UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Inquiry Regarding the Commission's Policy for Determining Return on Equity	**Docket No. PL19-4-000**

AFFIDAVIT

Of

BREANDAN T. MAC MATHUNA

On Behalf Of

THE CITIES OF ANAHEIM, AZUSA, BANNING, COLTON, PASADENA, AND RIVERSIDE, CALIFORNIA

June 25, 2019

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1 **I.**   **Introduction**

2   My name is Breandan T. Mac Mathuna. I am a Project Manager for GDS

3 Associates, Inc. ("GDS"). My business address is 1850 Parkway Place, Suite 800,

4 Marietta, Georgia 30067.

5   I graduated from the University College Dublin, Ireland with a Bachelor of

6 Commerce in 2007. My area of concentration was Finance. I received a Master's of

7 Business Studies in Strategic Management and Planning from the UCD Michael Smurfit

8 Graduate Business School, University College Dublin, Ireland in 2008.

9   I have over ten years of experience in the power industry. In 2008, I began my

10 career at EirGrid, the Transmission System Operator and Market Operator in Ireland and

11 Northern Ireland, which is owned by the Irish government. As part of my responsibilities,

12 I developed a business case and financial model for the transfer of transmission network

13 assets from the Electric Supply Board, the Transmission Asset Owner and dominant energy

14 company in the then newly-deregulated market, to EirGrid. I later became a transmission

15 pricing specialist and was assigned to a task force to design and implement a new

16 transmission network tariff for generators that were interconnected to the transmission

17 system. I was promoted in 2010 to the group regulation team as a regulatory analyst and

18 later to a senior regulatory analyst role. During this time, I was tasked with developing

19 and coordinating the revenue requirement submission to the Irish energy regulator

20 regarding the Ireland and Great Britain electricity interconnector link project.

21 Additionally, I worked with senior management to develop a sustainable dividend payment

22 framework, with EirGrid subsequently paying its first dividend to the Irish government.

1   Finally, I worked closely with senior management regarding EirGrid's regulatory

2   engagement as part of the price control process determining the five-year revenue

3   requirement for EirGrid. In particular, I worked on developing EirGrid's position on an

4   appropriate return on equity ("ROE") rate, prepared material filed with the Irish regulator,

5   and participated in regulatory negotiations to assert EirGrid's positions.

6   I joined GDS, a multi-disciplinary engineering and consulting firm primarily

7   serving electric, gas and water utilities, in 2014 and have subsequently performed a wide

8   variety of financial consulting services with a focus on rates, state and federal regulatory

9   matters, and strategic power supply advice. This has involved the development of

10   financial, wholesale power cost, and annual operating budget forecasts for numerous

11   clients. I have developed power supply procurement strategies and managed the request

12   for proposal processes and contracting for these efforts. I have performed long-term asset

13   reviews and economic feasibility analyses of purchase power contracts and/or ownership

14   of renewable generation facilities, participated at Regional Transmission Organization

15   ("RTO") stakeholder committees, and completed a comprehensive financial analysis on

16   becoming an RTO member for a large client that is currently in an unstructured market.

17   I have filed direct testimony before the Commission regarding the just and reasonable ROE

18   for use in the Southern Companies' open access transmission formula rate.[1] I have assisted

19   in conducting ROE analyses and also supported the development of transmission ROE

20   protests and the drafting of direct testimony as part of ROE complaints, and I am currently

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[1] *See* Direct Testimony and Exhibits of Breandan T. Mac Mathuna, Exh. No. JC-1, *Ala. Mun. Auth. And Coop. Energy v. Ala. Power Co.*, Docket No. EL18-147-000 (Filed May 10, 2018).

1   involved in a number of ongoing settlement negotiations regarding ROE proceedings at

2   FERC. I have performed analyses of transmission owners' annual FERC-approved Open

3   Access Transmission Tariff ("OATT") filings and numerous reactive revenue requirement

4   FERC Schedule 2 tariff filings, including representing clients' interests at settlement

5   conferences regarding those filings. In connection with my financial consulting

6   assignments, I regularly follow the capital markets and factors influencing the cost of

7   capital for electric utilities.

8   I am presenting this affidavit on behalf of the Cities of Anaheim, Azusa, Banning,

9   Colton, Pasadena, and Riverside, California (collectively, the "Six Cities").

10 **II.**   **List of Exhibits**

11   In addition to my affidavit, designated as Exhibit No. CIT-0001, I sponsor

12 the following exhibits:

13   Exhibit No. CIT-0002:   Market Capitalization Analysis

14   Exhibit No. CIT-0003:   Value Line Reports

15   Exhibit No. CIT-0004:   Market-to-Book Ratios Example

16   Exhibit No. CIT-0005:   Alternative High-End Outlier Test

17   Exhibit No. CIT-0006:   Natural Break Standard Analysis

1   **III.**   <u>**Purpose and Overview of Affidavit**</u>

2   In the Notice of Inquiry ("NOI"),[2] the Commission seeks information

3 regarding whether and how it should modify its policies concerning the

4 determination of the ROE used in jurisdictional rates charged by public utilities. The

5 Commission outlines eight topics and poses a series of questions regarding each

6 topic.

7   The purpose of this affidavit is to provide responses to certain of these

8 questions for the Commission's consideration in evaluating potential changes to its

9 return on equity policies. Regarding the instances where I have not provided a

10 response to a question posed in the NOI, my silence should not be construed as

11 agreement with the statements of the Commission in the NOI, those aspects of the

12 newly-proposed ROE framework outlined in the Orders Directing Briefs[3] to which

13 the question may relate, or the positions expressed by any other participant in this

14 proceeding or by parties in other proceedings. I also reserve the right to address the

15 questions in the NOI as part of a reply affidavit.

16   My responses follow chronologically the order of the topics and related

17 questions as laid out by the Commission in its NOI. Responses to NOI questions are

18 set forth in the following sections. Where practical and to avoid repetition, I have

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[2] *Inquiry Regarding the Commission's Policy for Determining Return on Equity*, 166 FERC ¶ 61,207 (2019).

[3] *Martha Coakley, Attorney Gen. of the Commonwealth of Mass. v. Bangor Hydro-Elec. Coop.*, 165 FERC ¶ 61,030 (2018) ("Coakley Order Directing Briefs"); *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, 165 FERC ¶ 61,118 (2018) ("MISO Order Directing Briefs").

1   grouped and responded to certain consecutively numbered questions on a

2   consolidated basis.

3 **IV.   Response to NOI Questions**

4   **A.   Role and Objectives of the Commission's Base ROE Policy**

5   **A1.   To what extent would the ROE methodology described in the *Coakley***
6   **and MISO Briefing Orders impact the predictability of ROE**
7   **determinations and the costs for market participants of making or**
8   **intervening in such proceedings?**

9   **A2.   How would using the ROE methodology described in the *Coakley* and**
10   **MISO Briefing Orders affect an investor's ability to forecast the ROE**
11   **the Commission would establish in a litigated proceeding and the**
12   **ability of participants to propose, contest, and settle base ROEs as**
13   **compared to using only the DCF methodology?**

14   **A3.   Currently, public utilities in different Independent System Operators**
15   **(ISOs) or RTOs may receive different ROEs, despite all using national**
16   **proxy groups, due primarily to differences in when FPA section 205 or**
17   **206 proceedings were initiated. Are such variations justified, and, if**
18   **not, should the Commission consider applying the same ROE to all**
19   **utilities in RTOs/ISOs based on the most recent proceeding?**

20   **A4.   Should the ROE reflect the cost of capital at the time of the investment**
21   **or be subject to adjustment to reflect the contemporary ROE required**
22   **by investors?**

23   **A4.a. Should the Commission consider a "vintage approach," with**
24   **ROE fixed for the life of the asset at the time that each asset was**
25   **completed?**

26   **A4.b. Would such a "vintage approach" need to be coupled with an**
27   **annual national default ROE for investments made in that year,**
28   **so as to minimize the need for numerous annual litigated ROE**
29   **proceedings for each public utility that made an investment**
30   **during that year? What procedure should be used to determine**
31   **such a default ROE?**

32   I do not address these questions in my affidavit at this time, but reserve the right to

33   do so in a reply affidavit.

1 **B.** **ROEs for Different Commission-Regulated Industries**

2   In this affidavit, my comments address issues relating to the Commission's ROE

3 policies and methodologies as applied to electric utilities. I do not state a position as to

4 whether the policies and methodologies that are applicable to electric utilities should be

5 expanded to other regulated industries.

6 **C.** **Performance of the DCF Model**

7   **C1.** **The DCF model assumes stock prices are equal to the present value of**
8   **projected future cash flows. Is there evidence of situations when these**
9   **assumptions are inaccurate?**

10   Please refer to my response to question C2.

11   **C2.** **Have current and projected proxy company earnings over the last 10**
12   **to 20 years increased in a manner that would justify any increases in**
13   **their stock prices over the same period, consistent with DCF model**
14   **assumptions?**

15   Yes, current and projected proxy company earnings have increased, thus justifying

16 an increase in stock prices, but the influence of earnings on stock prices has occurred in

17 concert with other factors, and this combination of factors does account for the price

18 increases over the last 10 to 20 years consistent with Discounted Cash Flow ("DCF") model

19 assumptions. As explained below, the DCF model does not assume that only changes in

20 earnings drive changes in stock prices. It is my belief that the Commission is incorrect in

21 its assertion, made in the MISO Order Directing Briefs, that "[i]n recent years, utility stock

22 prices appear to have performed in a manner inconsistent with the theory underlying the

23 DCF methodology."[4] The Commission's implied premise that the DCF theory dictates that

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[4] MISO Order Directing Briefs at P 47.

1   changes in prices must move in lock-step with changes in earnings and/or earnings

2   expectations over time is not correct.

3   According to the Commission:

4   increases in a company's actual earnings or projected growth
5   in earnings would ordinarily be required to justify an
6   increase in the company's stock price. However, as
7   described in the *Coakley* Briefing Order, although the Dow
8   Jones Utility Average increased by almost 70 percent from
9   October 1, 2012 through December 1, 2017, there was not
10   an increase in either utility earnings or projected earnings
11   during that period that would justify the substantial increase
12   in stock prices.[5]

13   The theory underlying the DCF methodology provides that stock prices may change not

14   only as a result of expected changes in earnings/dividends ("g"), but also due to changes

15   in investors' required rate of return for investing in a company ("k"). Indeed, it is investors'

16   required rate of return for which the DCF formula solves. That required rate of return

17   certainly changes over time and is influenced by a myriad of factors in addition to expected

18   growth in earnings and dividends. Such factors include, for example, expected opportunity

19   costs or returns that might be earned on alternative investments, changes in risk

20   perceptions, changes in risk tolerance, a desire for current income versus longer-term

21   capital gains, and expectations about inflation, real interest rates, the global economy, the

22   U.S. economy in general or various sectors of the U.S. economy. Under the DCF theory,

23   stock prices will react in response to any and all of those variables even if earnings or

24   expected growth in earnings and dividends remain static.

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[5] *See id.*

1   Many decades ago, the Commission itself debunked the contention that the DCF

2   assumes that the market price of a stock is exclusively or even primarily determined by

3   current dividends and expected future increases in dividends and earnings. In Order No.

4   489, the Commission explained:

5   AEP argues that the model assumes erroneously that the
6   market price of a stock is primarily or exclusively
7   determined by current dividends and expected future
8   increases in dividends, and ignores other factors such as
9   expectations about changes in stock prices, inflation rates
10   and speculative considerations.

11   AEP misinterprets the theory underlying the DCF model.
12   The DCF model used by the Commission shows the
13   relationship between stock prices and dividends, growth rate
14   of dividends, and shareholders' required rate of return. It
15   does not assume that price is primarily determined by
16   dividends alone. The DCF model assumes that price, "P0",
17   is determined by a combination of factors:

18               $[P0 = D0 (1+.5g) / (k\text{-}g)]$
19
20   Two of these factors relate to dividends. The indicated
21   current dividend is represented by the "D0" term and the
22   expected growth rate of dividends is represented by the "g"
23   term. The other factor, the shareholders' required return on
24   equity, the "k" term, also influences price. This term has
25   several components, including expectations about the real
26   interest rates, the expected rate of inflation, and the "risks"
27   associated with owning a particular stock. It is this term that
28   is estimated by the DCF model. Contrary to AEP's claim,
29   prices in the DCF model change in response to changes in
30   expectations associated with the "g" and "k" terms.[6]

31   I concur with the Commission's reasoning from Order No. 489. As the Commission

32   explained, it is not correct that, under the DCF theory, increases in a company's actual

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[6] *Generic Determination of Rate of Return on Common Equity for Pub. Utils.*, Order No. 489, FERC Stats.
& Regs. ¶ 30,795, at 30,990 (1988) ("Order No. 489") (citations omitted).

1   earnings or projected growth in earnings would ordinarily be required to justify an increase

2   in the company's stock price.

3   The Commission also seeks to support its contention that utility stock prices have

4   not performed in a manner consistent with the premise underlying the DCF methodology

5   when it observes that "there was not an increase in either utility earnings or projected

6   earnings during that period that would justify the substantial increase in stock prices" even

7   though "the Dow Jones Utility Average increased by almost 70 percent from October 1,

8   2012 through December 1, 2017."[7] However, as I just discussed, under the DCF theory,

9   many variables other than earnings and projected earnings affect stock prices, including,

10   for example, the opportunity costs of making alternative investments and expectations

11   about inflation. While the Commission references the nearly 70 percent increase in the

12   Dow Jones Utility Average from October 1, 2012 through December 1, 2017, the stock

13   market in general rose significantly over that same period. For example, the S&P 500

14   index rose over 83%, from 1,440.90 to 2,645.10.[8] Many of the same factors influencing

15   the increase in utility stock prices were also influencing overall stock market prices.

16   Additionally, relative opportunity costs were changing. Stock markets are complex,

17   and individual stock prices are somewhat interdependent on the stock price of other

18   individual stocks and with broader trends affecting stock prices generally. Thus, changes

19   in individual stock prices cannot be viewed in isolation. For instance, as the S&P 500 prices

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[7] *See* MISO Order Directing Briefs at P 47.

[8] S&P 500 (^GSPC) Stock Historical Prices & Data, *Yahoo! Finance*,
https://finance.yahoo.com/quote/%5EGSPC/history?period1=1349064000&period2=1512104400&interval=1d&filter=history&frequency=1d (last visited June 19, 2019).

1   rose, investors who perceived the price of the stocks driving the S&P 500 increases as

2   being too pricey[9] would have sought alternative investments, thereby increasing the

3   demand for and market prices of those alternative investments.

4   Additionally, over that same period (October 2012 through December 2017),

5   inflation expectations were declining, making utility stock investments, with their

6   relatively high and generally growing dividends, more attractive as a result of the utility

7   stocks' nominal expected return becoming more valuable in real terms. As shown by the

8   graph below, expected inflation, as measured by the relative prices of inflation-protected

9   and inflation-exposed U.S. Treasury bonds and reported by the Federal Reserve, was

10   almost 3.0% toward the end of 2012 and during early 2013. Inflation subsequently declined

11   to about 1.4% by mid-2016 before rising back up to near 2.0% toward the end of 2017.[10]

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[9] In other words, the price to acquire the stock was greater than investors' assessment of potential future
rewards that may result from holding the stock.

[10] *See 5-Year, 5-Year Forward Inflation Expectation Rate*, Federal Reserve Bank of St. Louis,
https://fred.stlouisfed.org/series/T5YIFR (last visited June 12, 2019) (applying custom date range for
October 1, 2012 through December 1, 2017).

1   *Figure 1: 5-Year Forward Inflation Expectation Rate*

2

3   In the MISO Order Directing Briefs, the Commission further stated "[i]t appears

4   that, for whatever the reason, investors have seen greater value in utility stocks than the

5   DCF methodology would predict. This suggests that the ROE estimated by that

6   methodology may be correspondingly inaccurate."[11] The Commission's statement implies

7   that part of the DCF methodology's role is to predict future stock prices. However, this

8   misrepresents the purpose of the DCF methodology. Rather than predicting stock prices,

9   its purpose is to identify investors' required return under the methodology's simplifying

10 assumptions during the study period in question. In Order No. 489, the Commission

11 clarified how the DCF methodology should be used:

12   The Commission agrees that the DCF model is a poor
13   method for predicting future stock prices. A simplifying
14   assumption underlying the constant growth DCF model is
15   that the firm will grow at a constant rate. This implies that

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[11] *See* MISO Order Directing Briefs at P 47.

1   book value and dividends can be thought of as growing at
2   roughly the same rate. If there were no changes in
3   expectations from one year to the next, prices could be
4   expected to grow at the same rate as earnings, dividends, and
5   book value . . . . Since expectations do change, it is not
6   surprising that AUS found that the model did a poor job of
7   explaining changes in stock prices. The DCF model is used
8   to estimate the return required by investors at the time the
9   analysis is performed. It is not intended to forecast price
10   changes, changes in market conditions, or changes in
11   expectations. A year later, expectations about interest rates,
12   dividends, and growth rates will likely have changed. Prices
13   change because expectations change. A test to determine
14   whether a DCF model can forecast stock price changes is not
15   a valid test of the model.[12]

16   Thus, based on the Commission's precedents and the data I have reviewed, I

17 conclude that the underlying theory of the DCF remains sound, and the methodology has

18 performed consistently over the last 10 to 20 years.

19   **C3.**   **How does the DCF methodology perform over a wide range of interest**
20   **rate conditions?**

21   **C3.a.**   **What specific assumptions of the DCF model, if any, do not**
22   **work well in low or high interest rate environments?**

23   **C3.b.**   **Is there evidence that the volatility of price-to-earnings ratios**
24   **over the last 10 to 20 years, assumed to be constant in the DCF**
25   **methodology, has been driven by the wide swings in interest**
26   **rates over this period? If so, would the constant P/E assumption**
27   **impact the award of reasonable ROEs?**

28   I do not address these questions in my affidavit at this time, but reserve the right to

29 do so in a reply affidavit.

30 **D.**   **Proxy Groups**

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[12] Order No. 489 at 30,991.

1   **D1.   Should proxy groups for electric utilities, as well as natural gas and oil**
2   **pipelines, consist only of companies with corresponding regulated**
3   **businesses?**

4   **D1.a. For companies with a combination of regulated and unregulated**
5   **businesses, should a company be required to derive a certain**
6   **percentage of its revenues from the applicable regulated**
7   **business in order for that company to be included in the proxy**
8   **group that is used to determine an ROE for a company in that**
9   **regulated business?**

10   **D1.b. Are the corresponding proxy groups sufficiently large given the**
11   **continued consolidation in the industries?**

12   I do not address these questions in my affidavit at this time, but reserve the right to

13   do so in a reply affidavit.

14   **D2.   Should risk be considered both in the proxy group selection and in the**
15   **placement within the zone of reasonableness?**

16   Yes, risk should be considered in proxy group company selection and in the

17   placement within the zone of reasonableness so long as the risk assessment is properly

18   applied for both. Please refer to my responses to questions D6. and D9.

19   **D2.a. Should the Commission's approach to proxy group selection**
20   **change depending on which financial models it considers when**
21   **determining the just and reasonable ROE and, if so, how?**

22   I do not address these questions in my affidavit at this time, but reserve the right to

23   do so in a reply affidavit.

24   **D3.   Should the Commission consider non-energy companies when selecting**
25   **proxy groups?**

26   **D3.a. What non-energy industries or securities have comparable risk**
27   **to public utilities and natural gas and oil pipelines, if any?**

28   No. Given electric utilities' unique industry characteristics, it is inappropriate to

29   include non-electric utilities in the analysis when determining the ROE for electric utilities.

1   As the U.S. Court of Appeals for the D.C. Circuit ("D.C. Circuit") has opined, "[f]inding

2   unregulated companies of comparable risk is an extremely tricky process."[13] The

3   Commission has previously stated that "we will not consider the non-utility DCF analysis

4   … because those methodologies are not based on electric utilities,"[14] and I do not support

5   changes in the Commission's policy.

6   A check on the reasonableness of a non-utility group is to ask whether one would

7   include electric utilities in a group with risk comparable to, for example, Walmart Stores,

8   which operates in a highly competitive and unregulated industry. I suggest that the answer

9   is almost always no. For instance, Moody's characterizes Walmart's peer group as

10   "Retail,"[15] while it characterizes Southern California Edison Company's ("SoCal Edison")

11   as part of the "Regulated Electric and Gas Utilities" peer group.[16] Moody's Retail peer

12   group of U.S.-domiciled companies includes companies such as Amazon.com, Costco

13   Wholesale and Walgreens. Unsurprisingly, as the peer group name would suggest, none

14   are electric utilities.[17]

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[13] *Ill. Bell Tel. Co. v. FCC*, 988 F.2d 1254, 1262-1263 (D.C. Cir. 1993).

[14] *Coakley v. Bangor Hydro-Elec. Co.*, Opinion No. 531, 147 FERC ¶ 61,234, at P 146, n.288 ("Opinion No. 531"), *order on paper hearing*, Opinion No. 531-A, 149 FERC ¶ 61,032 (2014) ("Opinion No. 531-A"), *order on reh'g*, Opinion No. 531-B, 150 FERC ¶ 61,165 (2015) ("Opinion No. 531-B"), *vacated by*, *Emera Maine v. FERC*, 854 F.3d 9 (2017) ("*Emera Maine*"), *order on remand*, Coakley Order Directing Briefs, 165 FERC ¶ 61,030.

[15] *See* Walmart Inc. – Peer Group, Moody's Investor Services, Inc., https://www.moodys.com/credit-ratings/Walmart-Inc-credit-rating-806500 (last visited on June 19, 2019). The peer group members can be viewed under the "Peer Group" tab provided on the website.

[16] Southern California Edison Company – Peer Group, Moody's Investor Services, https://www.moodys.com/credit-ratings/Southern-California-Edison-Company-credit-rating-693000 (last visited on June 19, 2019). The peer group members can be viewed under the "Peer Group" tab provided on the website.

[17] Walmart and Amazon in particular have been described as the world's largest general consumer product retailers, with a peer group consisting of Big Lots, Canadian Tire, and eBay, among others. *See* Daniel Seens, *Walmart or Amazon: An Extended Peer Group Comparison*, Yahoo! Finance (Oct. 15, 2018),

1   I find that it is inappropriate to include non-electric utilities in the analyses used to

2   determine ROEs for electric utilities given electric utilities' unique industry characteristics,

3   and I do not recommend this approach.

4   **D3.b. Do certain non-energy industries or securities feature fewer**
5   **outliers?**

6   I do not address this question in my affidavit at this time, but reserve the right to do

7   so in a reply affidavit.

8   **D4.   What, if any, are appropriate high- and low-end outlier tests?**

9   **D4.a. The Commission currently excludes from the proxy group**
10   **companies whose ROE fails to exceed the average 10-year bond**
11   **yield by approximately 100 basis points. Should the low-end**
12   **outlier test continue to be based on a fixed value relative to the**
13   **costs of debt or (a) should it be based on its value relative to the**
14   **median (i.e., less than 50 percent of the median); or (b) still**
15   **reflect the cost of debt but vary based on interest rates?**

16   As part of the newly proposed framework outlined in the Coakley and MISO Orders

17   Directing Briefs, the Commission proposes "to continue to use the same screens for

18   developing a proxy group as the Commission has used in recent cases, including Opinion

19   Nos. 531 and 551."[18] One of the screens seeks to ensure that a proxy group only retains

20   "companies whose ROE results pass threshold tests of economic logic, including both a

21   low-end outlier test and a high-end outlier test."[19] The need to test for economic logic is

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https://finance.yahoo.com/news/walmart-amazon-extended-peer-group-154345262.html; *see also* Phalguni Soni, *Cash Is King – Analyzing Valuations For Walmart And Its Peers*, Market Realist (Feb. 18, 2015), https://articles.marketrealist.com/2015/02/cash-king-analyzing-valuations-walmart-peers/ (identifying Walmart's industry peers, which do not include electric utilities). In these examples, none of the peer group members are electric utilities.

[18] Coakley Order Directing Briefs at P 49 (citations omitted); MISO Order Directing Briefs at P 50; *see also Ass'n of Bus. Advocating Tariff Equity v. MISO*, 156 FERC ¶ 61,234 (2016) ("Opinion No. 551").

[19] *See* Coakley Order Directing Briefs at P 49.

1   not in dispute. For example, Dr. William E. Avera, a witness who has previously filed

2   testimony on behalf of Commission-regulated public utilities, when explaining his

3   recommendation that not all points within the DCF range of results can be relied upon to

4   determine the cost of common equity, stated:

5   The DCF range for a proxy group of electric utilities must be
6   adjusted to eliminate cost of equity estimates that fail
7   fundamental tests of economic logic. It is a basic economic
8   principle that investors can be induced to hold more risky
9   assets only if they expect to earn a return to compensate them
10   for their risk bearing. As a result, the rate of return that
11   investors require from a utility's common stock, the most
12   junior and riskiest of its securities, must be considerably
13   higher than the yield offered by senior, long-term debt.[20]

14   Regarding the low-end outlier test, the Commission has stated that its objective is

15   to "exclude from the proxy group companies whose low-end ROE" is "sufficiently low

16   that an investor would consider the stock to 'yield essentially the same return' as debt."[21]

17   To meet this objective, the Commission explains that it "excludes from the proxy group

18   companies whose ROE fails to exceed the average 10-year [sic] bond yield by

19   approximately 100 basis points, taking into account any natural break between the cost of

20   equity estimates of the companies excluded from the proxy group and the lowest cost of

21   equity estimate of the companies included in the proxy group."[22] I agree that a 100-basis

22   point band, subject to the natural break analysis as discussed further below, reasonably

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[20] Direct Testimony of William E. Avera, Exh. No. PNR-700 at 48:8-14, *Pioneer Transmission, LLC*, Docket No. ER09-75-000 (filed Oct. 15, 2008).

[21] *See S. Cal. Edison Co.*, 131 FERC ¶ 61,020, at P 55 (2010).

[22] *See* MISO Order Directing Briefs at P 51 (citing Opinion No. 531 at P 123).

1   meets the objective of identifying ROEs that are sufficiently low such that investors would

2   perceive the equity returns to yield essentially the same return as debt.

3   When applying the low-end outlier test, the Commission has previously relied on

4   the six-month average bond yields for the DCF study period as reported in the Moody's

5   Public Utility Bond Index for the same rating category as the utility whose low-end ROE

6   is being tested.[23] This test remains appropriate because it is the economic logic of the

7   calculated ROE for the specific proxy company that is being tested, and the bond yield for

8   that utility's credit rating category should be used in the test. Credit ratings consider both

9   financial and business risks of utilities and differentiate between the overall risks associated

10   with individual utilities. Investors require lower capital cost rates for utilities with lower

11   risks and higher capital cost rates for those with higher risks. This fact is evidenced by the

12   differences in the Moody's Baa-rated utility bond index yields and its six A-rated utility

13   bond index yields. Additionally, the Commission has explained that "[a]n investor will

14   expect a higher yield for a more risky investment. For instance, an AAA long-term bond

15   has a lower discount rate than a BBB bond, because there is more risk that the company

16   with the BBB bond will not meet its obligations."[24] Therefore, using the Baa bond index

17   yield to test the ROE for an A-rated utility is not appropriate, as this approach fails to reflect

18   the risk associated with the applicant utility.

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[23] *See S. Cal. Edison Co.*, 131 FERC ¶ 61,020 at PP 54-56; *Bangor Hydro-Elec. Co.*, 117 FERC ¶ 61,129, at P 53 (2006) ("We affirm the Presiding Judge's determination that in eliminating unreliable low-end ROEs, it is appropriate to consider the company's own cost of debt, not the composite debt rate of the proxy group.").

[24] *See Nw. Pipeline Corp.*, Opinion No. 396-B, 79 FERC ¶ 61,309 (1997) ("Opinion No. 396-B"), *reh'g denied*, Opinion No. 396-C, 81 FERC ¶ 61,036, at 61,189, n.8 (1997) ("Opinion No. 396-C").

1   Regarding the high-end outlier test, in the Coakley and MISO Orders Directing

2   Briefs, the Commission has proposed a new test to meet its stated objective to "identify

3   those companies whose cost of equity under the model in question is so far above the cost

4   of equity of a typical proxy company as to suggest that it is the result of atypical

5   circumstances not representative of the risk profile of a more normal utility."[25]   The

6   proposal is to exclude:

7   [A]ny proxy company whose cost of equity estimated with a
8   given model is more than 150 percent of the median result
9   of all of the potential proxy group members in that model
10   before any high or low-end outlier test is applied, subject to
11   a "natural break" analysis.[26]

12   The proposed test is severely limited in its effectiveness. The proposed 150%

13   multiplier is an arbitrarily-chosen measure that does not appropriately consider information

14   inherent in the underlying array of ROEs produced by each model. There is no statistically

15   sound basis supporting the multiplier. Further, the multiplier will have limited value in

16   determining atypical results as the underlying array changes because the 150% multiplier

17   does not consider the dispersion of the ROEs produced by each model and therefore

18   provides an inadequate assessment of the underlying data set.

19   I recommend that the proposed high-end outlier test be improved by replacing the

20   150% multiplier with a common statistical method for identifying outliers based on the

21   elimination of any model results that are more than two standard deviations from the

22   median of each model's ROE array prior to testing for low- and high-end outliers. The

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[25] *See* MISO Order Directing Briefs at P 54.

[26] *See id*.

1 standard deviation measures the dispersion evident in the dataset and is a standard

2 statistical method to identify outliers. It can also be easily computed using the standard

3 deviation formula function in Microsoft Excel. A two-standard deviation bandwidth is

4 commonly used to provide a 95% confidence level that it encompasses the true value of

5 the statistic being measured.[27] Thus, employing the two-standard deviation bandwidth test

6 makes use of a standard statistical method that is simple to apply.

7   To demonstrate the application of my recommended alternative high-end outlier

8 test, I turn to the illustrative example the Commission provided in the MISO Order

9 Directing Briefs of how its proposed high-end outlier test would be applied.[28] The

10 Commission, in its example, calculated a 15.30% high-end outlier threshold for the

11 Expected Earnings analysis and removed two estimated ROE values of 16.37% and

12 18.24%, as these values were greater than the threshold level.[29] When applying my

13 alternative high-end outlier test, I calculated the two standard deviation upper limit as

14 14.88%.[30] Therefore, I eliminate the same two ROE values as were eliminated under the

15 Commission-proposed test, but I also eliminate an ROE value of 15.21% because it is

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[27] *See* Eugene F. Brigham and Louis C. Gapenski, *Intermediate Financial Management*, 36 (The Dryden Press, 5th Ed. 1996).

[28] *See* MISO Order Directing Briefs at P 55. While the order did not specifically cite the source, it is apparent that the Commission relied upon Dr. Avera's MISO I expected earnings analysis as presented in Exhibit No. MTO-31. Cross-Answering Testimony of William E. Avera, Exh. No. MTO-31, *Ass'n of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Docket No. EL14-12-002 (filed June 15, 2015).

[29] *Id*.

[30] The upper limit is determined by first calculating the standard deviation of the ROE array, before the application of any outlier tests, which is 2.34%. Second, the standard deviation value is multiplied by "2" and added to the 10.20% median of the ROE array, again, as determined before the application of outlier tests.

1   greater than the upper threshold limit of my alternative high-end outlier test.   The

2   Commission's proposed high-end outlier test, which does not consider the dispersion of

3   the ROEs produced by the analysis, would inappropriately result in the elimination of the

4   top two ROE values, but not the third-highest value.[31]

5   In the Coakley and MISO Orders Directing Briefs, the Commission made clear its

6   intention to apply a "natural break" analysis with respect to the low- and high-end outlier

7   tests, but it did not articulate specifically how this analysis should be performed. However,

8   the Commission has previously recognized that the cut-off point for the low-end outlier

9   test can vary "depending upon where the natural break is in the array of low-end ROEs of

10   the candidate proxy group companies that would distinguish outliers from non-outliers,"[32]

11   and it has noted that it will apply outlier tests with a degree of flexibility.[33] Thus, the

12   Commission has recognized that it can be appropriate to eliminate outlier ROE results if

13   they are sufficiently close to the thresholds that are first set by the outlier tests and are

14   significantly far apart from the remaining ROEs in the array. It is now an opportune time

15   for the Commission to establish clear and objective standards regarding the manner in

16   which it intends to perform its "natural break" analysis.

17   To that end, I recommend that the Commission adopt the following "Natural Break"

18   standard. This standard can be applied regardless of the ultimate high- or low-end outlier

19   tests implemented by the Commission. Under my proposed standard, a proxy value would

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[31] *See* Exhibit No. CIT-0005 detailing this example.

[32] *See* S. Cal. Edison Co., 131 FERC ¶ 61,020 at P 55.

[33] *See* Opinion No. 531 at P 122.

1   be deemed to constitute a "natural break" and, thus, the proxy company's result removed

2   from the analysis if it meets a two-part test:

3   Part 1: The proxy value is close to the threshold level that applies prior to
4   considering natural breaks, tested by whether that distance is less than one-
5   half the average jump (that is, one-half the width of the distribution's range
6   divided by the number of proxies, in each case prior to excluding any
7   outlier); and

9   Part 2: The proxy value is relatively far from the neighboring proxy value that
10   would be retained, tested by whether that distance is more than three times
11   the proxy group average jump.

12   While the one-half and three times the average jump values referenced above are

13   admittedly somewhat arbitrarily chosen, they do provide objective measures of the relative

14   closeness to the threshold values and the relative distance from otherwise retained values

15   that may be consistently applied to determine predictable outcomes. The use of one-half

16   the average jump would assure that only ROE results that are relatively near the threshold

17   values would be selected for further evaluation, and the use of three times the average jump

18   would assure that only values that are significantly distant from the next retained ROE to

19   constitute a natural break would be rejected. The Commission could reevaluate the one-

20   half and three times the average jump values after applying those benchmarks in several

21   cases, but I submit that they are logical and reasonable starting points that would provide

22   needed transparency and objectivity to the Commission's natural break analyses.

23   To demonstrate the application of this recommended "Natural Break" standard, I

24   again turn to the illustrative example the Commission provided in the MISO Order

25   Directing Briefs of how its proposed high-end outlier test would be applied.[34] As

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[34] *See* MISO Order Directing Briefs at P 55.

