

Niagara Mohawk Power Corporation
d/b/a National Grid

PROCEEDING ON MOTION OF
THE COMMISSION AS TO THE
RATES, CHARGES, RULES AND
REGULATIONS OF NIAGARA
MOHAWK POWER CORPORATION
FOR ELECTRIC AND GAS
SERVICE

Testimony and Exhibits of:

Ann E. Bulkley
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nationalgrid

Before the Public Service Commission

NIAGARA MOHAWK POWER CORPORATION d/b/a National Grid

Direct Testimony

of

ANN E. BULKLEY

**(SENIOR VICE PRESIDENT OF
CONCENTRIC ENERGY ADVISORS, INC.)**

Dated: April 28, 2017

Testimony of Ann E. Bulkley

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Testimony of Ann E. Bulkley

1 **I. Introduction and Qualifications**

2 **Q. Please state your name, affiliation, and business address.**

3 A. My name is Ann E. Bulkley. I am a Senior Vice President of Concentric
4 Energy Advisors, Inc. (“Concentric”), located at 293 Boston Post Road
5 West, Suite 500, Marlborough, Massachusetts 01752.

6
7 **Q. On whose behalf are you submitting this Direct Testimony?**

8 A. I am submitting this Direct Testimony on behalf of Niagara Mohawk
9 Power Corporation d/b/a National Grid (“Niagara Mohawk” or the
10 “Company”), which is a wholly-owned subsidiary of National Grid USA
11 (“National Grid USA”). My Direct Testimony is part of the Company’s
12 rate case filing before the New York State Public Service Commission
13 (“Commission” or “PSC”).

14
15 **Q. Please describe your experience in the energy and utility industries.**

16 A. I have approximately 20 years of experience consulting to the energy
17 industry. I have advised numerous energy and utility clients on a wide
18 range of financial and economic issues with primary concentrations in
19 valuation and utility rate matters. Many of these assignments have
20 included the determination of the cost of capital for ratemaking and
21 valuation purposes. I have included my resume and a summary of
22 testimony that I have filed in other proceedings as Attachment A.

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1 **Q. Please describe Concentric’s activities in energy and utility**
2 **engagements.**

3 A. Concentric provides regulatory, financial, and economic advisory services
4 to many energy and utility clients across North America. Our regulatory,
5 economic, and market analysis services include: utility ratemaking and
6 regulatory advisory services; energy market assessments; market entry and
7 exit analysis; corporate and business unit strategy development; and
8 energy contract negotiations. Our financial advisory activities include:
9 merger, acquisition, and divestiture assignments; due diligence and
10 valuation assignments; project and corporate finance services; and
11 transaction support services. In addition, we provide litigation support
12 services on a wide range of financial and economic issues for clients
13 throughout North America.

14

15 **II. Purpose and Overview of Testimony**

16 **Q. What is the purpose of your Direct Testimony?**

17 A. The purpose of my Direct Testimony is to present evidence and provide a
18 recommendation for the Company’s cost of equity (sometimes referred to
19 as the return on equity or “ROE”) and capital structure for rate-setting
20 purposes for its electric and gas distribution utility operations. My
21 analysis and recommendations are supported by the data presented in
22 Exhibits __ (AEB-1) through __ (AEB-15) that were prepared or compiled
23 under my supervision and direction.

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1 **Q. Please provide a brief overview of the analyses that led to your ROE**
2 **recommendation.**

3 A. As discussed in more detail below, it is important to consider the results of
4 several analytical approaches in estimating the cost of equity. To establish
5 my ROE recommendation, I developed a proxy group of companies that
6 are combination electric and gas utilities that face investment risk
7 generally comparable to that of Niagara Mohawk. I developed a multi-
8 stage Discounted Cash Flow (“DCF”) model and two forms of the Capital
9 Asset Pricing Model (“CAPM”). I weighted the results of the two CAPM
10 analyses equally, and then, for an overall recommendation, I equally
11 weighted the averaged CAPM result and the multi-stage DCF analysis.

12
13 The use of a multi-stage DCF model and two forms of the CAPM is
14 consistent with the approach employed by the Commission in prior cases.
15 While my equal weighting of the DCF and CAPM results does not
16 conform to the weighting that has been used in proceedings before the
17 PSC in the past 20 years, I explain why placing less emphasis on the DCF
18 model at this time is consistent with the goals of the Recommended
19 Decision issued in the Generic Finance Proceeding.¹

¹ Case 91-M-0509 is the docket in which the ROE framework was established that the Commission has generally relied on in subsequent decisions since the issuance of the Recommended Decision in that proceeding.

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1 **Q. Please summarize the results of the ROE estimation models that you**
2 **considered in your analyses.**

3 A. As noted above, I considered the results of the multi-stage form of the
4 DCF model and two versions of the CAPM. The results of my analyses
5 are summarized in Table 1.
6

7 **Table 1: Summary of Analytical Results**²

	Low	Mean	High
Multi-Stage DCF	9.13%	9.34%	9.62%
Mean CAPM	10.14%	10.24%	10.45%
Mean ROE (50/50 weighting)	9.63%	9.79%	10.03%
FERC DCF Methodology	9.38%	9.64%	10.10%

8
9 The DCF results presented in Table 1 reflect the results of the models
10 using low, average and high growth rate assumptions. The range of results
11 for the CAPM is based on three interest rate scenarios, a historical
12 average, a six-quarter projection and a long-term projection. As discussed
13 in more detail in the remainder of my testimony, the DCF results have
14 been somewhat understated due to the relatively low dividend yields
15 experienced in recent market conditions. While it is difficult to adjust the
16 DCF model to reflect expected market conditions, the assumptions used in
17 the CAPM are adjusted to reflect projected interest rates over the rate
18 period. Therefore, because of the unsustainably low dividend yields,
19 investors' expectations of rising interest rates, and the flexibility of the
20 CAPM to be able to adjust for these changing market conditions, it is

² See Exhibit __ (AEB-1) and Exhibit __ (AEB-4).

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1 appropriate to weight the results of the DCF and CAPM models equally.

2

3 **Q. What are your conclusions regarding the appropriate cost of equity**
4 **for the Company?**

5 A. Based on the quantitative and qualitative analyses discussed throughout
6 my Direct Testimony, an equal weighting of the DCF and CAPM results,
7 and based on my assessment of the business and financial risks of Niagara
8 Mohawk relative to the proxy group, I conclude that the appropriate ROE
9 is within the range of 9.63 percent and 10.03 percent. The Company is
10 requesting an ROE of 9.79 percent, which is the mean result for the proxy
11 group when the DCF and CAPM analyses are equally weighted.

12

13 **Q. Please summarize your analysis of the appropriate ratemaking capital**
14 **structure for the Company.**

15 A. The Company's requested equity ratio of 48 percent is at the low end of
16 the range of actual equity ratios for the companies in my proxy group over
17 the last four years. Therefore, I conclude that the Company's requested
18 equity ratio is reasonable, if not conservative.

19

20 **Q. How is the remainder of your Direct Testimony organized?**

21 A. The remainder of my Direct Testimony is organized as follows:

22 Section III – Discusses the regulatory guidelines and financial
23 considerations pertinent to the development of the
24 cost of capital;

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- 1 Section IV – Briefly discusses the current and prospective
2 conditions in capital markets and the effect of those
3 conditions on the Company’s cost of equity;
- 4 Section V - Explains my selection of the proxy group of electric
5 and gas distribution utilities used to develop my
6 analytical results;
- 7 Section VI – Explains my analyses and the analytical bases for
8 my ROE recommendation;
- 9 Section VII – Summarizes the business and regulatory risks of
10 Niagara Mohawk relative to the proxy group
11 companies;
- 12 Section VIII – Provides an assessment of the Company’s proposed
13 capital structure;
- 14 Section IX – Provides an assessment of the effect of a multi-year
15 rate plan on the authorized ROE; and
- 16 Section X – Summarizes my conclusions and recommendations.
- 17

1 **III. Regulatory Guidelines and Financial Considerations**

2 **Q. Please describe the guiding principles to be used in establishing the**
3 **cost of capital for a regulated utility.**

4 A. The United States Supreme Court's precedent-setting *Hope* and *Bluefield*
5 cases established the standards for determining the reasonableness of a
6 utility's allowed ROE. Among the standards established by the Court in
7 those cases are:

8 (1) Comparable return standard: consistency with the returns on
9 equity investments in other businesses having similar or
10 comparable risks;

11 (2) Financial integrity standard: adequacy of the return to support
12 credit quality; and

13 (3) Capital attraction standard: adequacy of the return to provide
14 the company access to capital on reasonable terms.

15
16 The *Hope* decision is also based on an understanding that the means of
17 arriving at a fair return are not controlling, only that the end result leads to
18 just and reasonable rates.³

19
20 In summary, the authorized ROE should enable the Company to finance
21 capital expenditures at reasonable rates and maintain its financial
22 flexibility over the period during which rates are expected to remain in

³ *Federal Power Commission v. Hope Natural Gas Co.*, 320 U.S. 591 (1944) ("Hope"); *Bluefield Waterworks & Improvement Co., v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923) ("Bluefield").

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effect.

Q. How can the Commission assess whether the allowed ROE for Niagara Mohawk satisfies the Comparable Return Standard?

A. The best measure of whether the Commission's authorized ROE for Niagara Mohawk satisfies the comparable return standard is to compare it with the average authorized return on equity for electric and gas utilities in other jurisdictions from January 1, 2012 – February 28, 2017 as shown in Chart 1.

Chart 1: Authorized ROE – Electric and Gas Utilities – 2012-2017

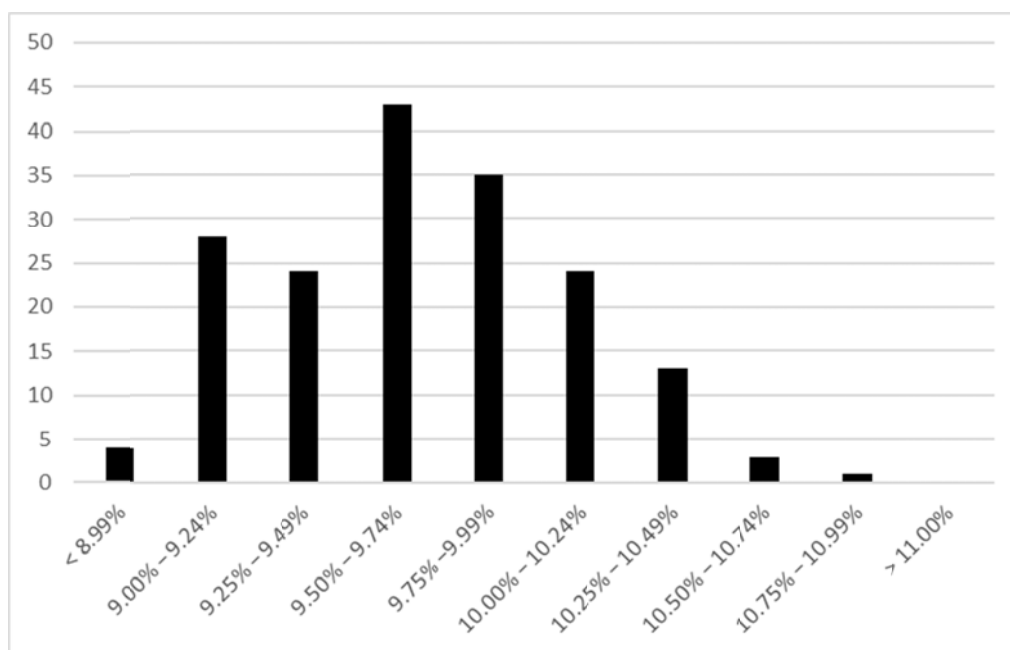


Chart 1 shows that the majority of the authorized ROEs during this period for electric and gas utilities nationwide have been within a range from 9.50 percent to 10.24 percent. The authorized ROEs in New York have been at the very low end of the returns authorized nationwide for electric

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1 and gas utilities in recent years. As discussed in more detail in Section
2 VII, there are no significant differences in the business, regulatory, and
3 financial risks of Niagara Mohawk (or other New York utilities) that
4 would account for the large differential in the authorized ROE as
5 compared with the nationwide range of returns.
6

7 **Q. Has the Commission conducted a proceeding to review the standard
8 for estimating the cost of equity for a regulated utility?**

9 A. Yes. On August 21, 1991, the PSC issued an Order establishing a
10 proceeding commonly referred to as the Generic Finance Proceeding
11 (“GFP”) to review the PSC’s then-current methodology for estimating the
12 cost of equity and to examine various alternatives.⁴
13

14 **Q. Why did the Commission initiate the GFP and what was its purpose?**

15 A. The GFP was initiated because the Commission recognized that the DCF
16 method was particularly sensitive to interest rate fluctuations and was
17 producing returns far below those of other methodologies.⁵ The
18 Commission’s goal in opening the GFP was to reduce controversy around
19 ROE calculations and to attempt to find common ground on contentious
20 issues by developing a consensus approach for setting utility equity
21 returns.

⁴ Case 91-M-0509, *Proceeding on Motion of the Commission to Consider Financial and Regulatory Policies for New York State Utilities*, Recommended Decision (issued July 19, 1994), at 2 (“GFP RD”).

⁵ *Id.*

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1
2 The Commission examined whether there should be greater consistency in
3 rate of return determinations from company to company, such that
4 differences in authorized returns could be directly attributed to differences
5 in risk between companies. In addition, the Commission examined
6 whether its historical primary reliance on the DCF method continued to
7 provide fair returns.⁶ The Commission's inquiry considered the merits of
8 a generic process to reduce redundancy in litigating equity returns, and
9 sought a robust, but standardized, approach to setting ROE such that
10 allowed returns would be commensurate with the risk of the individual
11 company and would not be skewed by the shortcomings of a single
12 methodology.

13
14 **Q. What conclusions were outlined in the GFP RD?**

15 A. Ultimately, the GFP RD concluded that the Commission should
16 implement a generic process for setting equity returns, based on proxy
17 groups (not company-specific data), and that sole reliance on the DCF
18 method should be replaced with a combination of the DCF and CAPM
19 methods. The GFP RD proposed, as a preferred convention, a respective
20 two-thirds – one-third weighting of the results of the DCF and CAPM
21 analyses. The GFP RD recognized that the CAPM “should figure
22 prominently in the analysis” because this methodology takes into account
23 fundamental information on interest rates and the returns required by

⁶ *Id.*, at 13-14.

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1 equity investors as a result of changes in interest rates. At that time, the
2 CAPM was not accorded the same level of prominence as the DCF
3 analysis, given that the former had previously been used only as a check.⁷
4

5 While the GFP RD recognized that there was a benefit to establishing an
6 “operating norm” with respect to weighting the results of the DCF and
7 CAPM methods in setting the ROE, it also recognized that there may be
8 good reason to either adjust the weightings of the DCF and CAPM
9 methods or to rely on different ROE estimation models. Specifically, the
10 GFP RD provided the following guidance:

11 In either an annual-proceeding to determine a rate of
12 return or in individual proceedings, the 2/3 DCF and
13 1/3 CAPM convention should be the presumption, but
14 as Multiple Intervenors suggests, parties would not be
15 barred from introducing new methods or different
16 weightings. Such parties, however, would have the
17 burden of convincing other parties and the
18 Commission of the relevance or superiority of their
19 proposals.⁸
20

21 To establish the “operating norm,” the GFP RD recommended specific
22 forms of the ROE estimation models – a two-stage DCF approach and a
23 Traditional and Zero Beta CAPM. Although the GFP RD was never
24 formally adopted by the Commission, it has served as a touchstone for the
25 Commission’s ROE determinations for the past 20 years.
26

⁷ *Id.*, at 27.

⁸ *Id.*

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1 **Q. Does your ROE analysis meet the intentions of the GFP RD?**

2 A. Yes. As discussed in greater detail in Section VI, the methodologies that I
3 have applied to estimate the cost of equity for Niagara Mohawk are
4 consistent with Commission precedent since the GFP RD. Moreover, the
5 models used in my analysis extend the principles advanced in the GFP RD
6 to best practices in financial analysis and current capital market
7 conditions, as was contemplated in the GFP RD.

8
9 Specifically, I rely on the weighted results of the DCF and CAPM
10 methods to estimate the return on equity for a proxy group of risk-
11 comparable companies. My multi-stage DCF model is consistent with the
12 methodology the Commission has relied on in that it allows growth rates
13 to vary over time. As discussed in more detail in Section VI, I have also
14 adjusted the multi-stage DCF model to rely on market measures of long-
15 term growth rather than the internal growth rate calculation that has
16 typically been relied on by the Department of Public Service Staff
17 (“Staff”). Consistent with the fundamental principles applied by the
18 Commission, I have applied two versions of the CAPM: Traditional and
19 Zero Beta. Finally, because of the effect of market conditions on the
20 assumptions used in the DCF model, I arrived at my ROE
21 recommendation by equally weighting the results of the DCF and CAPM
22 methods. The use of both the DCF and CAPM models in setting the ROE
23 is consistent with the principles of the GFP RD and the Commission’s

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1 precedent.

2

3 **Q. Do the principles and intentions of the GFP RD require adherence to**
4 **a static formula?**

5 A. No. The GFP RD did not require rote adherence to a static formula. The
6 Commission's decision to open the GFP and the subsequent GFP RD
7 promoted the same principles and intentions as are in practice today. The
8 Commission recognized that the DCF model was not providing reasonable
9 results compared with other methodologies due to conditions in financial
10 markets. Further, the results were not reflective of the risks of the
11 individual companies involved in rate proceedings. Therefore, the
12 Commission sought to re-examine the methodologies relied on and to
13 restructure the process to achieve a more reasonable result.

14

15 The GFP RD recognized the benefit of using multiple approaches for
16 setting ROE. Although it found benefits to a preferred convention for
17 setting ROE, it did not prohibit parties from introducing new cost of
18 capital estimation methods or weightings. The GFP RD specifically
19 recognized that there may be circumstances where departures from the
20 weightings that were established at that time would be warranted, and that
21 it may be reasonable to consider the results of other methodologies.

22

23 Capital market conditions vary widely over time, and each ROE

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1 methodology (*e.g.*, DCF and CAPM) may be affected differently by those
2 conditions. The effect of these conditions on the cost of equity must be
3 assessed and interpreted by the analyst. Accordingly, it is incumbent on
4 the analyst to review the results of the analyses and exercise judgment as
5 to how to weight those results in the overall ROE determination. The GFP
6 RD demonstrates that there was some uncertainty around the weighting of
7 the DCF and CAPM methods, and the GFP RD indicates a willingness to
8 revisit the proposed weightings in the future.

9
10 **Q. Has the Commission continued to consider modifications to its**
11 **regulatory approach as industry and market conditions have**
12 **changed?**

13 A. Yes, it has. For example, in its current New York Reforming the Energy
14 Vision (“NY REV”) docket, Case 14-M-0101, the Commission is
15 considering ways to update the traditional utility regulatory model with
16 new, innovative approaches suitable to current industry circumstances.
17 Likewise, it is equally appropriate for the Commission to consider whether
18 the methodologies and weightings used to estimate the cost of equity
19 continue to satisfy the intent and principles of the GFP RD under current
20 capital market conditions and whether the returns produced by those
21 methodologies and weightings meet the requirements of *Hope* and
22 *Bluefield*.