1   previously noted, the Commission, in its example, calculated a 15.30% high-end outlier

2   threshold for the Expected Earnings analysis and removed two estimated ROE values of

3   16.37% and 18.24%, as these values were greater than the threshold level. However, the

4   Commission did not eliminate, or even acknowledge, the next highest ROE in the

5   distribution, Vectren's 15.21% value, which was only nine basis points lower than the

6   Commission's proposed threshold level. Given this proximity to the threshold value,

7   Vectren's ROE value should have been evaluated in order to determine whether a "natural

8   break" is present in the distribution that would confirm either elimination or retention of

9   the Vectren value. Under my recommended standard, Vectren's 15.21% meets the first

10   test because its 9-basis points distance from the 15.30% threshold level is less than one-

11   half the average jump (which is 14 basis points[35]), and it meets the second test because its

12   126-basis point distance from CMS Energy's 13.94% ROE value, the next highest ROE

13   value in the array, is more than three times the distribution's 28.7 basis point average jump

14   (i.e., 86 basis points).[36] Therefore, under my proposed Natural Break standard, Vectren's

15   ROE should be eliminated as it is sufficiently close to the Commission's proposed high-

16   end threshold level and is clearly distinguishable from the remaining non-outlier utilities.

17   **D4.b. How, if at all, should the Commission's approach to outliers**
18   **vary among different financial models?**

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[35] The average jump is 28.7 basis points ((18.24% - 7.61%)/ 37 companies) and one-half the average jump is 14 basis points.

[36] *See* Exhibit No. CIT-0006, which illustrates this example. Please note that in this example, the Commission's outlier test as proposed in Opinion No. 531 is applied, rather than my recommended alternative high-end outlier test as discussed above.

1   In the Coakley and MISO Orders Directing Briefs, the Commission proposes to

2   apply the low- and high-end outlier tests separately to each of the models of its newly

3   proposed framework that produce an array of ROEs, which are the DCF, Capital Asset

4   Pricing Model ("CAPM") and Expected Earnings models.[37] I agree with this approach.

5   It is critical that the high-end outlier test be applied independently to the array of

6   ROE estimates produced by each ROE method ultimately adopted by the Commission.

7   Each method independently estimates the cost of equity for each of the proxy companies

8   to which it is applied, and, given the Commission's concern with the model risk inherent

9   in each method, it is imperative that the extreme values produced by each method be tested

10   against the other estimates produced by that method. To be internally consistent, the low-

11   and high-end tests should be applied individually to each model's results. As Dr. Roger

12   Morin has explained in his book, *New Regulatory Finance*, "[e]ach methodology possesses

13   its own way of examining investor behavior, its own premises, and its own set of

14   simplifications of reality."[38] Consequently, one can only determine whether a proxy group

15   member's ROE estimate, based on a specific model's assumptions, is illogical or can be

16   identified as an outlying value through reference to the full array of ROE outputs produced

17   by that same model. This process ensures that each methodology is producing internally

18   consistent outputs that are economically logical before they are combined to determine a

19   just and reasonable range of ROEs.

20   **D5.   How, if at all, does the Commission's use of credit ratings in ROE**
21   **determinations incentivize public utilities to behave in certain ways,**

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[37] For example, *see* MISO Order Directing Briefs at P 51.

[38] Roger A. Morin, PhD, *New Regulatory Finance* 429 (Public Utilities Reports, Inc., 2006) and referenced by the Commission in the MISO Order Directing Briefs at P 36.

1   **such as issuing more debt, and does this affect public utilities' credit**
2   **ratings?**

3   I do not address this question at this time, but reserve the right to do so in a reply

4   affidavit.

5   **D6.   What would be the impact of the Commission modifying the credit**
6   **rating screen to include all investment-grade utilities in the proxy**
7   **group?**

8   Modifying the credit rating screen to include all investment-grade utilities in the

9   proxy group would be a significant departure from the *Hope*[39] and *Bluefield*[40] standards,

10   which recognize that the equity investor's interest is served if the return to the equity owner

11   is comparable to the returns on investments in other enterprises having similar risks.[41] A

12   proxy group of all investment-grade utilities fails to achieve the goal of developing a proxy

13   group of risk comparable electric utilities.

14   In the Coakley and MISO Orders Directing Briefs, the Commission has proposed

15   to retain the proxy group screening factors it adopted in Opinion Nos. 531 and 551. These

16   criteria incorporate a screen to include "companies with credit ratings no more than one

17   notch above or below the utility or utilities whose ROE is at issue," and the Commission

18   further clarified that it "requires use of both Standard and Poor's corporate credit ratings

19   and Moody's issuer ratings when both are available."[42]   The Commission previously

20   explained "[t]he purpose of the credit rating band screen is to include in the proxy group

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[39] *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("*Hope*").

[40] *Bluefield Waterworks & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923) ("*Bluefield*").

[41] *Hope* at 603.

[42] *See* Coakley Order Directing Briefs at P 49, n.106.

1   only those companies whose credit ratings approximate those of the utilities whose rate is

2   at issue."[43] Furthermore, the Commission has stated that it "believes that companies within

3   one credit rating level can be considered comparable in risk."[44] This screen acts as the

4   Commission's primary tool to ensure the proxy group only consists of electric utilities that

5   are of comparable risk to the utility whose rates are at issue. In my view, this screen serves

6   an important purpose and should be retained.

7   Credit ratings reflect an agency's comprehensive review of all the risks a company

8   faces, including both business and financial risk. Despite not providing a direct measure

9   of equity risk, credit ratings are widely relied upon by and provide significant value to

10   equity investors. For example, share price movements following an announcement of

11   changes in credit ratings are strongly indicative of equity investors' reliance on credit

12   ratings.[45] Additionally, credit ratings provide an objective and independent measure of a

13   utility's risk, and given that each credit rating has its own respective common scale, credit

14   ratings are also an appropriate measure of risk comparability between utilities.

15   That credit ratings are relied upon by investors is a widely accepted view. The

16   Managing Director for Moody's Global Regulatory Affairs, Farisa Zarin, noted in

17   comments to the Securities and Exchange Commission:

18   To meet market needs over time, credit ratings have
19   developed important attributes including insightful, robust

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[43] *See* Opinion 531 at P 106.

[44] *See S. Cal. Edison Co.*, 122 FERC ¶ 61,187 at P 27, n.27 (2008).

[45] For instance, Zacks reports that "a rating change for a company's bonds can be an important factor in determining whether investors want to buy or sell that company's stock. A change in that rating may move stock prices." *See* Wayne Marks, *The Effect of Bond Rating Changes on Common Stock Prices*, Zacks https://finance.zacks.com/effect-bond-rating-changes-common-stock-prices-1686.html (last visited June 20, 2019).

1   and independent analysis, symbols that succinctly
2   communicate opinions, and broad coverage across markets,
3   industries and asset classes. These attributes have enabled
4   credit ratings to serve as a point of reference and common
5   language of credit that is used by financial market
6   professionals worldwide to compare credit risk across
7   jurisdictions, industries and asset classes, thereby facilitating
8   the efficient flow of capital worldwide."[46]

9   Dr. Avera has also provided testimony regarding the value of credit ratings as a

10   measure of investment risk:

11   Credit ratings are assigned by independent rating agencies to
12   provide investors with a broad assessment of the
13   creditworthiness of a firm. Because the rating agencies'
14   evaluation includes virtually all of the factors normally
15   considered important in assessing a firm's relative credit
16   standing, corporate credit ratings provide a broad measure of
17   overall investment risk that is readily available to investors.
18   Widely cited in the investment community and referenced
19   by investors as an objective measure of risk, credit ratings
20   are also frequently used as a primary risk indicator in
21   establishing proxy groups to estimate the cost of equity.[47]

22   The proxy group used to determine electric utility ROEs is intended to result in a

23   grouping of risk-comparable companies. With regard to the role of proxy groups, the

24   Commission has previously explained:

25   [T]he purpose of the proxy group is to "provide market-
26   determined stock and dividend figures from public
27   companies comparable to a target company . . . ." It is thus
28   crucial that the firms in the proxy group be comparable to
29   the regulated firm whose rate is being determined. In other

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[46] Farisa Zarin, Letter Re: Credit Rating Standardization Study – Release No. 34-63573; File No. 4-622 (Feb. 18, 2011), *quoted in* Answering Testimony of Adrien M. McKenzie, Exh. No. SER-0001 at 33:9-17, *Ark. Pub. Serv. Comm'n v. Sys. Energy Res., Inc.*, Docket Nos. EL17-41-001, EL18-142-000 (filed Mar. 20, 2019).

[47] Direct Testimony of William E. Avera, Exh. No. PNR-700 at 31:20 – 32:4, *Pioneer Transmission, LLC*, Docket No. ER09-75-000 (filed Oct. 15, 2008).

1   words, as the court emphasized in *Petal*, the proxy group

2   must be 'risk- appropriate.'[48]

3   The D.C Circuit likewise observed that:

4   [P]roxy group arrangements must be risk-appropriate. The

5   principle is well-established . . . [and] captures what proxy

6   groups do, namely, provide market-determined stock and

7   dividend figures from public companies comparable to a

8   target company for which those figures are unavailable.[49]

9   To establish proxy groups that consist of comparably-risked electric utilities, the

10   Commission has generally relied on credit ratings and has recognized that "investors rely

11   upon credit ratings"[50] when assigning investment risk. The Commission has also

12   concluded that "[i]t is reasonable to use the proxy companies' corporate credit rating as a

13   good measure of investment risk, since this rating considers both the financial and the

14   business risk of the company."[51]

15   In Opinion No. 486-B,[52] when developing pipeline proxy groups, the Commission

16   found that a "pipeline's credit rating is an appropriate part of the risk analysis and is well

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[48] *See generally Composition of Proxy Group for Determining Gas and Oil Pipeline Return on Equity Policy Statement*, 123 FERC ¶ 61,048 at P 48 (2008) (quoting *Petal Gas Storage, L.L.C. v. FERC*, 496 F.3d 695, 699 (D.C. Cir. 2007)).

[49] *Petal Gas Storage, L.L.C.*, 496 F.3d at 699 (citations omitted).

[50] Opinion 531 at P 107.

[51] *See Potomac-Appalachian Transmission Highline, L.L.C.*, 122 FERC ¶ 61,188, at P 97 (2008); *see also Va. Elec. and Power Co.*, 123 FERC ¶ 61,098, at P 62 (2008) ("We agree with protesters that, consistent with *Hope*, we must consider whether the proxy group is composed of companies with comparable risk to that of VEPCO. It is reasonable to use the proxy companies' corporate credit rating as a good measure of investment risk, since this rating considers both financial and business risk"); *Potomac-Appalachian Transmission Highline, L.L.C.*, 133 FERC ¶ 61,152, at P 63 (2010) (observing "corporate credit ratings are a reasonable measure to use to screen for investment risk," and that "[c]redit ratings are a key consideration in developing a proxy group that is risk-comparable"); *Westar Energy, Inc.*, 122 FERC ¶ 61,268 at P 95 (2008).

[52] *Kern River Gas Transmission Co.*, 126 FERC ¶ 61,034 (2009) ("Opinion No. 486-B").

1   established by Commission precedent," and "[Investment Credit Ratings], as well as

2   business risk profile ratings, are useful criteria in evaluating relative risk."[53] There, the

3   Commission further explained that "rating agencies such as Moody's use many factors that

4   would be relevant to an equity investor's analysis of a firm's business prospects," noting

5   that "[i]t is correct that a strong credit rating implies a greater ability to provide consistent

6   returns to the firm's stockholders and to raise capital for future growth."[54] In *Westar*, the

7   Commission found that "Westar's proxy group does not sufficiently screen for risk because

8   it includes various companies in its proxy group whose corporate credit ratings are not

9   comparable."[55]

10   Expanding the credit rating screen to include all investment grade electric utilities

11   would be inconsistent with the Commission's previously-expressed concern regarding an

12   "overly-broad selection criteria without any emphasis on finding companies that are

13   comparable in risk . . . "[56] to the subject to utility. Based on the widely-accepted view that

14   corporate credit ratings are a measurement of investment and business risk – a view that

15   the Commission has endorsed – I conclude that modification of the credit rating screen to

16   require simply that proxy companies have an investment-grade rating would result in

17   abandonment of the risk comparability principle the Commission has applied over many

18   years. I therefore support retention of the Commission's credit ratings screen as it is

19   currently applied.

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[53] *Id*. at P 137.

[54] *Id*.

[55] *Westar Energy, Inc.*, 122 FERC at P 95.

[56] *S. Cal. Edison Co.*, 92 FERC ¶ 61,070, at 61,264 (2000).

1   **D7.   To what extent do credit ratings correspond to the ROE required by**
2   **investors?**

3   The Commission is tasked with determining a just and reasonable return on equity

4   for the FERC-regulated service at issue. To reach this determination, the Commission must

5   rely on a set of analytical tools, *albeit* imperfect tools, and judgment, because an investor's

6   required return on equity is not directly observable. *Hope* and *Bluefield* recognize: (1) that

7   ratemaking involves balancing investor and consumer interests; and (2) the equity

8   investor's interest is served if the return to the equity owner is comparable to the returns

9   on investments in other enterprises having similar risks.[57] Consistent with these core

10 tenets, the Commission relies upon a proxy, or representative, group of utilities that are

11 deemed to be of comparable risk to the subject utility and, in particular, the FERC-

12 regulated service it renders. Apart from screening for risk comparability, the Commission

13 also screens for data availability, activity that may render the data unreliable, and whether

14 ROE values produced by an analytical model are economically sound and logical. The

15 "natural break" analysis forms part of this last screen.

16   As discussed further in response to question D6., credit ratings provide an objective

17 means to identify a proxy group of comparably-risked electric utilities, and the

18 Commission has traditionally relied upon a credit rating band to develop a risk-comparable

19 proxy group.

20   In his book *New Regulatory Finance*, Dr. Morin explains the rationale of using

21 credit ratings to develop a comparable group of proxy companies:

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[57] *Hope*, 320 U.S. at 603.

1   The assumption underlying this approach is that there is a
2   one-to-one correspondence between a utility's equity risk
3   and its debt risk. This is a plausible assumption given the
4   *positive relationship between bond rating and equity risk:*
5   *low bond ratings are usually accompanied with high equity*
6   *risks, and vice versa*.[58]

7   However, investors' required ROE is not directly observable, so, logically, the analytical

8   tools in estimating the return are considered imperfect. Therefore, it is important to not

9   over-emphasize the information provided by a single return on equity estimate for any one

10   individual utility. Dr. Morin adds "[t]here are several convincing reasons why the

11   determination of cost of capital should not rest on a sample of one firm" and suggests that

12   it is most appropriate to employ an analysis based on a comparable group to increase

13   reliability and account for abnormal conditions, among other limitations, inherent in

14   relying on a sample of one firm.[59] In fact, this explains why, in part, the Commission

15   develops a proxy group of comparably risked electric utilities, applies additional screens,

16   and relies on the point of central tendency from the resulting array of results for an electric

17   utility of average risk (e.g., the median in the case of single utilities) to determine the

18   ROE.[60]

19   **D8.**   **The Commission excludes from the proxy group companies with**
20   **merger activity during the six-month study period that is significant**
21   **enough to distort study inputs. Should the Commission continue using**
22   **our existing merger screen?**

23   **D8.a.** **If so, should the Commission revise its standards for what**
24   **conduct constitutes merger and acquisition activity?**

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[58] Roger A. Morin, PhD, *New Regulatory Finance* 404 (Public Utilities Reports, Inc., 2006) (emphasis supplied).

[59] *See id*. at 397-399.

[60] *See* Coakley Order Directing Briefs at P 17, n.46.

1   I do not address this question at this time, but reserve the right to do so in a reply

2   affidavit.

3   **D9.   What circumstances or factors, if any, warrant an adjustment from the**
4   **midpoint/median to other points within the zone of reasonableness (e.g.,**
5   **lower or upper midpoint/median)?**

6   While I would not categorically rule out discretionary adjustments (upward or

7   downward) from the midpoint or median results, I do not believe such adjustments should

8   be routine, and the justification for such adjustments should be based on compelling

9   evidence. For example, the Commission has previously held that "unless a party makes a

10   very persuasive case in support of the need for an adjustment and the level of the adjustment

11   proposed, the Commission will set the . . . return at the median of the range of reasonable

12   returns."[61] The Commission later clarified that "any analysis attempting to demonstrate

13   that a deviation from the median ROE is justified must present a comparison between the

14   risk level of the subject company and the risk level of each of the proxy group companies,"

15   explaining that "[t]his is the crux of the analysis, and if it is lacking, the analysis is

16   incomplete."[62]

17   The difficulty of meeting this "heavy burden"[63] is clear from the lack of successful

18   attempts to demonstrate that deviation from the point of central tendency is warranted. For

19   example, in *El Paso*, the FERC Trial Staff noted that "once an appropriate proxy group has

20   been determined, the Commission has never found that any pipeline company (or

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[61] Opinion 486-B at P 140.

[62] *El Paso Natural Gas Co.*, Opinion No. 528, 145 FERC ¶ 61,040 at P 698 (2013) ("Opinion No. 528"), *order on reh'g,* Opinion No. 528-A, 154 FERC ¶ 61,120 (2016) ("*El Paso*").

[63] *See id*. at P 688 ("The Commission places a heavy burden on those attempting to justify a deviation from the median ROE.").

1   intervenor) has persuasively shown the highly unusual circumstances required to justify a

2   ROE above (or below) the median."[64]

3   Further, as discussed in greater detail in response to question D6., credit ratings

4   reflect an agency's comprehensive review of all the risks a company faces, including both

5   business and financial risk. For example, wildfire risk was a primary reason for SoCal

6   Edison's recent credit rating downgrade.[65] Despite not providing a direct measure of equity

7   risk, credit ratings are widely relied upon by and provide significant value to equity

8   investors. Additionally, credit ratings provide an objective and independent measure of a

9   utility's risk, and given that each credit rating has its own respective common scale, credit

10   ratings are also an appropriate measure of risk comparability between electric utilities.

11   Indeed, this is confirmed in Moody's recent Rating Action report for San Diego Gas &

12   Electric Company with Nati Martel, Vice President Senior Analyst, explaining that "[t]he

13   downgrade of SDG&E's ratings reflects the company's exposure to sizeable potential

14   liabilities in connection with California wildfires which results in a higher business and

15   financial risk profile compared to utilities operating outside of California."[66] Therefore, it

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[64] *Id.* at P 662. However, recently the Commission ruled that in *Potomac-Appalachian Transmission Highline*, it was appropriate to award an ROE based on the lower median, i.e., the 25th percentile, of the zone of reasonableness, on the basis that "in the abandonment phase of the project, PATH's risk profile has decreased significantly as compared to the proxy companies that face ongoing business risks" (*see Potomac-Appalachian Transmission Highline, LLC*, 158 FERC ¶ 61,050 at P 262 (2017)) and that PATH "does not have a risk profile that is broadly comparable to those of the proxy group companies" (*see id*. at P 272).

[65] *See Rating Action: Moody's downgrades Edison International to Baa3 and Southern California Edison to Baa 2*, Moody's Investors Service (Mar. 5, 2019), https://www.moodys.com/research/Moodys-downgrades-Edison-International-to-Baa3-and-Southern-California-Edison--PR_396014 ("We downgraded Edison and SCE given the potential for multi-billion dollar exposure related to wildfire risk that is unique to investor-owned utilities in California," said Toby Shea, VP – Senior Credit Officer.").

[66] *See Rating Action: Moody's downgrades San Diego Gas & Electric to Baa1 from A2; Outlook Negative*, Moody's Investors Service (Mar. 5, 2019), https://www.moodys.com/research/Moodys-downgrades-San-

1   is clear that Moody's assesses the risks faced by an electric utility and determines a rating

2   that is comparable to its electric utility peers. A proxy group developed using the

3   Commission's traditional credit rating band criterion results in a risk comparable electric

4   utility proxy group without the need for a further adjustment for potential wildfire liabilities

5   or other risks, as such other risks have already been incorporated in the rating agencies'

6   assessments. Moreover, the facts of each case must be carefully considered. For example,

7   if the higher risk is demonstrably due to imprudent management, it would not be

8   appropriate to reward such imprudence with a higher ROE.

9   Thus, the Commission has historically placed great weight on the presumption that

10   an appropriately-selected proxy group contains companies of comparable risk and that

11   those attempting to rebut this presumption must meet a high standard of evidence. It is

12   also clear that those seeking to rebut the presumption must provide a rigorous comparative

13   risk analysis to each and every utility in the proxy group and that generalized assertions

14   regarding the applicant company's risk relative to the proxy group as a whole alone are

15   insufficient to meet this burden.

16   Furthermore, the median measurement, as opposed to the midpoint, is the most

17   appropriate measure of central tendency of ROE results. The midpoint measurement

18   simply averages the top and bottom ROE result and fails to consider the ROE results in

19   between these two points. It is not the extreme ROEs from the proxy group that are

20   representative of the return required by investors for the average amount of risk represented

21   by the proxy group, but rather the ROE around which the results cluster. The value that

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Diego-Gas-Electric-to-Baa1-from-A2--PR_396110.

1 best represents this clustering of ROEs is the median, which is determined by identifying

2 the ROE value for which there is an equal number of higher and lower calculated proxy

3 group ROEs. In proceedings involving an individual electric utility with risks comparable

4 to the average for the proxy group, it has been Commission policy to rely on the median of

5 the ROE results for the proxy as the appropriate ROE point estimate. That policy, which

6 was articulated in the Commission's *SCE Paper Hearing Order*,[67] was affirmed by the

7 D.C. Circuit on May 10, 2013 in *S. Cal. Edison Co. v. FERC*, 717 F.3d 177 (D.C. Cir.

8 2013).

9 **D10.** **The Commission currently uses midpoints to determine the central**
10   **tendency of the zone of reasonableness when determining RTO-wide**
11   **ROEs. Should the Commission adopt a policy of using medians for this**
12   **purpose?**

13   **D10.a. Would the use of multiple ROE methodologies, as proposed in**
14   **the *Coakley* Briefing Order, undercut the Commission's current**
15   **rationale for using the midpoint in RTO-wide base ROE?**

16   **D10.b. Should the size of the proxy group be considered in this decision?**

17 I support continued use of the median of the proxy group results as the point estimate

18 for establishing the ROE for an individual utility of average risk. I do not state a position

19 in this affidavit regarding the point estimate for use in setting an RTO-wide ROE.

20 **D11.** **Can the Commission continue to construct proxy groups of sufficient**
21   **size for natural gas and oil pipeline companies using the DCF**
22   **methodology, or in general for the alternative methodologies,**
23   **particularly considering the increased amount of merger and**
24   **acquisition activity involving master limited partnerships (MLPs) and**
25   **the multiple recent conversions of MLPs to C-corporations?**

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[67] *S. Cal. Edison Co.*, 131 FERC ¶ 61,020 (2010).

1   This affidavit does not state a position regarding the methodology for determining

2   the return on equity for natural gas and oil pipelines.

3   **E.   Financial Model Choice**

4   **E1.   What models do investors use to evaluate utility equities?**

5   Investors primarily use three market-based models to estimate the required rate of

6   return or cost of equity when evaluating utility equities. These are the DCF, the CAPM

7   and the Risk Premium Model ("Risk Premium"). The Expected Earnings method, which

8   examines a company's expected accounting return on the book value of its common equity,

9   is devoid of capital market input and has been thoroughly discredited.[68]

10   The prevalence of the DCF, the CAPM, and the Risk Premium is well documented.

11 For example:

12   a. Dr. Jonathan Lesser and Dr. Leonardo R. Giacchino explain that "[a]

13   number of methodologies have been developed for estimating the return on

14   equity. The three most common are the Discounted Cash Flow Model

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[68] The failure of either popular financial textbooks, investor survey results, or "best practice" practitioner guides published by major advisory firms to mention, let alone, discuss the method, is noteworthy. For example, please refer to Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance* (McGraw-Hill Irwin, 10th Ed. 2013). Also, Eugene F. Brigham, Dilip K. Shome and Steve R. Vinson, in a 1985 paper, report that the variation of the Expected Earnings method, known as the Comparable Earnings method, "has now been thoroughly discredited (see Robichek [15]), and it has been replaced by three market-oriented (as opposed to accounting-oriented) approaches: (i) the DCF method, (ii) the bond-yield-plus-risk-premium method, and (iii) the CAPM." *See* Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, 14 Fin. Mgmt. 33 (1985) (citations omitted). Note that, while the authors specifically reference the Comparable Earnings method, which examines historical accounting rates of return using unregulated firms in the sample group, their points are equally valid when regulated firms are used.

1   (DCF), the Capital Asset Pricing Model (CAPM), and the Risk Premium

2   Model (RPM)."[69]

3   b. Dr. Morin similarly states the same three methods are primarily used. He

4   says, quoting Professor Eugene Brigham, "[t]hree methods typically are

5   used: (1) the Capital Asset Pricing Model (CAPM), (2) the discounted cash

6   flow (DCF) method, and (3) the bond-yield-plus-risk-premium approach."[70]

7   According to Dr. Morin, "[t]hese methods are not mutually exclusive – no

8   method dominates the others, and all are subject to error when used in

9   practice," so, "when faced with the task of estimating a company's cost of

10   equity, we generally use all three methods and then choose among them on

11   the basis of our confidence in the data for each in the specific case at

12   hand."[71]

13   The choice of investors to not use the Expected Earnings method,[72] can be

14   understood by examining its many inherent flaws as a method for estimating the cost of

15   equity. In response to question E.3, I explain why the Expected Earnings method is inferior

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[69] Jonathan A. Lesser, Ph.D., Leonardo R. Giacchino, Ph.D., *Fundamentals of Energy Regulation* 147 (Public Utilities Reports, Inc., 2nd Ed. 2013).

[70] Roger A. Morin, PhD, *New Regulatory Finance* 430 (Public Utilities Reports, Inc., 2006) (quoting Eugene F. Brigham and Michael C. Ehrhardt, *Financial Management: Theory and Practice* (11th Ed. 2005)).

[71] *Id*. (quoting Eugene F. Brigham and Michael C. Ehrhardt, Financial Management: Theory and Practice (11th Ed. 2005)).

[72] *See* Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, 14 Fin. Mgmt. 33 (1985). Note while the authors specifically reference the Comparable Earnings method, which examines historical accounting rates of return using unregulated firms in the sample group, the points that the accounting rates of return, which the Expected Earnings method provides, including projected accounting rates of return, do not provide meaningful information on the cost of capital or economic rates of return are equally valid when regulated firms are used.

1   to the DCF method and other market-based methods and should not be used in the

2   Commission's ROE framework.

3   By presenting a series of detailed questions, the Commission's NOI makes clear

4   that it is not only important to understand what models investors use on a broad conceptual

5   level, but also gain an understanding of how best to apply the models in a regulatory setting

6   to determine authorized ROEs. After all, the results of a model are only as good as its

7   inputs. In the following sections, I explain why investors examining electric utility stocks

8   may utilize a particular methodology.

9   ***Discounted Cash Flow Method.*** The DCF method can be used to directly estimate

10   firms' cost of equity. An example of the direct DCF method application is to calculate cost

11   of equity for the individual utilities in a proxy group of comparably-risked electric utilities

12   and inferring the just and reasonable ROE from the analysis. For several decades,

13   beginning in the early 1980s, the Commission relied exclusively upon the DCF

14   methodology to determine the ROE for public utilities.[73] Additionally, the DCF method is

15   often used to estimate the Market Risk Premium as part of the CAPM method.[74]

16   The DCF method's direct application to estimate the cost of equity for electric

17   utilities is particularly apt given the utility sector's reputation as relatively low-risk,

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[73] *See, e.g.*, *Generic Determination of Rate of Return on Common Equity for Pub. Utils.*, FERC Stats. & Regs. ¶ 30,644, at 31,338 (1985) ("Order No. 420") ("[T]he Commission places primary reliance on the discounted cash flow (DCF) approach to estimating the market required rate of return on common equity."); *see also* Opinion No. 396-C at 61,189 ("The Commission has historically used a constant growth DCF model.").

[74] *See* Eugene F. Brigham and Louis C. Gapenski, *Intermediate Financial Management* 177 (The Dryden Press, 5th Ed. 1996) ("The most common approach to ex ante premiums is to use the discounted cash flow (DCF) model to estimate the expected market rate of return.").

1   defensive investments that offers steady dividends. In discussing the Dividend Discount

2   Model ("DDM"), which is a DCF model very similar to the Commission's preferred two-

3   step DCF method, Stephan A. Ross, *et al*. explain it "is only applicable to firms that pay

4   steady dividends; it is completely useless if companies do not."[75] An article from

5   Investopedia[76] entitled "How to Choose the Best Stock Valuation Method" echoes this

6   concept when discussing the DDM, stating: "the companies that pay stable and predictable

7   dividends are typically mature blue-chip companies in well-developed industries. These

8   types of companies are often best suited for the DDM valuation model."[77]

9   Electric utilities' reputation for being defensive and offering steady dividends is

10   well established, with one analyst describing utilities as "fundamentally boring companies

11   and boring stocks," noting that "[t]heir job is to be defensive and healthy and predictable,

12   and the overwhelming majority of the industry still is."[78] Investopedia adds that "[u]tilities

13   typically offer investors stable and consistent dividends, as well as less price volatility

14   relative to the overall equity markets. Because utility stocks are considered stable and pay

15   a consistent dividend, they tend to perform well when the economy is in a recession and be

16   out of favor with the market during times of economic expansion."[79] The steady and

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[75] *See* Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance* 412 (McGraw-Hill Irwin, 10th Ed. 2013).

[76] Investopedia is a well-known, popular website that explains basic financial concepts, and I refer to it in order present evidence of certain concepts that are commonly accepted in the investment community.

[77] Joseph Nguyen, *How to Choose the Best Stock Valuation Method*, Investopedia (Feb. 5, 2019), https://www.investopedia.com/articles/fundamental-analysis/11/choosing-valuation-methods.asp.

[78] Allison Good, *Despite PG&E Bankruptcy, 'Boring' US Utility Sector Still Safe, Analysts* Say, S&P Global Market Intelligence (Jan. 30, 2019), https://www.spglobal.com/marketintelligence/en/news-insights/trending/64wlqjHxYDQcXUVMybU8sA2.

[79] *See* Chris B. Murphy, *Utilities Sector*, Investopedia (May 4, 2019), https://www.investopedia.com/terms/u/utilities_sector.asp.

1   consistent dividends paid by utilities means that utility stock is considered defensive,

2   healthy and predictable. This can be seen in practice, for example, with Southern

3   Company's recent announcement of an increased dividend, "mark[ing] the 18th consecutive

4   year that Southern Company has raised the dividend on its common stock."[80]

5   Given the unique characteristics of the electric utility sector, it can be reasonably

6   inferred that investors use the DCF method to assess the estimated cost of equity for electric

7   utilities. One area of debate is the appropriate growth rate to apply in the two-step DCF

8   method. Please refer to my response to question H.2.a.3 for my views on that topic. As

9   part of its NOI, the Commission also asks whether other variations of the DCF method that

10   differ from the Commission's preferred two-step DCF method should be considered. I

11   discuss the merits of alternative DCF methods in my response to H.2.a.1 and H.2.a.5.

12   ***Capital Asset Pricing Model.***   Despite the widespread use of the CAPM and

13   expansive academic research on the model since its inception in the 1960s, there remain

14   many different views on how best to implement the conceptual framework in practice. The

15   standard CAPM method is a generally-accepted theoretical model and framework.[81] The

16   CAPM measures the systematic risk of a company (typically the stock of a company) and

17   its expected return. The theory is premised on the assumption that an investor can eliminate

18   company-specific risks as part of a diversified portfolio and therefore should only earn an

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[80] *See* Press Release, Southern Company, *Southern Company Increases Dividend for 18th Consecutive Year; Annualized Rate Goes to $2.48 per Share* (Apr. 15, 2019), https://www.southerncompany.com/newsroom/2019/april-2019/dividend-increase-18th-consecutive-year.html.

[81] *See* Roger A. Morin, PhD, *New Regulatory Finance* 166-167 (Public Utilities Reports, Inc., 2006) ("[T]he CAPM provides a valid and rigorous conceptual framework to determine capital costs").

1   expected return in respect of the systematic, or market risk, of a company. Additionally,

2   the theory holds that a diversified investor's expected return increases for greater

3   incremental market risk. The CAPM methodology is mathematically expressed as:

4    $$ER_i = R_f + \beta_i\ (ER_m - R_f)$$

5   where:

6   ER_i = expected return on investment

7   R_f = risk-free rate

8   β_i = beta, or systematic risk, of the investment

9   ER_m = expected return of market

10    $(ER_m - R_f)$ = market risk premium

11   The risk-free rate is generally represented by a long-term rate such as the yield on 30-year

12   U.S. Treasury bonds. The "Beta" term measures the volatility of a company's stock return

13   relative to the market return. The price of a stock that has a Beta value greater than 1.0 is

14   assumed to be more responsive to a change in the market returns than a stock that has a

15   Beta value of less than 1.0. The term "R_m" represents the expected market return and can

16   be estimated from historical or prospective data. The difference between the expected

17   market return and the risk-free rate is known as the Market Risk Premium.

18   A body of empirical research has sought to identify additional factors beyond the

19   Beta that may better measure and explain stock returns, such as the Fama-French Three

20   Factor Model, described in detail in my response to Question H.2.b.4.[82] My response to

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[82] Dr. Morin explains that "[t]he Fama-French formula for the cost of capital adds two factors to the CAPM to reflect a portfolio's (or security's) sensitivity to these two additional risk factors," with the factors "representing *size excess returns* (SMB) and *financial distress excess returns* (HML), where company size is defined in terms of total market capitalization (number of shares multiplied by share price) and financial distress is proxied by the ratio of the book value of equity to the market value of equity." *See* Roger A. Morin, PhD, *New Regulatory Finance* 203 (Public Utilities Reports, Inc., 2006).

1   question H.2.b.4 also outlines my belief that it is inappropriate to incorporate additional

2   factors to the standard, single-factor CAPM method. Additionally, the application of the

3   Beta is further discussed in response to question H.2.b.3. Here, I discuss the approaches

4   used to estimate the Market Risk Premium component of the CAPM method.

5   As the Commission notes in the Coakley Order Directing Briefs, a Market Risk

6   Premium can be determined on either an ex-post, historically-experienced basis or ex-ante

7   forward-looking basis.[83] However, it is difficult to conclusively determine which approach

8   is "better," with both approaches having merits and limitations in estimating the Market

9   Risk Premium.[84] Credit Suisse summarizes the dilemma faced by investors as follows:

10   Each approach has strengths and weaknesses. Historical
11   results are backed by lots of data but are highly sensitive to
12   the time period you select to analyze, reflect survivorship
13   bias, and vary based on whether you use arithmetic or
14   geometric averages. Surveys capture investor attitudes at the
15   moment but are imperfect because investors have a strong
16   tendency to extrapolate their most recent experience, and the
17   structures of the surveys are not always ideal. A market-
18   implied [Equity Risk Premium] is based on prevailing prices
19   but requires numerous assumptions about drivers such as
20   future growth and return on capital.[85]

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[83] Coakley Order Directing Briefs, Appendix at 41. The Commission also refers to survey approaches that are generally-accepted to be forward-looking, such as an ex-ante premium estimate. *See* Roger A. Morin, PhD, *New Regulatory Finance* 161-163 (Public Utilities Reports, Inc., 2006).

[84] *See* Roger A. Morin, PhD, *New Regulatory Finance* 162 (Public Utilities Reports, Inc., 2006); *see also* Michael J. Mauboussin and Dan Callahan, *Estimating the Cost of Capital, A Practical Guide to Assessing Opportunity Cost*, Credit Suisse at 12 (Oct. 8, 2013), https://research-doc.credit-suisse.com/docView?language=ENG&source=ulg&format=PDF&document_id=805810190&serialid=OI/G4SnL/qh5FOlYS9MKXLzznvRJnu1XiYUvUZAo%2BlE%3D ("Credit Suisse 2013").

[85] Michael J. Mauboussin and Dan Callahan, *Estimating the Cost of Capital, A Practical Guide to Assessing Opportunity Cost*, Credit Suisse at 12 (Oct. 8, 2013), https://research-doc.credit-suisse.com/docView?language=ENG&source=ulg&format=PDF&document_id=805810190&serialid=OI/G4SnL/qh5FOlYS9MKXLzznvRJnu1XiYUvUZAo%2BlE%3D ("Credit Suisse 2013").

1   I reviewed multiple sources that infer investor views, and they demonstrate that a single

2   definitive approach to using an ex-post or ex-ante Market Risk Premium estimate is not

3   evident. These sources include: (a) a sample of reports published by major global

4   investment and accounting advisory firms; (b) investor surveys; (c) affidavits from ROE

5   expert witnesses in Commission proceedings; and (d) the Commission's Orders and

6   Opinions. The following sections highlight the varying approaches taken.

7   **Major global investment and accounting firms:**

8   a. KPMG Netherlands, in its December 2018 report "Equity Market Risk

9   Premium – Research Summary" relied on the ex-ante estimate using the

10   DCF method. Notwithstanding reliance on the ex-ante approach, the report

11   states that the ex-post approach "is well established and theoretically sound,

12   [but] it does not allow for the incorporation of the most recent market

13   developments."[86]

14   b. Ernst & Young Switzerland, in its February 2018 report "Practitioner's

15   guide to cost of capital & WACC calculation" used a "historical" Market

16   Risk Premium as part of its CAPM methodology.[87]

17   c. Credit Suisse suggested the use of both the ex-post and ex-ante approaches,

18   explaining that "[o]ne approach that makes sense is to start with a historical

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[86] *See* Credit Suisse 2013, at 12.

[87] *See* Ernst & Young Switzerland, *Practitioner's Guide to Cost of Capital & WACC Calculation*, at 11 (Feb. 1, 2018), https://www.eycom.ch/en/Publications/20180206-Practitioners-guide-to-cost-of-capital-And-WACC-calculation/download.

1   average, calibrate the result using credit spreads, and then compare it to

2   market-implied returns."[88]

3   **Investor Surveys:**

4   a. W. Todd Brotherson, *et al*. interviewed a number of officers at large

5   corporations (e.g., Coca Cola) and financial advisors (e.g., JP Morgan).[89]

6   They reported that the Market Risk Premium topic "prompted the greatest

7   variety of responses among survey participants."[90] They summarized their

8   findings as follows:

> Among financial advisors, 73% extrapolate historical
> returns into the future on the presumption that past
> experience heavily conditions future expectations.
> Among companies, 43% cite historical data and another
> 16% use various sources inclusive of historical data.
> Unlike the results of our earlier study (1998) in which
> historical returns were used by all companies and
> advisors, we found a number of respondents (18% of
> financial advisors and 32% of companies) using
> forward-looking estimates of the market risk premium.
> The advisors cited versions of the dividend discount
> model. The companies used a variety of methods
> including Bloomberg's version of the dividend discount
> model.[91]

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[88] *See* Credit Suisse 2013, at 12.

[89] W. Todd Brotherson, Kenneth M. Eades, Robert S. Harris, and Robert C. Higgins, *"Best Practices" in Estimating the Cost of Capital: An Update*, 23 J. Applied Fin. 2-4 (2013).

[90] *See id*. at 12.

[91] *See id*. (citations omitted).

1   b.   Based on their survey of 392 chief financial officers, John. R. Graham and

2   Campbell Harvey report that 39% of all respondents used the CAPM "with

3   average historical returns on common stock."[92]

4   **ROE Witnesses:**

5   a.   It is informative to review the approaches taken by the ROE expert

6   witnesses, who represent investor-owned utilities, FERC Trial Staff, and

7   wholesale customers before the Commission. Based on a sample of

8   testimony from various proceedings, I observe that these experts favor a

9   number of different approaches to estimating the Market Risk Premium.

10   The table below summarizes the approaches taken:

11   *Table 1: Expert Witnesses - Market Risk Premium Approaches*

Witness Name	Proceeding	Represents	Market Risk Premium Estimation Method
McKenzie	ER19-13	Investor Owned Utilities	Ex-Ante: One-Step DCF
Keyton	EL14-12 / EL15-45 Paper Hearing Proceeding	Trial Staff	Ex-Ante: Two-Step DCF
Gorman	EL14-12 / EL15-45 Paper Hearing Proceeding	Wholesale Customers	Ex-Ante: Two-Step DCF
Morin	ER19-221	Investor Owned Utilities	Ex-Post: Historically Experienced
Villadsen[93]	ER18-1553	Investor Owned Utilities	Ex-Ante: One-Step DCF

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[92] John R. Graham and Campbell Harvey, *The Theory and Practice of Corporate Finance: Evidence from the Field*, 60 J. Fin. Econ. 202, Table 3 (2001).

[93] In January 2019, Dr. Villadsen provided testimony to the State of New York Public Service Commission that relied upon the historically experienced Market Risk Premium. *See* Direct Testimony of Bente Villadsen,

Witness Name	Proceeding	Represents	Market Risk Premium Estimation Method
Vander Weide	EL18-147	Investor Owned Utilities	Both: Ex-Post Historically Experienced and Ex-Ante

1

2   **Commission Views:**

3   a.   In Opinion No. 531, the Commission explained that it was using non-DCF

4   methods, including the CAPM, "only for the purpose of corroborating the

5   decision to place the ROE above the midpoint of the zone of

6   reasonableness," explaining that the non-DCF methods were "sufficiently

7   reliable – not to set the ROE itself – but rather to corroborate our

8   decision."[94]   In describing its use of the CAPM method, the Commission

9   stated that

10   [w]hile the Commission has in the past rejected the use
11   of CAPM analyses, those cases are distinguishable from
12   the instant proceeding because they involved CAPM
13   analyses that were based on historic market risk
14   premiums, *see, e.g., ITC Holdings Corp., et al. v.*
15   *Interstate Power and Light Co. and Midwest Indep. Sys.*
16   *Op., Inc.*, 121 FERC ¶ 61,229, at P 43 n.37 (2007),
17   whereas the NETOs' CAPM analysis is based on
18   forward-looking investor expectations for the market
19   risk premium.[95]

20   Thus, it appears that the Commission favors an ex-ante Market Risk

21   Premium estimate.

Consol. Edison Co. of N. Y., Inc., New York Public Service Commission Case No. 19-00317 (2019).

[94] *See* Coakley Order Directing Briefs at P 39 (citations omitted).

[95] *See* Opinion No. 531 at P 147, n.292.

1   b.   Notwithstanding the views expressed above, the Commission has accepted

2   CAPM analyses that relied on a historically-experienced ex-post Market

3   Risk Premium in orders[96] that post-date Opinion No. 531. These Orders

4   relate to important elements of PJM Interconnection, L.L.C.'s ("PJM")

5   capacity market that influence auction prices. PJM files revisions to its

6   Variable Resource Requirement Curve used in the Reliability Pricing

7   Model every four years. As noted in the most recent order accepting PJM's

8   tariff revisions, "PJM explains that its VRR Curve is an administratively-

9   determined demand curve that is used, in combination with the supply curve

10   formed from capacity supplier sell offers, to clear the RPM Auctions."[97]

11   The inputs to this curve include the Cost of New Entry ("CONE") for a

12   representative, theoretical new power plant.[98] An important input to the

13   CONE estimate is the cost of capital. For several years, PJM has relied on

14   The Brattle Group to produce the CONE estimate, inclusive of the cost of

15   capital assumption. Brattle's approach has been to rely upon a CAPM that

16   uses historically-experienced Market Risk Premium estimates.[99]

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[96] *See PJM Interconnection, L.L.C.*, 149 FERC ¶ 61,183 (2014) ("2014 Quadrennial Review Order"); *PJM Interconnection, L.L.C.*, 167 FERC ¶ 61,029 (2019) ("2019 Quadrennial Review Order").

[97] *See* 2019 Quadrennial Review Order at P 2.

[98] *Id.* at P 3.

[99] *See PJM Cost of New Entry: Combustion Turbines and Combined-Cycle Plants with June 1, 2022 Online Date*, The Brattle Group, at 38 (Apr. 19, 2018), https://brattlefiles.blob.core.windows.net/files/13896_20180420-pjm-2018-cost-of-new-entry-study.pdf ("We estimate the expected risk premium of the market to be 6.9% based on the long-term average of values provided by Duff and Phelps."); *see id.* at n.72 ("Duff and Phelps International Guide to Cost of Capital, 2017 (arithmetic average of excess market returns over 20-year risk-free rate from 1926 to 2016)."). *See Cost of New Entry Estimates for Combustion Turbine and Combined Cycle Plants in PJM*, The Brattle Group, at 35 (May 15, 2014),

1   Certain excerpts from the Commission's orders regarding the Brattle

2   Group's cost of capital estimate are illuminating. In fact, the Commission

3   determined the Brattle approach – which used historically-experienced

4   Market Risk Premium estimates – to be just and reasonable and well

5   supported. In the 2014 Quadrennial Review Order, the Commission

6   determined:

7   For the reasons discussed below, we find that PJM's
8   proposed Cost of Capital of 8.0 percent, as supported by
9   Brattle, *is a just and reasonable estimate* for the purpose
10   of estimating Gross CONE. ***Brattle's methodology is***
11   ***transparent and its assumptions are well-supported***.
12   Because a number of IPPs do not pay dividends, a value
13   required to perform a discounted cash flow analysis, we
14   find Brattle's use of a CAPM to be appropriate.[100]

15   In the 2019 Order, the Commission found this same methodology to be just

16   and reasonable, stating:

17   We find PJM's proposed 8.2 percent Cost of Capital to
18   be just and reasonable. In the instant filing, PJM relied
19   upon the same methodology that the Commission
20   accepted in the 2014 Quadrennial Review Order. The
21   United States Court of Appeals for the District of
22   Columbia recently upheld the Commission's acceptance
23   of that methodology and resulting Cost of Capital.[101]

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https://brattlefiles.blob.core.windows.net/files/6068_cost_of_new_entry_estimates_for_combustion_turbine_and_combined_cycle_plants_in_pjm.pdf ("We estimated the expected risk premium of the market to be 6.5% based on the long-term average of values provided by Credit Suisse and Ibbotson."); *see id.* at n.30 ("The Ibbotson market risk premium is 6.7% and the Credit Suisse market risk premium is 6.2%.") (citations omitted).

[100] *See* 2014 Quadrennial Review Order at P 76 (emphasis added).

[101] *See* 2019 Quadrennial Review Order at P 101.

1   The above-quoted excerpts demonstrate the Commission's consistent and

2   continued acceptance of a CAPM model based on an ex-post Market Risk

3   Premium. In these orders, the Commission did not express any explicit

4   theoretical or conceptual concerns regarding the reliance on an ex-post

5   assumption.

6   Dr. Morin, when discussing the dilemma of whether to rely on an ex-post or ex-

7   ante Market Risk Premium in CAPM calculations, offers a pragmatic solution to resolving

8   the issue by emphasizing the importance of providing equal weight to both the historically-

9   experienced Market Risk Premium and forward-looking Market Risk Premiums. He

10   concludes that "a regulatory body should rely on the results of both historical and

11   prospective studies in arriving at an appropriate risk premium."[102]

12   Given the lack of consensus as to how investors estimate the Market Risk Premium,

13   the Commission's acceptance of both approaches, and the other evidence presented above,

14   I concur with Dr. Morin's pragmatic solution. I recommend that the Commission place

15   equal weight on ex-post and ex-ante Market Risk Premium methods in the CAPM.

16   ***Risk Premium.*** The Risk Premium method, also known as the Bond Yield Plus

17   Risk Premium,[103] is based on "the simple idea that since investors in stocks take greater

18   risk than investors in bonds, the former expect to earn a return on a stock investment that

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[102] Roger A. Morin, PhD, *New Regulatory Finance* 163 (Public Utilities Reports, Inc., 2006).

[103] *See, e.g.*, Eugene F. Brigham and Louis C. Gapenski, *Intermediate Financial Management* 185 (The Dryden Press, 5th Ed. 1996); *see also* Roger A. Morin, PhD, *New Regulatory Finance* 107 (Public Utilities Reports, Inc., 2006).

1 reflects a 'premium' over and above the return they expect to earn on a bond investment"[104]

2 There are many versions of the method that may be applied.[105] I address the merits of the

3 common applications of the Risk Premium methods that have been advocated by ROE

4 expert witnesses before FERC in response to question H.2.d.1. I also address there certain

5 criticisms of the Risk Premium method.[106]

6   **E2.**   **What role do current capital market conditions play in the choice of**
7   **model used by investors to evaluate utility equities?**

8   **E2.a.**   **If capital market conditions factor into the choice of model, how**
9   **do investors determine and evaluate those conditions?**

10   I do not address these questions at this time, but reserve the right to do so in a reply

11 affidavit.

12   **E3.**   **Are any models thought to be superior or inferior to others? If so, why?**

13   Yes. The Expected Earnings method is inferior. It has been thoroughly discredited

14 and has been replaced with market-based methods such as the DCF method.[107] My

15 response to question E1. discusses these market-based methods. Here, I discuss the

16 Expected Earnings method's many flaws, and I explain why the Commission should not

17 rely on this method.

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[104] Roger A. Morin, PhD, *New Regulatory Finance* 108 (Public Utilities Reports, Inc., 2006).

[105] Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 117 (Elsevier Inc., 2017).

[106] *See* Michael S. Pagano, Ph.D., and David E. Stout, Ph.D., *Calculating a Firm's Cost of Capital*, 5 Management Accounting Quarterly 13, 15 (2004). *See also* Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 117 (Elsevier Inc., 2017) ("Unlike the CAPM, there is no well-specified theoretical model underlying either the risk premium or the appropriate cost of debt.").

[107] *See* Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity* , 14 Fin. Mgmt. 33 (1985).

1   The Expected Earnings method is a form of the Comparable Earnings method that

2   examines a company's expected accounting return on the book value of its common equity.

3   As the Commission states, it "provides an accounting-based approach that uses investment

4   analysts estimates of return (net earnings) on book value (the equity portion of a company's

5   overall capital, excluding long-term debt)."[108]

6   The Commission has long held that it is the investors' required rate of return, or

7   market cost of capital, that is the standard for rate of return decisions, thus requiring the

8   use of market-based measurement methods. One of the major flaws in the Expected

9   Earnings method is that it does not measure the rate of return investors require to invest in

10   the common equity capital of a utility, which is the utility's cost of equity capital, but,

11   rather, it measures expectations of what the utility will earn on the book value of its

12   common equity. Standing alone, the method is devoid of market or investor input, making

13   it incapable of measuring investors' or the market-required rate of return. Since an investor

14   cannot purchase a utility's common stock at book value, the utility's expected earned return

15   on book value says nothing about what an investor could expect to earn on the utility's

16   common stock or what return an investor requires to invest in the common stock, except in

17   the unusual circumstance where the utility's common stock happens to be trading in the

18   market at a price at or very near the utility's book value per share.

19   Placing any reliance on the Expected Earnings method clearly contradicts the

20   Commission's long-standing view on how best to meet the standards set out in the *Bluefield*

21   and *Hope* Supreme Court decisions. In Order No. 489, for example, the Commission stated:

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[108] MISO Order Directing Briefs at P 36.

1   There is compelling economic justification for relying on the
2   market cost of capital as the standard for rate of return
3   decisions. Furthermore, a market cost of capital approach
4   addresses both the comparable earnings and attraction of
5   capital standards of the *Hope* decision. In the Commission's
6   judgment, the DCF method is the best available means of
7   estimating the market cost of capital.[109]

8   Thus, the Commission has recognized that a market-based cost of capital methodology and,

9   specifically the DCF methodology, is the best means of meeting the comparable earnings

10   and capital attraction standards of *Hope* and *Bluefield*. The lack of any market input into

11   the Expected Earnings method is a fatal flaw, and it should be given no weight by the

12   Commission, let alone equal weight with the three market-oriented methods discussed

13   above.

14   The Commission has previously recognized that accounting or book rates of return

15   are not reliable measures of the market cost of capital. In its previous review of the

16   appropriate method for determining a utility's cost of common equity capital, the

17   Commission found that "[a]ccounting rates of return are not reliable measures of the

18   current market cost of capital, since they do not reflect the current market prices that are

19   determined in competitive capital markets."[110] Also, in Order No. 429, the Commission

20   found:

21   Mr. Moul's Comparable Earnings Approach was also
22   properly rejected by the presiding judge. The Commission
23   currently favors market oriented methodologies (the DCF
24   methodology in particular), and even Mr. Moul admits "[n]o
25   direct market-determined cost rate can be derived from this

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[109] Order No. 489 at 30,993.

[110] Order No. 420 at 31,367.

1   approach because the nature of the analysis is related to book
2   values."[111]

3   In both the Coakley and MISO Orders Directing Briefs, the Commission provides

4   very little support to justify a move away from reliance on a market-based cost of capital

5   methodology. The Commission's primary reason for relying on the Expected Earnings

6   method as part of its proposed framework is that it found the analysis useful in determining

7   a utility's ROE "[b]ecause investors rely on Expected Earnings analyses to help estimate

8   the opportunity cost of investing in a particular utility."[112] However, the Expected Earnings

9   analysis does not estimate the opportunity cost of investing in a particular utility.

10   Forecasted earnings on a utility's book value are not a measure of the opportunity cost of

11   capital, because an investor cannot purchase the utility's common equity at its book value,

12   but, rather, must pay the prevailing market price for its common equity. Therefore, not

13   only does the Expected Earnings method fail to measure the market cost of common equity

14   capital, but, more importantly, it produces an erroneously inflated measure when the

15   market-to-book ratios are above 1.0. This has been a regular occurrence for many decades,

16   with the Commission observing in the NOI that "for the last three decades, the market-to-

17   book ratios of the companies that the Commission uses in proxy groups have generally

18   been substantially in excess of one."[113]

19   When the investor must pay something more than book value to gain the right to

20   the future expected earnings on book value, that investor must be expecting to earn (and

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[111] *Consumers Energy Co.*, 85 FERC ¶ 61,100, at 61,362 (1998) ("Opinion No. 429") (citations omitted).

[112] MISO Order Directing Briefs, Appendix at 37.

[113] NOI at P 36.

1   thus requires) something less than the reported earned return on book value.[114] That is why

2   the Commission in *Orange and Rockland* and other cases rejected use of earnings on book

3   value as a measure of investors' required rates of return on equity.[115] Dr. Morin also makes

4   this point:

5   Accounting rates of return are not opportunity costs in the
6   economic sense, but reflect the average returns earned on
7   past investments, and hence reflect past regulatory actions.
8   The denominator of accounting return, book equity, is a
9   historical cost-based concept, which is insensitive to
10   changes in investor return requirements. Only stock market
11   price is sensitive to a change in investor requirements.
12   Investors can only purchase new shares of common stock at
13   current market prices and not at book value.

14   More simply, the Comparable Earnings standard ignores
15   capital markets.[116]

16   While Dr. Morin referenced historically-earned book returns, the key points are the

17   same for projected book returns. Book returns are not opportunity costs. The denominator

18   is book equity, which is insensitive to changes in investor return requirements. Only stock

19   market price is sensitive to a change in investor requirements. Investors can only purchase

20   new shares of common stock at current market prices and not at book value. And, simply

21   stated, the Comparable Earnings standard ignores capital markets.

22   As an example, the Expected Earnings method's fatal flaw in misrepresenting an

23   investor's required level of return can be observed when reviewing the Expected Earnings

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[114] *See Pub. Serv. Co. of Ind., Inc.*, Opinion No. 44, 7 FERC ¶ 61,319, at 61,709-10 (1979) ("[W]e agree with Intervenors that this high market-book ratio [market price significantly above book value] 'suggests that PSCI currently is earning more on its common equity than it requires to attract capital.'").

[115] *See Orange and Rockland Utils., Inc., Inc.,* 44 FERC ¶ 61,253, at 61,951-52 (1988) ("*Orange and Rockland*").

[116] Roger A. Morin, PhD, *New Regulatory Finance* 393 (Public Utilities Reports, Inc., 2006).

1   analysis used by the Commission in its preliminary analysis prepared to demonstrate its

2   proposed ROE framework. The Commission used the analysis presented by Dr. Avera[117]

3   in Docket No. EL14-12 regarding the RTO-wide ROE for transmission owners in MISO.

4   After applying its proposed outlier tests, the Commission determined that the resulting

5   midpoint of Dr. Avera's analysis was 11.41%.[118] However, the market price-to-book value

6   ratios of Dr. Avera's proxy group (as adjusted by the Commission in the MISO Order

7   Directing Briefs) are well above 1.0, with a range of 1.17 to 2.55 and a median and

8   midpoint of 1.65 and 1.86, respectively.[119] Therefore, Dr. Avera's Expected Earnings

9   analysis demonstrates only that his 9.79% median and 11.41% midpoint expected earned

10   returns are substantially higher than investors' required ROE.

11   Additional explanation and support for why an investor would not rely on the

12   Expected Earnings method or the Comparable Earnings method is found in the book "Risk

13   and Return for Regulated Industries" by Dr. Bente Villadsen, Dr. Michael J. Vilbert, Mr.

14   Dan Harris, and Dr. A. Lawrence Kolbe. Dr. Villadsen and Dr. Vilbert have testified as

15   expert witnesses for investor-owned utilities. The book discusses four practical problems

16   with implementation of the Comparable Earnings method: (1) identifying comparable risk

17   companies and the circularity concern if other regulated utilities are used; (2) selecting an

18   appropriate time period to use in light of the fluctuations in earnings from year to year;

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[117] While the MISO Order Directing Briefs did not specifically cite the source, it is apparent that the
Commission relied upon Dr. Avera's MISO Docket No. EL14-12 Expected Earnings analysis as presented
in Exhibit No. MTO-31. *See* Cross-Answering Testimony of William E. Avera, Exh. No. MTO-31, *Ass'n of
Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Docket No. EL14-12-002
(filed June 15, 2015).

[118] MISO Order Directing Briefs at P 60.

[119] *See* Exhibit No. CIT-0004.

1   (3) calculating comparable ROEs for sample companies given concerns of varying

2   accounting procedures, investment patterns, and asset lives; and (4) adjusting for

3   differences in risks especially where unregulated companies are included in the sample.[120]

4   All of these are legitimate concerns, but the authors go on to explain that "such

5   implementation difficulties, however, are not the comparable earnings method's biggest

6   problem."[121] According to Dr. Villadsen, *et al.*, "the chief problem with the comparable

7   earnings approach is that" "book rates of return [are not] estimates of the cost of equity,"

8   which "has long been recognized in the academic literature."[122] Dr. Villadsen, *et al.* use an

9   example from the Solomon paper to illustrate the point:

10   The Solomon article contains a simple example to illustrate
11   the point. It considers a very simple world, without taxes or
12   inflation, and a company that makes one $1000 investment
13   every year. The investments last 6 years and are depreciated
14   on a straight-line basis. On a midyear basis, the company has
15   one asset 5.5 years old, one 4.5 years old, going down to one
16   0.5 years old. The corresponding net book values sum to
17   one-half of the $6,000 gross book value, or $3,000. The
18   $1,000 investments each have a cost of capital of 10%,
19   recovered via level annual cash flows of $226.91. That
20   makes the company's annual cash flow 6 x $229.91 =
21   $1377.66. Annual depreciation is [6 x ($1000)/6] = $1,000,
22   so annual earnings are $1377.66 - $1000.00 = $377.66. The
23   book rate of return is $377.66/$3000.00 = 12.6%, materially
24   above the 10% cost of capital.

25   This result should be deeply troubling to anyone
26   contemplating use of the comparable earnings method. This
27   company is about as simple as one could imagine, without

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[120] *See* Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 128-129 (Elsevier Inc., 2017).

[121] *See id.* at 129.

[122] *Id.* at 129-130, n.45 (citing Ezra Solomon, *Alternative Rate of Return Concepts and Their Implications for Utility Regulation*, 1 Bell J. Econ. Mgmt. Sci. 65 (1972); Franklin M. Fisher and John J. McGowan, *On the Misuse of Accounting Rates of Return to Infer Monopoly Profits*, 73 Am. Econ. Rev. 82 (1983)).

1   any complications due to uneven growth, inflation,
2   alternative accounting conventions, or economic
3   fluctuations. Yet its book rate of return will differ materially
4   from its cost of capital every year, forever. Solomon goes on
5   to show that the problem persists with alternatives to
6   straight-line depreciation.[123]

7   The authors also quote conclusions from the Fisher and McGowan article, which considers

8   additional factors beyond the Solomon article, including growth and taxes. Fisher and

9   McGowan conclude that "only by accident will accounting rates of return be in one-to-one

10   correspondence with economic rates of return" and "[o]ur computer examples show the

11   effects [differences in accounting rates of return and economic rates of return] can be very

12   large: the belief that they are small enough in practice to make accounting rates of return

13   useful for analytic purposes rests on nothing but wishful thinking."[124] While the Solomon

14   example and Fisher/McGowan article dealt largely with unregulated firms in the sample

15   group, the point that the accounting rates of return do not provide meaningful information

16   on the cost of capital or economic rates of return is equally valid when regulated firms are

17   considered.

18   Thus, it is clear that the Expected Earnings method has no role in determining just

19   and reasonable ROEs for electric utilities. The Commission should not use the Expected

20   Earnings method to establish the ROE for electric utilities

21   **E4.**   **How are alternative models redundant or complementary with each**
22   **other and/or the DCF model?**

23   Please refer to my response to question E6.

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[123] *See id*. at 129-130 (quoting Franklin M. Fisher and John J. McGowan, *On the Misuse of Accounting Rates of Return to Infer Monopoly Profits*, 73 Am. Econ. Rev. 82 (1983)).

[124] *See id*. at 130.

1   **E5.**   **To what extent do alternative models avoid any deficiencies of the DCF**
2   **model and/or operate better in diverse capital market conditions?**

3   Please refer to my response to question E6.

4   **E6.**   **To the extent that investors use multiple models, should the**
5   **Commission combine them in its analysis or use the "best" one that**
6   **would apply in all market conditions?**

7   Despite the concerns expressed by the Commission regarding exclusive reliance on

8 the DCF methodology, I believe the DCF method is the preferable method for determining

9 ROEs for Commission-regulated electric utilities. While the CAPM and Risk Premium

10 methods have some capital market input, only the DCF method has direct, current utility

11 stock investor input through use of recent, competitive, market-determined stock prices.

12 By contrast, the Expected Earnings approach is completely devoid of any market input

13 whatsoever.

14   The Commission has for several decades, since at least the early 1980s, relied

15 exclusively on the DCF methodology to identify a zone of reasonableness and determine a

16 just and reasonable ROE for public utilities. Despite its 2014 finding in Opinion No. 531

17 that, based on the unique and anomalous capital market conditions prevailing at the time,

18 the Commission needed to consider the ROE estimates from other methods in determining

19 where within the DCF range of reasonableness to select the authorized ROE point estimate

20 for the subject electric utilities, the Commission has continued to rely exclusively on the

21 DCF method for determining the allowable ROEs for gas and oil pipeline companies even

22 though it recognizes that all utilities face the same national macroeconomic and market

1   conditions.[125]   Moreover, despite expressing concerns about the operation of the DCF

2   model in the recent market environment, which I demonstrate to be unfounded in my

3   response to question C2., the Commission proposes to continue to include the model in its

4   newly-proposed ROE framework. Of the three methods the Commission proposes to use

5   for determining a composite zone of reasonableness, the DCF model is the only one that

6   incorporates direct input from investors on the market value of electric utility common

7   equity capital.

8   In Opinion No. 531, the Commission suggested it was useful to examine the Risk

9   Premium and CAPM methods because each method uses interest rates as a direct input.[126]

10   The Commission stated that these two methods provide a "helpful indicator of how

11   investors' required returns on equity have been impacted by the interest rate

12   environment."[127] Although the DCF method does not directly incorporate interest rates as

13   an input, it is difficult to see how the DCF model's use of the market value of stock prices

14   in the computation of the dividend yield is anything but a comprehensive indicator of

15   investors' views as to how interest rates (and other factors) impact their required returns

16   for electric utilities in any capital market environment. The CAPM only captures the stock

17   price of each proxy group utility through the backward-looking Beta value. As discussed

18   further in the response to H.2.b.1., the Beta value is typically measured over a trailing five-

19   year period.   It is also important to note that a CAPM analysis that applies a DCF

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[125] *See* Opinion No. 551 at P 134 (noting that "capital market conditions apply across the entire economy and are not specific to individual utilities.").

[126] Opinion No. 531 at P 147.

[127] *Id.*

1 methodology to a representative market index to estimate the forward-looking Market Risk

2 Premium, a key assumption of the CAPM method, will arguably also share any perceived

3 weaknesses, if any, of the DCF methodology more broadly.

4   In response to question H.2.d.1., I highlight significant concerns with the Risk

5 Premium method. In particular, this method fails to incorporate the current market value

6 of electric utilities in any manner. Rather, it relies heavily on previously-authorized ROEs,

7 which have been based on the market-based DCF method since the early 1980s.

8   I consider the DCF method the most robust and instructive method to use for

9 determining electric utilities' ROEs, and I believe that it should be exclusively relied on

10 for this purpose. However, if the Commission decides to rely on other methods in addition

11 to the DCF method, I recommend that it rely only on the market-oriented methods. As

12 discussed further in response to question E3., the Expected Earnings approach is a

13 fundamentally inappropriate method to determine a just and reasonable ROE for a public

14 utility. It is not market-based, and it is wholly inconsistent with the standards employed

15 by the Commission for many decades. I therefore recommend that no weight be placed on

16 the Expected Earnings method. The results of the properly applied DCF, CAPM and Risk

17 Premium models, if all are used, should be weighted more heavily toward the DCF method.

18   **E7.**   **If the Commission were to consider multiple models, how should it**
19   **weigh them?**

20   There are two prongs of the Commission's proposed ROE framework, which were

21 outlined in the Orders Directing Briefs. The first prong seeks to determine whether an

22 existing ROE remains just and reasonable. To determine this, the Commission proposes to

23 rely on three models, the DCF, CAPM and Expected Earnings, to develop a single

1   composite zone of reasonableness, weighting each model equally by averaging the low-

2   and high-end value produced by each method.[128] If the Commission determines that the

3   existing ROE is unjust and unreasonable, the second prong establishes a process to

4   determine a new just and reasonable ROE. The Commission proposes to rely on the cost

5   of equity point estimate produced by the three models used in determining the range, along

6   with the Risk Premium model result and to weight the output from each of the four models

7   equally when determining the ROE.[129] While the Commission's proposed ROE framework

8   specifically dealt with existing ROEs evaluated under Section 206 complaints, it can be

9   reasonably inferred that it is the Commission's intent that a similar process to that proposed

10   would also apply to determining the justness and reasonableness of a new ROE requested

11   by a party in a Section 205 rate filing. In other words, a composite zone of reasonableness

12   is established, and the just and reasonable ROE is determined from within that zone.

13   If the Commission decides to rely on other methods in addition to the DCF method

14   to determine the ROE for electric utilities, I recommend that it rely only on the market-

15   oriented methods. I recommend that no weight be placed on the Expected Earnings

16   method. As discussed in response to question H.2.d.1, I find there are also significant

17   concerns regarding the most common application of the Risk Premium method, and the

18   Commission should not rely upon this method in determining just and reasonable ROEs.

19   However, if it is used, the Commission should accord less weight to the Risk Premium

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[128] *See* MISO Order Directing Briefs at PP 17, 32.

[129] *Id.* at PP 18, 34.

1   method than the other market-based methods. The DCF model should be weighted most

2   heavily.

3   In Table 2 below I present my suggested weights, which reflect my views in this

4   affidavit.

5   *Table 2 Alternative Scenarios Suggested Weights*

Option	Zone of Reasonableness	ROE Determination
Recommendation	DCF – 100%	DCF – 100%
Alternative One	DCF – 60% CAPM – 40%	DCF – 60% CAPM – 40%
Alternative Two	DCF – 60% CAPM – 40%	DCF – 50% CAPM – 30% Risk Premium – 20%

6
7
8   If the Commission decides to rely on other methods in addition to the DCF method,

9   beyond the appropriate weighting of each method, it is important to consider how to use

10   the outputs from each model to establish the zone of reasonableness and to determine the

11   ROE. In my view, the Commission's proposal raises concerns. The Commission proposes:

12   [T]o use the composite zone of reasonableness produced by
13   the DCF, CAPM and Expected Earnings models. Each of
14   these three methodologies relies on a proxy group to
15   determine a zone of reasonableness, and thus the top and
16   bottom of the zone of reasonableness produced by each
17   methodology can be averaged to determine a single
18   composite zone of reasonableness.[130]

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[130] *Id*. at P 32.

1   In practice this approach may not result in logical outcomes. For example, in

2   examining the ROE analysis prepared by SoCal Edison's witness Dr. Villadsen, when

3   applying the Commission's proposal, I observe that one of the proxy group companies,

4   Avangrid, sets in part both the high-end and low-end of the composite zone of

5   reasonableness.[131] In the two-step DCF analysis, Avangrid's estimated cost of equity of

6   11.28% is the maximum value, but in the CAPM analysis, Avangrid's estimated cost of

7   equity of 7.21% is the minimum value.

8   An alternative and more robust approach is to develop a single composite ROE

9   array by calculating a composite ROE for each proxy group electric utility member, the

10   composite ROE for each proxy company would be determined by combining the ROEs

11   produced by each model. The ROE outputs from each method would be weighted in

12   accordance with the Commission's determination as to weighting. As further discussed in

13   response D4.b, it is critical that the low- and high-end outlier tests are first applied

14   independently to each ROE method.