23

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1 **Q. Has the Commission demonstrated flexibility in modifying the inputs**
2 **and assumptions to the financial models used to estimate the cost of**
3 **equity as market conditions change?**

4 A. Yes, it has. For example, in its decision in Case 06-E-1433, the
5 Commission changed its calculation of the market return used in the
6 estimation of the market risk premium in the CAPM. Specifically, the
7 Commission recognized that historical returns published by Ibbotson were
8 stale and less reliable and therefore began relying on projected returns
9 published by Merrill Lynch. In that same case, the Commission
10 recognized that six-month average stock prices could be “stale.”⁹
11 Currently, the Commission’s methodology relies on three-month average
12 stock prices. These types of changes demonstrate that the Commission
13 has been willing to consider modifications to the ROE estimation
14 methodology to reflect current market conditions.

15
16 Finally, it is important to note that the Commission decision in Case 06-E-
17 1433 did not state that it would never consider changing the weights on
18 the ROE estimation methodologies. Rather, the Commission’s conclusion
19 at that time, nearly ten years ago, was that it was “not *now* inclined to
20 deviate from our long-held view that the CAPM should not be entitled to

⁹ Case 06-E-1433 *et al.*, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Orange and Rockland Utilities, Inc. for Electric Service*, “Order Setting Permanent Rates Reconciling Overpayments During Temporary Rate Period, and Establishing Disposition of Property Tax Refunds,” at 14 (Issued and Effective October 18, 2007).

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1 more than one-third of the weight.”¹⁰ The Commission explicitly left open
2 the possibility that there could be a point in the future when it would be
3 appropriate to consider such a change.

4
5 **Q. What was Staff’s position in the GFP regarding the reasonableness of**
6 **the traditional DCF analysis?**

7 A. In the GFP, Staff recognized that the volatility in the Commission’s
8 returns was related to reliance on the DCF model and that the DCF
9 analysis produced lower returns when stocks are selling above book value.

10 Specifically, the GFP RD noted:

11 Staff, too, contends that the volatility of the
12 Commission’s returns over past periods justifies
13 relying on a multi-method approach. Staff argues that
14 reliance on traditional DCF analysis produces
15 reasonable results over time, *but that at any specific*
16 *time it could produce (and in the past has produced)*
17 *inconsistent results*. Further, staff says that the DCF
18 approach tends to produce returns higher than
19 necessary when stocks are selling below book and
20 lower than necessary when stocks are selling above
21 book. *In staff’s view, DCF-based results are in no way*
22 *superior to those obtained using other methods, even*
23 *though the DCF, on average, has been unbiased over*
24 *time.*¹¹
25

¹⁰ *Id.*, at 15 (emphasis added).

¹¹ GFP RD, at 25 (emphasis added).

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1 **Q. Has Staff acknowledged in recent rate case proceedings that the DCF**
2 **model may not be producing reasonable results under current market**
3 **conditions?**

4 A. Yes. For example, in Case 16-G-0369, the Staff Finance Panel explained
5 that recent market conditions such as Britain's exit from the European
6 Union as well as longer-term market conditions, such as the Federal
7 Reserve's decision to "go slow" in raising interest rates have resulted in an
8 increase in the price of utility stocks, as investors search for safe
9 investments.¹² Staff recognized that these conditions have affected the
10 ROE estimation models, and proposed that the Commission address this
11 issue by moving from reliance on the midpoint result of the DCF analysis
12 to the average DCF result. In addition, Staff offered the Commission three
13 additional options for estimating the ROE:¹³ 1) do not update the analysis
14 from the March 2016 data, due to current market distortions; 2) adjust the
15 averaging period to rely on a longer period of historical data, and 3) rely
16 on a construct similar to the FERC methodology for estimating the ROE.

17
18 While this testimony demonstrates that Staff recognizes the effect of
19 market conditions on the results of the DCF model, the adjustments
20 proposed by Staff do nothing to better reflect the projected market
21 conditions because Staff continues to rely on the same weighting of the

¹² See Prepared Testimony of Staff Finance Panel, at 54-55 in Case 16-G-0369, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Corning Natural Gas Corporation for Gas Service*.

¹³ *Id.*, at 55-59.

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1 results from a DCF approach that Staff readily admits may be broken, and
2 does not account for investors' expectations of rising interest rates in the
3 CAPM analysis.

4
5 **Q. Why do you believe that current conditions in capital markets**
6 **support reconsideration of the weight placed on the DCF and CAPM**
7 **methodologies?**

8 A. When the GFP RD was issued in 1994, one of the primary concerns
9 identified by the Commission was that the low interest rate environment
10 was causing the DCF model to understate investors' return requirements.¹⁴
11 The Commission also noted that there was nothing sacrosanct about the
12 DCF return on equity analysis.¹⁵ The average daily yield on 30-year
13 Treasury bonds in 1991 was 8.14 percent, whereas the average daily yield
14 on 30-year Treasuries in 2016 was 2.60 percent. The extraordinarily low
15 interest rate environment today should do nothing to alleviate the
16 Commission's concerns about how the results of DCF model are being
17 affected by low interest rates. On the contrary, if the interest rate
18 environment in 1991 was sufficient reason for the GFP RD to conclude
19 that placing one-third weight on the CAPM results was appropriate, then
20 the current interest rate environment should provide sufficient basis for the
21 Commission to conclude that the weighting of the DCF and CAPM
22 methodologies should be modified in this case.

¹⁴ GFP RD at 28-29.1994 N.Y. PUC Lexis 141, *37.

¹⁵ *Id.*

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1 **Q. Why is flexibility of approach and informed judgment important to**
2 **ROE determination?**

3 A. When faced with the task of estimating the cost of equity, analysts benefit
4 from gathering and evaluating as much relevant data (both quantitative
5 and qualitative) as can be reasonably analyzed. Analysts and academics
6 understand that ROE models are tools to be used in the ROE estimation
7 process, and that strict adherence to any single approach, or the specific
8 results of any single approach, can lead to flawed conclusions. No model
9 can exactly pinpoint the correct return on equity; rather, each model brings
10 its own perspective and set of inputs that inform the ROE estimate. Recall
11 the *Hope* finding that “[u]nder the statutory standard of ‘just and
12 reasonable,’ it is the result reached, not the method employed, which is
13 controlling.”¹⁶

14
15 Although each model brings a different perspective, each model also has
16 its own inherent weaknesses and should not be relied upon individually
17 without corroboration from other approaches. Changes to assumptions as
18 a result of changes in economic conditions could have widely different
19 impacts on the results of the various analyses. Regardless of which
20 analyses are performed to estimate the investor’s required ROE, the
21 analyst must apply informed judgment to assess the reasonableness of
22 results and to determine the best weighting to apply under prevailing
23 capital market conditions. No one model can reliably and consistently

¹⁶ *Hope*, 320 U.S., at 602.

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1 estimate the cost of capital that meets the fairness standard of *Hope* and
2 *Bluefield* in all market conditions.

4 **IV. Capital Market Conditions**

5 **Q. Why is it important to analyze capital market conditions?**

6 A. The ROE estimation models rely on market data that are either specific to
7 the proxy group, in the case of the DCF model, or the expectations of
8 market risk, in the case of the CAPM. The results of the ROE estimation
9 models can be affected by prevailing market conditions at the time the
10 analysis is performed. While the ROE that is established in a rate
11 proceeding is intended to be forward-looking, the analyst uses current and
12 projected market data, specifically stock prices, dividends, growth rates
13 and interest rates in the ROE estimation models to estimate the required
14 return for the subject company. It is important to consider whether the
15 assumptions relied on in the current market or the projected data are
16 sustainable over the period that the recommended ROE would be in effect.
17 If investors do not expect current market conditions to be sustained in the
18 future, it is possible that the ROE estimation models will not provide an
19 accurate estimate of investors' required return during that rate period.

21 **Q. What factors are affecting the cost of equity for regulated utilities in** 22 **the current and prospective capital markets?**

23 A. The cost of equity for regulated utility companies is being affected by
24 several factors in the current and prospective capital markets, including:

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1 (1) the current low interest rate environment and the corresponding effect
2 on valuations and dividend yields of utility stocks relative to historical
3 levels; and (2) the market's expectation for higher interest rates. In this
4 section, I discuss each of these factors and how they affect the models
5 used to estimate the cost of equity for regulated utilities.
6

7 **Q. How has the Federal Reserve's monetary policy affected capital**
8 **markets in recent years?**

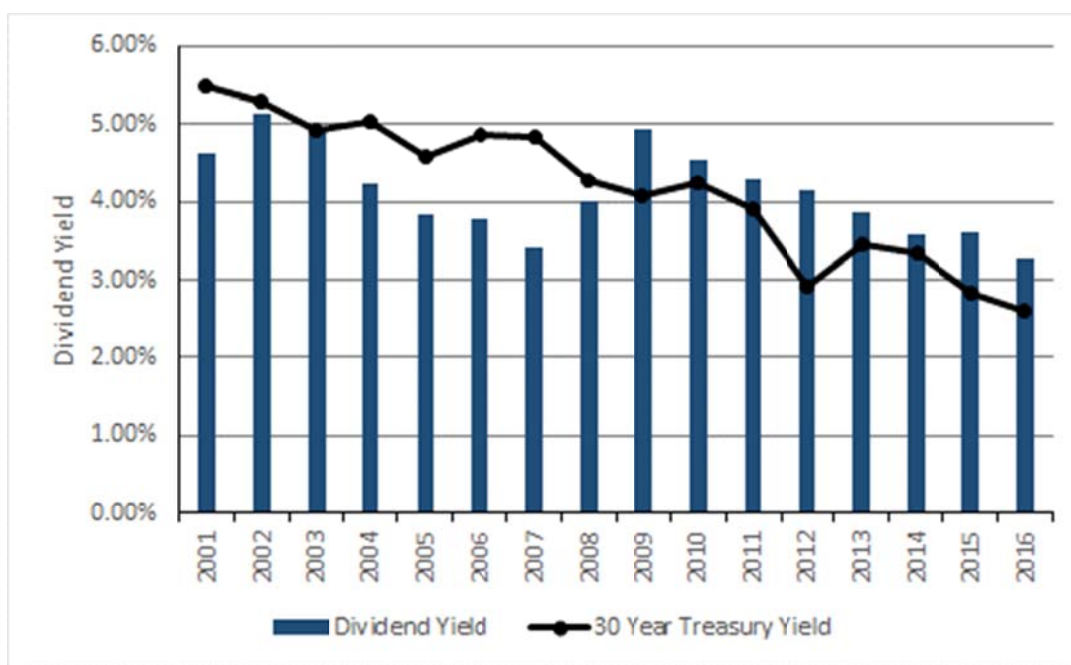
9 A. Extraordinary and persistent federal intervention in capital markets
10 artificially lowered government bond yields after the Great Recession of
11 2008-09, as the Federal Open Market Committee ("FOMC") used
12 monetary policy (both reductions in short-term interest rates and purchases
13 of Treasury bonds and mortgage-backed securities) to stimulate the U.S.
14 economy. As a result of very low or zero returns on short-term
15 government bonds, yield-seeking investors have been forced into longer-
16 term instruments, bidding up prices and reducing yields on those
17 investments. As investors have moved along the risk spectrum in search
18 of yields that meet their return requirements, there has been increased
19 demand for dividend-paying equities, such as gas and electric utility
20 stocks.
21

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1 **Q. How has the period of abnormally low interest rates affected the**
2 **valuations and dividend yields of utility shares?**

3 **A.** The Federal Reserve's accommodative monetary policy has caused
4 investors to seek alternatives to the historically low interest rates available
5 on Treasury bonds. As a result of this search for higher yield, the share
6 prices for many common stocks, especially dividend-paying stocks such as
7 utilities, have been driven higher while the dividend yields (which are
8 computed by dividing the dividend payment by the stock price) have
9 decreased to levels well below the historical average. As a result, as
10 shown in Chart 2, Treasury bond yields in 2007 were much higher when
11 dividend yields for utilities were at similar levels as they are today.

13 **Chart 2: Dividend Yields for Utility Stocks**



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1 **Q. How are higher stock valuations and lower dividend yields for utility**
2 **companies affecting the results of the DCF model?**

3 A. During periods of general economic and capital market stability, the DCF
4 model adequately reflects market conditions and investor expectations.
5 However, in the current market environment, the DCF model results are
6 distorted by the historically low level of interest rates and the higher
7 valuation of utility stocks. Value Line recently commented on the low
8 dividend yields and high valuations for electric utilities:

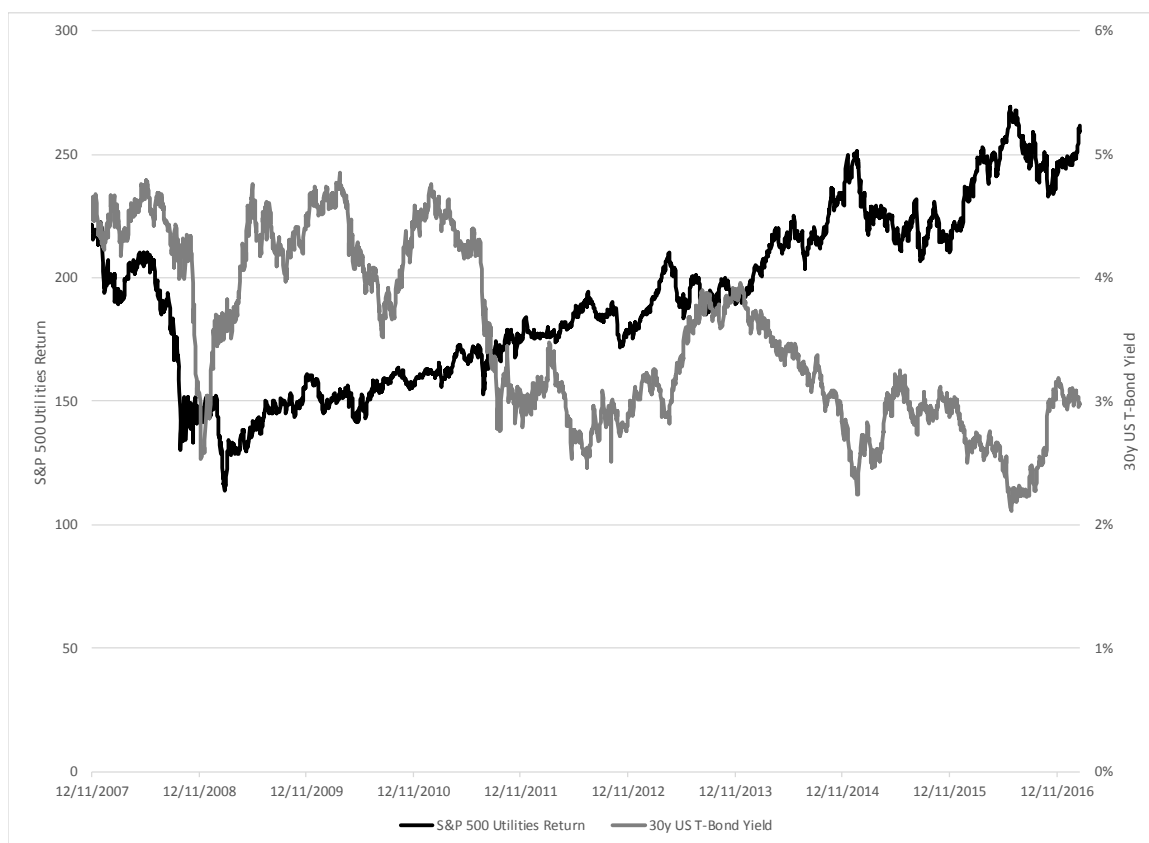
9 Electric utility stocks have underperformed the broader
10 market averages in the second half of 2016 as investors
11 have become more concerned about a possible hike in
12 interest rates by the Federal Reserve. Even after this
13 pullback, many issues have risen more than 10% this
14 year. A few have climbed more than 20%. With
15 interest rates so low and the return on cash close to
16 zero, income-oriented accounts have looked to stocks
17 with generous dividends, such as utilities. Most of the
18 stocks in this industry remain expensively priced, and
19 are trading within their 2019-2021 Target Price Range.
20 The average dividend yield for electric utility stocks is
21 just 3.7% - low by historical standards- and the group's
22 average 3- to 5-year total return potential is 5%.¹⁷
23

24 To assess how low interest rates are affecting the dividend yields for
25 utility stocks, I compared the Standard & Poor's ("S&P") Utilities index to
26 the yield on the 30-year Treasury bond since 2007. As shown in Chart 3,
27 the S&P Utilities index has increased steadily as yields on 30-year
28 Treasury bonds have declined in response to federal monetary policy.

¹⁷ Value Line Investment Survey, Electric Utility (Central) Industry, December 16, 2016, at 901.

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Chart 3: S&P Utilities Index and U.S. Treasury Bond Yields - 2007 – 2016



Q. What evidence is there that the Federal Reserve’s accommodative monetary policy has created and continues to create anomalous conditions in capital markets?

A. In recent statements, members of the Federal Reserve have acknowledged that monetary policy has created abnormal capital market conditions. One example is the Federal Reserve’s September 17, 2014 announcement of its plan to “normalize” monetary policy by, among other things, reducing its portfolio to minimize the effect of its holdings on “the allocation of credit

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1 across sectors of the economy.”¹⁸ In another example, Dr. Stanley
2 Fischer, Vice Chair of the Federal Reserve, in a March 2015 speech to the
3 Economics Club of New York further acknowledged the abnormal
4 economic conditions created by the actions of the Federal Reserve and
5 recognized the intentions of the Federal Reserve to return to normal
6 market dynamics:

7 Beginning the normalization of policy will be a
8 significant step toward the restoration of the
9 economy’s normal dynamics, allowing monetary
10 policy to respond to shocks without recourse to
11 unconventional tools.¹⁹
12

13 **Q. How have regulators in other jurisdictions recently responded to the**
14 **historically low dividend yields for utility companies and the**
15 **corresponding effect on the DCF model?**

16 A. Understanding the important role that dividend yields play in the DCF
17 model, the Federal Energy Regulatory Commission (“FERC”) recently
18 determined that anomalous capital market conditions have caused the DCF
19 model to understate equity costs for regulated utilities at this time. In
20 Opinion No. 531, the FERC noted:

¹⁸ Federal Open Market Committee, Policy Normalization Principles and Plans, September 16, 2014.

¹⁹ Remarks by Stanley Fischer, Vice Chairman of the Board of Governors of the Federal Reserve at the Economics Club of New York, March 23, 2015.

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1 There is ‘model risk’ associated with the excessive
2 reliance or mechanical application of a model when the
3 surrounding conditions are outside of the normal
4 range. ‘Model risk’ is the risk that a theoretical model
5 that is used to value real world transactions fails to
6 predict or represent the real phenomenon that is being
7 modeled.²⁰
8

9 In Opinion No. 531, the FERC noted that the low interest rates and bond
10 yields that persisted throughout the analytical period that was relied on
11 (study period) resulted in anomalous market conditions and recognized the
12 need to move away from the midpoint of the DCF analysis. In that case,
13 the FERC relied on the CAPM and other risk premium methodologies to
14 inform its judgment to set the return above the midpoint of the DCF
15 results.
16

17 In Opinion No. 551, which was issued in September 2016, the FERC
18 recognized that those conditions continued into the study period used in
19 that case for the purposes of setting the ROE and again concluded that it
20 was necessary to rely on other ROE estimation methodologies to set the
21 appropriate ROE.