15   The D.C. Circuit previously explained "[t]o calculate the ROE for a utility that is

16   not publicly traded, FERC relies on the ROEs for a 'proxy group' of comparable publicly

17   traded companies," and "[a]fter adjusting that range of ROEs to exclude unrepresentative

18   high or low rates, 'the Commission assembles a zone of reasonable ROEs on which to base

19   a utility's ROE.'"[132] Therefore, it can be reasonably inferred that the underlying process

---

[131] *See* SCE Transmission Owner Tariff Rate Filing (TO2019A) – Prepared Direct Testimony of Dr. Bente Villadsen, Exh. No. SCE-27:3, Table No. BV-3; Exh. No. SCE-27:8, Table No. BV-8, *S. Cal. Edison Co.*, Docket No. ER19-1553-000 (filed Apr. 11, 2019).

[132] *Emera Maine*, 854 F.3d at 21.

1   followed by the Commission has been to estimate the ROE for each respective proxy group

2   member. However, the Commission's proposal is at odds with this practice and is arguably

3   a disjointed approach. By combining the high and low ends of each method's estimated

4   ROEs and by combining each method's cost of equity point estimate, the proposal treats

5   each method's outputs as isolated events. It does not tie back to the underlying premise of

6   the exercise, which is to estimate the ROE for each proxy group member and from that

7   determine the just and reasonable ROE. Furthermore, the Commission has not explained

8   why the use of multiple ROE analytical methods detracts from the process of estimating

9   an ROE for each respective proxy group member. Moreover, in determining the just and

10   reasonable ROE, the proposal is not truly measuring the point of central tendency of the

11   composite zone of reasonableness given that it fails to create a single composite ROE array

12   from which to measure the central point. My alternative recommendation addresses these

13   concerns by combining the ROE estimates produced by each method for of each proxy

14   group member to create a true composite cost of equity for each utility and a true composite

15   zone of reasonableness.

16   **E8.   To what extent is it reasonable for the Commission to use a simplified**
17   **version of a model that does not reflect all the variables that investors**
18   **consider?**

19   Please refer to my response to question E6.

20   **E8.a. Is the use of a simplified model justified for ease of**
21   **administration and predictability of result?**

22   I do not address this question in my affidavit at this time, but reserve the right to do

23   so in a reply affidavit.

24   **E9.   How, if at all, should the Commission consider state ROEs?**

1   **E9.a.**   **How and why do state ROEs vary by state?**

2   **E9.b.**   **How are certain state ROEs more or less comparable to**
3   **Commission ROEs?**

4   I do not address these questions in my affidavit at this time, but reserve the right to

5 do so in a reply affidavit.

6   **E10.**   **If the Commission considers state ROEs, how should it compare**
7   **FERC-jurisdictional transmission ROEs with state ROEs that apply to**
8   **utilities that are (a) distribution and transmission companies; or (b)**
9   **distribution, generation, and transmission companies?**

10   I do not address this question in my affidavit at this time, but reserve the right to do

11 so in a reply affidavit.

12   **E11.**   **To what extent, if any, should the Commission exercise judgment in**
13   **using financial models to set ROEs under various capital market**
14   **conditions?**

15   I do not address this question in my affidavit at this time, but reserve the right to do

16 so in a reply affidavit.

17 **F.**   **Mismatch Between Market-based ROE Determinations and Book-Value Rate**
18   **Base**

19   **F1.**   **Does the mismatch between market-based ROE determinations and a**
20   **book value rate base support current market values? Is this**
21   **mismatch a problem?**
22
23   No. The Commission's long-standing practice is to apply a market-based ROE

24 determination to an electric utility's book value rate base. This "mismatch" does not

25 present a problem, and it has been described by as "logically sound," by Dr. Stewart Myers,

26 an expert in the field.[133] Rather, it is problematic to apply a market-based ROE

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[133] Stewart C. Myers, *The Application of Finance Theory to Public Utility Rate Cases*, 3 Bell J. Econ.
Mgmt. Sci. 58, 74 (1972).

1   determination to a market value rate base. Such an approach suffers from a circularity

2   problem – market value rate base would be influenced by the allowed ROE and investors'

3   assessments as to whether this value is greater or less than their required return. All else

4   being equal, where the allowed ROE is greater (less) than the investors' required return,

5   the market value will be greater (or less) than the book value. The market value is the end

6   result. Therefore, it is inappropriate to apply the market value as an input in the process to

7   determine the regulated revenue to be earned by the electric utility. Additionally, as

8   discussed at length in my response to question E3. above, the use of a book/accounting

9   return measure, such as the Expected Earnings method, is deficient and has been

10   thoroughly discredited.

11   With regard to any purported "mismatch," Dr. Myers states that "'consistency'"

12   does not require that a market-based cost of capital must be applied to market value rate

13   base."[134] Dr. Myers also highlights a number of issues with using a market value rate base:

14   Thus far, all I have said is that [stock market value or
15   "SMV"] is not useful in defining a utility's rate base. There
16   are several reasons why. First, since SMV depends on how
17   investors expect the regulators to act, it should be the "end
18   result . . . not the starting point." Second, adopting SMV as
19   a rate base amounts to a commitment to confirm investors
20   expectations regardless of what they are based on. Third, if
21   SMV is maintained consistently above (below) BV [book
22   value] then the utility will expect to earn a rate of return on
23   its new investment which is greater than (less than) the cost
24   of capital.[135]

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[134] *See id*.

[135] *See id*. at 85 (citing *Hope*, 320 U.S. at 601).

1   Dr. Morin also expresses concern with using a market value capital structure in the

2   computation of an electric utility's weighted average cost of capital return in setting

3   regulatory rates. Dr. Morin's concerns are equally relevant to the discussion here. He

4   explains:

5   One serious drawback of using market values is the
6   circularity issues, that is, by awarding a utility its market
7   value-based [after-tax weighted average cost of capital], the
8   regulator is forced to rubberstamp existing market values
9   that may in turn reflect unfair and unreasonable rates. Since
10   market value depends on how investors expect the regulators
11   to act, it should be the end result and not the starting point.
12   Adopting market values amounts to a commitment to
13   confirm investors' expectations regardless of what they are
14   based on. A regulator's fundamental responsibility is the
15   setting of fair and reasonable rates and not the creation or
16   destruction of shareholder value.[136]

17   The fallacy that a market value rate base is required to match the market-determined

18   allowed ROE is further debunked by Alfred Kahn in his 1988 treatise, *The Economics of*

19   *Regulation: Principles and Intuitions*.[137] Mr. Kahn posits the questions

20   [i]s there need for consistency between the basis on which
21   the cost of equity capital is determined and the rate base to
22   which it is then applied? If the cost of equity capital is
23   determined on the basis of the ratio of earnings to the *market*
24   *price* of the company's common stock, is there not some
25   inconsistency in applying that rate of return to a rate base as
26   valued in the company's *books* – that is, at original or
27   historic costs – when, as has been true for well over a decade,

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[136] Roger A. Morin, PhD, *New Regulatory Finance* 452-453 (Public Utilities Reports, Inc., 2006) (citations omitted). Similarly, at page 376, Dr. Morin notes that "[t]he M/B ratio is the end result of regulation, and not its starting point."

[137] *See* Alfred E. Kahn, *The Economics of Regulation: Principles and Institutions* 48-50 (The MIT Press, 1988).

1   the market value of most public utility shares has far

2   exceeded their book value?[138]

3   Before reaching the answers, Mr. Kahn presents a straightforward example: "[i]f,

4 for example, earnings per share were $5, the market price $100, and the book value $50,

5 the E/P ratio would suggest a 5% cost of capital; if that 5% were applied to the book value

6 of (the equity portion of) the rate base, this would produce a return of only $2.50 – thus

7 eliminating the justification for the $100 market price."[139] Mr. Kahn's answer illuminates

8 a core difficulty with the claim that market value rate base is needed:

9   The answer is that there would be an inconsistency in this
10   case, but only because it involves inconsistent assumptions
11   about regulatory policy.

12   That is, it assumes at one and the same time that the
13   commission allows returns on equity (r) in *excess* of and
14   equal to the cost of capital (k). The source of the discrepancy
15   between market and book value has been that commissions
16   have been allowing r's in excess of k; if instead they had set
17   r equal to k, or proceeded at some point to do so, both the
18   discrepancy between market and book value and the
19   inconsistency would have disappeared, or would never have
20   arisen. The fact that market value has remained above book
21   value indicates that in most jurisdictions r has been high
22   enough, relative to k, so that its application to the lower book
23   value, in determining allowable earnings, has not destroyed
24   the willingness of investors to continue to pay above book
25   value for public utility company shares.[140]

26 Mr. Kahn explained that, "[i]n the foregoing example, once market value per share was

27 reduced to book value – that is, to $50 – because r was set at k, here assumed to be 5%,

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[138] *Id.* at 48-49.

[139] *Id.* at 49.

[140] *See id*. at 49-50 (citations omitted).

1   there would no longer be any inconsistency, provided, of course, the commission had

2   correctly estimated *k* at 5%. Return per share would be $2.50, and this would be 5% of

3   both market and book value."[141]

4   The Commission has correctly rejected arguments that it is inappropriate to apply

5   a market-based ROE determination to a book value rate base. For example, in Order No.

6   420, the Commission concluded:

7   Although the Commission recognizes that there is a
8   difference between a rate of return reflective of market data
9   and one based on book or accounting data, it does not believe
10   that APPA adequately demonstrated why it is inappropriate
11   to apply a DCF-based allowed rate of return to a book value
12   rate base.[142]

13   Similarly, in Order No. 461, the Commission explained:

14   With respect to APPA's argument that "economic returns
15   and accounting returns are conceptually and numerically
16   different," the Commission notes that it has never disputed
17   this particular point. What the Commission said in Order No.
18   420 is that it has not been adequately demonstrated why this
19   fact makes it inappropriate to apply a DCF-based allowed
20   rate of return to a book value rate base…the Commission
21   finds that APPA has not offered any new evidence that
22   would cause the Commission to change its approach to
23   setting allowed rates of return.[143]

24   Furthermore, in Order No. 489, the Commission expands on its rationale for

25   rejecting arguments to apply a market-based ROE determinant to market value rate base.

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[141] *See id.* at 50, n.71.

[142] Order No. 420 at 31,376 (citations omitted).

[143] *Generic Determination of Rate of Return in Common Equity for Pub. Utils.*, FERC Stats. & Regs. ¶ 30,722, at 30,499-500 ("Order No. 461").

1   The Commission provides an example that demonstrates the circularity in using an electric

2   utility's market value and asserts that applying the market-based ROE to the book value

3   rate base allows investors the opportunity to recover its cost of capital. The Commission

4   explains:

5   The following example demonstrates the circularity of their
6   claim . . . . During periods of rising equity cost, utilities
7   generally file for rate increases to cover these higher costs.
8   This action protects utility shareholders from declines in the
9   value of their stock. The result is a tendency to maintain a
10   utility's existing market-to-book ratio during periods of
11   rising equity costs.

12   During periods of falling capital costs, the revenue required
13   to meet shareholder capital cost requirements also declines.
14   Until a utility files for new rates at the lower capital costs, it
15   continues to charge rates based on the higher equity capital
16   costs that existed when the current rates were set. The result
17   is a tendency for the utility to earn more than its shareholders
18   currently require and a concomitant increase in the price of
19   the utility's common stock and market-to-book ratio.

20   When capital costs are below those of the previous filing,
21   applying the allowed rate of return to a market value rate
22   base would perpetuate the unnecessarily high revenues at the
23   expense of a utility's customers. Applying the allowed rate
24   of return to a book value rate base would reduce revenues to
25   the level required by shareholders at the new lower cost of
26   equity. These revenues will provide the utility with an
27   opportunity to recover all costs including the cost of
28   capital.[144]

29   Additionally, in the same Order No. 489, issued over thirty years ago, the

30   Commission emphasized that this matter has long been settled, and the market value should

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[144] Order No. 489 at 30,993-94 (citations omitted).

1   be the end result of the ratemaking process and not an input at the beginning of the process.

2   The Commission stated:

3   The argument over the application of an allowed rate of
4   return to a market value rate base is an old one and the
5   problem of circularity inherent in that approach has been
6   long and widely recognized. The Supreme Court's statement
7   in *Federal Power Commission v. Hope Natural Gas Co.* that
8   "rates cannot be made to depend upon 'fair value' when the
9   value of the going enterprise depends on earnings under
10   whatever rates may be anticipated" reflects its recognition of
11   that problem. The market value of an enterprise or its
12   common stock depends upon its earnings or anticipated
13   earnings, which in turn depend upon its rates allowed. Thus,
14   market value is a result of the rate-making process and may
15   not properly be the beginning of that process as well.[145]

16   Thus, the Commission once again concluded "that its policy of applying the allowed rate

17   of return to a book value rate base is appropriate."[146]

18   As explained above and as the Commission has previously determined, it is

19   appropriate and logical to apply the market-based ROE determination to a book value rate

20   base. The use of a market value rate base raises serious issues of circularity and has the

21   potential to compromise the integrity of the ratemaking process.

22   **F2.**   **Why have most or all utility market-to-book ratios consistently**
23   **exceeded one?**
24
25   First, it is important to clarify that the term "book value of common equity," which

26   forms part of the commonly understood market-to-book ratio, differs from the term "book

27   value rate base." The book value of common equity represents the "dollar value remaining

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[145] Order No. 489 at 30,994.

[146] *Id.*

1   for common shareholders after all assets are liquidated and all debtors are paid,"[147] whereas

2   the book value rate base represents the original cost of assets, less deprecation, i.e., net

3   plant. Differences between the two concepts can be influenced by depreciation versus

4   financing policies and policies regarding the capitalization of an allowance for funds used

5   during construction, among other reasons.

6   I infer that the reason electric utilities' market-to-book ratios have been greater than

7   1.0 is because the expected return earned by electric utilities is greater than the investors'

8   required rate of return. Financial theory holds, and common sense confirms, that when

9   companies are expected to earn reported (or accounting) book rates of return on common

10   equity at or very near investors' required rates of return, investors will bid the stock prices

11   of such companies to at or very near the reported book value of the companies. However,

12   when companies are expected to earn book rates of return on common equity above (or

13   below) investors' required rates of return, investors will bid the stock prices of such

14   companies to above (or below) their book value; i.e., market-to-book ratios will be above

15   (or below) 1.0. As the Commission has recognized:

16   when the price-to-book ratio is greater than one, the rate of
17   return investors expect O&R to earn on common equity is
18   greater than the rate of return investors require from their
19   investment in O&R's common stock. O&R's proposal
20   would, in effect, set the allowed rate of return on common
21   equity at the rate of return investors expect O&R to earn on
22   common equity (r), rather than the market cost of common
23   equity (k).

24   O&R's 1.62 price-to-book ratio implies that the rate of return
25   investors expect O&R to earn on common equity is

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[147] *See* Adam Hayes, *Book Value Per Common Share – BVPS Definition*, Investopedia (Apr. 17, 2019), https://www.investopedia.com/terms/b/bookvaluepercommon.asp.

1   considerably more than the 10.9 percent rate of return they
2   require from their investment in O&R's common stock. In
3   fact, Staff's witness estimated that investors are expecting
4   O&R to earn a 13.5% rate of return on common equity. An
5   expected earnings level of that magnitude is sufficient reason
6   for investors to bid the price of O&R's common stock up to
7   62 percent above book value . . . .

8   . . . .

9   . . . . The cost of capital standard endorsed by this
10 Commission . . . set[s] the allowed rate of return on common
11 equity at the rate of return investors require on their
12 investment.[148]

13 Dr. Morin further addresses the underlying logic, explaining that "[i]ntuitively, if r

14 [the allowed return on book equity] > K [the cost of equity capital], and is expected to

15 remain so, then market price will exceed book value per share since shareholders are

16 obtaining a return in excess of their opportunity cost. But if r < K, and is expected to

17 remain so, market price will be below book value per share since the utility is failing to

18 achieve its opportunity cost."[149] Dr. Morin adds that "[t]he condition that the M/B ratio

19 will gravitate toward 1.0 if regulators set the allowed return equal to capital costs will be

20 met only if the actual return expected to be earned by investors is at least equal to the cost

21 of capital on a consistent long-term basis and absent inflation."[150] This view is also

22 confirmed by Dr. Myers, who explains that "[a] firm's market value will equal book value

23 if it consistently earns a book rate of return equal to the cost of capital."[151] Dr. Lesser and

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[148] *Orange and Rockland*, 44 FERC at 61,952.

[149] Roger A. Morin, PhD, *New Regulatory Finance* 359 (Public Utilities Reports, Inc., 2006).

[150] *See id*. at 376.

[151] Stewart C. Myers, *The Application of Finance Theory to Public Utility Rate Cases*, 3 Bell J. Econ. Mgmt. Sci. 58, 73 (1972).

1   Dr. Giacchino likewise opine that "[u]nder ideal circumstances, with a rate of return set

2   exactly equal to the firm's [weighted average cost of capital], the market-to-book ratio

3   would equal one."[152]

4   A number of industry experts have outlined additional reasons for differences

5   between the market value and book value of common equity. Dr. Myers highlights four

6   factors that may lead utilities to earn more or less than is nominally allowed: (1) regulatory

7   lag; (2) cost trends; (3) factors not under regulatory control; and (4) changes in rate base

8   relative to capacity and output.[153] Dr. Morin suggests that "[i]t is quite plausible and likely

9   that M/B ratios will exceed one if inflation increases the replacement cost of a firm's assets

10   at a faster pace than historical cost (book equity). Perhaps this explains in part why utility

11   M/B ratios have remained well above 1.0 over the past two decades."[154] Furthermore, the

12   Supreme Court observed that "[a]ppreciations in the value of unregulated industry assets

13   or excessive returns on regulated activities could account for the current market-to-book

14   ratios."[155]

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[152] Jonathan A. Lesser, Ph.D., Leonardo R. Giacchino, Ph.D., *Fundamentals of Energy Regulation* 240 (Public Utilities Reports, Inc., 2nd Ed. 2013).

[153] Stewart C. Myers, *The Application of Finance Theory to Public Utility Rate Cases*, 3 Bell J. Econ. Mgmt. Sci. 58, 75-76 (1972). It is worth noting Mr. Myers's explanation for the third factor – "[f]actors not under regulatory control" – which he explains as follows: "[c]learly if a utility has diversified into nonregulated fields, then restricting the profitability of the regulated portion is not sufficient to insure that the firm's book rate of return equals the cost of capital for the firm as a whole. A similar problem arises when different parts of a firm's operations are regulated by different bodies." *Id*. at 76.

[154] Roger A. Morin, PhD, *New Regulatory Finance* 378 (Public Utilities Reports, Inc., 2006).

[155] *Ill. Bell Tel. Co.*, 988 F.2d at 1261.

1   Dr. Lesser and Dr. Giacchino provide a comprehensive outline of many factors that

2   may create a divergence between the market and book value, some of which overlap with

3   the other views expressed above:

4   When a firm owns both regulated and unregulated assets, the
5   return on the unregulated assets may differ from the
6   regulated return, causing market value to differ from the
7   book value implied by the firm's cost of capital.
8   Additionally, a firm's rates typically stay constant between
9   rate cases, while its costs and volumes sold may fluctuate
10   during that time (the problem of regulatory lag). Even if a
11   regulator is able to perfectly set the firm's rate of return equal
12   to its cost of capital, the two will diverge as the cost of capital
13   changes in response to changing market conditions,
14   implying the market and book values will differ.

15   A firm's market value is also sensitive to growth
16   expectations in the market. Investors form their own
17   expectations about market conditions, future regulatory
18   proceedings, and other factors that may cause them to value
19   the firm at a premium or discount to its book value (not to
20   mention the effects of irrational or short-term price
21   fluctuations that impact the price of any traded stock).
22   Similarly, market value will likely differ from book value if
23   investors' expectations differ from the regulator regarding
24   future inflation, which affects a firm's cost of capital and
25   thus how future earnings are discounted back to the present.

26   The market-to-book ratio may also differ as a result of the
27   regulator's conduct. The regulator may set a rate of return
28   that differs from the firm's actual cost of capital, set a
29   revenue requirement that is seen as insufficient to recoup
30   costs, or use a different method to account for depreciation
31   than the one employed by investors, all of which would
32   cause market value to differ from book value. Regulators
33   may also disallow investments, or exclude them from the
34   rate base. If the firm sells these assets, the market-to-book
35   ratio will be unaffected, but if it continues to operate them

1   its income stream will be below that implied by the book

2   value of its assets.[156]

3   Therefore, it is clear that there are many factors that result in a divergence between

4 the market value and book value of common equity, and some combination of these factors

5 may explain why many electric utility market-to-book ratios consistently exceeded one

6 during the last three decades. However, the straightforward conclusion is that the expected

7 return earned by electric utilities has been greater than investors' required rate of return,

8 resulting in a market value that is greater than book value.

9   **F3.**   **How should the ROE level be set relative to the cost of equity?**

10

11   The allowed ROE should be set at the cost of equity. Using a book return method

12 that is devoid of capital market input, such as the Expected Earnings method, would result

13 in windfall gains and losses for either shareholders or customers. A market-based cost of

14 equity estimate is required in order to allow investors the opportunity to recover their costs.

15 As explained in my response to question E3. above, one of the major flaws in the Expected

16 Earnings method is that it does not measure the rate of return investors require to invest in

17 the common equity capital of a utility, which is the utility's cost of equity capital. Rather,

18 the Expected Earnings method measures expectations of what the utility will earn on the

19 book value of its common equity. Standing alone, the Expected Earnings method is devoid

20 of market or investor input and is, therefore, incapable of measuring investors' or the

21 market-required rate of return. Because an investor cannot purchase a utility's common

22 stock at book value, the utility's expected earned return on book value reveals nothing

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[156] Jonathan A. Lesser, Ph.D., Leonardo R. Giacchino, Ph.D., *Fundamentals of Energy Regulation* 240 (Public Utilities Reports, Inc., 2nd Ed. 2013).

1   about what an investor could be expected to earn on an investment in the utility's common

2   stock. Nor does it indicate what return an investor requires to invest in the utility's common

3   stock, except in the rare circumstance where the utility's common stock happens to be

4   trading in the market at a price at or very near the utility's book value per share.[157] In fact,

5   when the market value of an electric utility is significantly greater than the book value of

6   its common equity, it demonstrates that the expected earned book return on common equity

7   is higher than the cost of equity. Therefore, setting the allowed ROE using the book return,

8   in whole or in part, would result in windfall gains to shareholders. Moreover, placing any

9   reliance on the Expected Earnings method contradicts the Commission's long-standing

10   view that a market-based cost of capital methodology – namely the DCF method – is the

11   best means of meeting the standards set out in the landmark *Bluefield* and *Hope* Supreme

12   Court decisions.

13   **F4.   Should the Commission revise our use of these models to account for**
14   **the mismatch between market-based ROE determinations and book-**
15   **value rate base? If so, how? For example, should the Commission**
16   **adjust the dividend yield used in the DCF model to represent a yield**
17   **on book value rather than a yield on stock price?**

18   No. The Commission's current practice of applying a market-based ROE

19   determination to the book value rate base is logical and appropriate. This practice should

20   not be altered. Please see my response to question F1 for further details.

21   **F5.   Should the Commission consider adjusting ROEs to account for**
22   **market-to-book ratios above or below one? Would doing so introduce**
23   **circularity into Commission ROEs by setting the ROE at whatever**

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[157] The Commission notes in its preamble to Section F of the NOI that "[f]or the last three decades, the market-to-book ratios of the companies that the Commission uses in proxy groups have generally been substantially in excess of one." NOI at P 36.

1 **level of earnings the market expected, rather than making an**
2 **independent assessment of the appropriate ROE?**

3 I do not address this question in my affidavit at this time, but reserve the right to do

4 so in a reply affidavit.

5 **G.** **First Prong of ROE Determination**

6 **G1.** **How should the Commission determine if existing ROEs are just and**
7 **reasonable?**

8 I do not address this question at this time, but reserve the right to do so in a reply

9 affidavit.

10 **G2.** **Is the quartile approach that the Commission proposed in the *Coakley***
11 **and MISO Briefing Orders appropriate? If not, how should the**
12 **Commission revise this methodology?**

13 I do not address this question at this time, but reserve the right to do so in a reply

14 affidavit.

15 **G3.** **When a successive complaint is filed while the current ROE is being**
16 **adjudicated (i.e., a pancake complaint), should the subsequent**
17 **complainant be required to make a prima facie showing of sufficient**
18 **change in market conditions to meet the *Coakley* and MISO Briefing**
19 **Order's proposed determination of whether an existing ROE remains**
20 **just and reasonable? If so, what type of information or showing**
21 **should the complainant provide to demonstrate that market**
22 **conditions have changed, and what standard should the Commission**
23 **apply when assessing whether to deny the subsequent complaint**
24 **without setting it for hearing?**

25 I do not address this question at this time, but reserve the right to do so in a reply

26 affidavit.

27 **G4.** **In single utility rate cases, the Commission determines the central**
28 **tendency of the zone of reasonableness based on the median of the**
29 **proxy group ROEs. Is the approach outlined in the *Coakley* and**
30 **MISO briefing orders appropriate in single utility rate cases given**
31 **that the proxy company ROEs tend to cluster near the center of the**

1   **zone of reasonableness, making the middle quartile relatively**
2   **narrow?**

3   **G4.a. Would it be reasonable to determine the central tendencies of**
4   **the upper and lower halves of the zone of reasonableness for**
5   **single utilities based on a midpoint analysis, so as to produce**
6   **approximately equal ranges of presumptively just and**
7   **reasonable ROEs for below average, average, and above**
8   **average risk utilities?**

9   I do not address these questions at this time, but reserve the right to do so in a reply

10   affidavit.

11   **H.**   **Model Mechanics and Implementation**

12   **H1.**   **General issues/issues that affect multiple models**
13
14   **H.1.1. Are IBES data a good proxy for "investor consensus?"**
15
16   **H.1.1.a.   If not, are there better alternatives, such as Bloomberg,**
17   **Zacks, S&P Capital, Morningstar, and Value Line?**

18   **H.1.1.b.   Should the Commission combine data from multiple**
19   **sources?**

20   IBES growth rates are a good proxy for a consensus view of investors' expectations.

21   There are not better alternative sources for short-term growth rates, and the Commission

22   should not combine data from multiple sources.

23   IBES growth rates provide a consensus view of investors' expectations. They are

24   easily accessible and freely available. Yahoo! Finance continuously publishes analysts'

25   consensus growth rates sourced from the IBES database and provides free access to these

26   growth rates. Investopedia references IBES, among other sources, when discussing

27   "common places" where consensus estimates can be retrieved.[158] Investopedia does not

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[158] *See* James Chen, *Consensus Estimate*, Investopedia (Mar. 29, 2019),

1   indicate concerns with IBES's reliability and states that "IBES is a central location whereby

2   investors are able to research the different analyst estimates for any given stock without

3   necessarily searching for each individual analyst."[159]

4   In Opinion No. 531, the Commission explained that "[t]he growth rate used in the

5   DCF model should be the growth rate expected by the market," which "may not necessarily

6   prove to be the correct growth forecast."[160] However, "the cost of common equity to a

7   regulated enterprise depends upon what the market expects, not upon what ultimately

8   happens."[161] Thus, the objective is to rely upon a source that provides a reasonable

9   representation of the growth rate expected by the market.

10   It has long been the Commission's practice to rely on IBES growth projections as

11   evidence of the growth rates expected by the investment community.[162] While the

12   Commission has considered alternative sources for non-IBES, short-term growth rates on

13   a number of occasions, the Commission did not change its practice of primary reliance on

14   IBES short-term growth rates. For instance, regarding a proposal to use growth rates

15   provided by Zacks or a historical growth rate study, the Commission concluded that, "while

16   there is no perfect source of data, the Commission is satisfied that the evidence in this

17   proceeding supports its reliance on IBES as the source of data for the short-term growth

https://www.investopedia.com/terms/c/consensusestimate.asp.

[159] *See* Will Kenton, *Institutional Brokers' Estimate System (IBES)*, Investopedia (May 8, 2018), https://www.investopedia.com/terms/i/ibes.asp.

[160] Opinion No. 531 at P 88.

[161] *See id*.

[162] *Id.* at P 89.

1   projection."[163] Additionally, in Opinion No. 551, the Commission expressly rejected the

2   use of Value Line growth rates because "Value Line does not publish such consensus

3   growth rates estimates," and Value Line growth rates "are updated only on a lagging,

4   quarterly basis."[164]

5   A significant concern with opening the door to using alternative sources is that

6   witnesses may exercise discretion to select growth rates that are beneficial to their own

7   requirements. The Commission notes that "the witness for each party is likely to choose

8   … those data and methodologies that most favor his or her client's financial interest."[165]

9   The same witnesses could even choose different growth rates for use in different

10   proceedings, depending upon the results produced by the various sources.

11   Combining growth rates from multiple sources can also lead to distorted results. In

12   Opinion No. 551, the Commission has explained:

13   While the Commission stated that it is willing to allow the
14   substitution of "comparable data," the Commission
15   explained that "an alternative source of growth rate data
16   should only be used when that source can be used for the
17   growth projections of all of the proxy group companies"
18   because using different sources could "produce skewed
19   results, because those sources may take different approaches
20   to calculating growth rates." For this reason, the
21   Commission emphasized that it has "consistently used a

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[163] *See Transcon. Gas Pipeline Co.*, Opinion No. 414, 80 FERC ¶ 61,157 (1997), *order on reh'g*, Opinion No. 414-A, 84 FERC ¶ 61,084 (1998), *reh'g denied*, Opinion No. 414-B, 85 FERC ¶ 61,323, at 62,269 (1998).

[164] *See* Opinion No. 551 at P 64.

[165] *Nw. Pipeline Corp.*, 79 FERC ¶ 61,309, at 62,384 (1997); *Williston Basin Interstate Pipeline Co.*, 79 FERC ¶ 61,311, at 62,390 (1997), *review granted in part and denied in part sub nom. Williston Basin Interstate Pipeline Co. v. FERC*, 165 F.3d 54 (D.C. Cir. 1999).

1   single investor service such as IBES for the investment

2   analysts' growth rate estimates."[166]

3   The Commission also addressed its concern with relying on a mix-and-match

4 approach in Opinion No. 531, explaining that "while the sources of growth rate data often

5 rely on many of the same analysts in publishing their estimates, the different sources may

6 use slightly different time periods from one another."[167] Dr. Morin confirms that "[t]he

7 earnings growth rates published by Zacks, First Call, Reuters, Value Line, and IBES

8 contain significant overlap since all rely on virtually the same population of intuitional

9 analysts who provide such forecasts."[168] The Commission's concern with combining

10 multiple growth rates is equally applicable to using multiple sources in one individual DCF

11 analysis or some combination of DCF analyses that each used discrete sources of short-

12 term growth rates.

13   Furthermore, the Commission previously rejected a proposal to "revis[e] IBES

14 growth rates by averaging them with the comparable growth forecasts reported by Zacks

15 Investment," to "help remove anomalous or outlying growth rates."[169] In response to this

16 suggestion, the Commission determined that it "will not require that IBES growth rates be

17 averaged with the corresponding company's growth rates as reported for Zacks Investment

18 at this time."[170]

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[166] *See* Opinion No. 551 at P 63 (citations omitted).

[167] Opinion No. 531 at P 90.

[168] Roger A. Morin, PhD, *New Regulatory Finance* 302, n.13 (Public Utilities Reports, Inc., 2006).

[169] *See Composition of Proxy Group for Determining Gas and Oil Pipeline Return on Equity Policy Statement*, 123 FERC at P 83.

[170] *See id.* at P 84.

1   A further consideration in determining the appropriate source of short-term growth

2   rates is whether the short-term growth rates are readily available to stakeholders impacted

3   by the rates charged for the regulated service at issue. As described above, IBES growth

4   rates are available for free through Yahoo! Finance, as well as via www.reuters.com. Zacks

5   also makes its analysts' consensus short-term growth rate estimates freely available on its

6   website. However, access to the growth rates published by S&P Capital and Bloomberg,

7   among others, is only available via expensive subscription services. While electric utilities

8   may have the means to acquire access to these sources, the substantial expense may pose a

9   significant obstacle for some stakeholders, creating an unlevel playing field in regulatory

10 proceedings. Moreover, where access to growth rates requires a subscription, their use by

11 individual investors is likely to be limited. For these reasons, and the fact that reputable

12 consensus, short-term growth rates are available at no cost, it is both inappropriate and

13 unnecessary to rely on sources that require subscription.   Notwithstanding the public

14 availability of other free sources of analysts' consensus estimates, however, consistent use

15 of a single source of short-term growth rates, as the Commission has historically done with

16 IBES-reported growth rate estimates, offers the benefits of predictability, consistency, and

17 objectivity.

18   Based on the foregoing, I find that the exclusive use of IBES short-term growth

19 rates, without reference to alternative sources of growth rates, helps ensure ROE analyses

20 are internally consistent, does not introduce unnecessary points of contention or bias, and

21 meets the objective of providing a reasonable representation of short-term growth expected

22 by the market.

1   **H.1.1.c.   What weight, if any, should be given to an estimate if**
2   **the number and identity of analysts contributing to the**
3   **estimate is not available?**

4   I do not address this question, but reserve the right to do so in a reply affidavit.

5   **H.1.2. To what extent does model risk affect all ROE methodologies?**

6   I do not address this question, but reserve the right to do so in a reply affidavit.

7   **H.1.3. The DCF model incorporates data at the parent/holding**
8   **company level (*e.g.*, stock price). The Commission adjudicates**
9   **cases at the operating company level, for which there is no**
10   **public data like stock prices, growth rates, and betas. What**
11   **impact does this disparity have on the results of the DCF and**
12   **other models?**

13   I do not address this question, but reserve the right to do so in a reply affidavit.

14   **H.1.4. Should the Commission continue to rely on the efficient market**
15   **hypothesis, which underlies the DCF and CAPM models?**
16   **Why or why not?**

17   I do not address this question, but reserve the right to do so in a reply affidavit.

18   **H.1.4.a.   If yes, should the Commission continue to employ**
19   **outlier screens, M&A screens, etc., for the DCF and**
20   **CAPM models since these models need to incorporate**
21   **all relevant information?**

22   I do not address these questions at this time, but reserve the right to do so in a reply

23   affidavit.

24   **H.1.5. Should growth rates be based on Value Line, IBES, or**
25   **alternative estimates?**

26   Please refer to my response to question H.1.1.a, above.

27   **H.1.6. Should the same growth rate sources be used across models, if**
28   **more than one model is used to determine the ROE?**

29   I do not address this question at this time, but reserve the right to do so in a reply

30   affidavit.

1   **H2.   Model-Specific Questions**
2
3   **a.   DCF**

4   **H.2.a.1   Should the Commission continue to use a dividend DCF**
5   **model or should the Commission use a different DCF**
6   **model, for example, one based on free cash flow?**

7   My response here answers questions H.2.a.1. and H.2.a.5., with both questions

8   asking whether the Commission should apply a different DCF model than the two-step

9   DCF model. In my view, the Commission should continue to apply the two-step DCF

10   method to electric utilities. The alternative DCF models, such as one using free cash flow

11   as opposed to dividends or a multi-stage DCF method, require additional uncertain

12   assumptions beyond those required by the two-step DCF method. Using these methods

13   would likely result in further controversy and introduce unnecessary matters of dispute.

14   The standard DCF method assumes that the value of a utility's stock is the present

15   value of all future dividends, discounted by investors' required rate of return, which is

16   influenced by a myriad of factors in addition to expected growth in earnings and

17   dividends.[171] Industry experts Stephen A. Ross, Randolph W. Westerfield, and Jeffrey

18   Jaffe explain that "[p]roponents of using the DDM point out that returns in the long run

19   can only come from the current dividend yield and future dividend growth" and that

20   "[a]nyone who thinks that long-run stock returns will exceed the sum of these two

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[171] For a discussion of the theory underlying the DCF method please refer to my response to question C3.

1   components is fooling himself."[172]   In contrast, the theory of a free cash flow DCF[173]

2   method is that the free cash flow, rather than dividends, is a better representation of the

3   ultimate return that will be accrued by shareholders.[174]   However, there remains a question

4   of how comparable this information is between electric utilities, which employ different

5   accounting conventions in their respective financial reporting.

6   Additionally, regarding the expected growth in cash flow, Dr. Villadsen, Dr.

7   Vilbert, Mr. Harris, and Dr. Kolbe state that it is common to rely on earnings growth given

8   that there are few forecasts of cash flow growth available.[175]   However, they also express

9   concern with this assumption:

10   Cash flow differs from earnings most sharply in the
11   treatment of capital investment, where cash flow growth
12   looks at the actual financing and investment flows, while
13   earnings allocates the cost of the investment over the life of
14   the asset via noncash depreciation charges. Whether
15   earnings growth is a good proxy for cash flow growth is a
16   matter that would have to be considered case by case, with
17   recognition of just how "cash flow" was being defined.[176]

18   In contrast, the reliance on expected earnings growth rates as a substitute for dividend

19   growth rates in the standard dividend DCF model is a well-established and accepted

20   practice. When discussing the DDM, Ross, *et al.* state that "[t]he estimate for the growth

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[172] *See* Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance* 405 (McGraw-Hill Irwin, 10th Ed. 2013).

[173] Free cash flow "is commonly defined as net income plus the depreciation and the deferred income tax minus capital expenditures (including changes in working capital)." *See* Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 107 (Elsevier Inc., 2017).

[174] *See* Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 106 (Elsevier Inc., 2017).

[175] *Id.*

[176] *See id.*

1   rate in earnings, *g*, is also the estimate for the growth rate in dividends under the common

2   assumption that the ratio of dividends to earnings is held constant."[177] Dr. Morin explains

3   that "[t]he assumption of a constant dividend payout is realistic," and "[m]ost firms,

4   including utilities, tend to maintain a fixed payout rate when it is averaged over several

5   years."[178]

6   A multi-stage DCF method (also known as a non-constant DCF method) and the

7   two-step DCF method share the same goal of managing the DCF method's perpetual

8   assessment time horizon. Both methods seek to manage the problem that analysts'

9   earnings-per-share growth rate estimates, which typically do not exceed a five-year

10   horizon, are unrealistic for use as the sole growth rate in a perpetuity model.[179] Dr. Morin

11   notes that "[a] transition must occur between the first stage of growth forecast by analysts

12   for the first five years and the company's long-term sustainable growth rate."[180]

13   The Commission's preferred two-step DCF method, which blends a short-term and

14   long-term growth forecast and inputs this blended "g" value into the constant growth DCF

15   method, can be described as one form of the multi-stage DCF method.[181] Other forms of

16   multi-stage DCF methods involve an effort to explicitly estimate different stages of growth.

17   For instance, a three-stage, non-constant growth DCF analysis typically seeks to estimate

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[177] *See* Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance* 279 (McGraw-Hill Irwin, 10th Ed. 2013).

[178] *See* Roger A. Morin, PhD, *New Regulatory Finance* 258 (Public Utilities Reports, Inc., 2006).

[179] *See* Roger A. Morin, PhD, *New Regulatory Finance* 308 (Public Utilities Reports, Inc., 2006); more broadly, see my response to questions H.2.a.3. and H.2.b.1.

[180] *See id.*

[181] *Id.* at 309.

1   the growth for the first five years (Stage 1) based on analysts' short-term earnings-per-

2   share growth rates. In Stage 2, the method assumes a transition period whereby an

3   industry-wide growth rate or some other growth rate may be applied. Stage 3 involves the

4   assumption that the company will continue to grow at a rate of the wider economy, which

5   can be measured by a GDP growth projection. The assumptions underlying each stage,

6   e.g., the growth rates assumed and the length of time that each Stage will last, are open to

7   debate. For instance, the Ibbotson three-stage DCF method, which is a free-cash flow DCF

8   method, covers years one through five in Stage 1, years six through ten in Stage 2, and

9   years eleven and beyond in Stage 3.[182] The Ibbotson method assumes the following growth

10   rates:

11   [t]he growth rate for Years 1-5 is from equity analysts'
12   forecasted growth rates. For Years 6-10, the growth rate is
13   the industry growth rate, which Ibbotson, determines as the
14   average of the individual companies in the industry's growth
15   rates. The economy-wide growth rate in stage 3 is the [GDP]
16   growth rate that Ibbotson expects.[183]

17   In *New Regulatory Finance*, Dr. Morin provides an alternative three-stage DCF

18   method, which uses different years and growth rates for each stage than those adopted by

19   Ibbotson. Under Dr. Morin's approach, "[f]or the first five years (Stage 1), dividends are

20   assumed to grow at the analyst consensus long-term earnings growth forecast."[184] For

21   Stage 2, from years 5 through 25, "the growth rate is assumed to converge linearly from

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[182] *See* Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 107-108 (Elsevier Inc., 2017).

[183] *See id.* at 108.

[184] Roger A. Morin, PhD, *New Regulatory Finance* 311 (Public Utilities Reports, Inc., 2006).

1   the analyst forecast to the long-term forecast."[185]   In Stage 3, year 25 and forward,

2   "dividends are assumed to grow at the same nominal rate as the national economy, using

3   either the long-term economic forecast and/or the long-term historical growth rate of the

4   U.S. economy, as above."[186]   With regard to the Stage 2 growth rate, Dr. Morin explains

5   that "[t]he procedure can easily be adjusted by altering the convergence assumption," and

6   "[o]ther convergence patterns may be assumed, as long as the notion that eventually all

7   company growth rates settle to a level consistent with the growth of the macroeconomy is

8   maintained."[187] Thus, it is clear that there are a number of different approaches one can

9   take when developing a multi-stage DCF method.

10   Importantly, in Opinion 396-B, the Commission considered but ultimately rejected

11   the use of the three-stage DCF method and "chose to use the constant growth DCF model

12   and average the short and long-term growth data."[188] The Commission highlighted the

13   uncertainty and subjective nature of the method's assumptions – i.e., with regard to Stage

14   2, the Commission stated that "[t]he determination of the Stage 2 growth rate requires a

15   judgment by the analyst of the length of time Stage 2 will last, and whether the growth will

16   decline slowly, quickly, or at a steady rate."[189]   The Commission explained further, stating:

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[185] *Id.*

[186] *Id.*

[187] *Id*.

[188] Opinion No. 396-C at 61,191. Note that the Commission later adopted a two-thirds weighting for the short-term growth rate and one-third weighting for the long-term growth rate. The Commission summarized this change in Opinion No. 531 at P 21 and explained "When the Commission first required use of a long-term growth estimate, the Commission simply averaged the short-term five-year IBES growth estimate with the long-term GDP growth estimate in determining the overall dividend growth rate. However, in 1998, in Opinion No. 414-A, the Commission changed the weighting scheme in order to give two-thirds weight to short-term forecasts and one-third weight to long-term forecasts." (citations omitted).

[189] *See* Opinion No. 396-C at 61,191.

1   [t]he Commission did not adopt this approach, because the
2   calculations are more involved and require attempts to
3   predict the future that "are not well suited to litigation where
4   the witness for each party is likely to choose from among
5   reasonable alternatives, those data and methodologies that
6   most favor his or her client's financial interest and there are
7   no objective criteria for the Commission to make distinctions
8   between what will be the equally well-reasoned and well-
9   supported judgments of the equally well-credentialed
10   experts."[190]

11   Thus, there are concerns with the multi-stage DCF method that remain valid today,

12   and there are significant limitations with a free-cash flow DCF method. If the Commission

13   were to adopt these alternative DCF methods, it would introduce additional and

14   unnecessary points of contention in regulatory proceedings. Therefore, I conclude it is

15   appropriate that the Commission continues to employ its preferred two-step DCF method.

16   **H.2.a.2.   Could terminal stock value be used in place of long-**
17   **term growth projections? If so, how should terminal**
18   **stock value be determined?**

19   I do not address this question at this time, but reserve the right to do so in a reply

20   affidavit.

21   **H.2.a.3.   Do investment analysts project earnings/dividends**
22   **growth beyond five years, and if not, why not, and is**
23   **GDP an appropriate proxy for long-term growth?**

24   Yes, it is reasonable to infer that investment analysts and investors, as part of their

25   internal assessments, incorporate projections of earnings and dividends growth beyond five

26   years, despite the maximum 3-5 year horizon for general earnings-per-share consensus

27   forecasts.[191] It is commonly understood that stock investment is a long-term investment.

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[190] *See id.* at 61,192 (citing Opinion No. 396-B at 62,384).

[191] Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance* 412 (McGraw-Hill

1   When discussing the appropriate risk-free rate to use in the CAPM method, Dr. Avera

2   stated that "yields on long-term Treasury bonds, not a short-term interest rate, provide the

3   appropriate risk-free rate in applying the CAPM because they have an investment horizon

4   that is closer to that of common stocks." [192] Mr. Robert J. Keyton, a witness for FERC

5   Trial Staff, stated in the same proceeding that "common equity is generally considered a

6   long-term investment."[193]

7   Investors and analysts must logically account for the long-term economic value that

8   a stock is expected to generate even if the intention is only to retain ownership of the stock

9   in the short-term. Dr. Morin makes this abundantly clear in *New Regulatory Finance*,

10   where he states that "[t]he expected common stock return is based on long-term cash flows,

11   regardless of an individual's holding time period."[194] Ross *et al.* further expand on this

12   point, explaining:

13   Thus the price of a share of common stock to the investor is
14   equal to the present value of all of the expected future
15   dividends.

16   This is a very useful result. A common objection to apply
17   present value analysis to stocks is that investors are too
18   shortsighted to care about the long-run stream of dividends.
19   These critics argue that an investor will generally not look
20   past his or time horizon. Thus, prices in a market dominated
21   by short-term investors will reflect only near-term

Irwin, 10th Ed. 2013) ("However, analysts' estimates are generally for five-year growth rates in earnings, while the DDM requires long-term growth rates in dividends.").

[192] Cross-Answering Testimony of William E. Avera, Exh. No. MTO-23 at 93:10-12, *Ass'n of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Docket No. EL14-12-002 (filed June 15, 2015).

[193] Prepared Direct and Answering Testimony of Robert J. Keyton, Exh. No. S-1 at 16:5-6, *Ass'n of Businesses Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, Docket No. EL14-12-002 (filed May 15, 2015).

[194] Roger A. Morin, PhD, *New Regulatory Finance* 151 (Public Utilities Reports, Inc., 2006).

1   dividends. However, our discussion shows that a long-run
2   dividend discount model holds even when investors have
3   short-term time horizons. Although an investor may want to
4   cash out early, she must find another investor who is willing
5   to buy. The price this second investor pays is dependent on
6   dividends *after* his date of purchase.[195]

7 This explanation is confirmed by Dr. Avera, who states that

8   because common equity is a perpetual asset, investors are
9   concerned with expectations for the firm's long-term risks
10   and prospects. This does not mean that every investor will
11   buy and hold a particular common stock forever. Rather, it
12   recognizes that even an investor with a relatively short
13   holding period will consider the long-term because of its
14   influence on the price that he or she ultimately receives from
15   the stock when it is sold.[196]

16 In other words, even if investors do not intend to retain stock ownership indefinitely, they

17 must account for the remaining expected value of the stock at the end of their investment

18 horizon.

19   It is also evident that investors and analysts turn to economy-wide indicators, like

20 the GDP, to estimate expected growth beyond the maximum 3-5 year horizon for consensus

21 growth rates. For instance, a senior manager at Charles Swab Investment Advisory

22 describes the manner in which he calculates a long-term market return forecast as follows:

23   For U.S. and international large-cap stocks, we use analyst
24   earnings estimates and macroeconomic forecast data to
25   estimate two key cash-flow drivers of investment returns:
26   recurring investment income (earnings) and capital gains

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[195] Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance* 274 (McGraw-Hill Irwin, 10th Ed. 2013).

[196] Direct Testimony of William E. Avera, Exh. No. PNR-700 at 52:16-21, *Pioneer Transmission, LLC*, Docket No. ER09-75-000 (filed Oct. 15, 2008).

1   generated by selling the investment at the end of the forecast
2   horizon of 10 years.[197]

3   In the absence of reliable company-specific long-term forecasts, relying on a

4 macroeconomic indicator, such as the GDP, is a logical choice for measuring long-term

5 growth. Indeed, it has been found that "[e]arnings growth is primarily driven by economic

6 growth,"[198] "GDP growth, less the economic dilution associated with entrepreneurial

7 capitalism, basically defines sustainable growth in per share earnings and dividends,"[199]

8 and "over the long run, aggregate corporate earnings tend to grow at the same pace as

9 GDP."[200] This logic is further expanded on by Mr. Peng Chen, CFA and President, Global

10 Investment Management Division Morningstar Investment Management:

11   Long-term expected equity returns can be forecasted by
12   using supply-side models. The supply of stock market
13   returns is generated by the productivity of corporations in the
14   real economy. Investors should not expect a much higher or
15   lower return than that produced by the companies in the real
16   economy. Thus, over the long run, equity returns should be
17   close to the long-run supply estimate.

18   Earnings, dividends, and capital gains are supplied by
19   corporate profitability. Figure 3 illustrates that earnings and
20   dividends have historically grown in tandem with the overall
21   economy (GDP per capita), adjusting for inflation. So, if one
22   assumes that the economy will continue to grow, dividends

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[197] Veerapan Perianan, *Why Market Returns May Be Lower and Global Diversification More Important in the Future*, Charles Schwab (Feb. 19, 2019), https://www.schwab.com/resource-center/insights/content/why-market-returns-may-be-lower-in-the-future.

[198] John Mauldin, *It's Not Over Till the Fat Lady Goes on a P/E Diet*, Mauldin Economics (July 10, 2015), https://www.mauldineconomics.com/frontlinethoughts/its-not-over-till-the-fat-lady-goes-on-a-p-e-diet.

[199] Robert D. Arnott, *Equity Risk Premium Myths*, The Research Foundation of CFA Institute, at 97 (2011).

[200] *Is There a Link Between GDP Growth and Equity Returns?*, MSCI Barra at 2 (2010), https://www.msci.com/documents/10199/a134c5d5-dca0-420d-875d-06adb948f578.

1   and earnings should also continue to grow, thus continuing
2   to drive stock performance.[201]

3   Further, the use of GDP as a proxy for long-term growth is not controversial. The

4   Commission has long adopted the use of the GDP forecast as part of its two-step DCF

5   analysis for oil and gas pipelines.[202] The Commission explained that part of its rationale

6   for choosing the GDP growth rate was that "the record showed that as companies reach

7   maturity over the long-term, their growth slows, and their growth rate will approach that

8   of the economy as a whole" and "the long-term growth of GDP is used as the long-term

9   growth rate by investment houses for both regulated and unregulated companies."[203] The

10   Commission further found that "in the absence of a reliable, industry-specific long-term

11   growth projection, the best economy-wide approach to projecting long-term growth is to

12   use growth in GDP."[204] More recently, the Commission observed, as part of the paper

13   hearing process initiated in Opinion No. 531, that "[a]ll participants in the paper hearing

14   agree that the estimated long-term growth in GDP is the appropriate growth rate to use as

15   the long-term growth component of the two-step DCF methodology for public utilities."[205]

16   And, as summarized in Opinion No. 531,

17   the D.C. Court of Appeals affirmed the Commission's
18   decision to use GDP to estimate long-term growth in
19   dividends, finding that "[t]he testimony adduced at the
20   hearing demonstrated that major investment houses used an
21   economy-wide approach to project long-term growth, that

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[201] Peng Chen, *Will Bonds Outperform Stocks over the Long run? Not Likely*, The Research foundation of CFA Institute, at 125 (2011).

[202] *See generally* Opinion No. 396-C.

[203] *See id*. at 61,192, 61,197.

[204] *See Williston Basin Interstate Pipeline Co.*, 87 FERC ¶ 61,264 at 62,006 (1999).

[205] *See* Opinion No. 531-A at P 6.

1   such an approach was supported by practical economic

2   considerations, and that existing industry-specific

3   approaches imperfectly reflected investor expectations and

4   made unfounded economic assumptions."[206]

5   In Opinion No. 396-C, the Commission addressed arguments that "no evidence

6   shows investors rely upon these analyses", holding that "the record showed that the long-

7   term growth of the economy is used by two large investment houses as their long-term

8   figure in conducting DCF analyses for investment purposes" and "the very fact that major

9   investment houses, whose business depends upon providing advice to investors, commit

10   staff and resources to producing DCF analyses is evidence that such analyses have value

11   as investment tools."[207]

12   Fidelity Investments also acknowledges the role of GDP growth forecasts, along

13   with other important factors, in investment decisions, stating "while GDP forecasts can

14   provide guidance for investors seeking to set realistic expectations for future returns from

15   their portfolios, other factors such as stock market leverage and valuation dynamics will

16   also play a role in how stocks perform."[208] Investopedia reports that "[i]nvestors often pay

17   attention to both positive and negative GDP growth when assessing an investment idea or

18   devising an investment strategy."[209] Thus, it is reasonable to infer, as the Commission

19   previously did, that investors do incorporate long-term GDP growth in their analysis.

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[206] *See* Opinion No. 531 at P 20 (quoting *Williston Basin Interstate Pipeline Co., v. FERC*, 165 F.3d 54, 64 (D.C. Cir. 1999)).

[207] Opinion No. 396-C at 61,192, 61,194.

[208] *Investing for the Next 20 Years: Will Slower Economic Growth Mean Lower Returns?*, Fidelity Viewpoints (Mar. 11, 2019), https://www.fidelity.com/viewpoints/market-and-economic-insights/investing-for-the-next-20-years (emphasis added).

[209] Leslie Kramer, *What is GDP and Why is it so Important to Economists and Investors?*, Investopedia (Feb. 21, 2019), https://www.investopedia.com/ask/answers/what-is-gdp-why-its-important-to-economists-

1   Based on the foregoing, I conclude that investors and analysts assess the long-term

2   economic value expected from a stock and GDP is an appropriate measure of long-term

3   growth.

4   **H.2.a.4.   How should the Commission weight short-term and**
5   **long-term earnings/dividend growth projections?**

6   I do not address this question at this time, but reserve the right to do so in a reply

7   affidavit.

8   **H.2.a.5.   The Commission uses a constant growth DCF model.**
9   **Should the Commission consider using a multi-stage**
10   **DCF model?   If so, how would the Commission**
11   **determine the length of each stage of a proxy company's**
12   **growth?**

13   Please reference my response to question H.2.a.1, above.

14   **H.2.a.6.   Are six months of average high/low historical monthly**
15   **stock prices an appropriate measure for the current**
16   **stock price "P"?**

17   I do not address this question at this time, but reserve the right to do so in a reply

18   affidavit.

19   **b.   CAPM**
20

21   **H.2.b.1.   If the market risk premium is determined by applying**
22   **the DCF methodology to a representative market index,**
23   **should a long-term growth rate be used, as in the**
24   **Commission's two-step DCF methodology?**

25   Yes. It is appropriate and necessary to estimate the Market Risk Premium using

26   the two-step DCF methodology, which applies a long-term growth rate,[210] to a

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investors/.

[210] In response to question H.2.a.3, I explain that a GDP projection is an appropriate estimate to use for
long-term growth.

1   representative market index. There is no dispute that companies cannot grow in perpetuity

2   at a rate above the growth rate of the general economy. Dr. Villadsen, *et al*. describe this

3   as a "fact,"[211] and Ross, *et al*. note that "firms simply cannot maintain an abnormally high

4   growth rate *forever*."[212] The corollary of this is that an aggregation or index of companies

5   will similarly be grounded in this reality. A number of authoritative sources and

6   commenters have affirmed this intrinsic relationship. For example, John Mauldin, in an

7   article from his regularly-issued "Thoughts from the Frontline" series, explained that:

8   Earnings growth is primarily driven by economic growth.
9   Although profit margins vary across the business cycle and
10   by industry and company, earnings for the stock market as a
11   whole over the long term tend to track sales growth.
12   Measures of the economy, including gross domestic product
13   (GDP), tend to measure the aggregate sales of all companies
14   in the economy. As a result, earnings growth has historically
15   been similar to GDP growth. In reality, earnings growth for
16   large-company indexes like the S&P 500 has been slightly
17   lower than overall economic growth. The economy includes
18   faster-growth small companies and start-ups that tend to
19   outpace the more stable giants.[213]

20   The close relationship between long-run growth in the stock market and GDP

21   growth has been evident since at least 1871. Specifically, Mr. Robert D. Arnott, Chair and

22   Founder of Research Affiliates, LLC notes that "real per share prices, earnings, and

23   dividends grew at a pace similar to that of per capita GDP (with some slippage associated

24   with the 'entrepreneurial' stock rewards to management)," and that "since 1871, these

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[211] Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 100, n.12 (Elsevier, Inc., 2017).

[212] Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance* 282 (McGraw-Hill Irwin, 10th Ed. 2013).

[213] John Mauldin, *It's Not Over Till the Fat Lady Goes on a P/E Diet*, Mauldin Economics (July 10, 2013), https://www.mauldineconomics.com/frontlinethoughts/its-not-over-till-the-fat-lady-goes-on-a-p-e-diet.

1   growth rates have been 1.8 percent for real per share prices, 1.4 percent for earnings, 1.1

2   percent for dividends, and 1.9 percent for GDP."[214] With regard to "[w]hy [] these rates

3   [should] be so tightly linked," Mr. Arnott explains:

4   Per capita GDP is a measure of productivity (with slight
5   differences for changes in the workforce, hours worked, and
6   so forth). And aggregate GDP per capita must grow in
7   reasonably close alignment with productivity growth.
8   Productivity growth is also the key driver for per capita
9   income growth and for per share earnings and dividends.
10   Accordingly any difference in the growth rates of GDP and
11   the other three measures will mean that capital is deriving
12   outsized benefits from productivity growth relative to labor
13   (and vice versa). If share prices, earnings, and dividends
14   grow faster than productivity, return on labor migrates to
15   return on capital; if slower by a margin larger than the value
16   of stock awards to management, then the economy is
17   migrating from rewarding capital to rewarding labor. Either
18   way, such a change in the orientation of the economy cannot
19   continue indefinitely.[215]

20   While cyclical conditions may cause a company's growth rate or an index such as

21   the S&P 500 to deviate from that of the wider economy, it cannot be reasonably expected

22   to continue indefinitely. Indeed, Mr. Arnott comments on the specific differences that may

23   arise between analysts' consensus growth rates and the sustainable GDP growth rate. In his

24   2011 article, Mr. Arnott stated that

25   [t]he current consensus growth rate for earnings on the S&P
26   500, according to the Zacks Investment Research survey, is
27   10 percent, which, if we assume a consensus inflation
28   expectation of 2–3 percent, corresponds to 7–8 percent real
29   growth. Real earnings growth of 8 percent is six times the
30   real earnings growth of the past century, however, and three

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[214] Robert D. Arnott, *Equity Risk Premium Myths*, The Research foundation of CFA Institute, at 93 (2011).

[215] *Id.* at 93-94.

1   times the consensus long-term GDP growth rate. This
2   growth is not possible.[216]

3   Mr. Arnott concludes that "GDP growth, less the economic dilution associated with

4   entrepreneurial capitalism, basically defines sustainable growth in per share earnings and

5   dividends."[217] He further opines that "[e]ven the most aggressive, intellectually honest

6   forecasts of long-term earnings or dividend growth assume GDP growth as an upper

7   bound."[218]

8   Similarly, when estimating the Market Risk Premium, Mr. Antti Ilmanen,

9   Managing Director of AQR Capital Management (Europe) LLP, prefers a long-term

10 growth rate such as the GDP over short-term analyst growth rates, recognizing this intrinsic

11 relationship between stock market returns and the wider economy. Mr. Ilmanen states:

12   Some studies use growth estimates based on analyst
13   expectations for earnings growth or on P/Es, for which they
14   use analyst forecasts of next-year operating earnings. Both
15   approaches embed analyst overoptimism and result in
16   upwardly biased estimates of the ERP.

17   A more conservative approach is to use the trend of the rate
18   of growth in real GDP or corporate profits. Even this
19   approach turns out to be overoptimistic. Although many
20   practitioners think that the GDP growth rate is a *floor* for
21   earnings and dividend growth, the rate has historically been
22   a *ceiling* that has been broken only during benign decades.
23   Arnott and Bernstein (2002), Bernstein and Arnott (2003),
24   and Cornell (2010) showed that growth rates of per share
25   earnings and dividends have, over long histories, lagged the
26   pace of GDP growth and sometimes even per capita GDP
27   growth. As Table 2 shows, between 1950 and 2009, growth
28   rates of earnings and dividends per share almost matched the

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[216] *See id.* at 97.

[217] *Id.*

[218] *Id.*

1   1.9 percent real growth rate of GDP per capita but clearly

2   lagged real GDP growth (3.1 percent).[219]

3   Many other experts also have commented on the need to include a long-term growth

4   rate when applying the DCF method more broadly and also in the specific instance of

5   applying the DCF method to a representative market index. For example, Dr. Morin states

6   "DCF estimates of the return on equity comprise the dividend yield plus investor

7   expectations of *long-term growth*."[220] Brigham, Shome and Vinson explain, "[s]ince DCF

8   theory calls for a truly long-term (infinite horizon) growth rate, we concluded that it was

9   better to develop and use such a forecast than to use the five-year prediction."[221]

10   Additionally, Ross, *et al.*, when commenting on the use of security analysts' forecasts of

11   earnings growth in a DDM study, state that "analysts' estimates are generally for five-year

12   growth rates in earnings, while the DDM requires long-term growth rates in dividends."[222]

13   Ross, *et al*. also comment on the inappropriateness of relying on a short-term estimate for

14   growth assumptions in a perpetuity model, explaining that "firms simply cannot maintain

15   an abnormally high growth rate *forever*," and it would be error to "to use a short-run

16   estimate of *g* in a model requiring a perpetual growth rate."[223] When using their DCF

17   model to estimate Market Risk Premium, Tim Koller, *et al.*, "us[ed] the long-run return on

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[219] Antti Ilmanen, *Time Variation in the Equity Risk Premium*, The Research foundation of CFA Institute, at 108-109 (2011) (citations omitted).

[220] Roger A. Morin, PhD, *New Regulatory Finance* 110, n.2 (Public Utilities Reports, Inc., 2006) (emphasis added).

[221] *See* Eugene F. Brigham, Dilip K. Shome, and Steve R. Vinson, *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, 14 Fin. Mgmt. 33, 36-37 (1985).

[222] Stephen A. Ross, Randolph W. Westerfield and Jeffrey Jaffe, *Corporate Finance* 412 (McGraw-Hill Irwin, 10th Ed. 2013).

[223] *See id*. at 282.

1   equity of 13.5 percent and the long-run growth in real gross domestic product (GDP) of 3.5

2   percent to convert a given year's S&P 500 median P/E into the cost of equity."[224]

3   In Opinion No. 531, after concluding that capital market conditions were

4   anomalous during the study period at issue, the Commission relied in part on a CAPM

5   method that applied a one-step DCF model to the dividend-paying companies of the S&P

6   500 index as corroborative evidence to support the placement of the ROE within the zone

7   of reasonableness produced by a two-step DCF model applied to a proxy group of electric

8   utilities.[225] The Commission sought to explain its position, stating "[w]hile an individual

9   company cannot be expected to sustain high short term growth rates in perpetuity, the same

10   cannot be said for a stock index like the S&P 500 that is regularly updated to contain only

11   companies with high market capitalization, and the record in this proceeding does not

12   indicate that the growth rate of the S&P 500 stock index is unsustainable."[226] This

13   conclusion is erroneous for a number of reasons.

14   First, the DCF method assumes a time horizon of perpetuity. Importantly, as

15   discussed in response to question C2., "[t]he DCF model is used to estimate the return

16   required by investors at the time the analysis is performed."[227] Therefore, based on the

17   evidence discussed above and the intrinsic relationship between stock market returns and

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[224] *See* Tim Koller, Marc Goedhart and David Wessels, *Valuation, Measuring and Managing the Value of Companies* 276-277 (McKinsey & Company, 6th Ed. 2015).

[225] Opinion No. 531 at PP 146-147.

[226] *See* Opinion 531-B at P 113.

[227] *See* Order No. 489 at 30,991.

1   GDP, it is appropriate and necessary to incorporate a long-term growth rate, such as GDP,

2   in a perpetuity model using data from a single point in time.

3   Second, while the S&P 500 index is updated over time to retain companies with

4   high market capitalization, updating does not guarantee that the index replaces companies

5   that currently have high growth rates with companies that will have similarly high short-

6   term growth rates in the future. If it did, this might lend support to an argument that

7   exclusive reliance on short-term growth rates reflects expectations for the S&P 500 index.

8   However, this substitution argument runs counter to the objective of estimating a Market

9   Risk Premium that reflects contemporary capital market conditions at the time the analysis

10   is conducted. It is also important not to lose sight of the fact that the S&P 500 index acts

11   only as a representative sample of the wider market. Moreover, the Market Risk Premium

12   estimate produced by the DCF model is only the sum of its parts, i.e., a composition of the

13   individual companies' costs of equity as estimated by the model, regardless of whether

14   such estimates are weighted by market capitalization. Given that the objective is to

15   measure the wider economy over the long-term and the model is a function of individual

16   companies that cannot grow at an abnormally high growth rate forever, it is logical to

17   incorporate a long-term growth rate into the analysis.

18   Further, the reliance on a DCF method that uses only short-term growth rates

19   directly contradicts a long-standing Commission finding that "[w]ith respect to analyst

20   forecasts, however, the Commission's evaluation suggests that they should be viewed as

21   essentially short-term expectations, which is what they in fact purport to be, and that such

1   expectation overstated investors' long-term growth expectations during the base year." [228]

2   Additionally, in Opinion 396-C, the Commission explained that it found the "approach of

3   relying principally on short-term data [to be] inconsistent with the DCF analysis and could

4   result in a long-run forecast that is too influenced by the current position of the industry."[229]

5   The use of the two-step DCF method to estimate an ex-ante Market Risk Premium

6   ensures logical consistency with the Commission's preferred two-step DCF used to

7   determine the just and reasonable ROEs for electric utilities and natural gas and oil

8   pipelines. In response to question H.2.a.3, I provide evidence supporting my conclusion

9   that investors and analysts assess the long-term economic value expected from a stock, and

10   GDP growth is an appropriate measure of long-term growth. Additionally, the Commission

11   has made clear that the GDP is an appropriate measure of long-term growth for both

12   regulated and non-regulated companies, stating that "the long-term growth of GDP is used

13   as the long-term growth rate by investment houses for both regulated and unregulated

14   companies."[230]

15   Based on the evidence presented above, I conclude that it is appropriate and

16   necessary to apply a two-step DCF methodology, one that includes a long-term growth rate

17   reflective of the wider economy,[231] to a representative market index to estimate the Market

18   Risk Premium for use in the CAPM.

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[228] Order No. 420 at 31,362.

[229] *See* Opinion 396-C at 61,197.

[230] *See* Opinion 396-C at 61,197; *see also id.* at 61,192.

[231] In response to question H.2.a.3 I explain that a GDP projection is an appropriate estimate to use for long-term growth.

1   **H.2.b.2.   Beta is a measure of a security's risk relative to the**
2   **broader market, such as the S&P 500, not of its**
3   **absolute risk. Do CAPM's assumptions break down if**
4   ***both* utility stocks and the broader market become**
5   **riskier over time on an absolute basis, but the relative**
6   **increase in risk in utility stocks rises more slowly?**

7   I do not address this question at this time, but reserve the right to do so in a reply

8   affidavit.

9   **H.2.b.3.   What are appropriate data sources for the beta value?**

10   Several commercial entities provide estimates of Beta, including Yahoo! Finance,

11   Reuters and Value Line, among other providers. The estimates provided by Yahoo!

12   Finance and Reuters are readily available at no charge, and Value Line's estimate can be

13   acquired for a modest fee. However, each provider calculates the Beta value using different

14   analytical methods, which can result in quite different estimates of Beta. For example, from

15   a review of the estimates available for Sempra Energy on June 4, 2019, one can see an

16   estimate of 0.31 from Yahoo! Finance, 0.63 from Reuters, and 0.75 from Value Line.[232]

17   Given the options available, a number of witnesses in FERC regulatory proceedings

18   have used the estimates provided by Value Line for proxy group electric utilities as part of

19   their CAPM analysis.[233] As Dr. Morin points out, "Value Line betas are widely and well-

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[232] The values from Yahoo! Finance and Reuters were directly sourced from their respective websites on June 4, 2019. The Value Line estimate was sourced from the April 26, 2019 report for Sempra Energy, which is the most recently available report as of June 4, 2019.

[233] *See e.g.*, Prepared Direct Testimony and Exhibits of Adrien M. McKenzie, Exh. No. GPC-0001 at 75:13-14, *Gulf Power Co.*, Docket No. ER18-1953-000 (filed July 3, 2018); Affidavit of Michael P. Gorman, Exh. No. ICG-200 at 10:9-11, *Ark. Elec. Coop. Corp. v. ALLETE, Inc.*, Docket No. EL15-45-000 (filed Feb. 13, 2019).