²⁰ *Coakley et al. v. Bangor Hydro-Electric Co. et al.*, FERC Docket No. EL11-66-001, 147 FERC ¶ 61,234, Opinion No. 531, footnote 286 (2014).

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1 The record in this proceeding raises the same concerns
2 regarding capital market conditions that the
3 Commission identified in Opinion No. 531. Bond
4 yields remained at historically low levels during the
5 study period. For example, the yield on 10-year U.S.
6 Treasury bonds, which the Commission noted in
7 Opinion No. 531 was below two percent in that case
8 and had not been below three percent since the 1950's,
9 was at 2.07 percent during the study period. Also, the
10 yield on short-term U.S Treasury bonds was
11 historically low, ranging from zero to 0.25 percent.
12 Additionally, we note that, while the Federal Reserve
13 has ended the Quantitative Easing program under
14 which it was purchasing unprecedented levels of U.S.
15 Treasury bonds and mortgage-backed securities, the
16 Federal Reserve continues to hold approximately \$4.25
17 trillion of those bonds, a level only slightly below
18 recent record highs, and is reinvesting the principal
19 payments from those holdings to purchase
20 approximately \$16 billion of mortgage-backed
21 securities per month and rolling over the U.S. Treasury
22 bonds at auction. This record evidence is indicative of
23 the same type of unusual capital market conditions that
24 the Commission found concerning in Opinion No. 531.
25 Parties point out that certain capital market conditions
26 have changed since Opinion No. 531, including the
27 winding down of Quantitative Easing, the slight
28 increase in U.S. Treasury bond yields, the lower
29 unemployment rate, and strong stock market
30 performance. Though the Commission noted certain
31 economic conditions in Opinion No. 531, the principle
32 argument was based on low interest rates and bond
33 yields, conditions that persisted throughout the study
34 period. Consequently, we find that capital market
35 conditions are still anomalous as described above, and,
36 therefore, we disagree with Iowa Group's assertion
37 that there is not substantial evidence to justify a
38 potential adjustment.²¹

²¹ *Association of Businesses Advocating Tariff Equity et al. v. Midcontinent Independent System Operator et al.*, FERC Docket No. EL14-12-002, 156 FERC ¶ 61,234, Opinion No. 551, at para. 121 (2016).

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1 Because the evidence in this proceeding indicates that
2 capital markets continue to reflect the type of unusual
3 conditions that the Commission identified in Opinion
4 No 531, we remain concerned that a mechanical
5 application of the DCF methodology would result in a
6 return inconsistent with *Hope* and *Bluefield*. We
7 conclude that the fact that these conditions have
8 persisted over the approximately two years since the
9 end of the study period adopted in Opinion No. 531
10 does not, in and of itself, mean that these conditions
11 are not anomalous.²²

12 *****

13 As the Commission found in Opinion No. 531, under
14 these circumstances, we have less confidence that the
15 midpoint of the zone of reasonableness in this
16 proceeding accurately reflects the equity returns
17 necessary to meet the *Hope* and *Bluefield* capital
18 attraction standards. We therefore find it necessary
19 and reasonable to consider additional record evidence,
20 including evidence of alternative methodologies and
21 state-commission approved ROEs to gain insight into
22 the potential impacts of these unusual capital market
23 conditions on the appropriateness of using the resulting
24 midpoint.²³
25

26
27 **Q. Is there evidence that the interest rate environment is shifting?**

28 A. Yes, there is. Based on stronger conditions in employment markets, a
29 relatively stable inflation rate, steady economic growth, and increased
30 household spending, at the March 2017 meeting the Federal Reserve
31 raised the short term borrowing rate by 25 basis points for the third time
32 since December 2015, bringing the federal funds rate to the range of 0.75
33 percent to 1.00 percent. Going forward, as the economy continues to
34 expand, the Federal Reserve is expected to continue increasing short-term

²² *Id.*, at para. 122.

²³ *Id.*

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1 interest rates in order to sustain the desired balance between
2 unemployment and consumer price inflation.²⁴ The Federal Reserve has
3 indicated that it intends to raise short-term interest rates in 25 basis point
4 increments twice more in 2017 and three times in 2018.

5
6 **Q. What is the financial market's perspective on the future path of**
7 **interest rates?**

8 A. According to the March 2017 issue of Blue Chip Financial Forecasts, 97
9 percent of those surveyed expect the Federal Reserve will raise short-term
10 interest rates again at either the March, May or June meetings.²⁵ In
11 response to the question about how much they expect the Federal Reserve
12 will raise interest rates in 2017, 50 percent of those surveyed expect an
13 increase of 50 basis points, 32 percent expect an increase of 75 basis
14 points, and 14 percent expect an increase of 100 basis points.²⁶ Finally, in
15 response to the question about when the Federal Reserve will begin to
16 allow the size of its balance sheet to shrink, 79 percent of those surveyed
17 expect this to happen in the first or second half of 2018 and 9 percent
18 expect it will begin the second half of 2017.

19
20 **Q. What effect do rising interest rates have on the cost of equity?**

21 A. As interest rates continue to increase, the calculated cost of equity for the
22 proxy companies using the DCF model is likely to be a conservative

²⁴ FOMC, Federal Reserve press release, March 15, 2017.

²⁵ Blue Chip Financial Forecasts, Vol. 36, Issue No. 3, March 1, 2017.

²⁶ *Id.*

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1 estimate of investors' required return because the dividend yield is
2 calculated based on stock prices when interest rates were substantially
3 lower. As such, rising interest rates support the selection of a return
4 toward the upper end of a reasonable range of ROE estimates that are
5 based on current market data. Alternatively, my CAPM analyses include
6 estimated returns based on near-term projected interest rates.

7
8 **Q. What conclusions do you draw from your analysis of capital market**
9 **conditions?**

10 A. My main conclusion is that the currently low interest rate environment has
11 driven dividend yields to historically low levels. The effect of
12 accommodative monetary policy by the Federal Reserve is that the DCF
13 model, which relies on unsustainably low dividend yields, is understating
14 the forward-looking equity return requirements.²⁷ Therefore, it is
15 important to consider other alternative financial models, such as the
16 CAPM analyses, to provide a check on the reasonableness of the DCF
17 results. In addition, the Federal Reserve has indicated its intention to
18 move towards less accommodative monetary policy in 2017-2018. In
19 summary, market participants and analysts are expecting a change from
20 the recent low interest rate environment. Further, higher interest rates and
21 elevated credit spreads indicate that it is reasonable to believe that the cost
22 of capital for utilities such as Niagara Mohawk is increasing. Therefore,

²⁷ As the Federal Reserve tightens monetary policy and increases interest rates, it is likely utility dividend yields will increase.

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1 consistent with the FERC's approach, it is appropriate for the Commission
2 to also consider the results of Risk Premium based models such as the
3 CAPM in establishing the authorized ROE in this proceeding.
4

5 **V. Proxy Group Selection**

6 **Q. Why have you used a group of proxy companies to determine the cost**
7 **of equity for the Company?**

8 A. The focus of my Direct Testimony is on estimating the cost of equity for
9 Niagara Mohawk's rate-regulated electric and natural gas distribution
10 operations in New York. Because ROE is a market-based concept and
11 because Niagara Mohawk is not publicly-traded, it is necessary to
12 establish a group of companies that is both publicly-traded and
13 comparable to the Company in certain fundamental business and financial
14 respects to serve as the "proxy" in the ROE estimation process. The proxy
15 companies used in my analyses all possess a set of operating and business
16 risks that are substantially comparable to Niagara Mohawk and thus
17 provide a reasonable basis for the derivation and assessment of the
18 Company's ROE.
19

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1 **Q. Has the Commission also relied on proxy groups to estimate the cost**
2 **of equity for regulated utilities?**

3 A. Yes. Since the RD in the GFP,²⁸ the Commission has consistently
4 endorsed the use of proxy groups for the purpose of estimating the cost of
5 equity for regulated utilities. Because proxy companies are now
6 commonly used as the basis for estimating the utility cost of equity, the
7 primary objective of the screening process is to establish a group of
8 companies that is as comparable as possible to the Company with respect
9 to fundamental business and financial risks. The careful selection of a
10 risk-appropriate comparison group serves to mitigate the extent to which
11 subjective assessments must be applied.

12
13 **Q. Please provide a summary profile of the Company.**

14 A. Niagara Mohawk's business consists of its regulated electric and natural
15 gas distribution operations in New York State. Niagara Mohawk
16 distributes electricity to approximately 1.6 million retail customers and
17 natural gas to approximately 600,000 retail customers in upstate New
18 York.²⁹ Niagara Mohawk's long-term issuer ratings are A2 from Moody's
19 Investors Service ("Moody's") and A- from Standard and Poor's
20 ("S&P").³⁰

²⁸ GFP RD at 133-134.

²⁹ Source: Company website.

³⁰ Source: SNL Financial, accessed March 8, 2017.

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1 **Q. How did you select the companies in your proxy group?**

2 A. I began with the 43 companies that Value Line classifies as “Electric
3 Utilities,” and I simultaneously applied the following screening criteria to
4 establish a risk-comparable proxy group of companies that are
5 combination electric and gas utilities:

- 6 • To ensure that information regarding the proxy group companies is
7 consensus-based, I eliminated companies that are not covered by at
8 least two utility industry equity analysts;
- 9 • I eliminated companies that do not have investment grade
10 corporate credit ratings and/or senior unsecured bond ratings from
11 S&P or Moody’s because such companies do not have a similar
12 investment risk profile to that of the Company;
- 13 • I eliminated companies that have not paid regular cash dividends
14 or that have cut their dividend payment in the last three years and
15 companies that do not have positive earnings growth projections
16 from at least one source because such characteristics are
17 incompatible with the DCF model;
- 18 • To ensure that the proxy group consists of companies that are
19 primarily regulated utilities, I eliminated companies that derive
20 less than 70 percent of total operating income from regulated
21 utility operations;
- 22 • To ensure that the proxy group consists of entities with gas utility
23 operations, I eliminated companies that derive less than 10 percent

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of total operating income from regulated natural gas distribution operations; and

- I eliminated companies known to be party to a merger, acquisition, or other transformative transaction as such activities may have a temporary effect on such companies' stock prices and projections unrelated to the overall cost of capital.

Q. What is the composition of your proxy group?

A. My proxy group consists of the companies in Table 2.

Table 2: Proxy Group

Company	Ticker
Ameren Corporation	AEE
Avista Corporation	AVA
Black Hills Corporation	BKH
CenterPoint Energy, Inc.	CNP
CMS Energy Corporation	CMS
Consolidated Edison, Inc.	ED
DTE Energy Company	DTE
Northwestern Corporation	NWE
SCANA Corporation	SCG
Sempra Energy	SRE
Vectren Corporation	VVC
Wisconsin Energy Corporation	WEC
Xcel Energy Inc.	XEL

Q. Do you believe that your proxy group is sufficiently large?

A. Yes. The analyses performed in estimating the ROE are more likely to be representative of the subject utility's cost of equity to the extent that the proxy companies are fundamentally comparable to the subject utility.

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1 Because all analysts use some form of screening process to arrive at a
2 proxy group, the group, by definition, is not randomly drawn from a larger
3 population. Consequently, there is no reason to place more reliance on the
4 results of a larger and more dissimilar proxy group simply by virtue of the
5 larger number of observations.

6
7 **Q. Why have you screened based on net operating income rather than**
8 **revenue?**

9 A. The percentage of net operating income derived from regulated operations
10 is more representative of the contribution of that business segment to
11 earnings and the corporation's overall financial position than is revenue.
12 Earnings is the most important factor that investors consider in
13 establishing return requirements and making buy/sell decisions.
14 Furthermore, a significant portion of electric and gas utility company
15 revenue is derived from the costs of purchased fuel, purchased power and
16 purchased gas, which, in most cases, are passed through directly to
17 customers and do not affect earnings. This portion of total revenue can
18 fluctuate considerably based on the commodity cost and other inputs.
19 Relying exclusively on a revenue screen does not provide a clear or
20 necessarily consistent indicator of the contribution of the regulated utility
21 operations to a company's earnings. Net operating income excludes the
22 cost of purchased commodity and therefore more closely represents the
23 contribution of the business segment to earnings.

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1 **Q. Has the Commission typically relied on similar screening criteria to**
2 **develop a proxy group for purposes of estimating the ROE?**

3 A. Yes. The Commission has generally relied on screening criteria similar to
4 those that I used to develop my proxy group. The Commission's proxy
5 group is typically composed of a large group of dividend-paying
6 companies with investment grade bond ratings and regulated revenues of
7 at least 70 percent that are not engaged in merger-related or corporate
8 restructuring activities.³¹ For the reasons noted above, these somewhat
9 less selective criteria may result in a proxy group that is less comparable
10 to Niagara Mohawk than the proxy group I have relied on, and therefore
11 may not produce risk-comparable estimates of the cost of equity.

12

13 **VI. Cost of Equity Estimation**

14 **Q. Please briefly discuss the ROE in the context of the regulated Rate of**
15 **Return.**

16 A. The rate of return ("ROR") for a regulated utility is based on its weighted
17 average cost of capital, in which the costs of the individual sources of
18 capital are weighted by their respective percentages of total capitalization
19 of the utility. The ROE included in the ROR is weighted by the
20 percentage of common equity in the regulated utility's capital structure.

21

³¹ See, e.g., Case 13-E-0030, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service*, Testimony of Craig E. Henry, at 14-16.

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1 **Q. How is the required ROE determined?**

2 A. While the cost of debt can be directly observed, the cost of equity and the
3 required ROE are market-based and, therefore, must be estimated based on
4 observable market data. The required ROE is determined by using
5 analytical techniques that rely on market data to quantify investor
6 expectations regarding the range of required equity returns. Informed
7 judgment is applied, based on the results of those analyses, to determine
8 where within the range of results the cost of equity for a company falls.
9 The key consideration in determining the cost of equity is to ensure that
10 the methodologies employed reasonably reflect investors' views of the
11 financial markets, the proxy group companies, and the subject company's
12 risk profile.

13

14 **Q. What methods did you use to determine the Company's cost of**
15 **equity?**

16 A. Consistent with Commission precedent, I used the multi-stage DCF model
17 and two forms of the CAPM as the primary approaches. I also considered
18 the results of the Bond Yield Plus Risk Premium analysis, as well as
19 authorized returns in other jurisdictions as a check on the reasonableness
20 of my DCF and CAPM results. In establishing my recommended ROE, I
21 relied on a multi-stage form of the DCF model, and, consistent with the
22 Commission's stated preference, I used both the traditional and Zero-beta

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1 forms of the CAPM. In both forms of the CAPM, I incorporated a
2 forward-looking measure of the Market Risk Premium.

3

4 **Q. Why is it important to use more than one analytical approach?**

5 A. The cost of equity is not directly observable, so it must be estimated based
6 on both quantitative and qualitative information. A number of financial
7 models have been developed for purposes of estimating the cost of equity,
8 and each model has inherent strengths and weaknesses. Because all of the
9 models for estimating the cost of equity are subject to limiting
10 assumptions or other methodological constraints, many finance texts
11 recommend using multiple approaches. For example, Copeland, Koller,
12 and Murrin³² suggest using the CAPM and Arbitrage Pricing Theory
13 model, while Brigham and Gapenski³³ recommend the CAPM, DCF, and
14 “bond yield plus risk premium” approaches.

15

16 **Q. How are current market conditions affecting the results of the DCF**
17 **and CAPM models?**

18 A. As discussed in Section IV, there is concern that “anomalous market
19 conditions” (*i.e.*, low Treasury bond yields) are causing utility stocks to be
20 overvalued, thereby reducing the dividend yields in the DCF model.
21 Consequently, the results of the DCF model are understating the forward-

³² Tom Copeland, Tim Koller and Jack Murrin, Valuation: Measuring and Managing the Value of Companies, 3rd Ed. (New York: McKinsey & Company, Inc., 2000), at 214.

³³ Eugene Brigham, Louis Gapenski, Financial Management: Theory and Practice, 7th Ed. (Orlando: Dryden Press, 1994), at 341.

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1 looking cost of equity. The CAPM method offers some balance to the
2 sensitivity of the DCF model to low Treasury bond yields because the
3 CAPM can consider projected yields on Treasury bonds, and a forward-
4 looking computation of the expected return on the total market less the
5 risk-free rate. Risk-free rates based on historical average yields on
6 Treasury bonds or market risk premiums based on long-term historical
7 averages are unresponsive to movements in interest rates and would likely
8 understate the market risk premium and, accordingly, the cost of equity.

9
10 **Q. What are your conclusions about the results of the DCF and CAPM**
11 **models?**

12 A. The results of both models have been affected by market conditions and,
13 with traditional data inputs, have a tendency to underestimate the current
14 cost of equity. The DCF model is less reliable in current market
15 conditions because dividend yields for utilities are low and not expected to
16 remain at current levels. The CAPM is affected by the current artificially
17 low yields on Treasury bonds. The use of projected yields on Treasury
18 bonds in the CAPM produces returns that are more reflective of the market
19 conditions that investors expect during the period that the Company's rates
20 will be in effect. Therefore, properly specified, the CAPM is a more
21 reliable model in current market conditions than the DCF. Given the
22 sensitivity of each of these models to market conditions, it is appropriate
23 to equally weight the results of the DCF and CAPM models at this time.

1 A. Discounted Cash Flow Model

3 A. The DCF approach is based on the theory that a stock's current market
4 price represents the present value of all expected future cash flows. In its
5 most general form, the DCF model is expressed as follows:

Where P_0 represents the current market stock price, $D_1 \dots D_n$ are all expected future dividends, and r is the discount rate, or required ROE. As discussed below, I have not included the constant growth form of the DCF model, but instead have focused on a multi-stage form of the DCF model.

12 **Q. Please generally describe the DCF model you relied on.**

20

A. The multi-stage DCF model that I have used sets the proxy company's current stock price equal to the present value of future cash flows received

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1 over three time periods. In all three periods, cash flows are equal to the
2 annual dividend payments that stockholders receive. The first period is a
3 short-term growth period that consists of the first five years; the second
4 period is a transition period from the short-term growth rate to the long-
5 term growth rate that occurs over five years (*i.e.*, years six through 10);
6 and the third period is a long-term growth period that begins in year 11
7 and continues in perpetuity. The ROE is then calculated as the rate of
8 return that results from the initial stock investment and the dividend
9 payments over the analytical period.

10

11 **Q. Has the Commission relied on a multi-stage DCF model in prior**
12 **cases?**

13 A. Yes, the Commission has relied on a two-stage form of the DCF model in
14 prior cases.³⁴ The two-stage model that the Commission has relied on and
15 the multi-stage model that I rely on both define the cost of equity as the
16 discount rate that sets the current stock price equal to the discounted value
17 of future cash flows that are expressed as projected dividends. Both
18 models project dividends using growth rates over multiple periods.