1   known to investors."[234] Value Line explains its methodology for calculating its Beta

2   estimates as follows:

3   In finance, the Beta of a security (or portfolio) is used as an
4   indicator of its historical volatility in regards to a benchmark,
5   generally the New York Stock Exchange (NYSE)
6   Composite Index or the S&P 500 Index. At Value Line, we
7   derive the Beta coefficient from a regression analysis of the
8   relationship between weekly percentage changes in the price
9   of a stock and weekly percentage changes in the NYSE
10   Composite Index over a period of five years. In the case of
11   shorter price histories, a shorter time period is used, but two
12   years is the minimum. Value Line then adjusts these Betas
13   to account for their long-term tendency to converge toward
14   1.00. (Though the scope of this convergence is beyond our
15   purposes here, readers can refer to M. Blume, "On the
16   Assessment of Risk," Journal of Finance, March 1971 for
17   further details.)[235]

18   Regarding Value Line's use of the Blume Adjustment,[236] which adjusts a stock's

19   Beta toward 1.0, it may be inappropriate to make such an adjustment to the Beta for

20   utilities.[237] The use of historical data in computing the Beta estimate is not unique to Value

21   Line. As Dr. Morin explains, "Beta … is generally computed from a linear regression

22   analysis based on past realized returns over some past time period."[238] Therefore, inclusion

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[234] Roger A. Morin, PhD, *New Regulatory Finance* 70 (Public Utilities Reports, Inc., 2006).

[235] Andrew J. Cueter, *Using Beta*, Value Line (Oct. 2, 2012),
http://www.valueline.com/Tools/Educational_Articles/Stocks/Using_Beta.aspx#.XQz-AyhKiUk.

[236] *See* Affidavit of Dr. J. Randall Woolridge, Exh. No. CAP-500 at Section III, CAPM Approach,
Subsection B., Beta, *Martha Coakley v. Bangor Hydro-Elec. Co.*, Docket No. EL11-66-001, et al. (filed
Jan. 11, 2019) ("The so-called Blume adjustment cited by Value Line adjusts Betas calculated using
historical returns data to reflect the tendency of stock Betas to regress toward 1.0 over time, which means
that the Betas of typical low Beta stocks tend to increase toward 1.0, and the Betas of typical high Beta
stocks tend to decrease toward 1.0").

[237] *See id*. (referencing a study that "utilities are different from unregulated companies in several areas
which may result in Betas not regressing toward 1.0").

[238] Roger A. Morin, PhD, *New Regulatory Finance* 70 (Public Utilities Reports, Inc., 2006).

1   by the Commission of the CAPM analysis as part of its ROE framework, as proposed in

2   the Coakley Order Directing Briefs, would signal acceptance that realized returns should

3   form part of the determination of allowed ROE for electric utilities.

4   As I explained in more detail in my response to Question E1., the Commission has

5   accepted the use of analyses that incorporate historically-experienced Market Risk

6   Premiums as well as forward-looking Market Risk Premiums in CAPM applications.

7   Moreover, in my response to question E1., I conclude that, given the lack of consensus as

8   to how investors estimate the Market Risk Premium and the Commission's acceptance of

9   both approaches and considering other evidence presented, I concur with Dr. Morin's

10   pragmatic solution and recommend that the Commission place equal weight on ex-post and

11   ex-ante Market Risk Premium methods if it were to no longer solely rely on the two-step

12   DCF method. The use of historically-experienced Beta typically applied in CAPM analyses

13   lends additional support to my recommendation.

14   **H.2.b.4.   Should the Commission employ more sophisticated**
15   **versions of the CAPM model that consider more**
16   **variables instead of only beta, such as the Fama-French**
17   **Model?**

18   No. If the Commission is to rely on the CAPM, it should not rely on models that

19   incorporate additional factors over and above the standard single-factor CAPM.[239] Industry

20   experts have raised serious questions regarding the reliability of additional factors,

21   rendering them unfit for use in regulatory proceedings for determining ROEs for electric

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[239] Please refer to my response to E.1 for a further explanation of the standard single-factor CAPM method.

1   utilities. In my response below, I focus on why the Fama-French model and the so-called

2   "size premium" adjustment are inappropriate distortions to the CAPM.

3   **Fama-French Model**

4   I have a number of concerns with the use of Fama-French factor models to

5   determine ROEs for electric utilities. The Fama-French factor models were developed

6   through empirical research that has sought to identify additional factors not included in the

7   standard CAPM model that purport to better measure and explain stock returns.

8   For example, Dr. Villadsen explains that the Fama-French three-factor model

9   "captures the excess average returns earned by investors in small stocks and in value stocks,

10   in addition to the return on the market."[240] However, the standard CAPM model has sound

11   theoretical foundations.[241] Empirical CAPM models such as the Fama-French model, on

12   the other hand, do not,[242] which undermines the rational connection one can infer from the

13   model's inputs and results. When discussing an application of the Fama-French model to

14   United Parcel Service of America, Inc. ("UPS"), Koller, *et al.* provide an illuminating

15   example of the unexplainable results that may arise:

16   Given that UPS is a large company with a strong [Return on
17   Invested Capital], it is surprising that UPS is positively
18   correlated with the small-stock portfolio and companies with
19   high book-to-market ratios. Is a large, stable company such
20   as UPS really more risky than the average stock?
21   Unfortunately, the Fama-French model does not provide

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[240] *See* Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 124 (Elsevier Inc., 2017).

[241] *See* Roger A. Morin, PhD, *New Regulatory Finance* 167 (Public Utilities Reports, Inc., 2006) ("…the CAPM provides a valid and rigorous conceptual framework to determine capital costs…").

[242] *See* Tim Koller, Marc Goedhart and David Wessels, *Valuation: Measuring and Managing the Value of Companies* 282 (McKinsey & Company, 6th Ed. 2015); *see also* Michael S. Pagano, Ph.D., and David E. Stout, Ph.D., *Calculating a Firm's Cost of Capital*, 5 Management Accounting Quarterly 13, 15 (2004).

1   much guidance on the reasons behind the regression results.

2   Whereas the CAPM is based on solid theory about risk and

3   return (albeit with strong assumptions), the Fama-French

4   model is based purely on empirical evidence. Although the

5   latter model has been loosely tied to risk factors such as

6   illiquidity (size premium) and default risk (book-to-market

7   premium), no theory has gained universal acceptance.[243]

8   Koller, *et al.*'s concluding remarks on CAPM also undermine reliance on the Fama-

9   French model. They state that "[i]t takes a better theory to kill an existing theory, and we

10   have yet to see the better theory. Therefore, we continue to use the CAPM while keeping

11   a watchful eye on new research in the area."[244] With regard to Fama-French factors as add-

12   ons to the CAPM, Jonathan B. Berk and Jules H. van Binsbergen determined that

13   "[e]xtensions to the CAPM perform poorly, implying that investors do not use these models

14   to compute discount rates," and conclude that "[n]either factor model statistically

15   significantly outperforms the CAPM at any horizon, suggesting that the additional factors

16   add no explanatory power for flows."[245] They also conclude that "the CAPM outperforms

17   all extensions to the model at all horizons."[246] Dr. Villadsen, *et al.* conclude that the Fama-

18   French model is most useful in assessing portfolios, rather than individual stocks – i.e., for

19   a purpose other than how it would be used by the Commission. [247] They explain that "[o]ur

20   understanding is that it is widely used in practice to test for superior performance of

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[243] *See* Tim Koller, Marc Goedhart and David Wessels, *Valuation: Measuring and Managing the Value of Companies* 281-282 (McKinsey & Company, 6th Ed. 2015).

[244] *Id.* at 282.

[245] *See* Jonathan B. Berk and Jules H. van Binsbergen, *How Do Investors Compute the Discount Rate? They Use the CAPM*, 73 Fin. Analysts J. 25, 29 (2017).

[246] *Id.*

[247] *See* Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 126 (Elsevier Inc., 2017) (citations omitted).

1   actively managed portfolios," noting that "a thorough analysis of the performance of

2   pension or mutual funds is likely to correct for the funds' exposures to the Fama-French

3   factors."[248] I also note that the Commission has previously rejected use of the Fama-French

4   CAPM model.[249] Due to these serious concerns, it is inappropriate to rely upon the Fama-

5   French model to determining a just and reasonable ROE.

6   **Size Premium**

7   Proponents of the Size Premium adjustment claim that the CAPM does not fully

8   account for differences in the rate of return due to firm size, and they therefore propose a

9   modification to account for this size effect. Witnesses may rely on a study published by

10   Duff & Phelps (formerly Morningstar)[250] examines the long-run, historically-realized

11   excess returns earned by stocks over and above that earned on bonds against an estimate

12   of excess returns. The study then organizes the results by high-to-low market capitalization

13   values, with ten differently-sized buckets known as deciles.[251] The results purportedly

14   demonstrate that

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[248] *Id*.

[249] *ITC Holdings Corp. v. Interstate Power and Light Co. and Midwest Indep. Trans. Sys. Operator, Inc.*, 121 FERC ¶ 61,229, at P 43, n.37 (2007) ("We also are not persuaded to adopt ITC Midwest's analysis using the Fama-French variant of the Capital Asset Pricing Model (CAPM). The Commission has found that the problems of estimating the betas on which the CAPM methodology relies make betas, in isolation, unreliable predictors of risk. They therefore make the CAPM methodology, alone, inappropriate for determining the ROE for an individual company.").

[250] *Duff & Phelps Cost of Capital Navigator;* 2018 Cost of Capital; Annual U.S. Guidance and Examples, *cited in* Answering Testimony and Exhibits of Adrien M. McKenzie, Exh. No. AEP-0013 at 164-191, *E. Tex. Elec. Coop., Inc. v. Pub. Serv. Co. of Okla.*, Docket No. EL17-76-001 (filed Aug. 24, 2018)..

[251] For a detailed explanation please refer to Clifford S. Ang, *Why We Shouldn't Add a Size Premium to the CAPM Cost of Equity*, National Association of Certified Valuators and Analysts (Feb. 15, 2017), https://quickreadbuzz.com/2017/02/15/shouldnt-add-size-premium-capm-cost-equity/.

1   companies with lower market capitalization values are expected to earn a higher return than

2   those with higher market capitalization values, which seemingly justifies a greater cost of

3   equity for smaller companies.

4   The empirical studies on this subject began in the 1970s/1980s, with Dr. Rolf

5   Werner Banz's 1981 paper[252] popularizing the concept, and it has been a subject of debate

6   ever since. More recent research shows that the size effect is no longer evident, if it ever

7   truly existed in the first place, and that practitioners and investors should "consider

8   adjusting the expected cash flows in the DCF analysis for whatever risk they believe the

9   size premium may be reflecting."[253] This view is similarly held by Dr. Morin. In *New*

10   *Regulatory Finance*, Dr. Morin argues that applying a Size Premium adder to the CAPM

11   analysis:

12   opens the door to a whole series of similar adjustments
13   reflecting numerous market inefficiencies (e.g., dividend
14   yield, skewness, low M/B ratio, etc.) In order to resist this
15   temptation, a superior alternative to considering the size
16   premium explicitly is to identify the economic reasons for
17   the premium and develop more direct measures of risk.[254]

18   In Opinion No. 531-B, the Commission stated that it was not persuaded that reliance

19   on a CAPM analysis incorporating a Size Premium was inappropriate based on the record

20   in that particular case.[255] However, the evidence presented here makes it clear that the

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[252] Rolf W. Banz, *The Relationship Between return and Market Value of Common Stocks*, 9 J. Fin. Econ. 3 (1981).

[253] *See* Clifford S. Ang, *Why We Shouldn't Add a Size Premium to the CAPM Cost of Equity*, National Association of Certified Valuators and Analysts (Feb. 15, 2017), https://quickreadbuzz.com/2017/02/15/shouldnt-add-size-premium-capm-cost-equity/.

[254] Roger A. Morin, PhD, *New Regulatory Finance* 187, n.8 (Public Utilities Reports, Inc., 2006).

[255] *See* Opinion No. 531-B at P 117.

1   Commission should not rely on a CAPM analysis that includes the Size Premium, given

2   "serious questions that can be raised about whether the [size effect] exists and if so, what

3   exactly is it measuring."[256]

4   Regarding the lack of need for the Size Premium adder, in 2017, Mr. Clifford Ang,

5   citing an earlier article from 2014,[257] states "[t]he size effect – that small stocks outperform

6   large stocks – was brought to investors' attention by Banz in 1981 and reached its peak

7   after that . . . Since the mid-1980s, however, there has been no size premium after adjusting

8   for market risk." Mr. Ang quotes Mr. John H. Cochrane,[258] stating, "[m]any of the

9   anomalous risk premia seem to be declining over time. The small-firm effect completely

10   disappeared in 1980; you can date this as the publication of the first small-firm effect papers

11   or the founding of small-firm mutual funds that made diversified portfolios of small stocks

12   available to average investors." Mr. Aswath Damodaran also shares the view that:

13   Small cap stocks have earned higher returns than large cap
14   stocks between 1928 and 2014 but the premium has been
15   volatile over history, disappearing for decades and
16   reappearing again. While the premium was strong prior to
17   1980, it seems to have dissipated since 1981. One reason
18   may be that the small cap premium studies drew attention
19   and investor money to small cap stocks, and in the process
20   led to a repricing of these stocks. Another is that the small
21   cap premium is a side effect of larger macroeconomic
22   variables (inflation, real growth etc.) and that the behavior
23   of those variables has changed since 1980.[259]

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[256] *See* Aswath Damodaran, *The Small Cap Premium: Where's the Beef?*, Musings on Markets (Apr. 11, 2015), http://aswathdamodaran.blogspot.com/2015/04/the-small-cap-premium-fact-fiction-and.html.

[257] Andrew Ang, *Asset Management: A Systematic Approach to Factor Investing* 457 (Oxford University Press, 2014).

[258] John H. Cochrane, *Asset Pricing: Revised Edition* 452 (Princeton University Press, Revised Ed. 2005).

[259] *See* Aswath Damodaran, *The Small Cap Premium: Where's the Beef?*, Musings on Markets (Apr. 11,

1   In addition to his findings that the size effect is no longer evident, Mr. Ang

2   identified two specific issues with the Duff & Phelps methodology – first, the estimated

3   Size Premium value "is not arrived at using the same method by which practitioners

4   estimate their CAPM cost of equity," and second, it "does not appropriately measure the

5   relevant 'size premium' for use in a DCF analysis."[260] Mr. Ang corrected for these issues,

6   finding that many of the excess return values computed are not statistically significant, and

7   for those that were – which were in the largest and smallest deciles – the results were

8   inconsistent with the concept of the Size Premium, because the largest decile's excess

9   return was twice the size of the return for the smallest decile.

10   Further, Mr. Ang observed from reviewing the Duff & Phelps Size Premium results

11   that there were a number of examples that cut against the logic of the Size Premium

12   argument. He found:

13   For example, the 2002 Ibbotson SBBI Yearbook reported
14   Decile 6 had a size premium of 1.36% while Decile 7 had a
15   size premium of 1.26%, the 2006 Ibbotson SBBI yearbook
16   reported Decile 6 had a size premium of 2.14% while Decile
17   7 had a size premium of 2.06%, and the 2015 Ibbotson SBBI
18   Yearbook reported that Decile 5 had a size premium of
19   1.65% while Decile 6 had a size premium of 1.63%. Had the
20   Ibbotson methodology been reliable and robust, we would
21   observe that deciles with smaller firms would always have a
22   larger Size Premium in Excess of CAPM than deciles with
23   larger firms.[261]

2015), http://aswathdamodaran.blogspot.com/2015/04/the-small-cap-premium-fact-fiction-and.html.

[260] *See* Clifford S. Ang, *Why We Shouldn't Add a Size Premium to the CAPM Cost of Equity*, National
Association of Certified Valuators and Analysts (Feb. 15, 2017),
https://quickreadbuzz.com/2017/02/15/shouldnt-add-size-premium-capm-cost-equity/.

[261] *Id.*

1   From my review of a Duff & Phelps study,[262] I also observe some inconsistency in what

2   one may expect. For instance, decile 7 has a Size Premium of 1.58%, whereas the decile 6

3   group, which have a greater market capitalization than the decile 7 group, had a reported

4   Size Premium of 1.63%.

5   Mr. Damodaran questions the reliability of the data used to support the Size

6   Premium, expressing his concern that "[h]istorical equity returns are noisy and any

7   estimates of risk premium from the data will reflect the noise in the form of large standard

8   errors on estimates."[263] His analysis of the standard errors in excess returns by decile class

9   "reinforce[s] the notion that the small cap premium is fragile, barely making the threshold

10   for statistical significance over the entire period."[264] Mr. Damodaran notes a further

11   concern that "[o]ne of the most puzzling aspects of the small cap premium is that almost

12   all of it is earned in one month of the year, January, and removing that month makes it

13   disappear," causing him to question "why that risk shows up only in the first month of

14   every year."[265] Mr. Damodaran also found that forward-looking estimates "are yielding no

15   premiums."[266]

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[262] *Duff & Phelps Cost of Capital Navigator;* 2018 Cost of Capital; Annual U.S. Guidance and Examples, CRSP Deciles Size Premiums, *cited in cited in* Answering Testimony and Exhibits of Adrien M. McKenzie, Exh. No. AEP-0013 at 164, *E. Tex. Elec. Coop., Inc. v. Pub. Serv. Co. of Okla.*, Docket No. EL17-76-001 (filed Aug. 24, 2018).

[263] Aswath Damodaran, *The Small Cap Premium: Where's the Beef?*, Musings on Markets (Apr. 11, 2015), http://aswathdamodaran.blogspot.com/2015/04/the-small-cap-premium-fact-fiction-and.html.

[264] *Id.*

[265] *Id*.

[266] *Id*.

1   Mr. Damodaran also describes an underlying fallacy of the small company

2   premium, stating "if the proponents of small cap premiums are right, bundling together

3   small companies into a larger company should instantly generate a bonus, since you are

4   replacing the much higher required returns of smaller companies with the lower expected

5   return of a larger one. In fact, small companies should disappear from the market."[267] This

6   simple logic certainly has a ring of truth to it.

7   As mentioned above, in Opinion No. 531-B, the Commission was not persuaded

8   that it was inappropriate to use the size adjustment as part of a CAPM analysis.[268] However,

9   the Commission has simultaneously accepted and relied on CAPM analyses that did not

10   incorporate a Size Premium. For example, the Commission has found that the CAPM-

11   based cost of capital estimate was "just and reasonable" for purposes of determining the

12   CONE in PJM.[269] The Commission held that this CAPM method, which did not include a

13   Size Premium, was "transparent and its assumptions are well-supported."[270] I discuss the

14   Commission's acceptance of the CAPM analysis for purpose of determining PJM's CONE

15   value more generally in response to question E.1.

16   In support of its acceptance of the Size Premium, the Commission further explained

17   that "[t]he purpose of the NETOs' size adjustment is to render the CAPM analysis useful

18   in estimating the cost of equity for companies that are smaller than the companies that were

---

[267] *Id.*

[268] Opinion No. 531-B at P 117.

[269] 2019 Quadrennial Review Order at P 101; 2014 Quadrennial Review Order at P 76.

[270] 2014 Quadrennial Review Order at P 76.

1   used to determine the market risk premium in the CAPM analysis."[271] However, while the

2   S&P 500 index includes companies that have a much greater market capitalization than the

3   Value Line electric utilities, large portions of the S&P 500 companies have comparable

4   market capitalization values. For instance, as of the end of March 2019, 49% of the S&P

5   500 companies had a market capitalization value less than or equal to the average Value

6   Line electric utility market capitalization of $21.0 billion and 40% of the S&P 500

7   companies have a market capitalization value less than or equal to the median Value Line

8   electric utility market capitalization value of $16.8 billion.[272] This evidence rebuts the

9   Commission's statement that the Size Premium is "useful in estimating the cost of equity

10   for companies that are smaller than the companies that were used to determine the market

11   risk premium in the CAPM analysis,"[273] and provides further evidence that the Size

12   Premium is not justified.

13   Further, given the nature and characteristics of regulated electric utilities, experts

14   have questioned the applicability of a Size Premium adjustment when determining rates

15   for public utilities. Ms. Annie Wong performed a regression analysis examining market

16   returns, Beta, and firm size for a sample of 152 electric and gas utilities and 304 industrial

17   firms over four sub-periods from 1968 through 1987.[274] Ms. Wong found that "there is

18   some weak evidence that firm size is a missing factor from the CAPM for the industrial

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[271] *See* Opinion 531-B at P 117.

[272] *See* Exhibit No. CIT-0002 at 1.

[273] Opinion No. 531-B at P 117.

[274] *See* Annie Wong, *Utility Stocks and the Size Effect: An Empirical Analysis*, J. Midwest Fin. Ass'n 96-101 (1993).

1   but not for the utility stocks" and concluded that "the findings suggest that there is no need

2   to adjust for the firm size in utility rate regulations."[275]

3   I find, as a result of the serious questions regarding the soundness of the Size

4   Premium, that it is an unreliable measure, and its application in a CAPM analysis for

5   electric utilities is inappropriate and unsupported. The Commission should confirm, to the

6   extent it determines to use CAPM methods to set electric utility ROEs, that a Size Premium

7   adder should not be used.

8   **c.   Expected Earnings**
9

10   **H.2.c.1.   Should the use of utilities in the proxy group for the**
11   **Expected Earnings model be predicated on the**
12   **Expected Earnings analysis being forward-looking?**

13   I do not address this question at this time, but reserve the right to do so in a reply

14   affidavit.

15   **H.2.c.2.   What, if any, concerns regarding circularity are there**
16   **with using the Expected Earnings analysis to determine**
17   **the base ROE, as opposed to using the analysis for**
18   **corroborative purposes?**

19   Placing any reliance, in whole or in part, on the results produced by the Expected

20   Earnings method to determine a electric utility ROEs is inappropriate due to circularity.

21   Dr. Morin provides a cautionary note regarding this issue:

22   It would be circular to set a fair return based on the past
23   actions of other regulators, much like observing a set of
24   duplicate images in multiple mirrors. The rates of return
25   earned by other regulated utilities may very well have been
26   reasonable under historical conditions, but they are still

---

[275] *See id*. at 98.

1   subject to tests of reasonableness under current and
2   prospective conditions.[276]

3   Placing reliance on Value Line's projected, or forward-looking, accounting returns

4 on book value does not avoid the issue of circularity. For regulated utilities, expected future

5 earned returns are heavily influenced by returns previously authorized by regulators. Of

6 necessity, Value Line's projections must take into consideration existing ROEs.[277] Unless

7 a rate case has been filed, past allowed ROEs provide the basis for future earnings, and,

8 even when cases are pending or expected, the timing of decisions is uncertain and the ROEs

9 that will be granted are unknown. The Value Line reports do not provide projections of

10 future authorized ROEs.

11   Value Line does in many instances cite the prevailing allowed ROE(s) in

12 connection with its reported historical and projected accounting return on book value

13 estimates. For example, in the March 15, 2019 Value Line report for Fortis Inc. ("Fortis"),

14 a footnote connected with the historical and projected ROE line states "[r]ates all'd on com.

15 Eq.: 8.3%-10.32%."[278] This range includes the MISO-wide base ROE of 10.32% that

16 pertains to Fortis' subsidiary ITC Holdings.[279] Furthermore, Value Line often cites the

17 average return earned on common equity for the year immediately preceding its forecast

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[276] Roger A. Morin, PhD, *New Regulatory Finance* 383 (Public Utilities Reports, Inc., 2006).

[277] Value Line's projected accounting returns reflect the return expected for the whole utility or holding company and not simply the expected return for the regulated operations of the utility or holding company; thus, these projected returns are often affected by unregulated and non-utility operations as well.

[278] *See* Exhibit No. CIT-0003 at 1.

[279] *See* MISO Order Directing Briefs at P 11 ("In the meantime, MISO TOs are continuing to collect their 10.32 percent ROE.").

1   period.[280] Because Value Line earnings-per-book projections are based on ROEs that were

2   approved by regulators, reliance on Value Line earnings-per-book is directly circular.

3   Setting aside the unregulated and non-utility operations of the Value Line-

4   designated industry group of electric utilities, if the authorized ROEs for electric utilities

5   were determined using the Expected Earnings approach, not only would the results suffer

6   from circularity issues, but Value Line's accounting return projections would effectively

7   become a self-fulfilling prophecy. Using the Value Line-projected ROEs as the authorized

8   ROEs would provide the utilities the opportunity to earn those ROEs and virtually

9   guarantee such earnings when the utility's rates are based on formula rates that use forward

10   projections of investment and costs with true-ups to provide for the recovery of actual costs,

11   including the authorized ROE. Moreover, Value Line then would have significant influence

12   over the direction of this self-fulling prophecy, as the Commission would be placing sole

13   reliance on its forecasts. The fact that the Commission proposes to use the Expected

14   Earnings approach in combination with other models is not redemptive. Using a fatally-

15   flawed circular and potentially self-fulfilling methodology, even in part, is inappropriate

16   regulatory policy.

17   Importantly, the Commission has not yet directly addressed these issues in

18   determining allowed electric utility ROEs, despite its proposals in the Coakley and MISO

19   Orders Directing Briefs. The Commission previously rejected claims that the "MISO TOs'

20   expected earnings analysis will nevertheless raise issues of circularity or lead to the

---

[280] For example, the March 15, 2019 Value Line for American Electric Power refers to "earn. on avg. com. eq., '18." *See* Exhibit No. CIT-0003 at 2.

1 convergence of Commission-approved ROEs and the Value Line projections," because the

2 Expected Earnings analysis was "merely used as corroborative evidence," and the

3 Commission concluded that "we are not persuaded that our acceptance of the expected

4 earnings analysis, which at most can corroborate the Commission's decision to place an

5 ROE above the midpoint of the zone of reasonableness, will raise issues of circularity or

6 lead to a convergence of Commission-approved ROEs to the Value Line projections."[281]

7 Now that the Commission has proposed to use the Expected Earnings approach as a direct

8 input into the determination of an allowed ROE, the Commission is faced with a new

9 imperative to address these significant concerns.

10   **H.2.c.2.i.** **If there are circularity concerns, are there ways to**
11   **mitigate these concerns for the Expected Earnings**
12   **analysis? If these concerns exist, are these concerns**
13   **more significant than those surrounding the DCF**
14   **methodology, which effectively separates Expected**
15   **Earnings and ROE into its dividend yield and**
16   **growth rate subcomponents?**

17 In my response to H.2.c.2, I explain that the Expected Earnings analysis suffers

18 from circularity issues that render it unsuitable for use in ratemaking. In addition, in

19 response to question E3., I explain that the numerous other flaws inherent in the Expected

20 Earnings analysis also make it inappropriate for use in determining ROEs for electric

21 utilities. Even if it were possible to mitigate this method's circularity problems, doing so

22 will not rehabilitate a wholly flawed methodology.

---

[281] *See* Opinion No. 551 at P 233.

1   The Expected Earnings analysis' circularity issue is significantly greater than any

2   potential circularity issue associated with the DCF methodology. Dr. Morin explains that

3   the DCF method self-corrects, at least to a certain degree, any potential circularity issues:

4   The circularity problem is somewhat dampened by the self-
5   correcting nature of the DCF model. If a high equity return
6   is granted, the stock price will increase in response to the
7   unanticipated favorable return allowance, lowering the
8   dividend yield component of market return in compensation
9   for the high g induced by the high allowed return. At the next
10   regulatory hearing, more conservative forecasts of r would
11   prevail. The impact on the dual components of the DCF
12   formula, yield and growth, are at least partially offsetting.[282]

13 The Expected Earnings analysis, on the other hand, does not self-correct.

14   **d.   Risk premium**
15
16   **H.2.d.1.   Should the analysis be historical or forward-looking?**

17   The Risk Premium method, otherwise known as the Bond Yield Plus Risk

18 Premium,[283] is based on "the simple idea that since investors in stocks take greater risk

19 than investors in bonds, the former expect to earn a return on a stock investment that

20 reflects a 'premium' over and above the return they expect to earn on a bond

21 investment."[284] The method is considered "essentially an ad hoc empirical relation with no

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[282] Roger A. Morin, PhD, *New Regulatory Finance* 307 (Public Utilities Reports, Inc., 2006). While Dr. Morin is specifically discussing the DCF variation that the Commission previously adopted for electric utilities known as the one-step DCF methodology or sustainable growth DCF method, the self-correcting nature he highlights is equally applicable to the Commission's two-step DCF methodology.

[283] *See* Eugene F. Brigham and Louis C. Gapenski, *Intermediate Financial Management* 185 (The Dryden Press, 5th Ed. 1996); Roger A. Morin, PhD, *New Regulatory Finance* 107 (Public Utilities Reports, Inc., 2006).

[284] Roger A. Morin, PhD, *New Regulatory Finance* 108 (Public Utilities Reports, Inc., 2006).

1   solid theoretical justification,"[285] and there are many variants of the method.[286]   Thus, a

2   review of the specific application of the Risk Premium method is important.   In my

3   response, I limit my comments to addressing the most common application of the Risk

4   Premium method known as the Allowed ROE Risk Premium, which measures the risk

5   premium by examining the Commission's historical ROE decisions.

6   The Allowed ROE Risk Premium approach first calculates the average annual

7   implied equity risk premium for each year of the dataset by subtracting the average annual

8   yield on Moody's Baa public utility bonds from the average annual allowed FERC ROE.

9   Second, a linear regression analysis is performed, measuring the relationship between the

10   implied equity risk premium and the Moody's Baa public utility bond yield.   This

11   regression is undertaken to account for claims of an inverse relationship between equity

12   risk premiums and interest rates and that there is not a one-for-one relationship between

13   equity risk premiums and interest rates.   Third, the implied risk premium is adjusted to

14   reflect current interest rates by accounting for the average change in interest rates over the

15   historical study period to contemporary yields together with the computed inverse

16   relationship between implied equity risk premiums and bond yields.   Fourth, the adjusted

17   implied risk premium is then added to contemporary bond yields to determine an estimated

18   cost of equity.

---

[285] *See* Michael S. Pagano, Ph.D., CFA, and David E. Stout, Ph.D., Calculating a Firm's Cost of Capital, 5 Management Accounting Quarterly 13, 15 (2004). *See also* Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 117 (Elsevier, Inc., 2017) ("Unlike the CAPM, there is no well-specified theoretical model underlying either the risk premium or the appropriate cost of debt.").

[286] *See* Dr. Villadsen, Dr. Vilbert, Mr. Harris and Dr. Kolbe, *Risk and Return for Regulated Industries* 117 (Elsevier, Inc., 2017).

1   In Opinion Nos. 531 and Opinion No. 551, the Commission relied in part on an

2   Allowed ROE Risk Premium method as corroborative evidence to support the placement

3   of the ROE within the zone of reasonableness produced by a two-step DCF model that was

4   applied to a proxy group of electric utilities.[287] However, the Commission made clear in

5   Opinion No. 531-B that it only found the "risk premium analysis sufficiently reliable – not

6   to set the ROE itself – but rather to corroborate our decision."[288] This message was

7   reiterated in Opinion No. 551 and in the Coakley Order Directing Briefs.[289] Therefore, the

8   method warrants a thorough review if it is to be directly used to determine the ROE. Here,

9   I outline a number of concerns with the Allowed ROE Risk Premium analysis, which I find

10   render the method unreliable, such that use of the method will compromise the integrity of

11   a just and reasonable ROE decision.

12   Consideration of the Allowed ROE Risk Premium method raises the critical

13   question of exactly what data this method is intended to provide. In determining the ROE

14   for electric utilities, the pertinent matter at hand is to determine the ROE that is informed

15   by estimates of investors' *required* rate of return. The Allowed ROE Risk Premium does

16   not reveal this required return. It simply seeks to measure a relationship between ROEs

17   previously authorized by the Commission and utility bond yields, amounting to a short-

18   hand approach for estimating how changes in yields may have impacted the Commission's

19   allowed-ROEs, which have been based on the market-based DCF method since the early

---

[287] *See* Opinion No. 531 at P 147; Opinion No. 551 at P 195.

[288] Opinion No. 531-B at P 98.

[289] *See* Opinion No. 551 at P 195; *see also* Coakley Order Directing Briefs at P 39.

1   1980s.   In other words, it is largely a derivative measure of more comprehensively

2   determined market-based estimates of the cost of equity.   In contrast, the DCF method

3   directly estimates the required rates of return by examining current market-based

4   information.

5   The value of the regression analysis used as part of this methodology is limited

6   because the analysis only uses interest rates and equity risk premiums as inputs.   It cannot

7   account for historic volatility in risk premiums, which are influenced by a myriad of other

8   factors, as the Commission has stated:

9   *ex post* and *ex ante* public utility common stock and bond
10   returns comprise a variety of components, including:
11   anticipated and unanticipated inflation; the risk of default,
12   duration; interest rate risk, business risk, call protection (in
13   the case of bonds); liquidity risk and purchasing power risk.
14   These risks directly affect capital cost for both common
15   stock and bonds. As economic conditions change, so does
16   the impact of different risk components.[290]

17   Of further concern are the clear and inescapable circularities inherent in the

18   Allowed ROE Risk Premium method.   The Risk Premium method strictly relies on past

19   ROE determinations.   While the method also seeks to update the implied risk premium to

20   the contemporary interest rate environment, at its core, the Allowed ROE Risk Premium

21   method still relies on past Commission decisions.   The Commission previously made clear

22   its concern regarding such an occurrence and explained "[e]ven were the analyses limited

23   to Commission equity allowances, the results of such a study would remain inherently

---

[290] *See* Order No. 489 at 31,005.

1   circular.   For this reason, the Commission rejects [Boston Edison Company's] risk

2   premium analysis."[291]

3   Additionally, if the Allowed ROE Risk Premium method is used, in part, to

4   determine a just and reasonable ROE, a second circularity arises when the method is

5   applied in proceedings over multiple years, given that the method's resulting ROE becomes

6   part of the ROE decisions data set. As discussed above, the Risk Premium method seeks

7   to capture the implied risk premium of FERC ROEs allowed starting some number of years

8   in the past through the most recent ROE decisions that are available and adjusts the implied

9   risk premiums for contemporary interest rates.   However, when the method is applied

10   subsequently as part of a separate proceeding, it will also seek to capture the adjusted

11   implied risk premium in prior ROEs determined in part by a previous Allowed ROE Risk

12   Premium. Therefore, there is effectively a double counting of implied risk premium results

13   from prior FERC data set assessment periods and the interest rate adjustment.