19

³⁴ See Case 10-E-0362, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Orange and Rockland Utilities, Inc. for Electric Service*, “Order Establishing Rates for Electric Service,” (issued June 17, 2011) (“2011 O&R Rate Order”), at 68-69.

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1 **Q. Is the multi-stage form of the DCF model consistent with the intent of**
2 **the two-stage model relied upon by the Commission?**

3 A. Yes. Both the construction of the multi-stage model and the underlying
4 assumptions are consistent with the two-stage model relied upon by the
5 Commission. The constant growth DCF model assumes the expected
6 growth rate will be constant in perpetuity. The multi-stage forms of the
7 DCF model, including both the two-stage model that the Commission has
8 relied upon and the multi-stage form of the model that is relied on in my
9 analysis, recognize short and long-term growth prospects.

10

11 **Q. Does the multi-stage form of the DCF model offer improvements over**
12 **the two-stage model traditionally relied upon by the Commission?**

13 A. Yes. The general form of the two-stage model relied upon by the
14 Commission involves a near-term growth stage based on projected
15 dividends and a long-term growth stage employing an estimated long-term
16 growth rate in dividends.³⁵ The Commission's application of a two-stage
17 DCF assumes that a company's growth abruptly shifts to a long-run

³⁵ See, e.g., Case 10-E-0362, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Orange and Rockland Utilities, Inc. for Electric Service*, "Order Establishing Rates for Electric Service" (Issued and Effective June 17, 2011); Case 06-E-1433 *et al.*, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Orange and Rockland Utilities, Inc. for Electric Service*, "Order Setting Permanent Rates, Reconciling Overpayments During Temporary Rate Period, and Establishing Disposition of Property Tax Refunds" (Issued and Effective October 17, 2007); and Case 08-E-0539 *et al.*, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service*, "Order Setting Electric Rates" (Issued and Effective April 24, 2009).

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1 growth state after the initial five-year period. In contrast, the multi-stage
2 model relies on growth rates over three periods, as described above. The
3 multi-stage form of the DCF model provides for a gradual transition to a
4 company's expected long-term growth, whereas the two-stage DCF model
5 assumes the transition from short to long-term growth occurs in one year.
6

7 **Q. What market data did you use to calculate the current stock price in**
8 **your DCF model?**

9 A. The stock prices that I relied on in my DCF model are based on the
10 average market closing prices for the proxy companies' shares over the
11 three months ended February 28, 2017.
12

13 **Q. What growth rates did you rely on in the multi-stage DCF model?**

14 A. As shown in Exhibit __ (AEB-1), I began with the current annualized
15 dividend as of February 28, 2017 for each proxy group company. In the
16 first stage of the model, the current annualized dividend is escalated based
17 on the average of the three-to five-year earnings growth estimates reported
18 by First Call, Zacks, and Value Line. For the third stage of the model, I
19 relied on long-term projected growth in Gross Domestic Product ("GDP").
20 The second stage growth rate is a transition from the first stage growth
21 rate to the long-term growth rate on a geometric average basis.
22

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1 **Q. Why do you believe that earnings growth rates are the appropriate**
2 **growth rates to be relied on in the DCF model?**

3 A. Earnings are the fundamental driver of a company's ability to pay
4 dividends; therefore, earnings growth is the appropriate measure of a
5 company's long-term growth. In contrast, changes in a company's
6 dividend payments are based on management decisions related to cash
7 management and other factors. For example, a company may decide to
8 retain certain earnings rather than include those earnings in a dividend
9 issuance. Therefore, dividend growth rates are less likely than earnings
10 growth rates to reflect investor perceptions of a company's growth
11 prospects.

12
13 **Q. Is there support for the use of analysts' earnings growth estimates in**
14 **the DCF model?**

15 A. Yes, there is significant academic support for the use of analysts' earnings
16 growth rates. In addition, the majority of the data that are publicly
17 available to investors sets forth analysts' projections of earnings growth
18 rates. Value Line is the only publication I am aware of that provides
19 projected dividend growth rates.

20

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1 **Q. Please summarize the academic research on growth rates and stock**
2 **valuation.**

3 A. The relationship between various growth rates and stock valuation metrics
4 has been the subject of much academic research. Many published articles
5 specifically support the use of analysts' earnings growth projections in the
6 DCF model in general, as well as for a method of calculating the expected
7 market risk premium in particular. While his report is focused on the
8 calculation of the CAPM, Dr. Robert Harris, demonstrates that financial
9 analysts rely on earnings forecasts (referred to in the article as "FAF") and
10 the use of a constant growth DCF formula to estimate the expected market
11 risk premium.³⁶ Dr. Harris made the following observations:

12 [...] a growing body of knowledge shows that
13 analysts' earnings forecasts are indeed reflected in
14 stock prices. Such studies typically employ a
15 consensus measure of FAF calculated as a simple
16 average of forecasts by individual analysts.³⁷

17 *****

18 Given the demonstrated relationship of FAF to equity
19 prices and the direct theoretical appeal of expectational
20 data, it is no surprise that FAF have been used in
21 conjunction with DCF models to estimate equity return
22 requirements.³⁸

23 Dr. Harris's work demonstrates that analysts' rely on earnings as the
24 appropriate measure of growth in the DCF model. Professors Carleton
25 and Vander Weide also performed a study to determine whether projected

³⁶ Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholder
Required Rates of Return*, Financial Management, Spring 1986 at p. 66.

³⁷ *Id.*, at 59.

³⁸ *Id.*, at 60.

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1 earnings growth rates are superior to historical measures of growth in the
2 implementation of the DCF model.³⁹ Although the purpose of that study
3 was to “investigate what growth expectation is embodied in the firm’s
4 current stock price,”⁴⁰ the authors clearly indicate the importance of
5 earnings projections in the context of the DCF model. Professors Carleton
6 and Vander Weide concluded that:

7 [...] our studies affirm the superiority of analysts’
8 forecasts over simple historical growth extrapolations
9 in the stock price formation process. Indirectly, this
10 finding lends support to the use of valuation models
11 whose input includes expected growth rates.⁴¹
12

13 Similarly, Harris and Marston presented “estimates of shareholder
14 required rates of return and risk premia which are derived using forward-
15 looking analysts’ growth forecasts.”⁴² In addition to other findings, Harris
16 and Marston reported that,

17 [...] in addition to fitting the theoretical requirement of
18 being forward-looking, the utilization of analysts’
19 forecasts in estimating return requirements provides
20 reasonable empirical results that can be useful in
21 practical applications.⁴³
22

23
24 The Carleton and Vander Weide study was updated to determine whether
25 the finding that analysts’ earnings growth forecasts are relevant in the

³⁹ James H. Vander Weide, Willard T. Carleton, *Investor growth expectations: Analysts vs. history*, The Journal of Portfolio Management, Spring 1988.

⁴⁰ *Id.*, at 78.

⁴¹ *Id.*, at 82.

⁴² Robert S. Harris, Felicia C. Marston, *Estimating Shareholder Risk Premia Using Analysts’ Growth Forecasts*, Financial Management, Summer 1992.

⁴³ *Id.*, at 63.

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1 stock valuation process still holds. The results of that updated study
2 continued to demonstrate the importance of analysts' earnings forecasts,
3 including the application of those forecasts to utility companies.⁴⁴
4 Similarly, Brigham, Shome and Vinson noted that "evidence in the current
5 literature indicates that (1) analysts' forecasts are superior to forecasts
6 based solely on time series data; and (2) investors do rely on analysts'
7 forecasts."⁴⁵

8
9 **Q. What is your opinion of the Commission's historical reliance on**
10 **dividend per share growth rates during the initial five-year term of its**
11 **Two Stage DCF?**

12 A. Sole reliance on Value Line projections of dividend per share growth is
13 not appropriate for several reasons. First, the use of only dividend growth
14 rates ignores the substantial body of academic research demonstrating that
15 earnings growth rates are the most relevant factor in stock price
16 valuation.⁴⁶ Second, projections of dividend growth, which would not
17 include growth in retained earnings, only measure a portion of a
18 company's growth. Therefore, earnings growth projections are more
19 complete estimates of total company growth than projected dividend
20 growth rates. Finally, Value Line's 4-6 year projections are not consensus

⁴⁴ Advanced Research Center, *Investor Growth Expectations*, Summer, 2004.

⁴⁵ *The Risk Premium Approach to Measuring a Utility's Cost of Equity*, Financial Management, Spring 1985.

⁴⁶ The GFP RD indicates that the Telecommunications Group, which included Commission Staff, supported the use of earnings per share growth in the DCF models employed to estimate the ROE (RD at 9).

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1 estimates, but reflect the viewpoint of a single analyst. Therefore, the
2 Commission's models, which have historically relied only on projected
3 dividend per share growth rates from Value Line, reflect the growth
4 expectations of a single analyst in the first stage of the model. In contrast,
5 there are several consensus estimates of projected earnings per share
6 growth rates that are publicly available and widely used by investors,
7 including Zacks Investment Research and Thomson First Call. Each of
8 these consensus forecasts considers the growth expectations for each
9 company based on the expectations of multiple analysts. It is not
10 reasonable to exclude these timely and widely-available sources of
11 information from the analysis when it is likely that these real-time sources
12 have become the more common data points relied on by investors.

13
14 **Q. How did you calculate the long-term GDP growth rate?**

15 A. As shown in Exhibit __ (AEB-2), the long-term growth rate of 5.60
16 percent is based on the real GDP growth rate of 3.22 percent from 1929
17 through 2016,⁴⁷ and a projected inflation rate of 2.30 percent. The rate of
18 inflation of 2.30 percent is based on three measures: (1) the average long-
19 term projected growth rate in the Consumer Price Index ("CPI") of 2.30
20 percent, as reported by Blue Chip Financial Forecasts;⁴⁸ (2) the compound
21 annual growth rate of the CPI for all urban consumers for 2027-2040 of
22 2.44 percent as projected by the Energy Information Administration

⁴⁷ U.S. Department of Commerce, Bureau of Economic Analysis, National Income and Product Accounts Tables, Table 1.1.6, February 28, 2017.

⁴⁸ Blue Chip Financial Forecasts, Vol. 35, No. 12, December 1, 2016, at 14.

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1 (“EIA”) in the Annual Energy Outlook 2016; and (3) the compound
2 annual growth rate of the GDP chain-type price index for 2027-2040 of
3 2.17 percent, also reported by the EIA in the Annual Energy Outlook
4 2016.⁴⁹

5
6 **Q. Why is the long-term GDP growth rate a reasonable estimate of long-**
7 **term growth in your multi-stage DCF model?**

8 A. Long-term estimates of GDP growth are commonly used in regulatory
9 proceedings as a proxy for the long-term growth rate in the multi-stage
10 DCF analysis. That application is based on the common theoretical
11 assumption that, over the long-run, all the companies in the economy will
12 tend to grow at the same constant rate. That assumption is designed to
13 address the uncertainty associated with estimating individual company
14 growth rates over very long time horizons and is not meant to suggest that
15 company growth rates in the economy will indeed converge in practice
16 over any given period.

17
18 **Q. Is your calculation of GDP growth consistent with analysts’ estimates**
19 **of long-term GDP growth?**

20 A. Yes. Investors understand that the U.S. economy goes through cycles of
21 growth and contraction. Therefore, it is appropriate to consider the
22 longest time period possible to measure historical real growth in GDP.

⁴⁹ U.S. Energy Information Administration, Annual Energy Outlook Early Release 2016, Table 20.

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1 This view is consistent with Morningstar's explanation about measuring
2 GDP growth:

3 Growth in real GDP (with only a few exceptions) has
4 been reasonably stable over time; therefore, its
5 historical performance is a good estimate of expected
6 long-term future performance. By combining the
7 inflation estimate with the real growth rate estimate, a
8 long-term estimate of nominal growth is formed.⁵⁰
9

10 Furthermore, Morningstar supports the use of long-term historical data:

11 The 87-year period starting with 1926 is representative
12 of what can happen: it includes high and low returns,
13 volatile and quiet markets, war and peace, inflation and
14 deflation, and prosperity and depression. Restricting
15 attention to a shorter historical period underestimates
16 the amount of change that could occur in a long future
17 period. Finally, because historical event-types (not
18 specific events) tend to repeat themselves, long-run
19 capital market return studies can reveal a great deal
20 about the future. Investors probably expect "unusual"
21 events to occur from time to time, and their return
22 expectations reflect this.⁵¹

23

24 **Q. How does your estimate of long-term GDP growth compare with**
25 **investor expectations of long-term utility industry growth rates?**

26 A. The Commission has traditionally relied on Bank of America Merrill
27 Lynch's ("BAML") market return calculations in estimating a company's
28 ROE using the CAPM. Exhibit ___ (AEB-3) includes the relevant pages
29 from the BAML *Quantitative Profiles* reports for December 2016 through
30 February 2017. BAML derives the Implied Return through the use of a

⁵⁰ Ibbotson and Associates, *Stocks, Bonds, Bills and Inflation, 1926-2012, 2013 Valuation Yearbook*, at 52.

⁵¹ *Id.*, at 59.

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1 multi-stage Dividend Discount Model (“DDM”). As shown in Exhibit __
2 (AEB-3), the December, January and February Implied Returns for the
3 utility industry were 9.70 percent, 9.60 percent and 9.50 percent,
4 respectively, which produces an average Implied Return of approximately
5 9.60 percent.⁵² For those same months, the average dividend yield for the
6 utility industry was 3.67 percent.⁵³ Because the total return consists of
7 capital appreciation (*i.e.*, growth) and dividend yield, that data suggest an
8 expected utility growth rate of approximately 5.93 percent, which is
9 considerably higher than the long-term growth estimate of 5.60 percent
10 used in my multi-stage DCF analysis.

11
12 **Q. How does your estimate of long-term growth differ from the estimate**
13 **the Commission has traditionally relied on?**

14 A. The final stage of both the two-stage DCF model that the Commission has
15 relied on and my multi-stage DCF model extends into the future
16 indefinitely. My long-term growth estimate reflects investors’ long-term
17 growth expectations for the period from 2027 through 2040. Therefore,
18 the third stage of my multi-stage DCF model reflects investor growth
19 expectations beginning in the first year of the third stage of the model. In
20 contrast, the growth estimate for the two-stage model that the Commission
21 has typically relied on is based on short-term growth rate forecasts. The

⁵² Bank of America Merrill Lynch, *Quantitative Profiles*, December 12, 2016, at 56; Bank of America Merrill Lynch, *Quantitative Profiles*, January 11, 2017 at 56; and February 8, 2017, at 56.

⁵³ *Id.*

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1 use of the sustainable growth rate, calculated using Value Line's published
2 projections, provides an estimate of growth four- to six-years in the future.

3 As a result, the use of the sustainable growth rate in perpetuity in the
4 second stage of a two-stage DCF model does not provide a long-run
5 estimate of growth. Rather, the use of the sustainable growth rate assumes
6 that the short-term estimate for the four- to six-year period from the Value
7 Line report date is sustained in perpetuity.

8
9 In contrast, the long-term growth rate in my DCF analyses reflects both
10 economic forecasts and market-derived projections of inflation over the
11 longest available time period (30 or more years). Those estimates of long-
12 term inflation expectations are combined with the long-term average
13 historical real GDP growth rate to calculate an expected nominal GDP
14 growth rate. Consequently, the long-term growth estimate in my multi-
15 stage DCF model represents investors' and economists' views of nominal
16 long-term GDP growth well beyond the time horizon reflected in the four-
17 to six-year Value Line sustainable growth estimate relied on by the
18 Commission in prior cases.

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1 **Q. Does the use of Value Line data to develop the Sustainable Growth**
2 **address concerns about growth rate bias?**

3 A. No. The sustainable growth rate is the sum of retention growth plus an SV
4 factor,⁵⁴ calculated using Value Line data. As such, the sustainable
5 growth rate estimate that the Commission has relied upon is based on a
6 single analyst's viewpoint of a company's projected four- to six-year
7 growth prospects.

8
9 **Q. Are there other problems with the use of the sustainable growth rate**
10 **as an estimate of long-term growth?**

11 A. Yes. The sustainable growth rate used to estimate the long-term growth of
12 the company uses a very narrowly-defined set of short-term projections
13 using Value Line data. Specifically, it relies on the following
14 assumptions: (1) projected dividends for year 2; (2) projected dividends
15 for years 4-6; (3) projected earnings for years 4-6; (4) projected book
16 value for year 2; (5) projected book value for years 4-6; (6) current
17 estimate of actual outstanding shares of stock; (7) projected shares of
18 outstanding stock for years 4-6; and (8) current three-month stock price.
19 Each of these assumptions is estimated at most for 6 years into the future.
20 As a result, the sustainable growth rate, which is applied over the long-

⁵⁴ Retention growth is the product of the expected earned ROE and the retention ratio (one minus the dividend payout ratio). The SV factor employs an estimate of the market-to-book ratio and the expected expansion rate of outstanding shares of common stock in the future.

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1 term in the Commission's two-stage model, does not consider any actual
2 long-term forecasts for the specific company or the economy as a whole.

3
4 **Q. What is your conclusion regarding the methodology typically relied**
5 **on by the Commission to estimate the sustainable growth rate in the**
6 **two-stage DCF model?**

7 A. There are several reasons why the Commission's sustainable growth rate
8 should not be relied on in the two-stage DCF model. First, the sustainable
9 growth rate is not a long-term measure of growth and as such should not
10 be applied in perpetuity in the second stage of the model. Second, the
11 exclusive use of Value Line data, which is a single analyst's viewpoint, to
12 establish the sustainable growth rate assumes that investors do not
13 consider any of the other financial information that is widely available
14 when establishing future dividend expectations. Finally, the
15 Commission's sustainable growth rate methodology implicitly assumes
16 that investors establish long-term growth expectations based entirely on
17 short-term, company-specific projections. It is unreasonable to conclude
18 that investors would ignore the expectations of long-term macroeconomic
19 growth in establishing the long-term growth estimates for an electric or
20 natural gas distribution utility or any other company.

21

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1 **Q. Have other regulatory Commissions reconsidered the use of the**
2 **sustainable growth rates in the ROE estimation methodology?**

3 A. Yes. The FERC's long-standing methodology for setting the ROE in
4 utility proceedings was to rely on a single stage DCF model that used two
5 estimates of short-term growth: 1) analysts' estimates of earnings growth,
6 as published by IBES and; 2) the sustainable growth rate, calculated using
7 the $(b \cdot r) + (s \cdot v)$ components that are used by this Commission. The
8 FERC acknowledged that the sustainable growth rate is not a measure of
9 long-term growth, but is another estimate of short-term growth similar to
10 analysts' earnings projections.

11

12 In Opinion No. 531, the FERC determined that it was appropriate to move
13 from a constant growth DCF methodology to a two-stage DCF model for
14 public utility rate cases.⁵⁵ In moving to the two-stage DCF, FERC now
15 relies on analysts' estimates of earnings growth in the short-term and a
16 long-term GDP growth rate as the measure of growth in the second stage.
17 The FERC's two-stage model does not rely on a sustainable growth
18 calculation.

19

20 **Q. What are the results of your DCF analyses?**

21 A. As shown in Exhibit __ (AEB-1), the multi-stage DCF analysis based on a
22 three-month average stock price and a range of near-term growth rate

⁵⁵ Opinion No. 531, 147 FERC ¶ 61,234 (June 19, 2014).

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1 assumptions produces a ROE range of 9.13 percent to 9.62 percent with a
2 mean ROE of 9.34 percent.

3

4 **Q. Does the Multi-stage DCF Model discussed above address your**
5 **concern about low dividend yields?**

6 A. No, it does not. While the multi-stage DCF model provides for changes in
7 growth over time, it does not address the low current dividend yields for
8 utility stocks. As discussed in Section IV, those low dividend yields are
9 causing the DCF model to understate the cost of equity at this time.

10

11 **Q. What are your conclusions about the results of the DCF Model?**

12 A. The results of the DCF model are currently influenced by the low dividend
13 yields on utility stocks due to the low interest rate environment. As
14 discussed previously, one primary assumption of the DCF model is the
15 dividend yield. To the extent these dividend yields are abnormally low
16 and not sustainable, as suggested by Value Line, it is important to
17 recognize that the results of the DCF model are understated.

18

19 **Q. Using the FERC's methodology for selecting the appropriate cost of**
20 **equity from the range of DCF results, as adopted in Opinion No. 531-**
21 **B, what would be the DCF estimate?**

22 A. Given the anomalous conditions in capital markets that are causing
23 concern with the results produced by the DCF model, the FERC has

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1 determined that the reasonable cost of equity is the midpoint between the
2 midpoint and high DCF results for the proxy group.⁵⁶ Applying the
3 FERC's methodology in Opinion Nos. 531-B and 551 to the range of
4 results produced by my Multi-Stage DCF analysis, the midpoint between
5 the midpoint and high DCF results is from 9.38 percent to 10.10 percent
6 using the low, mean, and high growth rate scenarios that were developed
7 for my the DCF analysis, as shown in Exhibit __ (AEB-1).

9 **B. Capital Asset Pricing Model**

10 **Q. Please briefly describe the Capital Asset Pricing Model.**

11 A. The CAPM is a risk premium approach that estimates the market cost of
12 equity for a given security as a function of a risk-free return plus a risk
13 premium (to compensate investors for the non-diversifiable or
14 "systematic" risk of that security). As shown in Equation [2], the CAPM
15 is defined by four components:

16
$$k_e = r_f + \beta(r_m - r_f) \quad [2]$$

17 where:

18 k_e = the required market ROE

19 β = Beta coefficient of an individual security

20 r_f = the risk-free rate of return

21 r_m = the required return on the market as a whole

22

⁵⁶ FERC Opinion No. 531-B, at para. 55, 150 FERC ¶ 61,165 (2015); FERC Opinion No. 551, at para. 9.

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1 In this specification, the term $(r_m - r_f)$ represents the market risk premium.
2 Based on the theory underlying the CAPM, investors should be concerned
3 only with systematic or non-diversifiable risk because unsystematic risk
4 can be diversified away. Non-diversifiable risk is measured by the Beta
5 coefficient, which is defined as:

$$6 \quad \beta = \frac{\text{Covariance}(r_e, r_m)}{\text{Variance}(r_m)} \quad [3]$$

7
8 The variance of the market return, noted in Equation [3], is a measure of
9 the uncertainty of the general market, and the covariance between the
10 return on a specific security and the market reflects the extent to which the
11 return on that security will respond to a given change in the market return.

12
13 **Q. What risk-free rate did you use in your CAPM analysis?**

14 **A.** I used three estimates of the yield on Treasury bonds: (1) the current three-
15 month average yield on 30-year Treasury bonds (3.05 percent);⁵⁷ (2) the
16 projected 30-year Treasury yield for 2017-2018 (3.42 percent);⁵⁸ and (3)
17 the projected 30-year Treasury yield for the period 2018-2022 (4.20
18 percent).⁵⁹

57 Bloomberg Professional.

58 Blue Chip Financial Forecasts, Vol. 36, No. 2, February 1, 2017, at 2.

59 Blue Chip Financial Forecasts, Vol. 35, No. 12, December 1, 2016, at 14.

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1 **Q. Why did you use the 30-year treasury bond yield as the risk-free rate**
2 **in the CAPM analysis?**

3 A. In determining the security most relevant to the application of the CAPM,
4 it is important to select the term (or maturity) that best matches the life of
5 the underlying investment. As noted by Morningstar:

6 The traditional thinking regarding the time horizon of
7 the chosen Treasury security is that it should match the
8 time horizon of whatever is being valued... Note that
9 the horizon is a function of the investment, not the
10 investor. If an investor plans to hold stock in a
11 company for only five years, the yield on a five-year
12 Treasury note would not be appropriate since the
13 company will continue to exist beyond those five
14 years.⁶⁰

15
16
17 Because utility companies represent long-duration investments, it is
18 appropriate to use yields on long-term Treasury bonds as the risk-free rate
19 component of the CAPM. In my view, the 30-year Treasury bond is the
20 appropriate security for that purpose. Because the cost of capital is
21 intended to be forward-looking, it is appropriate to consider projected
22 measures of interest rates and the market risk premium.

23
24 **Q. What Beta coefficient did you use in your CAPM model?**

25 A. As shown in Exhibit__ (AEB-6), I used the adjusted Beta coefficients
26 reported by Value Line for each of the proxy group companies. Beta is
27 adjusted to account for the tendency of the regression equation to

⁶⁰ Morningstar Inc., Ibbotson SBBI 2013 Valuation Yearbook, at 44.

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1 understate the variability of lower risk companies such as utilities. In the
2 remainder of my testimony, any references to Beta are to the adjusted Beta
3 from Value Line.

4
5 **Q. Please describe your estimate of the market risk premium used in**
6 **your CAPM.**

7 A. The estimated market risk premium is based on the expected return on the
8 S&P 500 Index less the 30-year Treasury bond yield. The expected return
9 on the S&P 500 Index is calculated using a DCF model for all companies
10 in the index based on market capitalization-weighted growth rates and
11 dividend yields. The market risk premium implied by each of the three
12 Treasury yields discussed above is used in the CAPM analysis.

13
14 **Q. Is your calculation of the market risk premium consistent with the**
15 **methodology relied upon in previous cases before the Commission?**

16 A. Yes. The Commission previously has relied upon the calculation of a
17 projected market risk premium, based on the difference between the
18 estimated forward-looking required market return for the S&P 500, as
19 provided by BAML, and the risk-free rate.⁶¹ As a practical matter, that
20 approach is consistent with the Market DCF-derived forward-looking
21 market risk premium estimate discussed above (*see also* Exhibit __ (AEB-
22 5).

23

⁶¹ See e.g., 2011 O&R Rate Order, at 77.

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1 **Q. Did you consider another form of the CAPM?**

2 A. Yes. In prior proceedings, the Commission has also relied upon the Zero-
3 Beta CAPM (the form of which is sometimes referred to as the “Empirical
4 CAPM”⁶²) in estimating the cost of equity. The Zero-Beta CAPM
5 calculates the product of the Beta coefficient and the market risk premium
6 and applies a weight of 75 percent to that result. The model then applies a
7 25 percent weight to the market risk premium, without any effect from the
8 Beta coefficient. The results of the two calculations are summed, along
9 with the risk-free rate, to produce the Zero-Beta CAPM result, as noted in
10 Equation [4] below:

11 $k_e = r_f + 0.75\beta(r_m - r_f) + 0.25(r_m - r_f)$ [4]

12 where:

13 k_e = the required market ROE

14 β = Beta coefficient of an individual security

15 r_f = the risk-free rate of return

16 r_m = the required return on the market as a whole

17

18 In essence, the Zero-Beta form of the CAPM addresses the tendency of the
19 “traditional” CAPM to underestimate the cost of equity for companies
20 with low Beta coefficients such as regulated utilities. The Zero-Beta
21 CAPM is not redundant to the use of adjusted Betas; rather, it recognizes
22 the results of academic research indicating that the risk-return relationship

⁶² See e.g., Roger A. Morin, New Regulatory Finance, Public Utilities Reports, Inc., 2006, at 189.

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1 is different (in essence, flatter) than estimated by the CAPM, and that the
2 CAPM underestimates the “alpha,” or the constant return term.⁶³

3
4 As with the CAPM, my application of the Zero-Beta CAPM uses the
5 forward-looking market risk premium estimates, the three yields on 30-
6 year Treasury securities noted earlier as the risk-free rate, and the Value
7 Line Beta coefficients. Exhibit __ (AEB-4) shows the CAPM results for
8 the proxy group. The traditional CAPM results range from 9.77 percent to
9 10.12 percent. The Zero-Beta CAPM results range from 10.51 percent to
10 10.77. The range established an equal weighting of the traditional CAPM
11 and the Zero-Beta CAPM is 10.14 percent to 10.45 percent with a mean of
12 10.27 percent.⁶⁴

13 14 **C. Weighted Average Results**

15 **Q. Please summarize the results of your analysis and your recommended**
16 **ROE.**

17 A. Table 3 summarizes the analytical approaches that I have considered in
18 my analysis. As shown in Table 3, I have weighted the DCF and CAPM
19 results equally, resulting in an ROE range of 9.63 percent to 10.03 percent.
20 In addition, the results of the FERC approach in Opinion Nos. 531-B and

⁶³ *Id.*, at 191.

⁶⁴ The CAPM range is developed by averaging the traditional CAPM and Zero-Beta CAPM results for each of the three scenarios presented in Exhibit __ (AEB-4).

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551 indicate that the appropriate ROE for Niagara Mohawk is in a range from 9.38 percent to 10.10 percent.

Table 3: Summary of Analytical Results⁶⁵

	Low	Mean	High
Multi-Stage DCF	9.13%	9.34%	9.62%
Mean CAPM	10.14%	10.24%	10.45%
Mean ROE (50/50 weighting)	9.63%	9.79%	10.03%
FERC DCF Methodology	9.38%	9.64%	10.10%

As discussed throughout my testimony, the DCF results have been somewhat understated due to the relatively low dividend yields experienced in recent market conditions. Therefore, I have considered two approaches to estimating the appropriate ROE. The first methodology, which weights the DCF and CAPM results equally, recognizes that it is difficult to adjust the DCF model to reflect expected market conditions, whereas the assumptions used in the CAPM can be adjusted to reflect projected interest rates over the rate period. The second approach applies the FERC's methodology for adjusting the ROE by moving to the midpoint of the high end of the range of DCF results.

⁶⁵ The DCF results presented in Table 3 reflect the results of the models using low, average and high growth rate assumptions. The range of results for the CAPM is based on three interest rate scenarios, a historical average, a six-quarter projection and a long-term projection.

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1 **Q. What was the Commission’s reasoning for developing its weighting of**
2 **the DCF and CAPM methodologies in the GFP RD?**

3 A. At the time of the GFP RD, the Commission did not have a significant
4 amount of experience with the CAPM. The GFP RD noted that the
5 Commission had historically used the CAPM as a check on its DCF
6 results, and was somewhat undecided as to “how far the Commission
7 should go in elevating the status of CAPM.”⁶⁶ The GFP RD opted for a
8 gradual transition towards the CAPM, ultimately settling on a one-third
9 weighting, indicating that “proposals have simply not shown that the
10 CAPM should be raised all at once to parity with the DCF analysis in the
11 setting of returns on equity.”⁶⁷ To the extent that this was a consideration
12 in the GFP RD’s weighting determination, the Commission’s 25 years of
13 experience with the CAPM since that time provides a sound basis for
14 altering the weighting of the two ROE methodologies.

15
16 **Q. Please summarize your conclusion regarding the relative weighting of**
17 **the CAPM and DCF results.**

18 A. While the GFP RD proposed the two-thirds weighting on the DCF, the
19 weightings and methodologies used to estimate the ROE were left open
20 for additional consideration in future rate proceedings. Since then, the
21 Commission has employed the CAPM as one component of the formula
22 used to develop ROE estimates. There does not appear to be any reason to

⁶⁶ GFP RD at 27.

⁶⁷ *Id.*

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1 infer that the Commission has less confidence in the results of the CAPM
2 than those of the DCF. The conditions that warranted the Commission's
3 GFP inquiry and the subsequent RD in the early 1990s exist again today
4 with DCF results considerably lower than those from other models, such
5 as the CAPM, as well as returns authorized in other jurisdictions. Finally,
6 to the extent that dividend yields are low relative to historical levels and
7 could increase as yields on government bonds rise, the DCF model is
8 likely to underestimate the cost of equity. Therefore, it is reasonable to
9 apply equal weighting to the DCF and CAPM methods when determining
10 the ROE for Niagara Mohawk.

11
12 **Q. Are the assumptions used in the CAPM less reliable than the**
13 **assumptions used in the DCF model?**

14 A. Not necessarily. As discussed previously, the CAPM relies on a risk-free
15 rate, Beta and the MRP. The risk-free rate is readily observable and can
16 be projected for the forward-looking period. Beta is estimated using the
17 historical relationship between the risk of the stock and the overall market.
18 Finally, the market risk premium, while not observable, can be estimated
19 for the forward-looking period. My testimony discusses how the dividend
20 yield has been affected by market conditions and therefore, while this
21 assumption may be easy to calculate using historical data, it is not
22 representative of forward-looking market conditions. Therefore, while the
23 CAPM is often criticized as relying on unobservable assumptions,

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1 currently the dividend yield in the DCF model is not reflective of
2 projected market conditions.

4 **D. Risk Premium Analysis**

5 **Q. Did you consider any other analyses to corroborate the**
6 **reasonableness of the DCF and CAPM results?**

7 A. Yes, I also considered the results of a Bond Yield Plus Risk Premium
8 analysis.

10 **Q. Please describe the Bond Yield Plus Risk Premium approach you**
11 **employed.**

12 A. In general terms, this approach is based on the fundamental principle that
13 equity investors bear the residual risk associated with ownership and,
14 therefore, require a premium over the return they would have earned as a
15 bondholder. That is, since returns to equity holders have greater risk than
16 returns to bondholders, equity investors must be compensated to bear that
17 risk. Risk premium approaches estimate the cost of equity as the sum of
18 the equity risk premium and the yield on a particular class of bonds. In
19 my analysis, I used actual authorized returns for electric utility companies
20 as the historical measure of the cost of equity to determine the risk
21 premium.

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1 **Q. Are there other considerations that should be addressed in conducting**
2 **this analysis?**

3 A. Yes. Both academic literature and market evidence indicate that the
4 equity risk premium (as used in this approach) is inversely related to the
5 level of interest rates. That is, as interest rates increase (decrease), the
6 equity risk premium decreases (increases). Consequently, the analysis
7 should: (1) reflect the inverse relationship between interest rates and the
8 equity risk premium; and (2) be based on current and expected market
9 conditions. Such an analysis can be developed based on a regression of
10 the risk premium as a function of U.S. Treasury bond yields. If we let
11 authorized ROEs for electric utility companies serve as the measure of
12 required equity returns and define the yield on the long-term U.S.
13 Treasury bond as the relevant measure of interest rates, the risk premium
14 is simply the difference between those two points.⁶⁸

15
16 **Q. What did your Bond Yield Plus Risk Premium analysis reveal?**

17 A. As shown in Chart 4, from 1990 through 2016, there was a strong negative
18 relationship between risk premia and interest rates. To estimate that

⁶⁸ See e.g., S. Keith Berry, Interest Rate Risk and Utility Risk Premia during 1982-93, *Managerial and Decision Economics*, Vol. 19, No. 2 (March, 1998), in which the author used a methodology similar to the regression approach described below, including using allowed ROEs as the relevant data source, and came to similar conclusions regarding the inverse relationship between risk premia and interest rates. See also Robert S. Harris, *Using Analysts' Growth Forecasts to Estimate Shareholders Required Rates of Return*, *Financial Management*, Spring 1986, at 66.

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relationship, I conducted a regression analysis using the following equation:

$$RP = a + b(T) \quad [5]$$

Where:

RP = Risk Premium (difference between allowed ROEs and the yield on 30-year U.S. Treasury bonds)

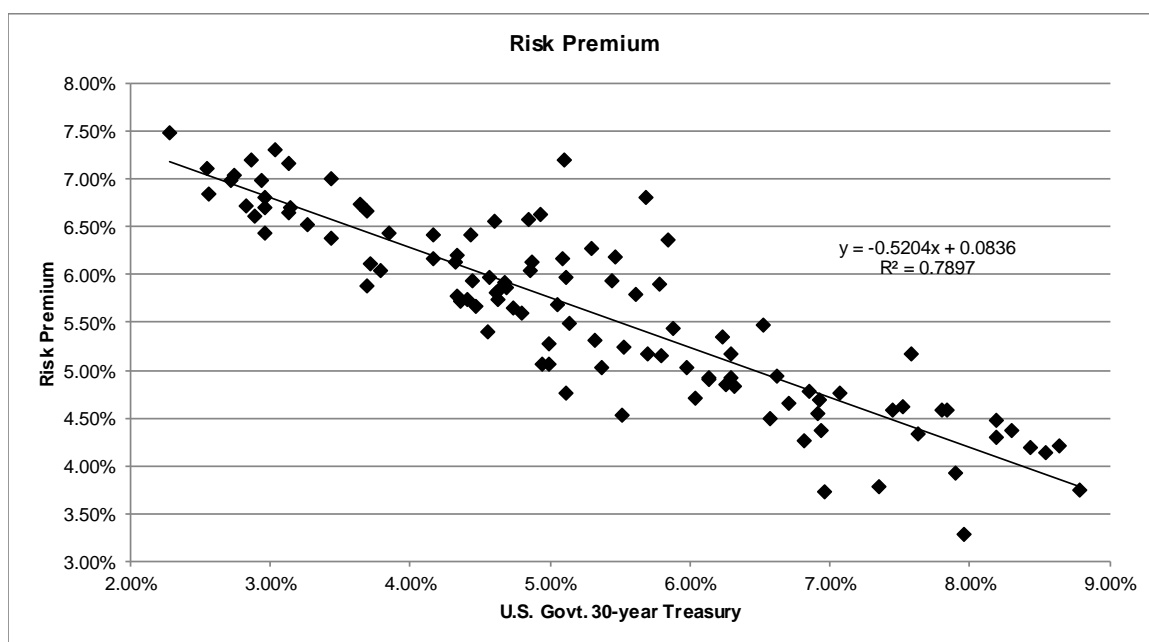
a = intercept term

b = slope term

T = 30-year U.S. Treasury bond yield

Data regarding allowed ROEs were derived from 766 electric utility rate case decisions from 1990 through 2016 as reported by Regulatory Research Associates (“RRA”). This equation’s coefficients were statistically significant at the 99 percent confidence interval.

Chart 4: Risk Premium Results



As shown in Exhibit ____ (AEB-7), based on the current 30-day average of

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1 the 30-year U.S. Treasury bond yield (*i.e.*, 3.05 percent), the risk premium
2 would be 6.77 percent, resulting in an estimated ROE of 9.82 percent.
3 Based on the near-term (2017-2018) projections of the 30-year U.S.
4 Treasury bond yield (*i.e.*, 3.42 percent), the risk premium would be 6.58
5 percent, resulting in an estimated ROE of 10.00 percent. Based on longer-
6 term (2018-2022) projections of the 30-year U.S. Treasury bond yield
7 (*i.e.*, 4.20 percent), the risk premium would be 6.17 percent, resulting in
8 an estimated ROE of 10.37 percent.