14   Despite the concerns raised above, if the Commission were to use the Allowed ROE

15   Risk Premium method, a thorough case-by-case review of the allowed ROEs used in the

16   data set is required. As discussed above, the premise of FERC Allowed Risk Premium

17   method is to estimate how changing utility bond yields may impact the Commission's

18   allowed-ROEs as determined through market-based methods. The Commission previously

19   determined that its ROE estimate reflects the investors required return at the time the

20   analysis was performed.[292] Therefore, developing an implied risk premium by comparing

---

[291] *See* Order No. 489 at 31,005.

[292] *See* Order No. 489 at 30,991 ("The DCF model is used to estimate the return required by investors at the time the analysis is performed.").

1   bond yields to allowed ROEs that were not determined through market-based methods for

2   the same time period as the underlying bond yield will not be informative. For example,

3   the Commission first granted a 12.38% RTO-wide ROE for the MISO transmission owners

4   in 2004, which was determined using data for the six-month study period ending January

5   2002.   This RTO-wide ROE was later applied to new transmission owners that

6   subsequently joined MISO.[293]   However, using allowed ROEs that are merely

7   reapplications of previously authorized ROEs is problematic, because the reapplied ROEs

8   do not reflect a cost of equity estimate based upon relevant data from the time the

9   reapplication was authorized.

10   I conclude, based on the concerns raised above, that the Allowed ROE Risk

11   Premium is an unreliable method and should not be used to determine electric utility ROEs.

12   If the Commission adopts the Allowed ROE Risk Premium method in some form, I

13   recommend that a thorough case-by-case review be undertaken to ensure the integrity of

14   the data that the method uses.

15   **H.2.d.2.**   **Is a Risk Premium analysis compatible with a finding of**
16   **anomalous capital market conditions? Why or why**
17   **not?**

18   I do not address this question in my affidavit at this time, but reserve the right to do

19   so in a reply affidavit.

20   **H.2.d.3.**   **Unlike the financial models discussed above, the Risk**
21   **Premium analysis produces a single ROE rather than a**
22   **zone of reasonableness. Does this characteristic**
23   **require the Commission to use the Risk Premium model**
24   **differently than the other models?**

---

[293] *See Ameren Service Co.*, 135 FERC ¶ 61,142, at P 94 (2011).

1   I do not address this question in my affidavit at this time, but reserve the right to do

2   so in a reply affidavit.

3   **H.2.d.3.i. Is there a method by which the Risk Premium ROE**
4   **could be adjusted upward for an above average**
5   **utility or downward for a below average risk utility?**
6   **If not, is it reasonable to consider the results of a**
7   **Risk Premium analysis when determining the ROE**
8   **of an above or below average risk utility?**

9   The Commission's proposed ROE framework, as presented in the Coakley Order

10   Directing Briefs, gives equal weight to the Risk Premium, DCF, CAPM, and Expected

11   Earnings methods in determining the just and reasonable ROE for electric utilities.[294] As

12   part of its proposed framework, the Commission applies the Allowed ROE Risk Premium

13   method. This method seeks to measure the average annual implied equity risk premium

14   by subtracting the average annual yield on Moody's Baa public utility bonds from the

15   average annual allowed FERC ROE over a prior period and to adjust the implied risk

16   premium for contemporary bond yields. I discuss the merits of the method in H.2.d.1.

17   The Commission's proposed treatment of the Allowed ROE Risk Premium

18   indicates a view that the utilities with Moody's "Baa" credit ratings are of average risk.

19   Correspondingly, under this view, a utility with a Moody's "A" rating would be below-

20   average risk, and those below a "Baa" rating, which is considered non-investment grade,

21   would be above-average risk. Clearly, the Commission's credit rating screen for formation

22   of an electric utility proxy group of comparably-risked companies is a better, more refined

23   way of addressing risk.

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[294] *See* Coakley Order Directing Briefs at P 32.

1   That said, it is commonly understood that the utility with a higher credit rating will

2   have a lower risk premium and vice versa. Dr. Morin recognizes this when discussing a

3   study completed by Brigham, Shome and Vinson, which "examined the relationship

4   between risk premium and bond rating and found, unsurprisingly, that the risk premiums

5   are higher for lower rated firms than for higher rated firms."[295] He then presents a figure

6   based on data from that study that shows that Moody's "A" rated electric utilities had lower

7   risk premiums (by approximately 100 basis points) than those rated "A/BBB."[296]

8   Therefore, I suggest that the Commission could adjust the Allowed ROE Risk Premium

9   result downward by 100 basis points if the subject utility has a Moody's "A" credit rating

10 as opposed to a Moody's "Baa" credit rating, which is the method's default bond yield. An

11 adjustment for electric utilities with above-average risk, which, as discussed above would

12 be utilities with a non-investment rating, is beyond the scope of this response given that

13 such a situation brings to fore many difficult questions that may impact a Risk Premium

14 analysis.

15   **H.2.d.3.ii. Is it appropriate to use a Risk Premium analysis**
16   **when conducting the first prong of the section 206**
17   **evaluation?**

18   I do not address this question in my affidavit at this time, but reserve the right to do

19 so in a reply affidavit.

20   This concludes my affidavit.

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[295] Roger A. Morin, PhD, *New Regulatory Finance* 129 (Public Utilities Reports, Inc., 2006).

[296] *Id*. at 129, Figure 4-5.

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Inquiry Regarding the Commission's   Docket No. PL19-4-000
Policy for Determining Return on
Equity

AFFIDAVIT OF BREANDAN T. MAC MATHUNA

STATE OF GEORGIA	)
	) ss.
COBB COUNTY	)

I, Breandan T. Mac Mathuna, being duly sworn, certify under penalty of perjury that the statements contained in the foregoing affidavit are true and correct to the best of my information, knowledge, and belief.

Breandan T. Mac Mathuna
Breandan T. Mac Mathuna

Subscribed and sworn before me this 25th day of June, 2019.

Lisa Wilson
Notary Public
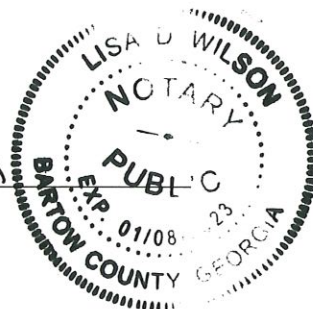
Exhibit No. CIT-0002

Market Capitalization Analysis

Market Capitalization Analysis
Docket No. PL19-4-000

	Market Cap ($ million)
Average Market Cap of Value Line Electric Utilities	$ 20,996
Median Market Cap of Value Line Electric Utilities	$ 16,803

	Number of Companies	Percent of Total
Total Number of Dividend-Paying Companies in S&P 500	414	
Number with Market Caps less than $21.0 billion	201	49%
Number with Market Caps less than $16.8 billion	164	40%

Source: Value Line Investment Analyzer, Data Weekly as of March 28, 2019

Market Capitalizations of Value Line Electric Utilities
Source: Value Line Investment Analyzer, Data Weekly as of March 28, 2019

Number	Ticker	Company Name	Market Cap ($ million)
1	ALE	ALLETE	$ 4,221
2	LNT	Alliant Energy	$ 11,071
3	AEP	Amer. Elec. Power	$ 41,329
4	AEE	Ameren Corp.	$ 17,961
5	AGR	AVANGRID, Inc.	$ 15,453
6	AVA	Avista Corp.	$ 2,653
7	BKH	Black Hills	$ 4,406
8	CNP	CenterPoint Energy	$ 15,201
9	CMS	CMS Energy Corp.	$ 15,645
10	ED	Consol. Edison	$ 27,051
11	D	Dominion Energy	$ 49,564
12	DTE	DTE Energy	$ 22,519
13	DUK	Duke Energy	$ 63,728
14	EIX	Edison Int'l	$ 20,252
15	EE	El Paso Electric	$ 2,373
16	ETR	Entergy Corp.	$ 17,972
17	EVRG	Evergy, Inc.	$ 14,796
18	ES	Eversource Energy	$ 22,290
19	EXC	Exelon Corp.	$ 48,177
20	FE	FirstEnergy Corp.	$ 21,193
21	FTS.TO	Fortis Inc.	$ 21,284
22	HE	Hawaiian Elec.	$ 4,434
23	IDA	IDACORP, Inc.	$ 4,979
24	MGEE	MGE Energy	$ 2,341
25	NEE	NextEra Energy	$ 91,738
26	NWE	NorthWestern Corp.	$ 3,528
27	OGE	OGE Energy	$ 8,555
28	OTTR	Otter Tail Corp.	$ 1,977
29	PCG	PG&E Corp.	$ 8,976
30	PNW	Pinnacle West Capital	$ 10,659
31	PNM	PNM Resources	$ 3,768
32	POR	Portland General	$ 4,602
33	PPL	PPL Corp.	$ 22,755
34	PEG	Public Serv. Enterprise	$ 29,630
35	SRE	Sempra Energy	$ 34,076
36	SO	Southern Co.	$ 53,085
37	WEC	WEC Energy Group	$ 24,756
38	XEL	Xcel Energy Inc.	$ 28,868

Average Market Cap of the Value Line Electric Utilities $ 20,996
Median Market Cap of the Value Line Electric Utilities $ 16,803

Market Capitalizations of Dividend-Paying S&P 500 Companies
Source: Value Line Investment Analyzer, Data Weekly as of March 28, 2019

Number	Ticker	Company Name	Market Cap ($ million)
1	MSFT	Microsoft Corp.	$ 898,373
2	AAPL	Apple Inc.	$ 892,608
3	JNJ	Johnson & Johnson	$ 372,637
4	XOM	Exxon Mobil Corp.	$ 341,853
5	JPM	JPMorgan Chase	$ 334,902
6	V	Visa Inc.	$ 311,041
7	WMT	Walmart Inc.	$ 282,188
8	BAC	Bank of America	$ 269,426
9	PG	Procter & Gamble	$ 259,039
10	VZ	Verizon Communic.	$ 244,120
11	MA	MasterCard Inc.	$ 243,080
12	INTC	Intel Corp.	$ 242,394
13	PFE	Pfizer, Inc.	$ 241,772
14	CSCO	Cisco Systems	$ 236,065
15	CVX	Chevron Corp.	$ 235,063
16	UNH	UnitedHealth Group	$ 232,541
17	WFC	Wells Fargo	$ 231,291
18	T	AT&T Inc.	$ 225,803
19	HD	Home Depot	$ 214,958
20	MRK	Merck & Co.	$ 214,223
21	BA	Boeing	$ 212,548
22	KO	Coca-Cola	$ 198,804
23	ORCL	Oracle Corp.	$ 183,133
24	CMCSA	Comcast Corp.	$ 182,939
25	PEP	PepsiCo, Inc.	$ 172,038
26	DIS	Disney (Walt)	$ 166,065
27	C	Citigroup Inc.	$ 151,364
28	MCD	McDonald's Corp.	$ 146,001
29	ABT	Abbott Labs.	$ 139,523
30	LLY	Lilly (Eli)	$ 136,305
31	PM	Philip Morris Int'l	$ 135,684
32	NKE	NIKE, Inc. 'B'	$ 132,531
33	IBM	Int'l Business Mach.	$ 124,876
34	UNP	Union Pacific	$ 121,838
35	MMM	3M Company	$ 121,424
36	MDT	Medtronic plc	$ 120,600
37	ABBV	AbbVie Inc.	$ 120,273
38	AVGO	Broadcom Inc.	$ 118,432
39	AMGN	Amgen	$ 118,144
40	HON	Honeywell Int'l	$ 115,589
41	ACN	Accenture Plc	$ 111,731
42	UTX	United Technologies	$ 109,641
43	TMO	Thermo Fisher Sci.	$ 108,694

44	NVDA	NVIDIA Corp.	$	108,123
45	MO	Altria Group	$	106,259
46	COST	Costco Wholesale	$	106,134
47	TXN	Texas Instruments	$	99,156
48	UPS	United Parcel Serv.	$	94,748
49	AXP	Amer. Express	$	93,223
50	SBUX	Starbucks Corp.	$	91,954
51	NEE	NextEra Energy	$	91,738
52	DHR	Danaher Corp.	$	91,083
53	LOW	Lowe's Cos.	$	87,346
54	GE	Gen'l Electric	$	86,024
55	AMT	Amer. Tower 'A'	$	85,920
56	LMT	Lockheed Martin	$	83,064
57	GILD	Gilead Sciences	$	82,415
58	CAT	Caterpillar Inc.	$	78,112
59	BMY	Bristol-Myers Squibb	$	78,084
60	COP	ConocoPhillips	$	77,571
61	USB	U.S. Bancorp	$	77,264
62	SYK	Stryker Corp.	$	73,386
63	ANTM	Anthem, Inc.	$	72,676
64	MDLZ	Mondelez Int'l	$	71,907
65	MS	Morgan Stanley	$	71,649
66	GS	Goldman Sachs	$	70,406
67	ADP	Automatic Data Proc.	$	69,081
68	QCOM	Qualcomm Inc.	$	68,426
69	BLK	BlackRock, Inc.	$	67,501
70	INTU	Intuit Inc.	$	67,166
71	BDX	Becton, Dickinson	$	66,459
72	TJX	TJX Companies	$	65,431
73	CB	Chubb Ltd.	$	64,130
74	DUK	Duke Energy	$	63,728
75	CSX	CSX Corp.	$	62,850
76	SLB	Schlumberger Ltd.	$	60,405
77	EL	Lauder (Estee)	$	59,497
78	WBA	Walgreens Boots	$	58,975
79	CL	Colgate-Palmolive	$	58,134
80	CME	CME Group	$	58,077
81	SPG	Simon Property Group	$	57,054
82	SCHW	Schwab (Charles)	$	56,881
83	PNC	PNC Financial Serv.	$	56,761
84	EOG	EOG Resources	$	55,223
85	CVS	CVS Health	$	54,374
86	SO	Southern Co.	$	53,085
87	CCI	Crown Castle Int'l	$	52,800
88	SPGI	S&P Global	$	52,102
89	GM	Gen'l Motors	$	51,884
90	RTN	Raytheon Co.	$	51,031
91	ECL	Ecolab Inc.	$	50,827
92	NSC	Norfolk Southern	$	50,763
93	DE	Deere & Co.	$	50,347

94	OXY	Occidental Petroleum	$	50,193
95	LIN	Linde plc	$	50,001
96	BK	Bank of New York Mellon	$	49,824
97	D	Dominion Energy	$	49,564
98	AGN	Allergan plc	$	49,521
99	GD	Gen'l Dynamics	$	48,432
100	EXC	Exelon Corp.	$	48,177
101	ZTS	Zoetis Inc.	$	47,664
102	ITW	Illinois Tool Works	$	47,398
103	MMC	Marsh & McLennan	$	46,794
104	FDX	FedEx Corp.	$	46,356
105	NOC	Northrop Grumman	$	45,552
106	PLD	Prologis	$	45,408
107	KMI	Kinder Morgan Inc.	$	45,130
108	WM	Waste Management	$	44,178
109	PSX	Phillips 66	$	44,116
110	HCA	HCA Healthcare	$	44,050
111	KMB	Kimberly-Clark	$	42,742
112	ICE	Intercontinental Exch.	$	42,694
113	BAX	Baxter Int'l Inc.	$	42,497
114	MAR	Marriott Int'l	$	42,327
115	PGR	Progressive Corp.	$	42,228
116	TGT	Target Corp.	$	41,912
117	APD	Air Products & Chem.	$	41,767
118	EMR	Emerson Electric	$	41,603
119	CTSH	Cognizant Technology	$	41,516
120	MPC	Marathon Petroleum	$	41,446
121	AEP	Amer. Elec. Power	$	41,329
122	AON	Aon plc	$	40,804
123	MET	MetLife Inc.	$	40,712
124	SHW	Sherwin-Williams	$	40,373
125	KHC	Kraft Heinz Co.	$	40,093
126	CI	Cigna Corp.	$	38,890
127	COF	Capital One Fin'l	$	38,347
128	ADI	Analog Devices	$	38,330
129	AIG	Amer. Int'l Group	$	38,128
130	PSA	Public Storage	$	38,074
131	PRU	Prudential Fin'l	$	37,658
132	AFL	Aflac Inc.	$	37,538
133	AMAT	Applied Materials	$	36,561
134	FIS	Fidelity Nat'l Info.	$	36,356
135	TRV	Travelers Cos.	$	36,251
136	HUM	Humana Inc.	$	36,026
137	VLO	Valero Energy	$	36,023
138	EQIX	Equinix, Inc.	$	35,994
139	EBAY	eBay Inc.	$	35,419
140	BBT	BB&T Corp.	$	35,350
141	CCL	Carnival Corp.	$	35,238
142	ROP	Roper Tech.	$	35,166
143	F	Ford Motor	$	34,886

144	ATVI	Activision Blizzard	$	34,808
145	WMB	Williams Cos.	$	34,694
146	ETN	Eaton Corp. plc	$	34,611
147	DAL	Delta Air Lines	$	34,500
148	VFC	V.F. Corp.	$	34,469
149	MCO	Moody's Corp.	$	34,373
150	ROST	Ross Stores	$	34,104
151	SRE	Sempra Energy	$	34,076
152	SYY	Sysco Corp.	$	34,026
153	JCI	Johnson Ctrls. Int'l plc	$	33,679
154	STZ	Constellation Brands	$	32,751
155	LYB	LyondellBasell Inds.	$	32,469
156	ALL	Allstate Corp.	$	32,409
157	XLNX	Xilinx Inc.	$	32,043
158	DG	Dollar General	$	31,378
159	YUM	Yum! Brands	$	31,031
160	GIS	Gen'l Mills	$	30,822
161	PEG	Public Serv. Enterprise	$	29,630
162	HPQ	HP Inc.	$	29,248
163	WELL	Welltower Inc.	$	29,211
164	FTV	Fortive Corp.	$	29,012
165	XEL	Xcel Energy Inc.	$	28,868
166	OKE	ONEOK Inc.	$	28,540
167	TEL	TE Connectivity	$	28,431
168	PAYX	Paychex, Inc.	$	28,387
169	APH	Amphenol Corp.	$	28,328
170	LUV	Southwest Airlines	$	27,879
171	EQR	Equity Residential	$	27,833
172	AVB	AvalonBay Communities	$	27,746
173	ED	Consol. Edison	$	27,051
174	LRCX	Lam Research	$	27,048
175	PPG	PPG Inds.	$	26,800
176	STI	SunTrust Banks	$	26,503
177	RSG	Republic Services	$	26,166
178	PXD	Pioneer Natural Res.	$	26,065
179	IR	Ingersoll-Rand	$	25,985
180	GLW	Corning Inc.	$	25,925
181	ZBH	Zimmer Biomet Hldgs.	$	25,900
182	HAL	Halliburton Co.	$	25,570
183	A	Agilent Technologies	$	25,345
184	TSN	Tyson Foods 'A'	$	25,214
185	STT	State Street Corp.	$	25,179
186	CMI	Cummins Inc.	$	25,036
187	WEC	WEC Energy Group	$	24,756
188	HLT	Hilton Worldwide Hldgs.	$	24,710
189	DLR	Digital Realty Trust	$	24,582
190	TROW	Price (T. Rowe) Group	$	24,039
191	HSY	Hershey Co.	$	23,978
192	DFS	Discover Fin'l Svcs.	$	23,898
193	PCAR	PACCAR Inc.	$	23,881

194	ADM	Archer Daniels Midl'd	$	23,880
195	HRL	Hormel Foods	$	23,722
196	RCL	Royal Caribbean	$	23,500
197	VTR	Ventas, Inc.	$	23,176
198	SYF	Synchrony Financial	$	22,877
199	MSI	Motorola Solutions	$	22,758
200	PPL	PPL Corp.	$	22,755
201	WLTW	Willis Towers Wat. plc	$	22,727
202	DTE	DTE Energy	$	22,519
203	ES	Eversource Energy	$	22,290
204	CXO	Concho Resources	$	22,289
205	MTB	M&T Bank Corp.	$	22,265
206	APC	Anadarko Petroleum	$	22,260
207	MCK	McKesson Corp.	$	22,136
208	PH	Parker-Hannifin	$	21,935
209	VRSK	Verisk Analytics	$	21,889
210	GPN	Global Payments	$	21,379
211	FE	FirstEnergy Corp.	$	21,193
212	CTAS	Cintas Corp.	$	21,091
213	HPE	Hewlett Packard Ent.	$	21,028
214	O	Realty Income Corp.	$	20,995
215	ROK	Rockwell Automation	$	20,791
216	CLX	Clorox Co.	$	20,662
217	BXP	Boston Properties	$	20,618
218	APTV	Aptiv PLC	$	20,490
219	SWK	Stanley Black & Decker	$	20,328
220	EIX	Edison Int'l	$	20,252
221	NTRS	Northern Trust Corp.	$	19,941
222	WY	Weyerhaeuser Co.	$	19,861
223	MKC	McCormick & Co.	$	19,630
224	K	Kellogg	$	19,590
225	KR	Kroger Co.	$	19,503
226	BLL	Ball Corp.	$	19,425
227	BBY	Best Buy Co.	$	19,339
228	MCHP	Microchip Technology	$	19,230
229	ESS	Essex Property Trust	$	19,167
230	NEM	Newmont Mining	$	18,959
231	AWK	Amer. Water Works	$	18,849
232	HRS	Harris Corp.	$	18,836
233	AME	AMETEK, Inc.	$	18,675
234	FCX	Freep't-McMoRan Inc.	$	18,446
235	IP	Int'l Paper	$	18,427
236	FAST	Fastenal Co.	$	18,231
237	NUE	Nucor Corp.	$	18,089
238	HES	Hess Corp.	$	18,060
239	ETR	Entergy Corp.	$	17,972
240	AEE	Ameren Corp.	$	17,961
241	KLAC	KLA-Tencor	$	17,781
242	EXPE	Expedia Group	$	17,766
243	CHD	Church & Dwight	$	17,763

244	AMP	Ameriprise Fin'l	$	17,756
245	CBS	CBS Corp. 'B'	$	17,734
246	HIG	Hartford Fin'l Svcs.	$	17,704
247	MSCI	MSCI Inc.	$	17,421
248	DXC	DXC Technology	$	17,356
249	TSS	Total System Svcs.	$	16,923
250	BEN	Franklin Resources	$	16,828
251	NTAP	NetApp, Inc.	$	16,645
252	FRC	First Republic Bank	$	16,567
253	ABC	AmerisourceBergen	$	16,437
254	FITB	Fifth Third Bancorp	$	16,424
255	OMC	Omnicom Group	$	16,418
256	GWW	Grainger (W.W.)	$	16,411
257	GPC	Genuine Parts	$	16,290
258	LLL	L3 Technologies	$	16,249
259	GRMN	Garmin Ltd.	$	16,220
260	LEN	Lennar Corp.	$	16,134
261	KEY	KeyCorp	$	16,006
262	ARE	Alexandria Real Estate	$	15,900
263	CMS	CMS Energy Corp.	$	15,645
264	DHI	Horton D.R.	$	15,553
265	CFG	Citizens Fin'l Group	$	15,376
266	VMC	Vulcan Materials	$	15,274
267	CNP	CenterPoint Energy	$	15,201
268	DVN	Devon Energy	$	15,082
269	L	Loews Corp.	$	15,073
270	DRI	Darden Restaurants	$	14,961
271	HCP	HCP Inc.	$	14,876
272	EVRG	Evergy, Inc.	$	14,796
273	RMD	ResMed Inc.	$	14,715
274	SYMC	Symantec Corp.	$	14,659
275	COO	Cooper Cos.	$	14,542
276	RF	Regions Financial	$	14,522
277	MXIM	Maxim Integrated	$	14,416
278	CAH	Cardinal Health	$	14,280
279	AAL	Amer. Airlines	$	14,233
280	NDAQ	Nasdaq, Inc.	$	14,221
281	XYL	Xylem Inc.	$	14,209
282	PFG	Principal Fin'l Group	$	14,183
283	AJG	Gallagher (Arthur J.)	$	14,169
284	MRO	Marathon Oil Corp.	$	14,095
285	EFX	Equifax, Inc.	$	14,084
286	SWKS	Skyworks Solutions	$	14,022
287	HST	Host Hotels & Resorts	$	14,021
288	CINF	Cincinnati Financial	$	13,901
289	TFX	Teleflex Inc.	$	13,800
290	DOV	Dover Corp.	$	13,683
291	ROL	Rollins, Inc.	$	13,646
292	MGM	MGM Resorts Int'l	$	13,543
293	CAG	Conagra Brands	$	13,472

294	CTXS	Citrix Sys.	$	13,392
295	APA	Apache Corp.	$	13,389
296	HBAN	Huntington Bancshs.	$	13,367
297	CE	Celanese Corp.	$	13,317
298	WDC	Western Digital	$	13,313
299	SJM	Smucker (J.M.)	$	13,206
300	STX	Seagate Technology	$	13,021
301	CTL	CenturyLink Inc.	$	13,016
302	TAP	Molson Coors Brewing	$	12,986
303	EXR	Extra Space Storage	$	12,948
304	EXPD	Expeditors Int'l	$	12,937
305	VNO	Vornado R'lty Trust	$	12,848
306	WYNN	Wynn Resorts	$	12,789
307	TIF	Tiffany & Co.	$	12,774
308	MAA	Mid-America Apartment	$	12,458
309	NRG	NRG Energy	$	12,397
310	MLM	Martin Marietta	$	12,372
311	UHS	Universal Health `B'	$	12,351
312	AAP	Advance Auto Parts	$	12,301
313	UDR	UDR, Inc.	$	12,186
314	TXT	Textron, Inc.	$	12,169
315	CMA	Comerica Inc.	$	12,130
316	DGX	Quest Diagnostics	$	12,022
317	LNC	Lincoln Nat'l Corp.	$	12,008
318	AES	AES Corp.	$	11,994
319	NBL	Noble Energy	$	11,942
320	CHRW	C.H. Robinson	$	11,907
321	IFF	Int'l Flavors & Frag.	$	11,897
322	BR	Broadridge Fin'l	$	11,882
323	KSU	Kansas City South'n	$	11,718
324	TSCO	Tractor Supply	$	11,631
325	REG	Regency Centers Corp.	$	11,623
326	CPB	Campbell Soup	$	11,528
327	MAS	Masco Corp.	$	11,497
328	COG	Cabot Oil & Gas 'A'	$	11,440
329	KSS	Kohl's Corp.	$	11,395
330	ETFC	E*Trade Fin'l	$	11,324
331	RJF	Raymond James Fin'l	$	11,241
332	BHGE	Baker Hughes, a GE co.	$	11,190
333	LNT	Alliant Energy	$	11,071
334	VIAB	Viacom Inc. 'B'	$	11,065
335	JBHT	Hunt (J.B.)	$	11,025
336	DRE	Duke Realty Corp.	$	10,987
337	XRAY	Dentsply Sirona	$	10,980
338	HAS	Hasbro, Inc.	$	10,842
339	LW	Lamb Weston Holdings	$	10,829
340	JKHY	Henry (Jack) & Assoc.	$	10,663
341	PNW	Pinnacle West Capital	$	10,659
342	FTI	TechnipFMC	$	10,648
343	EMN	Eastman Chemical	$	10,627

344	PKI	PerkinElmer Inc.	$	10,581
345	JEC	Jacobs Engineering	$	10,522
346	CBOE	Cboe Global Markets	$	10,508
347	MOS	Mosaic Company	$	10,473
348	NI	NiSource Inc.	$	10,365
349	IRM	Iron Mountain	$	10,198
350	RL	Ralph Lauren	$	10,171
351	NOV	National Oilwell Varco	$	10,159
352	FRT	Federal Rlty. Inv. Trust	$	10,141
353	FANG	Diamondback Energy	$	10,118
354	FMC	FMC Corp.	$	10,065
355	GPS	Gap (The), Inc.	$	9,870
356	AVY	Avery Dennison	$	9,834
357	WRK	WestRock Co.	$	9,693
358	PVH	PVH Corp.	$	9,660
359	TPR	Tapestry Inc.	$	9,486
360	ADS	Alliance Data Sys.	$	9,413
361	PKG	Packaging Corp.	$	9,402
362	ARNC	Arconic Inc.	$	9,245
363	TMK	Torchmark Corp.	$	9,175
364	JNPR	Juniper Networks	$	8,999
365	CF	CF Industries	$	8,993
366	AOS	Smith (A.O.)	$	8,832
367	HFC	HollyFrontier Corp.	$	8,766
368	RE	Everest Re Group Ltd.	$	8,754
369	SNA	Snap-on Inc.	$	8,687
370	COTY	Coty Inc.	$	8,639
371	ALB	Albemarle Corp.	$	8,619
372	HII	Huntington Ingalls	$	8,594
373	ZION	Zions Bancorp.	$	8,509
374	ALLE	Allegion plc	$	8,500
375	WHR	Whirlpool Corp.	$	8,451
376	SLG	SL Green Realty	$	8,428
377	NLSN	Nielsen Hldgs. plc	$	8,399
378	WU	Western Union	$	8,220
379	IPG	Interpublic Group	$	8,186
380	IVZ	Invesco Ltd.	$	7,967
381	BWA	BorgWarner	$	7,875
382	KIM	Kimco Realty	$	7,855
383	PHM	PulteGroup, Inc.	$	7,842
384	RHI	Robert Half Int'l	$	7,823
385	AIV	Apartment Investment	$	7,708
386	LB	L Brands	$	7,684
387	PNR	Pentair plc	$	7,530
388	JWN	Nordstrom, Inc.	$	7,486
389	M	Macy's Inc.	$	7,438
390	XRX	Xerox Corp.	$	7,350
391	UNM	Unum Group	$	7,340
392	NWS	News Corp. 'B'	$	7,259
393	NWSA	News Corp. 'A'	$	7,241

394	SEE	Sealed Air	$	7,227
395	FL	Foot Locker	$	6,847
396	ALK	Alaska Air Group	$	6,797
397	XEC	Cimarex Energy	$	6,756
398	FBHS	Fortune Brands Home	$	6,611
399	NWL	Newell Brands	$	6,528
400	PRGO	Perrigo Co. plc	$	6,442
401	FLIR	FLIR Systems	$	6,414
402	HBI	Hanesbrands, Inc.	$	6,391
403	PBCT	People's United Fin'l	$	6,252
404	JEF	Jefferies Fin'l Group	$	6,241
405	HP	Helmerich & Payne	$	6,222
406	AMG	Affiliated Managers	$	6,220
407	MAC	Macerich Comp. (The)	$	6,130
408	AIZ	Assurant Inc.	$	5,911
409	FLS	Flowserve Corp.	$	5,841
410	HOG	Harley-Davidson	$	5,802
411	PWR	Quanta Services	$	5,561
412	LEG	Leggett & Platt	$	5,519
413	FLR	Fluor Corp.	$	5,123
414	HRB	Block (H&R)	$	4,944

Exhibit No. CIT-0003

Value Line Reports

FORTIS INC. TSE-FTS.TO [A]

RECENT PRICE **47.54**	P/E RATIO **17.7** (Trailing: 18.9 / Median: 19.0)	RELATIVE P/E RATIO **1.04**	DIV'D YLD **3.9%**	**VALUE LINE**

TIMELINESS 3 Raised 11/30/18
SAFETY 2 Raised 7/17/15
TECHNICAL 2 Lowered 3/15/19
BETA .65 (1.00 = Market)

2022-24 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	70	(+45%)	13%
Low	50	(+5%)	5%

Insider Decisions

	M	J	J	A	S	O	N	D	J
to Buy	0	0	0	0	0	0	0	0	0
Options	0	0	0	0	0	0	0	0	0
to Sell	0	0	0	0	0	0	0	0	0

Institutional Decisions

	2Q2018	3Q2018	4Q2018
to Buy	120	103	123
to Sell	100	122	109
Hld's(000)	222393	216243	226055

Percent shares traded: 12 / 8 / 4

| High: | 29.9 | 29.2 | 34.5 | 35.4 | 40.7 | 35.1 | 40.5 | 42.1 | 45.1 | 48.7 | 47.4 | 48.2 |
| Low: | 20.7 | 21.5 | 21.6 | 28.2 | 30.5 | 29.6 | 29.8 | 34.5 | 36.0 | 40.6 | 39.4 | 44.0 |

LEGENDS
— 0.74 x Dividends p sh divided by Interest Rate
···· Relative Price Strength
Options: Yes
Shaded area indicates recession

Target Price Range 2022 | 2023 | 2024

% TOT. RETURN 2/19

	THIS STOCK	VL ARITH.* INDEX
1 yr.	17.7	3.9
3 yr.	41.8	49.2
5 yr.	87.2	39.6

2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
12.13	11.99	13.86	14.14	17.48	23.07	21.24	21.01	19.84	19.07	18.99	19.57	23.89	17.03	19.71	19.58	*20.00*	*20.45*	Revenues per sh	22.00
1.92	2.23	2.73	3.05	2.96	3.51	3.66	3.99	3.90	4.10	4.10	3.62	5.21	3.91	5.43	5.40	*5.70*	*5.95*	"Cash Flow" per sh	6.75
1.03	1.01	1.19	1.36	1.29	1.52	1.51	1.62	1.74	1.65	1.63	1.38	2.11	1.89	2.66	2.52	*2.70*	*2.85*	Earnings per sh [B]	3.25
.52	.54	.59	.67	.82	1.00	1.04	1.12	1.17	1.21	1.25	1.30	1.43	1.55	1.65	1.75	*1.85*	*1.96*	Div'd Decl'd per sh [C] ■	2.35
2.99	2.92	4.93	4.80	5.16	5.34	5.79	5.89	5.91	5.68	5.32	6.00	7.97	5.13	7.18	7.51	*8.50*	*7.90*	Cap'l Spending per sh	7.75
8.84	10.47	11.76	12.26	16.72	18.00	18.57	18.95	20.53	20.84	22.39	24.90	28.63	32.32	31.77	34.80	*36.45*	*38.25*	Book Value per sh [D]	44.00
69.52	95.53	103.20	104.09	155.52	169.19	171.26	174.39	188.83	191.57	213.17	276.00	281.56	401.49	421.10	428.50	*435.00*	*440.00*	Common Shs Outst'g [E]	455.00
13.6	15.3	17.2	17.7	21.1	17.5	16.4	18.2	18.8	20.1	20.0	24.3	18.0	21.6	16.8	17.1	*Bold figures are*		Avg Ann'l P/E Ratio	18.0
.78	.81	.92	.96	1.12	1.05	1.09	1.16	1.18	1.28	1.12	1.28	.91	1.13	.84	.92	*Value Line*		Relative P/E Ratio	1.00
3.7%	3.5%	2.9%	2.8%	3.0%	3.8%	4.2%	3.8%	3.6%	3.6%	3.8%	3.9%	3.8%	3.8%	3.7%	4.1%	*estimates*		Avg Ann'l Div'd Yield	4.0%

CAPITAL STRUCTURE as of 12/31/18
Total Debt $24787 mill. Due in 5 Yrs $6226 mill.
LT Debt $23549 mill. LT Interest $966 mill.
Incl. $390 mill. capitalized leases.
(LT interest earned: 2.4x)
Leases, Uncapitalized Annual rentals $8 mill.