9
10 **Q. How did the results of the Bond Yield Risk Premium inform your**
11 **recommended ROE for Niagara Mohawk?**

12 A. I did not rely specifically on the results of the Bond Yield Risk Premium
13 analysis in determining my recommended ROE for Niagara Mohawk.
14 Rather, the results of this analysis provide support for my view that the
15 DCF model is understating investors' return requirements under current
16 market conditions. Consistent with the way in which the FERC has
17 utilized the Risk Premium analysis to establish the return on equity from
18 within the range of reasonableness, I conclude that the results of the Bond
19 Yield Risk Premium analysis support selection of an authorized ROE in
20 the upper half of the range of DCF results.

21

VII. Regulatory and Business Risks

A. Risk Assessment

Q. Have you performed an analysis of the level of regulatory protection that Niagara Mohawk receives in New York as compared to the proxy group companies?

A. Yes, I have. I conducted an analysis of the regulatory protections that are in place for Niagara Mohawk compared with those for the operating utility companies held by the proxy group companies. The results of my analysis are presented in Exhibit ____ (AEB-8). Specifically, I examined the following factors that affect the business risk of Niagara Mohawk and the proxy group companies: (1) test year convention; (2) fuel cost recovery; (3) revenue decoupling; and (4) capital cost recovery.

As shown in Exhibit ____ (AEB-8), the majority of the operating companies (*i.e.*, 38 out of 66) in the proxy group provide service in jurisdictions that allow the use of a fully or partially forecast test year. Moreover, the average authorized ROE for companies with a fully forecast test year is 9.60 percent, while the average authorized ROE for companies that use an historic test year is 9.90 percent. All of the operating companies held by the proxy group are allowed to pass through fuel costs and purchased power costs directly to customers, so that the utility does not incur any risk associated with fuel or purchased power costs. It is important to recognize that fuel and purchased power costs typically

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1 account for 50 to 60 percent of the total operating costs for a regulated
2 utility. Like Niagara Mohawk, 52 percent of the operating utilities held by
3 the proxy group (*i.e.*, 34 out of 66) have revenue decoupling mechanisms
4 or weather normalization adjustment clauses that allow them to break the
5 link between customer usage and revenues. Finally, two thirds of the
6 operating utilities held by the proxy group (44 out of 66) have capital cost
7 recovery mechanisms that allow them to recover capital investments that
8 are placed into service between rate cases.

9
10 I also compared the authorized ROE to the earned ROE of the operating
11 utilities held by the proxy group companies for which earned ROE data is
12 readily available. The purpose of this assessment is to determine whether
13 the operating utilities have earned their authorized return, thereby
14 suggesting that those utilities have regulatory protections that mitigate
15 regulatory lag and permit timely cost recovery. As shown in Exhibit ____
16 (AEB-9), for the period from 2012-2015, the average earned ROE for the
17 operating utilities held by the proxy group has been in the range of 9.74
18 percent to 10.21 percent, while the average authorized ROE for that time
19 period has been in the range from 9.99 percent to 10.32 percent.

20

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1 **Q. Based on these analyses, what is your conclusion regarding the level of**
2 **regulatory protection for Niagara Mohawk relative to that of the**
3 **proxy group companies?**

4 A. My conclusion is that Niagara Mohawk has comparable regulatory
5 protection to the proxy group companies. While the Commission has been
6 a leader in implementing mechanisms that reduce the business risk of
7 regulated utilities in New York, many other jurisdictions have taken
8 similar steps in more recent years. A November 2015 report published by
9 the Edison Electric Institute indicates that more and more jurisdictions
10 have moved toward the use of forecast test years since the 2013 survey⁶⁹;
11 fuel cost recovery mechanisms have been ubiquitous for many years;
12 revenue decoupling and weather normalization clauses have been
13 approved in many states, especially where declining usage per customer is
14 a concern⁷⁰; and many states have approved capital tracking mechanisms

⁶⁹ Edison Electric Institute, “Alternative Regulation for Emerging Utility Challenges: 2015 Update,” prepared by Pacific Economics Group, November 11, 2015, at 32. (EEI report states: “The ranks of US jurisdictions that allow the use of forward test years have swollen and now encompasses about half of the total. Since our 2013 survey, electric utilities in Pennsylvania have successfully used FTYs and utilities in Arkansas and Indiana have received legislative authorization for their use. Forward test years are the norm in Canadian regulation.”)

⁷⁰ *Id.*, at 21. (EEI report states: “In the electric utility industry, decoupling has been favored in states that strongly support DSM. Since our 2013 survey, decoupling has been adopted for electric utilities in Connecticut, Maine, Minnesota, and Washington state. Decoupling is the most widespread means of relaxing the revenue/usage link for gas distributors. This reflects the fact that gas distributors often experience declining average use and that this has been driven chiefly by external forces.”)

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1 that reduce the regulatory lag associated with significant investments to
2 enhance reliability, service quality and safety.⁷¹

3
4 **Q. Are there other risks to Niagara Mohawk that are specific to New**
5 **York utility regulation?**

6 A. Yes. In addition to the characteristically low equity returns that are
7 authorized by the Commission for New York's gas and electric utilities,
8 New York utilities are subject to strictly enforced customer service
9 quality, electric reliability, and gas safety measures where the utility is
10 required to achieve predetermined performance benchmarks, or be subject
11 to a negative revenue adjustments for any shortfall.

12
13 **Q. Please describe Niagara Mohawk's customer service quality, electric**
14 **reliability, and gas safety measures.**

15 A. Niagara Mohawk is subject to a host of customer service quality, electric
16 reliability, and gas safety performance metrics for which negative revenue
17 adjustments are incurred for specific levels of non-performance. Table 4
18 below summarizes the potential annual exposure that Niagara Mohawk

⁷¹ *Id.*, at 7. (EEI report states: "It can be see that the precedents are numerous and continue to grow. This is the most widely used Altreg tool in the United States. For electric utilities, trackers for emissions controls, generation capacity, advanced metering infrastructure, and general system modernization have been especially common in recent years. Trackers for gas distributors typically address the cost of replacing old case iron and bare steel mains.")

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may face if it fails to meet these metrics and provides a list of the types of metrics in each of the three performance categories.⁷²

Table 4: Summary of Service Quality, Electric Reliability, and Gas Safety Performance Metrics

Performance Measure	Maximum Negative Revenue Adjustment
Customer Service Quality Performance Measures – PSC Complaint Rate, Residential and Small/Medium Commercial and Industrial Customer Satisfaction Surveys, and % Calls Answered in 30 seconds	\$19.8 million
Electric Reliability Performance Metrics – SAIFI, CAIDI, Estimating, Standardized Interconnection Requirements, and Inspection and Maintenance	\$20 million
Gas Safety Performance Metrics – Main Replacement, Emergency Response, Leak Management, Damage Prevention, and Gas Safety Violations	150 bps revenue adj.

⁷² Case 12-E-0201 and Case 12-G-0202, “Order Approving Electric and Gas Rate Plans in Accord with Joint Proposal” (March 15, 2013).

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1 **Q. Do the negative revenue adjustments associated with these**
2 **performance metrics differentiate Niagara Mohawk from the proxy**
3 **group companies?**

4 A. Yes, they do. Even though the utility regulatory model may be evolving
5 towards incentive regulation as attempts are made to align utility interests
6 with regulatory policy objectives, the addition of rewards and penalties to
7 the utility rate structure remains the exception rather than the rule. Of
8 those jurisdictions that do employ some form of incentive regulation, it is
9 rare for those programs to be based solely on penalties, or for those
10 programs to result in financial exposure of the magnitude faced by
11 Niagara Mohawk.

12

13 The penalty-only structure and the magnitude of the Companies' exposure
14 places the Company at greater risk than the proxy companies on average,
15 which provides support for a cost of equity at the higher end of my range
16 of reasonableness and provides further evidence that the New York model
17 substantially underestimates the Companies' cost of equity.

18

19 **B. Regulatory Environment**

20 **Q. Please explain how the regulatory framework affects investors' risk**
21 **assessments.**

22 A. The ratemaking process is premised on the principle that, for investors and
23 companies to commit the capital needed to provide safe and reliable utility
24 services, the utility must have the opportunity to recover invested capital

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1 and the market-required return on such capital. Regulatory commissions
2 recognize that because utility operations are capital intensive, regulatory
3 decisions should enable the utility to attract capital at reasonable terms,
4 thereby balancing the long-term interests of investors and customers. In
5 that respect, the regulatory framework in which a utility operates is one of
6 the most important factors in both debt and equity investors' risk
7 assessments.

8
9 Because investors have many investment alternatives, even within a given
10 market sector, the Company's authorized return must be adequate on a
11 relative basis to ensure its ability to attract capital under a variety of
12 economic and financial market conditions. From the perspective of debt
13 investors, the authorized return should enable the Company to generate the
14 cash flow needed to meet its near-term financial obligations, make the
15 capital investments needed to maintain and expand its systems, and
16 maintain sufficient levels of liquidity to fund unexpected events. This
17 financial liquidity must be derived not only from internally-generated
18 funds, but also from efficient access to capital markets.

19
20 From the perspective of equity investors, the authorized return must be
21 adequate to provide a risk-comparable return on the equity portion of the
22 Company's capital investments. Because equity investors are the residual
23 claimants on the Company's cash flows (*i.e.*, debt interest must be paid

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prior to any equity dividends), equity investors are particularly concerned with the regulatory framework in which a utility operates and its effect on future earnings and cash flows.

Q. Please explain how credit rating agencies consider the regulatory framework in establishing a company's credit rating.

A. Moody's and S&P both consider the overall regulatory framework in establishing credit ratings. Moody's establishes credit ratings based on four key factors:

Table 5: Moody's Rating Factors

Factor	Weighting
Regulatory Framework	25%
Ability to Recover Costs and Earn Returns	25%
Diversification	10%
Financial Strength	40%
Total	100%

Two of these factors (*i.e.*, regulatory framework and the ability to recover costs and earn returns) are based on the regulatory environment such that half of Moody's overall assessment of business and financial risk for regulated utilities is based upon the regulatory environment.⁷³ Moody's further subdivides the first two factors, Regulatory Framework and the Ability to Recover Costs and Earn Returns, into sub-factors to help

⁷³ Moody's Investor Service, Rating Methodology, Regulated Electric and Gas Utilities, December 23, 2013, at 6 ("December Moody's").

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1 “provide more granularity and transparency on the overall regulatory
2 environment, which is the most important consideration for this sector.”⁷⁴

3 With respect to Regulatory Framework, Moody’s looks for transparency,
4 predictability, and supportiveness of regulatory commissions.⁷⁵ For the
5 second factor, Ability to Recover Costs and Earn Returns, Moody’s
6 evaluates the regulatory elements that directly affect the ability of the
7 utility to generate cash flow and service its debt over time.⁷⁶ Moody’s
8 views the ability to recover costs on a timely basis and to attract debt and
9 equity capital as crucial credit considerations noting that “[t]he inability to
10 recover costs...has been one of the greatest drivers of financial stress in
11 this sector.”⁷⁷ This is particularly true as utilities are often cash flow
12 negative due to large capital expenditures, so any lack of timely recovery
13 or sufficiency of rates can strain access to capital markets.

14
15 S&P has also identified the regulatory environment as an important factor,
16 stating, “we believe the fundamental regulatory environment in the
17 jurisdictions in which a utility operates often influence credit quality the
18 most.”⁷⁸

⁷⁴ *Id.*, at 3.

⁷⁵ *Id.*, at 9-10.

⁷⁶ *Id.*, at 15.

⁷⁷ *Id.*

⁷⁸ Standard & Poor’s, *Assessing U.S. Utility Regulatory Environments*, March 11, 2010, at 2.

Testimony of Ann E. Bulkley

1 **Q. How does the regulatory environment in which a utility operates**
2 **affect its access to and cost of capital?**

3 A. The proportion and cost of debt capital available to utility companies are
4 influenced by the rating agencies' assessment of the regulatory
5 environment. Moody's has highlighted the relevance of a stable and
6 predictable regulatory environment to a utility's credit quality, stating that
7 "[b]roadly speaking, the Regulatory Framework is the foundation for how
8 all the decisions that affect utilities are made (including the setting of
9 rates), as well as the predictability and consistency of decision-making
10 provided by that foundation."⁷⁹

11

12 **Q. Have you conducted any analysis of investors' perceptions of the**
13 **regulatory framework in which the Company operates relative to the**
14 **proxy group companies?**

15 A. Yes. To assess investors' view of the Company's regulatory framework, I
16 considered three different rankings: (1) the S&P business and financial
17 rankings; (2) the RRA ranking of regulatory jurisdictions; and (3) S&P's
18 ranking of the credit supportiveness of regulatory jurisdictions.
19 S&P ranks the business risk profile on a six-tier scale from excellent ("1")
20 to vulnerable ("6"). In addition, S&P ranks financial risk profile on a
21 similar scale, from minimal ("1") to highly-leveraged ("6"). I applied that
22 numeric ranking system to the proxy group companies. As shown in
23 Exhibit __ (AEB-10), Niagara Mohawk's business risk profile ranking is

⁷⁹ December Moody's at 15.

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1 Excellent (“1”), which is in line with the proxy group average ranking that
2 was also Excellent (“1.21”). Regarding the financial risk profile rankings,
3 Niagara Mohawk’s ranking is Significant (“4”), which is higher risk than
4 the proxy group average ranking of Intermediate/Significant (“3.54”).

5
6 **Q. How did you use the RRA ratings to compare the regulatory**
7 **jurisdictions of the proxy companies with the Company’s regulatory**
8 **jurisdiction?**

9 A. RRA assigns a ranking for each regulatory jurisdiction from “Above
10 Average/1” to “Below Average/3,” with nine total rankings between these
11 categories. I applied a similar numeric ranking system to the RRA
12 rankings with “Above Average/1” assigned the highest ranking (“9”) and
13 “Below Average/3” assigned the lowest ranking (“1”). As shown on
14 Exhibit __ (AEB-11), the New York jurisdictional ranking (“5.0”) was
15 generally consistent with the proxy group average numeric ranking
16 (“5.29”) from RRA.

17
18 **Q. How did you conduct your analysis of the S&P credit supportiveness?**

19 A. For credit supportiveness, S&P classifies each regulatory jurisdiction into
20 five categories ranging from “Strong” to “Weak.” Within each category,
21 regulatory jurisdictions are ranked according to their credit supportiveness
22 from most credit supportive to least credit supportive. My analysis of the
23 credit supportiveness of the regulatory jurisdictions that the proxy

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1 companies operate in, as compared with the Company's regulatory
2 jurisdiction, was similar to the analyses of the S&P business and financial
3 ranking and RRA overall regulatory ranking discussed above. I assigned a
4 numerical ranking to each jurisdiction ranked by S&P, from most credit
5 supportive ("1") to least credit supportive ("53"). As shown in Exhibit __
6 (AEB-12), the proxy group average ranking is 24.38, which would be
7 classified as Strong/Adequate and rank slightly above average for credit
8 supportiveness, while the New York jurisdictional ranking is 34.00, which
9 is below average in credit supportiveness.

10

11 **Q. What is your conclusion regarding the regulatory framework in New**
12 **York as compared with the jurisdictions in which the proxy group**
13 **companies operate?**

14 A. The regulatory framework in which a regulated utility provides service is
15 one of the most important considerations for debt and equity investors.
16 Based on my analysis, I conclude that New York's regulatory framework
17 has somewhat greater risk than the jurisdictions in which the proxy group
18 companies provide service. While the differences are not significant, my
19 analysis demonstrates that investors perceive regulation for Niagara
20 Mohawk as slightly below average relative to the proxy group. There are
21 no significant differences in the business, regulatory and financial risks of
22 Niagara Mohawk (or other New York utilities) that would account for the

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1 large differential in the authorized ROEs in New York as compared with
2 the nationwide range of returns.

3

4 **Q. Have any credit rating agencies or investment analysts commented on**
5 **the impact of REV on the risk profile of regulated utilities in New**
6 **York?**

7 A. Yes, both Moody's and UBS have commented on the risk related to REV.
8 Moody's has indicated that the implementation of REV is at best credit
9 neutral for regulated utilities in New York. In the November 2016 report
10 for Niagara Mohawk, Moody's explains:

11 In 2014, the NYPSC began the Reforming the Energy
12 Vision Initiative (REV), a proceeding to consider
13 sweeping reforms to promote clean energy, energy
14 efficiency, and distributed generation. Changes to the
15 regulatory framework will affect the role of
16 distribution utilities like NiMo, including
17 modifications to their rate design. At this early stage,
18 we cannot gauge how REV will affect NiMo's credit
19 quality. However, the uncertainty surrounding REV
20 brings a negative bias to some key factors that drive
21 utility ratings, such as the consistency and
22 predictability of regulation and the ability to recover
23 costs.

24

25 The transition from a traditional rate-regulated
26 monopoly framework to a more market-based revenue
27 model is negative for distribution utilities such as
28 NiMo, since it increases the company's business risk
29 and provides uncertainty as to how the new and
30 developing revenue streams will ultimately result in
31 cash flow and debt service. However, the credit
32 impact will develop over time, as the company and
33 commission implement various initiatives, as concrete
34 operations continue to develop and as financial
35 outcomes are realized.

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1
2 However, we regard it as positive that New York is
3 taking a comprehensive review of the challenges that
4 face the utility sector, such as the proliferation of
5 distributed generation, integration of expanding
6 renewable generation and technology advancements.
7 We see this as a step toward addressing the risk that
8 industry and customer behavior changes rapidly, while
9 utility operational change does not keep pace.
10 Likewise, the cooperation of all industry stakeholders
11 and attention to the appropriate remuneration for utility
12 services is also viewed positively. The ultimate
13 effectiveness of these steps will drive the future credit
14 ratings of NiMo.⁸⁰
15

16
17 UBS also noted that the REV initiatives presented risk related to the
18 forceful effort to introduce competition in T&D alternatives.⁸¹
19

20 **Q. Should the implementation of REV initiatives be considered in the**
21 **determination of the Company's ROE?**

22 A. Yes. The NYPSC is at the forefront of reforming the regulatory structure
23 for electric transmission and distribution utilities in the nation. The
24 Company has been an active participant in the REV proceedings and is
25 working in a collaborative manner to implement the Commission's
26 evolving and innovative policies. The Company's active participation in
27 these innovative programs should be reflected in the ROE that is
28 authorized by the NYPSC.

⁸⁰ Moody's Investors Service Credit Opinion: Niagara Mohawk Power Corporation, November 10, 2016, at 3.

⁸¹ UBS First Read, Consolidated Edison Putting Down the Blast Risk, February 17, 2017, at 2.

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1 **Q. Is there precedent in New York for an ROE premium?**

2 A. Yes. The Commission has recognized and rewarded companies for
3 innovation, management performance and the ability to provide new
4 benefits to customers. In a Rochester Telephone case, the Commission
5 specifically recognized the company for its willingness to innovate, to use
6 creative efforts to manage costs and to provide new benefits to customers.
7 In that case, the Commission authorized an ROE premium of 25 basis
8 points.⁸² While the Company is not seeking a specific ROE premium in
9 this case, the Company's efforts to pursue innovation should be
10 recognized through the adoption of a fully compensatory ROE such as that
11 proposed by the Company in this case.

12

13 **C. Capital Expenditures**

14 **Q. Did you consider any other information regarding the Company's**
15 **risks relative to the proxy group companies?**

16 A. Yes. I also considered the risk related to the Company's future capital
17 expenditures as compared with the proxy group's capital spending plans.

18

19 **Q. Please summarize the projected capital expenditures for Niagara**
20 **Mohawk.**

21 A. The capital expenditure projections for Niagara Mohawk are
22 approximately \$1.732 billion for the period from 2018 through 2021. The
23 Company's program includes significant capital investment in electric and

⁸² Case 27014, *Rochester Telephone Corporation*, July 14, 1977, at 462-463.

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1 gas infrastructure projects designed to enhance the safety and reliability of
2 its systems.

3
4 **Q. Do credit rating agencies recognize the risks associated with**
5 **significant capital expenditures?**

6 A. Yes. From a credit perspective, the additional pressure on cash flows
7 associated with high levels of capital expenditures exerts corresponding
8 pressure on credit metrics and, therefore, credit ratings. A July 2014
9 report from S&P, specifically focused on the then “record” capital
10 expenditures by electric utilities, illustrates the effect of substantial capital
11 expenditures on credit quality:

12 [T]here is little doubt that the U.S. electric industry
13 needs to make record capital expenditures to comply
14 with the proposed carbon pollution rules over the next
15 several years, while maintaining safety standards and
16 grid stability. We believe the higher capital spending
17 and subsequent rise in debt levels could strain these
18 companies’ financial measures, resulting in an almost
19 consistent negative discretionary cash flow throughout
20 this higher construction period. To meet the higher
21 capital spending requirements, companies will require
22 ongoing and steady access to the capital markets,
23 necessitating that the industry maintains its high credit
24 quality. We expect that utilities will continue to
25 effectively manage their regulatory risk by using
26 various creative means to recover their costs and to
27 finance their necessary higher spending.⁸³
28

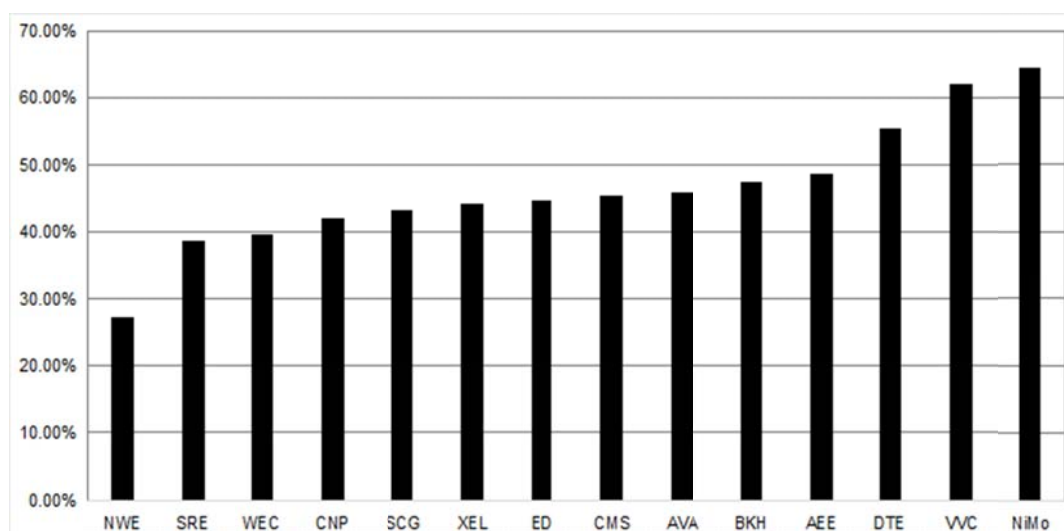
⁸³ Standard and Poor’s, Ratings Direct, “U.S. Regulated Electric Utilities’ Annual Capital Spending Is Poised to Eclipse \$100 Billion,” July 2014.

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1 **Q. Have you conducted any analysis of the Company's projected capital**
2 **expenditures relative to the proxy companies?**

3 A. Yes. I compared the ratio of projected capital expenditures from 2018
4 through 2021 to net utility plant as of December 31, 2015, for Niagara
5 Mohawk with each of the proxy group companies. Chart 5 (also see
6 Exhibit ____ (AEB-13)) demonstrates that Niagara Mohawk's ratio of
7 projected capital expenditures to net plant is greater than all of the proxy
8 group members. Furthermore, as shown in Exhibit ____ (AEB-13), Niagara
9 Mohawk's planned investment ratio of 64.48 percent is well above the
10 proxy group median of 44.59 percent, which suggests that the Company
11 faces greater risk from its capital program than the typical proxy group
12 member.

13 **Chart 5: Capital Expenditures/Net Plant**



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1 **Q. What are your conclusions regarding the effect of the projected**
2 **capital expenditure plans on the risk profile of Niagara Mohawk and**
3 **its cost of equity?**

4 A. It is clear that the Company's capital expenditure requirements as a
5 percentage of net utility plant are higher than the majority of the proxy
6 group companies. This elevated level of capital expenditures relative to
7 the proxy group increases the importance of setting a return for Niagara
8 Mohawk above the average return for the proxy group.

9
10 **VIII. Capital Structure**

11 **Q. Please summarize the company's proposed capital structure.**

12 A. As explained in Company Witness Caldwell's Direct Testimony, the
13 Company is requesting a 48 percent equity ratio for ratemaking purposes,
14 which is more conservative than the Company's actual stand-alone equity
15 ratio. The requested equity ratio is consistent with recent Commission
16 precedent regarding the authorized capital structure for utilities.⁸⁴

17

⁸⁴ See e.g., Case 14-G-0319 *et al.*, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Central Hudson Gas & Electric Corporation for Gas Service*, "Order Approving Rate Plan" (Issued and Effective June 17, 2015); and Case 15-E-0050, *et al.*, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Consolidated Edison Company of New York, Inc. for Electric Service*, "Order Adopting Terms of Joint Proposal to Extend Electric Rate Plan" (Issued and Effective June 19, 2015).

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1 **Q. Have you conducted any analysis of the Company's proposed capital**
2 **structure as compared with the proxy companies?**

3 A. Yes. I have compared Niagara Mohawk's proposed capital structure of 48
4 percent to the authorized capital structures of the companies in the proxy
5 group for the period from 2012 through 2015. As shown on Exhibit ____
6 (AEB-14), the mean annual equity ratio of the proxy companies over that
7 period is 54.44 percent.

8
9 **Q. What do you conclude from this analysis?**

10 A. The requested 48 percent equity ratio is conservative considering the
11 equity ratios of the proxy companies and the current business and financial
12 risks of Niagara Mohawk, including significant capital investment
13 programs. This analysis shows that the utility operating subsidiaries
14 owned by holding companies with similar business characteristics to
15 Niagara Mohawk have for the last two years maintained average common
16 equity ratios more than six percentage points higher than the 48 percent
17 equity ratio, indicating that Niagara Mohawk will have higher financial
18 risk than the proxy group companies if it maintains its equity ratio at 48
19 percent. Therefore, I conclude that the requested equity ratio should be
20 considered a lower bound on the equity ratio that would support the
21 Company's financial integrity.

22

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1 **Q. What is the Commission's policy on determining the authorized**
2 **equity ratio?**

3 A. The Commission has allowed the use of a stand-alone equity ratio if a
4 utility can demonstrate that the credit rating agencies view that utility's
5 credit on a stand-alone basis independent of its parent.

6
7 **Q. Do the credit rating agencies view Niagara Mohawk's credit on a**
8 **stand-alone basis?**

9 A. Yes. The credit rating agencies review and assess the credit risk profile of
10 the individual utility on a stand-alone basis, and Niagara Mohawk is rated
11 on its own financial merits and business risk profile. The rating agencies
12 point to the strong ring-fencing provisions for the Company as a basis for
13 its standalone evaluation.

14
15 **Q. Please describe how the Moody's reports for Niagara Mohawk**
16 **demonstrate that Moody's considers the Company's credit quality on**
17 **a stand-alone basis.**

18 A. In recent reports, Moody's notes that Niagara Mohawk has strong ring
19 fencing provisions that protect the stand-alone ratings.

Testimony of Ann E. Bulkley

1 While there is significant additional debt located at
2 NiMo's parent holding companies, including at
3 National Grid USA (NG USA, Baa1 stable), National
4 Grid North America Inc. (NGNA, Baa1 stable) and
5 National Grid plc (NG, Baa1 Stable), the strong ring-
6 fencing provisions applicable to NiMo reduce the
7 potential for debt to be pushed back down into NiMo
8 and increasing its indebtedness. In particular, we view
9 the explicit leverage restriction for NiMo (to maintain
10 debt-to-capitalisation ratio of less than 55%) as
11 providing the greatest credit support at the current
12 rating level. This provision compares favourably
13 against other utilities within the NG group.
14

15 Additional ring-fencing provisions imposed by the
16 NYPSC for NiMo that we view as credit supportive
17 include: (1) a "special preferred share" provision that
18 reduces the probability of bankruptcy in a distressed
19 situation and (2) the requirement for NiMo to hold an
20 investment grade rating.⁸⁵
21

22
23 **Q. What do you conclude regarding the credit rating agencies' view of**
24 **the credit quality of Niagara Mohawk?**

25 A. Rating agencies are very cognizant of the protective ring-fencing measures
26 that the Commission has established for Niagara Mohawk and cite them as
27 the reason why they assess the Company's credit quality on a stand-alone
28 basis. Because there is factual evidence indicating that the two major
29 credit rating agencies view the Company's credit quality on a stand-alone
30 basis, the stand-alone capital structure proposed in this proceeding is
31 appropriate for the purpose of establishing the ROR on rate base.

⁸⁵ Moody's Investors Service Credit Opinion: Niagara Mohawk Power Corporation, November 10, 2016, at 4.

Testimony of Ann E. Bulkley

1 **Q. How will the capital structure and ROE authorized in this proceeding**
2 **affect the Company's access to capital at reasonable rates?**

3 A. The level of earnings authorized by the Commission directly affects the
4 Company's ability to fund its operations with internally-generated funds.
5 Both bond investors and rating agencies expect a significant portion of
6 ongoing capital investments to be financed with internally-generated
7 funds. It also is important to realize that because a utility's investment
8 horizon is very long, investors require the assurance of an authorized
9 return that causes the coverage ratios to satisfy the long-run financing
10 requirements of debt holders. As such, both the ROE and capital structure
11 are very important to debt and equity investors. Furthermore, considering
12 the capital market conditions discussed in Section IV, the authorized ROE
13 and capital structure take on even greater significance.

14

15 **Q. Does the use of a 48 percent equity ratio have any implications for**
16 **your recommendation concerning the Company's ROE?**

17 A. Yes. The average equity ratio of the proxy companies is higher than 48
18 percent, which means that all else equal, the proxy companies have lower
19 financial risk than is implied by the 48 percent equity ratio proposed by
20 the Company. Given this risk differential and the significance of the
21 overall ROE/capital structure determination to the Company's continuing
22 ability to access capital, it is critically important that the Commission
23 establish an ROE at least equal to 9.79 percent.

Testimony of Ann E. Bulkley

1 **IX. Multi-Year Rate Plan**

2 **Q. Would a multi-year rate plan impact your ROE recommendation?**

3 A. Yes, it would. As noted earlier in my Direct Testimony, Treasury yields
4 remain low by historical standards even as the Federal Reserve has moved
5 toward a more neutral monetary policy. Consensus forecasts show that
6 interest rates are expected to increase in the short term. While the current
7 three-month average yield on the 30-year U.S. Treasury bond as of
8 February 28, 2017, was 3.03 percent, the latest Blue Chip Consensus
9 Forecast for the period 2018 to 2022 is 4.20 percent, an increase of
10 approximately 117 basis points. If interest rates were to increase as
11 predicted, an ROE established based on economic conditions in 2016
12 would not reflect economic conditions during the term of a multi-year rate
13 plan.

14
15 **Q. How might the risks of a multi-year rate plan be addressed?**

16 A. The Commission has in many cases approved three-year rate case
17 settlements that often include stay-out premiums. It is my understanding
18 that the Company has provided three years of forecast data in its rate
19 filing. In keeping with Commission precedent, a stay-out premium would
20 reflect the increased risk faced by the Company under a multi-year rate
21 plan.

22

Testimony of Ann E. Bulkley

1 **Q. How has the Commission typically estimated a stay-out premium?**

2 A. The Commission's approach has typically set the measure of the risk and
3 return trade-off using one half of the yield spread between one-year and
4 three-year Treasury securities.

5
6 **Q. Have you calculated the difference in the expected yield on one-year
7 and three-year Treasuries?**

8 A. Yes. As shown in Exhibit __ (AEB-15), the yield spread between one and
9 three-year Treasury bonds has been increasing steadily over the past three
10 months. On average over the three months ended February 28, 2017,
11 investors in 3-year Treasury bonds required a 66 basis point premium over
12 a one-year yield to lock in a yield for an additional two years. It is also
13 important to note that this spread has been increasing over the past three
14 months. Because this 66 basis point interest differential relates to Treasury
15 securities, the Commission's approach would apply a premium of 33 basis
16 points to the authorized ROE for an additional two-year stay-out period.

17

18 **Q. Does one half of the yield spread between one-year and three-year
19 Treasuries sufficiently reflect the risk to equity investors inherent in a
20 multiyear stay-out?**

21 A. No. The stay-out premium associated with a multi-year rate plan should
22 not only compensate utility investors for changes in the level of interest
23 rates or inflation, but also compensate utility investors for the potential

Testimony of Ann E. Bulkley

1 risk of under-earning that is introduced by “staying out.” By staying out
2 of rate cases, the utility may not fully recover material amounts of capital
3 expenditures and may be required to absorb losses due to differences
4 between the cost of service established in the rate plan and actual levels of
5 revenue and expense. The premium should compensate the utility for
6 these additional risks over and above interest rate risk. In the current
7 market environment, there is additional risk that the authorized ROE will
8 be lower than investors’ expectations as interest rates are expected to
9 increase.

10

11 **Q. What do you propose as the stay-out premium for a three-year rate**
12 **plan?**

13 A. The ROE proposed by Niagara Mohawk of 9.79 percent will not provide
14 the Company a return commensurate with returns available on investments
15 of similar risk over the term of the multi-year rate plan without an
16 adequate stay-out premium. Based on the analysis discussed above, I
17 recommend that a stay-out premium of 50 basis points is a reasonable,
18 albeit conservative, reflection of the incremental risk to the Company
19 under a multi-year stay-out provision.

20

Testimony of Ann E. Bulkley

1 **X. Conclusion and Recommendation**

2 **Q. What is your conclusion regarding a fair return on equity for Niagara**
3 **Mohawk?**

4 A. My recommended ROE considers the results of the DCF and CAPM
5 methodologies, summarized in Table 6, and the specific business and
6 financial risks to which the Company is exposed. The range, established
7 based on an equal weighting of the DCF and CAPM results, is between
8 9.63 percent and 10.03 percent. The FERC's application of the DCF
9 model in Opinion Nos. 531 and 551 results in an ROE of 9.38 percent to
10 10.10 percent. In addition, the Company is an active participant in the
11 most innovative change in traditional utility regulation (*i.e.*, REV) that is
12 occurring in the entire country. This change is not reflected in the ROEs
13 of the proxy companies, and reasonably warrants an ROE premium.
14 Commission precedent has been to consider premiums of 25 basis points
15 for the implementation of innovative programs, which the Company is not
16 requesting in this case. Based on all these factors, the Company's
17 requested ROE of 9.79 percent is conservative and should be adopted.
18 Furthermore, if the Commission adopts a multi-year settlement that
19 includes a stay-out period, a premium of 50 basis points should be added
20 to the ROE.

Testimony of Ann E. Bulkley

Table 6: Summary of Analytical Results

	Low	Mean	High
Multi-Stage DCF	9.13%	9.34%	9.62%
Mean CAPM	10.14%	10.24%	10.45%
Mean ROE (50/50 weighting)	9.63%	9.79%	10.03%
FERC DCF Methodology	9.38%	9.64%	10.10%

Q. What is your conclusion regarding the Company's proposed common equity ratio?

A. Niagara Mohawk's proposed common equity ratio of 48 percent for ratemaking purposes is below the mean and median equity ratios for the operating companies held by the proxy group. On that basis, I conclude that Niagara Mohawk's proposed common equity ratio is consistent with the range for the proxy group and lower than the mean and median equity ratio. Further, the Company has substantial ring-fencing provisions in place that insulate the operating utilities from the parent company and make use of Niagara Mohawk's equity ratio appropriate for ratemaking purposes.

Q. Does this conclude your Direct Testimony?

A. Yes, it does.



Ann E. Bulkley
Senior Vice President

Ms. Bulkley more than two decades of management and economic consulting experience in the energy industry. Ms. Bulkley has extensive state and federal regulatory experience on both electric and natural gas issues including rate of return, cost of equity and capital structure issues. Ms. Bulkley has advised clients seeking to acquire utility assets, providing valuation services including an understanding of regulation, market expected returns, and the assessment of utility risk factors. Ms. Bulkley has assisted clients with valuations of public utility and industrial properties for ratemaking, purchase and sale considerations, ad valorem tax assessments, and accounting and financial purposes. In addition, Ms. Bulkley has experience in the areas of contract and business unit valuation, strategic alliances, market restructuring and regulatory and litigation support.

REPRESENTATIVE PROJECT EXPERIENCE

Regulatory Analysis and Ratemaking

Ms. Bulkley has provided a range of advisory services relating to regulatory policy analysis and many aspects of utility ratemaking. Specific services have included: cost of capital and return on equity testimony, cost of service and rate design analysis and testimony, development of ratemaking strategies; development of merchant function exit strategies; analysis and program development to address residual energy supply and/or provider of last resort obligations; stranded costs assessment and recovery; performance-based ratemaking analysis and design; and many aspects of traditional utility ratemaking (e.g., rate design, rate base valuation).

Cost of Capital

Ms. Bulkley has provided expert testimony on the cost of capital testimony before several state regulatory commissions. In addition, Ms. Bulkley has prepared and provided supporting analysis for at least forty Federal and State regulatory proceedings over the past seven years. Ms. Bulkley's expert testimony experience includes:

- Northern States Power Company: Before the North Dakota Public Service Commission, provided expert testimony on the cost of capital for the company's North Dakota electric utility operations.
- WE Energies: Before the Michigan Public Service Commission, provided expert testimony in support of the company's cost of capital for its electric utility operations.



- Atmos Energy: Provided expert testimony in support of the company's return on equity and capital structure before the Public Utilities Commission for the State of Colorado.
- UNS Electric: Provided expert testimony in support of the company's return on equity and capital structure before the Arizona Corporation Commission.
- Portland Natural Gas Transmission: Provided testimony strategy as well as analytical support for cost of capital testimony before the Federal Energy Regulatory Commission.
- In addition to the specific cases listed above, Ms. Bulkley has provided testimony strategy as well as analytical support on cost of capital in several cases in the following states: Arizona, Colorado, Connecticut, Massachusetts, Minnesota, New Mexico, New York, North Carolina, South Carolina, South Dakota, Virginia, and Utah.