Pension Assets-12/18 $2830 mill.
Oblig $3207 mill.
Pfd Stock $1623 mill. Pfd Div'd $66 mill.

Common Stock 428,500,000 shs.

MARKET CAP: $20 billion (Large Cap)

3637.0	3664.0	3747.0	3654.0	4047.0	5401.0	6727.0	6838.0	8301.0	8390.0	*8700*	*9000*	Revenues ($mill)	10000
280.0	313.0	347.0	362.0	390.0	374.0	672.0	660.0	1174.0	1136.0	*1325*	*1405*	Net Profit ($mill)	1650
14.4%	17.2%	18.3%	14.1%	7.4%	14.6%	21.3%	16.9%	25.8%	13.4%	*13.5%*	*13.5%*	Income Tax Rate	13.5%
6.4%	4.2%	5.5%	5.0%	5.9%	7.2%	7.4%	10.0%	9.5%	8.4%	*8.0%*	*7.0%*	AFUDC % to Net Profit	7.0%
61.3%	60.5%	57.5%	55.1%	53.5%	54.8%	53.3%	59.3%	58.4%	58.8%	*58.0%*	*56.5%*	Long-Term Debt Ratio	54.0%
34.8%	33.5%	36.9%	35.1%	37.0%	35.7%	38.1%	36.2%	37.1%	37.2%	*38.0%*	*40.0%*	Common Equity Ratio	42.5%
9136.0	9868.0	10513	11358	12892	19235	21151	35874	36108	40082	*41725*	*42300*	Total Capital ($mill)	47200
8246.0	8762.0	9281.0	10249	12267	17816	19595	29337	29668	32654	*35050*	*37150*	Net Plant ($mill)	42600
5.0%	5.0%	5.0%	4.8%	4.6%	3.4%	4.5%	2.8%	4.5%	4.1%	*4.5%*	*4.5%*	Return on Total Cap'l	4.5%
7.9%	8.0%	7.8%	7.1%	6.5%	4.3%	6.8%	4.5%	7.8%	6.9%	*7.5%*	*7.5%*	Return on Shr. Equity	7.5%
8.2%	8.6%	8.2%	7.9%	7.0%	4.5%	7.4%	4.5%	8.3%	7.2%	*7.5%*	*7.5%*	Return on Com Equity [F]	7.5%
4.1%	2.8%	4.3%	3.7%	3.2%	1.7%	4.5%	2.1%	5.2%	4.1%	*4.0%*	*4.0%*	Retained to Com Eq	4.0%
54%	71%	52%	60%	61%	68%	46%	59%	41%	46%	*42%*	*42%*	All Div'ds to Net Prof	44%

ELECTRIC OPERATING STATISTICS

	2016	2017	2018
% Change Retail Sales (KWH)	NA	NA	NA
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (¢)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load, Summer (Mw)	NA	NA	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	NA	NA	NA

Fixed Charge Cov. (%)	173	231	208

ANNUAL RATES of change (per sh)

	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
Revenues	.5%	-.5%	2.5%
"Cash Flow"	4.5%	4.0%	5.5%
Earnings	5.5%	7.0%	5.5%
Dividends	7.0%	6.5%	6.0%
Book Value	7.5%	9.0%	5.0%

QUARTERLY REVENUES ($ mill.)

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	1772	1485	1528	2053	6838.0
2017	2274	2015	1901	2111	8301.0
2018	2197	1947	2040	2206	8390.0
2019	*2300*	*2100*	*2100*	*2200*	*8700*
2020	*2400*	*2150*	*2150*	*2300*	*9000*

EARNINGS PER SHARE [B]

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	.57	.38	.45	.49	1.89
2017	.72	.62	.66	.66	2.66
2018	.69	.57	.65	.61	2.52
2019	*.75*	*.65*	*.67*	*.63*	*2.70*
2020	*.80*	*.70*	*.70*	*.65*	*2.85*

QUARTERLY DIVIDENDS PAID [C] ■

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2015	.34	.34	.34	.375	1.40
2016	.375	.375	.375	.40	1.53
2017	.40	.40	.40	.425	1.63
2018	.425	.425	.425	.45	1.73
2019	.45				

BUSINESS: Fortis Inc.'s main focus is electricity, hydroelectric, and gas utility operations (both regulated and nonregulated) in the United States, Canada, and the Caribbean. Has 2 mill. electric, 1.3 mill. gas customers. Owns UNS Energy (Arizona), Central Hudson (New York), FortisBC Energy (British Columbia), FortisAlberta (Central Alberta), and Eastern Canada (Newfoundland). Sold commercial real estate and hotel property assets in 2015. Acquired ITC Holdings 10/16. Fuel costs: 30% of revenues. '18 reported deprec. rate: 2.5%. Has 8,800 employees. Chairman: Douglas J. Haughey. President & CEO: Barry V. Perry. Inc.: Canada. Address: Fortis Place, Suite 1100, 5 Springdale St., PO Box 8837, St. John's, NL, Canada, A1B 3T2. Tel.: 709-737-2800. Internet: www.fortisinc.com.

Fortis has agreed to sell an asset. The company reached a deal to sell its 51% stake in a hydro project in British Columbia for $1 billion. Management had expressed its intention to finance part of its five-year, $17.3 billion capital budget with the proceeds from sales of noncore assets, and this transaction will fulfill this. (Fortis will use the cash to retire parent-level debt that was used to finance the capital budget.) The sale price is well above book value, so Fortis will record a nonrecurring gain when the deal closes in the next several weeks. The transaction is expected to be neutral for ongoing earnings.

The company's ITC subsidiary was hit with a setback from the Federal Energy Regulatory Commission. FERC reduced the incentive "adder" on ITC's allowed return on equity from a half percentage point to a quarter. This will reduce Fortis' annual earning power by $0.025 a share. Besides this, we think our previous estimate was too high, so we cut our 2019 share-earnings estimate from $2.90 to $2.70. Even with this disappointing ruling, profits should advance this year. ITC's forward-looking formula rate

plan allows it to earn a return on its capital spending. Also, Fortis' Central Hudson G&E subsidiary in New York will benefit from a full year of rate relief thanks to an order that took effect in mid-2018. Note, however, that mark-to-market accounting items associated with its stake in a gas-storage facility can skew year-to-year earnings comparisons.

Two rate cases are upcoming. Fortis will file a multiyear case in British Columbia, as its current regulatory plan expires at the end of 2019. New tariffs will take effect at the start of 2020. Tucson Electric Power will file an application in Arizona, with new rates taking effect in May of 2020. Rate relief (including another increase at Central Hudson G&E) should help lift profits next year. We estimate an increase of 5%-6%.

The stock's dividend yield is above average for this industry. Fortis has a long track record of dividend growth, and expects to increase the disbursement 6% a year through 2023. This ought to provide respectable total returns (by utility standards) over the 3- to 5-year period.
Paul E. Debbas, CFA — *March 15, 2019*

(A) Also trades on NYSE under the symbol FTS. All data in Canadian $. **(B)** Diluted earnings. Excl. nonrec. gains (loss): '07, 3¢; '14, 2¢; '15, 48¢; '17, (35¢); '18, 7¢. Next earnings report due early May. **(C)** Div'ds historically paid in early Mar., June, Sept., and Dec. ■ Div'd reinvest. plan avail. (2% disc.) **(D)** Incl. intang. In '18: $38.70/sh. **(E)** In mill., adj. for split. **(F)** Rate base: varies. Rates all'd on com. eq.: 8.3%-10.32%; earned on avg. com. eq., '18: 7.6%. Regulat. Climate: FERC, Above Average; AZ, Average; NY, Below Average.

Company's Financial Strength B++
Stock's Price Stability 100
Price Growth Persistence 25
Earnings Predictability 70

AMERICAN ELEC. PWR. NYSE-AEP

RECENT PRICE	81.03	P/E RATIO	20.6	(Trailing: 20.8) (Median: 15.0)	RELATIVE P/E RATIO	1.20	DIV'D YLD	3.4%	VALUE LINE

TIMELINESS	3	Lowered 3/8/19
SAFETY	1	Raised 3/17/17
TECHNICAL	2	Raised 3/1/19
BETA	.55	(1.00 = Market)

High: 49.1 36.5 37.9 41.7 45.4 51.6 63.2 65.4 71.3 78.1 81.1 81.8
Low: 25.5 24.0 28.2 33.1 37.0 41.8 45.8 52.3 56.8 61.8 62.7 72.3

LEGENDS
— 0.67 x Dividends p sh divided by Interest Rate
.... Relative Price Strength
Options: Yes
Shaded area indicates recession

Target Price Range 2022 2023 2024

2022-24 PROJECTIONS

	Price	Gain	Ann'l Total Return
High	95	(+15%)	8%
Low	75	(-5%)	2%

Insider Decisions

	M	J	J	A	S	O	N	D	J
to Buy	0	0	0	0	0	0	0	0	0
Options	10	0	0	0	0	0	0	0	0
to Sell	1	0	0	0	0	0	1	0	0

Institutional Decisions

	2Q2018	3Q2018	4Q2018
to Buy	357	397	485
to Sell	463	429	429
Hld's(000)	358261	359124	363168

Percent shares traded: 15 10 5

% TOT. RETURN 2/19

	THIS STOCK	VL ARITH.* INDEX
1 yr.	28.2	3.9
3 yr.	46.1	49.2
5 yr.	93.8	39.6

2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	© VALUE LINE PUB. LLC	22-24
36.82	35.51	30.76	31.82	33.41	35.56	28.22	30.01	31.27	30.77	31.48	34.78	33.51	33.31	31.35	32.84	33.35	33.85	Revenues per sh	35.50
5.76	5.89	5.96	6.67	6.80	6.84	6.32	6.29	6.83	6.92	7.02	7.57	7.98	8.47	7.95	8.77	9.20	9.60	"Cash Flow" per sh	11.00
2.53	2.61	2.64	2.86	2.86	2.99	2.97	2.60	3.13	2.98	3.18	3.34	3.59	4.23	3.62	3.90	4.10	4.35	Earnings per sh A	5.00
1.65	1.40	1.42	1.50	1.58	1.64	1.64	1.71	1.85	1.88	1.95	2.03	2.15	2.27	2.39	2.53	2.72	2.88	Div'd Decl'd per sh B ■	3.40
3.44	4.28	6.11	8.89	8.88	9.83	6.19	5.07	5.74	6.45	7.75	8.68	9.37	9.98	11.79	12.89	13.55	12.50	Cap'l Spending per sh	12.50
19.93	21.32	23.08	23.73	25.17	26.33	27.49	28.33	30.33	31.37	32.98	34.37	36.44	35.38	37.17	38.58	40.00	41.90	Book Value per sh C	48.00
395.02	395.86	393.72	396.67	400.43	406.07	478.05	480.81	483.42	485.67	487.78	489.40	491.05	491.71	492.01	493.25	495.00	502.00	Common Shs Outst'g D	520.00
10.7	12.4	13.7	12.9	16.3	13.1	10.0	13.4	11.9	13.8	14.5	15.9	15.8	15.2	19.3	18.0	Bold figures are Value Line estimates		Avg Ann'l P/E Ratio	17.0
.61	.66	.73	.70	.87	.79	.67	.85	.75	.88	.81	.84	.80	.80	.97	.97			Relative P/E Ratio	.95
6.1%	4.3%	3.9%	4.1%	3.4%	4.2%	5.5%	4.9%	5.0%	4.6%	4.2%	3.8%	3.8%	3.5%	3.4%	3.6%			Avg Ann'l Div'd Yield	4.0%

CAPITAL STRUCTURE as of 12/31/18

Total Debt $25257 mill. **Due in 5 Yrs** $9286.3 mill.
LT Debt $21648 mill. **LT Interest** $931 mill.
Incl. $1109.2 mill. securitized bonds. Incl. $289 mill. capitalized leases.
(LT interest earned: 2.9x)
Leases, Uncapitalized Annual rentals $259.6 mill.
Pension Assets-12/18 $4695.9 mill.
Oblig $4810.3 mill.

Pfd Stock None

Common Stock 493,245,876 shs.

MARKET CAP: $40 billion (Large Cap)

13489	14427	15116	14945	15357	17020	16453	16380	15425	16196	16500	17000	Revenues ($mill)	18500
1365.0	1248.0	1513.0	1443.0	1549.0	1634.0	1763.4	2073.6	1783.2	1923.8	2025	2160	Net Profit ($mill)	2585
29.7%	34.8%	31.7%	33.9%	36.2%	37.8%	35.1%	26.8%	33.7%	5.8%	15.0%	15.0%	Income Tax Rate	15.0%
10.9%	10.4%	10.4%	11.2%	7.3%	9.0%	11.0%	8.0%	8.0%	10.7%	11.0%	11.0%	AFUDC % to Net Profit	9.0%
54.4%	53.1%	50.7%	50.6%	51.1%	49.0%	49.8%	50.0%	51.5%	53.2%	54.0%	52.5%	Long-Term Debt Ratio	51.5%
45.4%	46.7%	49.3%	49.4%	48.9%	51.0%	50.2%	50.0%	48.5%	46.8%	46.0%	47.5%	Common Equity Ratio	48.5%
28958	29184	29747	30823	32913	33001	35633	34775	37707	40677	42950	44200	Total Capital ($mill)	51400
34344	35674	36971	38763	40997	44117	46133	45639	50262	55099	59300	62925	Net Plant ($mill)	77300
6.2%	5.7%	6.6%	6.1%	6.0%	6.3%	6.1%	7.2%	5.9%	5.9%	5.5%	6.0%	Return on Total Cap'l	6.0%
10.3%	9.1%	10.3%	9.5%	9.6%	9.7%	9.9%	11.9%	9.8%	10.1%	10.0%	10.5%	Return on Shr. Equity	10.5%
10.4%	9.1%	10.3%	9.5%	9.6%	9.7%	9.9%	11.9%	9.8%	10.1%	10.0%	10.5%	Return on Com Equity E	11.0%
4.6%	3.1%	4.2%	3.5%	3.7%	3.8%	3.9%	5.5%	3.2%	3.5%	3.5%	3.5%	Retained to Com Eq	3.5%
56%	66%	60%	63%	62%	61%	60%	54%	67%	65%	69%	69%	All Div'ds to Net Prof	70%

ELECTRIC OPERATING STATISTICS

	2016	2017	2018
% Change Retail Sales (KWH)	+.3	-1.6	+3.0
Avg. Indust. Use (MWH)	NA	NA	NA
Avg. Indust. Revs. per KWH (¢)	NA	NA	NA
Capacity at Peak (Mw)	NA	NA	NA
Peak Load (Mw)	NA	NA	NA
Annual Load Factor (%)	NA	NA	NA
% Change Customers (yr-end)	NA	NA	NA

| Fixed Charge Cov. (%) | 374 | 354 | 254 |

ANNUAL RATES

of change (per sh)	Past 10 Yrs.	Past 5 Yrs.	Est'd '16-'18 to '22-'24
Revenues	-.5%	1.0%	1.5%
"Cash Flow"	2.0%	4.0%	4.5%
Earnings	3.0%	5.0%	4.0%
Dividends	4.5%	5.0%	6.0%
Book Value	4.0%	3.5%	4.5%

QUARTERLY REVENUES ($ mill.)

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	4044	3892	4652	3790	16380
2017	3933	3576	4104	3810	15424
2018	4048	4013	4333	3801	16195
2019	4150	4050	4500	3800	16500
2020	4300	4200	4650	3850	17000

EARNINGS PER SHARE A

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2016	1.02	1.03	1.43	.76	4.23
2017	.94	.76	1.11	.81	3.62
2018	.92	1.07	1.17	.74	3.90
2019	1.00	.90	1.30	.90	4.10
2020	1.05	1.00	1.40	.90	4.35

QUARTERLY DIVIDENDS PAID B ■

Calendar	Mar.31	Jun.30	Sep.30	Dec.31	Full Year
2015	.53	.53	.53	.56	2.15
2016	.56	.56	.56	.59	2.27
2017	.59	.59	.59	.62	2.39
2018	.62	.62	.62	.67	2.53
2019	.67				

BUSINESS: American Electric Power Company, Inc. (AEP), through 10 operating utilities, serves 5.4 mill. customers in Arkansas, Kentucky, Indiana, Louisiana, Michigan, Ohio, Oklahoma, Tennessee, Texas, Virginia, & West Virginia. Electric revenue breakdown: residential, 41%; commercial, 24%; industrial, 19%; wholesale, 8%; other, 8%. Sold SEEBOARD (British utility) '02; Houston Pipeline '05; commercial barge operation in '15. Generating sources not available. Fuel costs: 36% of revenues. '18 reported depreciation rates (utility): 1.6%-9.8%. Has 17,600 employees. Chairman, President & CEO: Nicholas K. Akins. Incorporated: New York. Address: 1 Riverside Plaza, Columbus, Ohio 43215-2373. Telephone: 614-716-1000. Internet: www.aep.com.

American Electric Power has announced a significant acquisition. The company has agreed to buy 724 megawatts of wind capacity from Sempra Energy for a cash payment of $551 million, the assumption of $343 million of project debt, and $162 million in tax-equity obligations. The seven wind farms have long-term contracts with creditworthy counterparties, including two deals with utilities owned by AEP. The company plans to finance the transaction with a combination of debt and equity. This requires the approval of the Federal Energy Regulatory Commission, and is expected to close in the second quarter of 2019. AEP expects the purchase to be accretive to earnings by "a few cents" a share in the first full year. The deal would be a big step toward the company's goal of investing $2.2 billion in contracted renewables by 2023. We will not include this in our figures until after it is completed. Even after this purchase, AEP will still be predominantly a regulated utility.

One utility received a rate hike, another has a settlement pending, a third just filed an application, and a fourth will soon initiate a case. In West Virginia, Appalachian Power's settlement for a $44 million increase, based on a 9.75% return on equity, was approved. New tariffs took effect on March 6th. Public Service of Oklahoma reached a settlement calling for a $46 million hike, based on a 9.4% ROE, and awaits a ruling from the state commission (probably later this month). SWEPCO asked the Arkansas regulators for a $46 million increase, based on a 10.5% ROE. New rates should take effect at the start of 2020. Finally, AEP Texas expects to put forth an application in the second quarter.

We expect earnings growth this year and next in line with AEP's annual goal of 5%-7%. Rate relief should help. Also, the company is investing heavily in its transmission system, and much of this spending is recovered concurrently, via a tracking mechanism. The utilities should see modest kilowatt-hour sales growth. Our 2019 estimate is at the midpoint of AEP's targeted range of $4.00-$4.20.

This stock has a dividend yield and 3- to 5-year total return potential that are similar to those of most utilities.
Paul E. Debbas, CFA *March 15, 2019*

(A) Dil. EPS. Excl. nonrec. gains (losses): '03, ($1.92); '04, 24¢; '05, (62¢); '06, (20¢); '07, (20¢); '08, 40¢; '10, (7¢); '11, 89¢; '12, (38¢); '13, (14¢); '16, ($2.99); '17, 26¢; disc. ops.: '03, (32¢); '04, 15¢; '05, 7¢; '06, 2¢; '08, 3¢; '15, 58¢; '16, (1¢). '16 EPS don't sum due to rounding. Next egs. report due late Apr. (B) Div'ds paid early Mar., June, Sept., & Dec. ■ Div'd re- invested. plan avail. (C) Incl. intang. In '18: $12.04/sh. (D) In mill. (E) Rate base: various. Rates all'd on com. eq.: 9.3%-10.9%; earn. on avg. com. eq., '18: 10.3%. Regul. Climate: Avg.

Company's Financial Strength	A+
Stock's Price Stability	100
Price Growth Persistence	60
Earnings Predictability	85

Exhibit No. CIT-0004

Expected Earnings Misrepresentation of Investors' Required Return

Expected Earnings Misrepresentation of Investors' Required Return
Docket No. PL19-4-000

Market Price to Book Values

Line	Company	Ticker	Value Line 2015 1st Half Avg Price	2014-2015 Average Book Value	M/B	Value Line Book Values		Value Line 2015 1st Half Market Price	
						2014	2015	High	Low
1	ALLETE	ALE	53.75	36.06	1.49	35.06	37.05	59.70	47.80
2	Alliant Energy	LNT	64.30	31.42	2.05	31.09	31.75	70.80	57.80
3	Amer. Elec. Power	AEP	59.25	35.06	1.69	34.37	35.75	65.40	53.10
4	Ameren Corp.	AEE	42.30	28.14	1.50	27.67	28.60	46.80	37.80
5	Avista Corp.	AVA	35.20	24.17	1.46	23.84	24.50	38.30	32.10
6	Black Hills Corp.	BKH	50.65	31.35	1.62	30.80	31.90	53.40	47.90
7	CenterPoint Energy	CNP	21.40	10.63	2.01	10.60	10.65	23.70	19.10
8	CMS Energy	CMS	35.05	13.75	2.55	13.34	14.15	38.70	31.40
9	Consol. Edison	ED	65.50	43.65	1.50	42.94	44.35	72.30	58.70
10	DTE Energy	DTE	83.30	48.10	1.73	47.05	49.15	92.30	74.30
11	Duke Energy	DUK	81.80	58.23	1.40	57.81	58.65	90.00	73.60
12	Edison Int'l	EIX	65.00	34.57	1.88	33.64	35.50	69.60	60.40
13	El Paso Electric	EE	38.35	24.80	1.55	24.39	25.20	41.30	35.40
14	Empire Dist. Elect.	EDE	26.90	18.16	1.48	18.02	18.30	31.50	22.30
15	Entergy Corp.	ETR	80.60	56.89	1.42	55.83	57.95	90.30	70.90
16	Eversource Energy	ES	52.05	32.04	1.62	31.47	32.60	56.80	47.30
17	FirstEnergy Corp.	FE	37.75	30.02	1.26	29.49	30.55	41.70	33.80
18	G't Plains Energy	GXP	27.50	23.48	1.17	23.26	23.70	30.30	24.70
19	IDACORP, Inc.	IDA	64.85	39.78	1.63	38.85	40.70	70.50	59.20
20	NextEra Energy, Inc.	NEE	105.05	46.83	2.24	44.96	48.70	112.60	97.50
21	NorthWestern Corp.	NWE	55.25	32.08	1.72	31.50	32.65	59.70	50.80
22	OGE Energy Corp.	OGE	32.80	16.69	1.97	16.27	17.10	36.50	29.10
23	Otter Tail Corp.	OTTR	29.75	15.72	1.89	15.39	16.05	33.40	26.10
24	PG&E Corp.	PCG	55.65	33.82	1.65	33.09	34.55	60.20	51.10
25	Pinnacle West	PNW	67.40	40.23	1.68	39.50	40.95	73.30	61.50
26	PNM Resources, Inc.	PNM	29.15	21.86	1.33	21.61	22.10	31.20	27.10
27	Portland General	POR	37.85	25.12	1.51	24.43	25.80	41.00	34.70
28	Public Serv. Enterprise	PEG	41.70	24.72	1.69	24.09	25.35	44.40	39.00
29	SCANA Corp.	SCG	58.45	36.50	1.60	34.95	38.05	65.60	51.30
30	Sempra Energy	SRE	110.40	46.89	2.35	45.98	47.80	116.20	104.60
31	Southern Co.	SO	48.15	22.29	2.16	21.98	22.60	53.20	43.10
32	TECO Energy	TE	20.10	11.03	1.82	10.96	11.10	22.00	18.20
33	Vectren Corp.	VVC	44.65	19.98	2.24	19.45	20.50	49.50	39.80
34	Westar Energy	WR	39.10	25.31	1.54	25.02	25.60	44.00	34.20
35	Xcel Energy	XEL	35.85	20.53	1.75	20.20	20.85	38.30	33.40
36									
37				Low	1.17				
38				High	2.55				
39				Midpoint	1.86				
40				Median	1.65				
41				Average	1.72				

(1) The proxy group is sourced from *Ass'n of Bus. Advocating Tariff Equity et al. v. Midcontinent Indep. System Operator, Inc.* et al.,
Docket No. EL14-12-002, Cross-Answering Testimony of William E. Avera, PH.D., CFA, Exhibit No. MTO-31.
(2) In line with the Commission's preliminary application of its proposed framework, Dominion and ITC were both removed
from this exhibit. Please refer to the *Ass'n of Bus. Advocating Tariff Equity et al. v. Midcontinent Indep. System Operator, Inc. et al.* ,
165 FERC ¶ 61,118 (November 15, 2018) at P 55 and 57.
(3) Data from Value Line Reports Dated May 1, May 22, and June 19, 2015.

Exhibit No. CIT-0005

Alternative High-End Outlier Test

Alternative High-End Outlier Test
Docket No. PL19-4-000

Mac Mathuna Modifications to
Exhibit No. MTO-31

EXPECTED EARNINGS APPROACH (PROSPECTIVE)

NATIONAL GROUP

	Company	(a) Expected Return on Common Equity	(b) Mid-Year Adjustment Factor	(c) Adjusted Return on Common Equity	(d) Applying Commission Proposed High-End Outlier Test	(e) Applying Alternative High-End Outlier Test
1	ALLETE	9.50%	1.0240	9.73%	9.73%	9.73%
2	Alliant Energy	12.00%	1.0113	12.14%	12.14%	12.14%
3	Ameren Corp.	9.50%	1.0238	9.73%	9.73%	9.73%
4	American Elec Pwr	10.50%	1.0198	10.71%	10.71%	10.71%
5	Avista Corp.	9.00%	1.0170	9.15%	9.15%	9.15%
6	Black Hills Corp.	8.50%	1.0205	8.67%	8.67%	8.67%
7	CenterPoint Energy	12.50%	1.0182	12.73%	12.73%	12.73%
8	CMS Energy Corp.	13.50%	1.0329	13.94%	13.94%	13.94%
9	Consolidated Edison	9.00%	1.0161	9.14%	9.14%	9.14%
10	Dominion Resources	17.50%	1.0421	18.24%	18.24%	18.24%
11	DTE Energy Co.	10.00%	1.0310	10.31%	10.31%	10.31%
12	Duke Energy Corp.	8.00%	1.0095	8.08%	8.08%	8.08%
13	Edison International	11.50%	1.0274	11.81%	11.81%	11.81%
14	El Paso Electric	9.00%	1.0212	9.19%	9.19%	9.19%
15	Empire District Elec	8.50%	1.0205	8.67%	8.67%	8.67%
16	Entergy Corp.	9.00%	1.0165	9.15%	9.15%	9.15%
17	Eversource Energy	10.00%	1.0210	10.21%	10.21%	10.21%
18	FirstEnergy Corp.	8.50%	1.0220	8.69%	8.69%	8.69%
19	Great Plains Energy	7.50%	1.0149	7.61%	7.61%	7.61%
20	IDACORP, Inc.	8.50%	1.0199	8.67%	8.67%	8.67%
21	ITC Holdings Corp.	15.50%	1.0561	16.37%	16.37%	16.37%
22	NextEra Energy, Inc.	12.00%	1.0367	12.44%	12.44%	12.44%
23	NorthWestern Corp.	10.00%	1.0200	10.20%	10.20%	10.20%
24	OGE Energy Corp.	11.00%	1.0237	11.26%	11.26%	11.26%
25	Otter Tail Corp.	13.00%	1.0281	13.37%	13.37%	13.37%
26	PG&E Corp.	9.50%	1.0301	9.79%	9.79%	9.79%
27	Pinnacle West Capital	9.50%	1.0247	9.73%	9.73%	9.73%
28	PNM Resources	9.50%	1.0169	9.66%	9.66%	9.66%
29	Portland General Elec.	9.00%	1.0357	9.32%	9.32%	9.32%
30	Pub Sv Enterprise Grp	10.50%	1.0232	10.74%	10.74%	10.74%
31	SCANA Corp.	9.50%	1.0306	9.79%	9.79%	9.79%
32	Sempra Energy	12.50%	1.0268	12.84%	12.84%	12.84%
33	Southern Company	13.50%	1.0171	13.73%	13.73%	13.73%
34	TECO Energy	11.00%	1.0135	11.15%	11.15%	11.15%
35	Vectren Corp.	15.00%	1.0139	15.21%	15.21%	15.21%
36	Westar Energy	9.50%	1.0128	9.62%	9.62%	9.62%
37	Xcel Energy Inc.	10.00%	1.0215	10.22%	10.22%	10.22%

Range of Reasonableness

	Low			7.61%	7.61%	7.61%
	High			18.24%	18.24%	18.24%
	Midpoint			12.92%	12.92%	12.92%
	Median			10.20%	10.20%	10.20%

Adjusted Range of Reasonableness (eliminates highlighted values)

	Low			7.61%	7.61%	7.61%
	High			16.37%	15.21%	13.94%
	Midpoint			11.99%	11.41%	10.78%
	Median			9.99%	9.79%	9.79%

Commission High-End Test

Median of Full Array Times 1.5		15.30%

2 Standard Deviation High-End Test

Median		10.20%
Standard Deviation		2.34%
Upper Limit		14.88%

(a) The Value Line Investment Survey (Mar. 20, May 1, & May 22, 2015).
(b) Computed using the formula 2*(1+5-Yr. Change in Equity)/(2+5 Yr. Change in Equity).
(c) (a) x (b).
Data Source: *Association of Businesses Advocating Tariff Equity, et al* ., Docket No. EL14-12-002, Cross-Answering Testimony of William E. Avera, PH.D., CFA, Exhibit No. MTO-31.

Exhibit No. CIT-0006

Natural Break Standard Analysis

Natural Break Standard Analysis
Docket No. PL19-4-000

Mac Mathuna Modifications to
Exhibit No. MTO-31

EXPECTED EARNINGS APPROACH (PROSPECTIVE)

NATIONAL GROUP

	Company	(a) Expected Return on Common Equity	(b) Mid-Year Adjustment Factor	(c) Adjusted Return on Common Equity	(d) Applying Commission Proposed High-End Outlier Test	(e) Applying Recommended Natural Break Standard
1	ALLETE	9.50%	1.0240	9.73%	9.73%	9.73%
2	Alliant Energy	12.00%	1.0113	12.14%	12.14%	12.14%
3	Ameren Corp.	9.50%	1.0238	9.73%	9.73%	9.73%
4	American Elec Pwr	10.50%	1.0198	10.71%	10.71%	10.71%
5	Avista Corp.	9.00%	1.0170	9.15%	9.15%	9.15%
6	Black Hills Corp.	8.50%	1.0205	8.67%	8.67%	8.67%
7	CenterPoint Energy	12.50%	1.0182	12.73%	12.73%	12.73%
8	CMS Energy Corp.	13.50%	1.0329	13.94%	13.94%	13.94%
9	Consolidated Edison	9.00%	1.0161	9.14%	9.14%	9.14%
10	Dominion Resources	17.50%	1.0421	18.24%	18.24%	18.24%
11	DTE Energy Co.	10.00%	1.0310	10.31%	10.31%	10.31%
12	Duke Energy Corp.	8.00%	1.0095	8.08%	8.08%	8.08%
13	Edison International	11.50%	1.0274	11.81%	11.81%	11.81%
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15	Empire District Elec	8.50%	1.0205	8.67%	8.67%	8.67%
16	Entergy Corp.	9.00%	1.0165	9.15%	9.15%	9.15%
17	Eversource Energy	10.00%	1.0210	10.21%	10.21%	10.21%
18	FirstEnergy Corp.	8.50%	1.0220	8.69%	8.69%	8.69%
19	Great Plains Energy	7.50%	1.0149	7.61%	7.61%	7.61%
20	IDACORP, Inc.	8.50%	1.0199	8.67%	8.67%	8.67%
21	ITC Holdings Corp.	15.50%	1.0561	16.37%	16.37%	16.37%
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25	Otter Tail Corp.	13.00%	1.0281	13.37%	13.37%	13.37%
26	PG&E Corp.	9.50%	1.0301	9.79%	9.79%	9.79%
27	Pinnacle West Capital	9.50%	1.0247	9.73%	9.73%	9.73%
28	PNM Resources	9.50%	1.0169	9.66%	9.66%	9.66%
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30	Pub Sv Enterprise Grp	10.50%	1.0232	10.74%	10.74%	10.74%
31	SCANA Corp.	9.50%	1.0306	9.79%	9.79%	9.79%
32	Sempra Energy	12.50%	1.0268	12.84%	12.84%	12.84%
33	Southern Company	13.50%	1.0171	13.73%	13.73%	13.73%
34	TECO Energy	11.00%	1.0135	11.15%	11.15%	11.15%
35	Vectren Corp.	15.00%	1.0139	15.21%	15.21%	15.21%
36	Westar Energy	9.50%	1.0128	9.62%	9.62%	9.62%
37	Xcel Energy Inc.	10.00%	1.0215	10.22%	10.22%	10.22%

Range of Reasonableness

	(c)	(d)	(e)
Low	7.61%	7.61%	7.61%
High	18.24%	18.24%	18.24%
Midpoint	12.92%	12.92%	12.92%
Median	10.20%	10.20%	10.20%

Adjusted Range of Reasonableness (eliminates highlighted values)

	(c)	(d)	(e)
Low	7.61%	7.61%	7.61%
High	16.37%	15.21%	13.94%
Midpoint	11.99%	11.41%	10.78%
Median	9.99%	9.79%	9.79%

Commission High-End Test
Median of Full Array Times 1.5 — 15.30%

Natural Break Standard
Subject Value — 15.21%

Part 1: Upper Limit Proximity Test
Distribution's Average Jump — 0.29%
One-Half of the Average Jump — 0.14%
Subject Value Delta to Upper Limit — 0.09%
Test Met: — YES

Part 2: Distance to Next Highest ROE Value
Three Times Average Jump — 0.86%
Subject Value Distance — 1.26%
Test Met: — YES

(a)   The Value Line Investment Survey (Mar. 20, May 1, & May 22, 2015).
(b)   Computed using the formula 2*(1+5-Yr. Change in Equity)/(2+5 Yr. Change in Equity).
(c)   (a) x (b).
Data Source: *Association of Businesses Advocating Tariff Equity, et al* ., Docket No. EL14-12-002, Cross-Answering Testimony of William E. Avera, PH.D., CFA, Exhibit No. MTO-31.