Valuation

Ms. Bulkley has provided valuation services to utility clients, unregulated generators and private equity clients for a variety of purposes including ratemaking, fair value, ad valorem tax, litigation and damages, and acquisition. Ms. Bulkley's appraisal practices are consistent with the national standards established by the Uniform Standards of Professional Appraisal Practice. In addition, Ms. Bulkley has relied on other simulation based valuation methodologies.

Representative projects/clients have included:

- Northern Indiana Fuel and Light: Provided expert testimony regarding the fair value of the company's natural gas distribution system assets. Valuation relied on cost approach.
- Kokomo Gas: Provided expert testimony regarding the fair value of the company's natural gas distribution system assets. Valuation relied on cost approach.
- Prepared fair value rate base analyses for Northern Indiana Public Service Company for several electric rate proceedings. Valuation approaches used in this project included income, cost and comparable sales approaches.
- Confidential Utility Client: Prepared valuation of fossil and nuclear generation assets for financing purposes for regulated utility client.
- Prepared a valuation of a portfolio of generation assets for a large energy utility to be used for strategic planning purposes. Valuation approach included an income approach, a real options analysis and a risk analysis.
- Assisted clients in the restructuring of NUG contracts through the valuation of the underlying assets. Performed analysis to determine the option value of a plant in a competitively priced electricity market following the settlement of the NUG contract.



- Prepared market valuations of several purchase power contracts for large electric utilities in the sale of purchase power contracts. Assignment included an assessment of the regional power market, analysis of the underlying purchase power contracts, a traditional discounted cash flow valuation approach, as well as a risk analysis. Analyzed bids from potential acquirers using income and risk analysis approached. Prepared an assessment of the credit issues and value at risk for the selling utility.
- Prepared appraisal of a portfolio of generating facilities for a large electric utility to be used for financing purposes.
- Prepared an appraisal of a fleet of fossil generating assets for a large electric utility to establish the value of assets transferred from utility property.
- Conducted due diligence on an electric transmission and distribution system as part of a buy-side due diligence team.
- Provided analytical support for and prepared appraisal reports of generation assets to be used in ad valorem tax disputes.
- Provided analytical support and prepared testimony regarding the valuation of electric distribution system assets in five communities in a condemnation proceeding.
- Valued purchase power agreements in the transfer of assets to a deregulated electric market.

Ratemaking

Ms. Bulkley has assisted several clients with analysis to support investor-owned and municipal utility clients in the preparation of rate cases. Sample engagements include:

- Assisted several investor-owned and municipal clients on cost allocation and rate design issues including the development of expert testimony supporting recommended rate alternatives.
- Worked with Canadian regulatory staff to establish filing requirements for a rate review of a newly regulated electric utility. Analyzed and evaluated rate application. Attended hearings and conducted investigation of rate application for regulatory staff. Prepared, supported and defended recommendations for revenue requirements and rates for the company. Developed rates for gas utility for transportation program and ancillary services.

Strategic and Financial Advisory Services

Ms. Bulkley has assisted several clients across North America with analytically based strategic planning, due diligence and financial advisory services.

Representative projects include:

- Preparation of feasibility studies for bond issuances for municipal and district steam clients.



- Assisted in the development of a generation strategy for an electric utility. Analyzed various NERC regions to identify potential market entry points. Evaluated potential competitors and alliance partners. Assisted in the development of gas and electric price forecasts. Developed a framework for the implementation of a risk management program.
- Assisted clients in identifying potential joint venture opportunities and alliance partners. Contacted interviewed, and evaluated potential alliance candidates based on company-established criteria for several LDCs and marketing companies. Worked with several LDCs and unregulated marketing companies to establish alliances to enter into the retail energy market. Prepared testimony in support of several merger cases and participated in the regulatory process to obtain approval for these mergers.
- Assisted clients in several buy-side due diligence efforts, providing regulatory insight and developing valuation recommendations for acquisitions of both electric and gas properties.

PROFESSIONAL HISTORY

Concentric Energy Advisors, Inc. (2002 – Present)

Senior Vice President

Vice President

Assistant Vice President

Project Manager

Navigant Consulting, Inc. (1995 – 2002)

Project Manager

Cahners Publishing Company (1995)

Economist

EDUCATION

M.A., Economics, Boston University, 1995

B.A., Economics and Finance, Simmons College, 1991

Certified General Appraiser licensed in the Commonwealth of Massachusetts



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Arizona Corporation Commission				
Tucson Electric Power Company	11/15	Tucson Electric Power Company	Docket No. E-01933A-15-0322	Return on Equity
UNS Electric	12/12	UNS Electric	Docket No. E-04204A-12-0504	Return on Equity
UNS Electric	05/15	UNS Electric	Docket No. E-04204A-15-0142	Return on Equity
Arkansas Public Service Commission				
Arkansas Oklahoma Gas Corporation	10/13	Arkansas Oklahoma Gas Corporation	Docket No. 13-078-U	Return on Equity
Colorado Public Utilities Commission				
Atmos Energy Corporation	05/13	Atmos Energy Corporation	Docket No. 13AL-0496G	Return on Equity
Atmos Energy Corporation	04/14	Atmos Energy Corporation	Docket No. 14AL-0300G	Return on Equity
Atmos Energy Corporation	05/15	Atmos Energy Corporation	Docket No. 15AL-0299G	Return on Equity
Connecticut Public Utilities Regulatory Authority				
The United Illuminating Company	07/16	The United Illuminating Company	Docket No. 16-06-04	Return on Equity
Federal Energy Regulatory Commission				
Tallgrass Interstate Gas Transmission	10/15	Tallgrass Interstate Gas Transmission	RP16-137	Return on Equity
Indiana Utility Regulatory Commission				
Indianapolis Power and Light Company	09/15	Indianapolis Power and Light Company	Cause No. 44576 Cause No. 44602	Fair Value



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Indianapolis Power and Light Company	12/16	Indianapolis Power and Light Company	Cause No.44893	Fair Value
Kokomo Gas and Fuel Company	09/10	Kokomo Gas and Fuel Company	Cause No. 43942	Fair Value
Northern Indiana Fuel and Light Company, Inc.	09/10	Northern Indiana Fuel and Light Company, Inc.	Cause No. 43943	Fair Value
Northern Indiana Public Service Company	10/15	Northern Indiana Public Service Company	Cause No. 44688	Fair Value
Kansas Corporation Commission				
Atmos Energy Corporation	08/15	Atmos Energy Corporation	Docket No. 16-ATMG-079-RTS	Return on Equity
Massachusetts Department of Public Utilities				
Unitil Corporation	01/04	Fitchburg Gas and Electric	DTE 03-52	Integrated Resource Plan; Gas Demand Forecast
Michigan Public Service Commission				
Wisconsin Electric Power Company	12/11	Wisconsin Electric Power Company	Case No. U-16830	Return on Equity
Michigan Tax Tribunal				
Covert Township	07/14	New Covert Generating Co., LLC.	Docket No. 399578	Valuation of Electric Generation Assets
New Mexico Public Regulation Commission				
Southwestern Public Service Company	06/15	Southwestern Public Service Company	Case No. -15-001398-UT	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
Southwestern Public Service Company	10/15	Southwestern Public Service Company	Case No. -15-00296-UT	Return on Equity
Southwestern Public Service Company	12/16	Southwestern Public Service Company	Case No. – 16-00269-UT	Return on Equity
New York State Department of Public Service				
Corning Natural Gas Corporation	06/16	Corning Natural Gas Corporation	Case No. 16-G-0369	Return on Equity
KeySpan Energy Delivery	01/16	KeySpan Energy Delivery	Case No. 15-G-0059	Return on Equity
National Fuel Gas Company	04/16	National Fuel Gas Company	Case No. 16-G-0257	Return on Equity
New York State Electric and Gas Company	05/15	New York State Electric and Gas Company	Case No. 15-G-0284	Return on Equity
North Dakota Public Service Commission				
Northern States Power Company	12/10	Northern States Power Company	C-PU-10-657	Return on Equity
Northern States Power Company	12/12	Northern States Power Company	C-PU-12-813	Return on Equity
Oklahoma Corporation Commission				
Arkansas Oklahoma Gas Corporation	01/13	Arkansas Oklahoma Gas Corporation	Cause No. PUD 201200236	Return on Equity
Public Utility Commission of Texas				
Southwestern Public Service Company	01/14	Southwestern Public Service Company	Docket No. 42004	Return on Equity



SPONSOR	DATE	CASE/APPLICANT	DOCKET /CASE NO.	SUBJECT
South Dakota Public Utilities Commission				
Northern States Power Company	06/14	Northern States Power Company	Docket No. EL14-058	Return on Equity

Exhibits of
Ann E. Bulkley

Testimony of Ann E. Bulkley

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Exhibit__ (AEB-4)	Capital Asset Pricing Model – Combined Utility Proxy Group
Exhibit__ (AEB-5)	Market Risk Premium Derived From Analysts’ Long-Term Growth Estimates
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Exhibit__ (AEB-7)	Risk Premium – Electric Utilities
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Exhibit__ (AEB-15)	Utility Debt and Treasury Yields

Testimony of Ann E. Bulkley

Exhibit __ (AEB-1)

3-Month Multi-Stage DCF – Combined Utility Proxy Group

3 MONTH MULTI-STAGE DCF -- MEAN GROWTH RATE -- COMBINED UTILITY PROXY GROUP

Company	Ticker	Stock Price	Annualized Dividend	[3]		[4]		[5]		[6]		[7]					[8]		[9]		[10]		[11]		Third Stage Growth	ROE	
				Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	First Stage Growth	Year 6	Year 7	Year 8	Year 9	Year 10	Second Stage Growth														
Ameren Corporation	AEE	\$52.16	\$1.76	6.00%	5.85%	6.50%	6.12%	6.03%	5.94%	5.86%	5.77%	5.68%	5.60%	9.44%													
Avista Corporation	AVA	\$39.69	\$1.43	3.00%	5.65%	n/a	4.33%	4.54%	4.75%	4.96%	5.17%	5.39%	5.60%	9.25%													
Black Hills Corporation	BKH	\$61.48	\$1.78	7.50%	10.48%	6.20%	8.06%	7.65%	7.24%	6.83%	6.42%	6.01%	5.60%	9.32%													
CenterPoint Energy, Inc.	CNP	\$25.40	\$1.07	2.00%	6.90%	5.00%	4.63%	4.79%	4.96%	5.12%	5.28%	5.44%	5.60%	9.98%													
CMS Energy Corporation	CMS	\$42.06	\$1.33	6.00%	7.60%	6.00%	6.53%	6.38%	6.22%	6.07%	5.91%	5.75%	5.60%	9.29%													
Consolidated Edison, Inc.	ED	\$73.37	\$2.76	3.00%	3.51%	3.10%	3.20%	3.60%	4.00%	4.40%	4.80%	5.20%	5.60%	9.15%													
DTE Energy Company	DTE	\$98.12	\$3.30	6.00%	5.05%	6.00%	5.68%	5.67%	5.66%	5.64%	5.63%	5.61%	5.60%	9.32%													
NorthWestern Corporation	NWE	\$66.87	\$2.00	6.50%	3.94%	4.30%	4.91%	5.03%	5.14%	5.26%	5.37%	5.48%	5.60%	9.30%													
SCANA Corporation	SCG	\$70.94	\$2.30	4.50%	5.70%	5.30%	5.17%	5.24%	5.31%	5.38%	5.45%	5.53%	5.60%	9.06%													
Sempra Energy	SRE	\$102.74	\$3.02	8.00%	6.50%	7.40%	7.30%	7.02%	6.73%	6.45%	6.17%	5.88%	5.60%	9.20%													
Vectren Corporation	VVC	\$53.43	\$1.68	9.00%	4.57%	5.30%	6.29%	6.17%	6.06%	5.94%	5.83%	5.71%	5.60%	9.21%													
Wisconsin Energy Corporation	WEC	\$68.04	\$2.08	6.00%	6.73%	6.00%	6.24%	6.14%	6.03%	5.92%	5.81%	5.71%	5.60%	9.72%													
Xcel Energy Inc.	XEL	\$40.97	\$1.36	5.50%	5.65%	5.40%	5.52%	5.53%	5.54%	5.56%	5.57%	5.58%	5.60%	9.23%													
Mean														9.34%													
Median														9.23%													
High														9.98%													
Midpoint between Median and High														9.64%													

Notes

[1] Source: Bloomberg Professional, equals 3-Month average as of February 28, 2017

[2] Source: Bloomberg Professional

[3] Source: Value Line

[4] Source: Yahoo! Finance

[5] Source: Zacks

[6] Equals Average ([3], [4], [5])

[7] Equals [6] + ([12] - [6]) / 6

[8] Equals [7] + ([12] - [6]) / 6

[9] Equals [8] + ([12] - [6]) / 6

[10] Equals [9] + ([12] - [6]) / 6

[11] Equals [10] + ([12] - [6]) / 6

[12] Source: Exhibit __ (AEB-2)

[13] Equals internal rate of return of cash flows for Year 0 through Year 200

3-MONTH MULTI-STAGE DCF -- LOW GROWTH RATE -- COMBINED UTILITY PROXY GROUP

Company	Ticker	Stock Price	Annualized Dividend	Value Line EPS Growth	Yahoo! Finance EPS Growth	Zacks EPS Growth	First Stage Growth	Second Stage Growth					Third Stage Growth	ROE
								Year 6	Year 7	Year 8	Year 9	Year 10		
Ameren Corporation	AEE	\$52.16	\$1.76	6.00%	5.85%	6.50%	5.85%	5.81%	5.77%	5.72%	5.68%	5.64%	5.60%	9.37%
Avista Corporation	AVA	\$39.69	\$1.43	3.00%	5.65%	n/a	3.00%	3.43%	3.87%	4.30%	4.73%	5.17%	5.60%	8.94%
Black Hills Corporation	BKH	\$61.48	\$1.78	7.50%	10.48%	6.20%	6.20%	6.10%	6.00%	5.90%	5.80%	5.70%	5.60%	8.90%
CenterPoint Energy, Inc.	CNP	\$25.40	\$1.07	2.00%	6.90%	5.00%	2.00%	2.60%	3.20%	3.80%	4.40%	5.00%	5.60%	9.28%
CMS Energy Corporation	CMS	\$42.06	\$1.33	6.00%	7.60%	6.00%	6.00%	5.93%	5.87%	5.80%	5.73%	5.67%	5.60%	9.17%
Consolidated Edison, Inc.	ED	\$73.37	\$2.76	3.00%	3.51%	3.10%	3.00%	3.43%	3.87%	4.30%	4.73%	5.17%	5.60%	9.10%
DTE Energy Company	DTE	\$98.12	\$3.30	6.00%	5.05%	6.00%	5.05%	5.14%	5.23%	5.32%	5.42%	5.51%	5.60%	9.17%
NorthWestern Corporation	NWE	\$66.87	\$2.00	6.50%	3.94%	4.30%	3.94%	4.22%	4.49%	4.77%	5.05%	5.32%	5.60%	9.07%
SCANA Corporation	SCG	\$70.94	\$2.30	4.50%	5.70%	5.30%	4.50%	4.68%	4.87%	5.05%	5.23%	5.42%	5.60%	8.91%
Sempra Energy	SRE	\$102.74	\$3.02	8.00%	6.50%	7.40%	6.50%	6.35%	6.20%	6.05%	5.90%	5.75%	5.60%	9.02%
Vectren Corporation	VVC	\$53.43	\$1.68	9.00%	4.57%	5.30%	4.57%	4.74%	4.91%	5.08%	5.26%	5.43%	5.60%	8.83%
Wisconsin Energy Corporation	WEC	\$68.04	\$2.08	6.00%	6.73%	6.00%	6.00%	5.93%	5.87%	5.80%	5.73%	5.67%	5.60%	9.65%
Xcel Energy Inc.	XEL	\$40.97	\$1.36	5.50%	5.65%	5.40%	5.40%	5.43%	5.47%	5.50%	5.53%	5.57%	5.60%	9.20%
Mean														9.13%
Median														9.10%
High														9.65%
Midpoint between Median and High														9.38%

Notes

- [1] Source: Bloomberg Professional, equals 3-Month average as of February 28, 2017
[2] Source: Bloomberg Professional
[3] Source: Value Line
[4] Source: Yahoo! Finance
[5] Source: Zacks
[6] Equals Minimum ([3], [4], [5])
[7] Equals [6] + ([12] - [6]) / 6
[8] Equals [7] + ([12] - [6]) / 6
[9] Equals [8] + ([12] - [6]) / 6
[10] Equals [9] + ([12] - [6]) / 6
[11] Equals [10] + ([12] - [6]) / 6
[12] Source: Exhibit __ (AEB-2)
[13] Equals internal rate of return of cash flows for Year 0 through Year 200

3-MONTH MULTI-STAGE DCF -- HIGH GROWTH RATE -- COMBINED UTILITY PROXY GROUP

Company	Ticker	Stock Price	Annualized Dividend	[3]		[4]		Zacks	First Stage Growth	Second Stage Growth										Third Stage Growth	ROE
				Value Line		Yahoo Finance				Year 6	Year 7	Year 8	Year 9	Year 10							
				EPS Growth	EPS Growth	EPS Growth	EPS Growth														
Ameren Corporation	AEE	\$52.16	\$1.76	6.00%	5.85%	6.50%	6.50%	6.50%	6.50%	6.35%	6.20%	6.05%	5.90%	5.75%	5.60%	5.60%	9.53%				
Avista Corporation	AVA	\$39.69	\$1.43	3.00%	5.65%	n/a	n/a	n/a	5.65%	5.64%	5.63%	5.62%	5.62%	5.61%	5.60%	5.60%	9.58%				
Black Hills Corporation	BKH	\$61.48	\$1.78	7.50%	10.48%	6.20%	6.20%	6.20%	10.48%	9.67%	8.85%	8.04%	7.23%	6.41%	5.60%	5.60%	9.92%				
CenterPoint Energy, Inc.	CNP	\$25.40	\$1.07	2.00%	6.90%	5.00%	5.00%	5.00%	6.90%	6.68%	6.47%	6.25%	6.03%	5.82%	5.60%	5.60%	10.65%				
CMS Energy Corporation	CMS	\$42.06	\$1.33	6.00%	7.60%	6.00%	6.00%	6.00%	7.60%	7.27%	6.93%	6.60%	6.27%	5.93%	5.60%	5.60%	9.55%				
Consolidated Edison, Inc.	ED	\$73.37	\$2.76	3.00%	3.51%	3.10%	3.10%	3.10%	3.51%	3.86%	4.21%	4.55%	4.90%	5.25%	5.60%	5.60%	9.22%				
DTE Energy Company	DTE	\$98.12	\$3.30	6.00%	5.05%	6.00%	6.00%	6.00%	6.00%	5.93%	5.87%	5.80%	5.73%	5.67%	5.60%	5.60%	9.40%				
NorthWestern Corporation	NWE	\$66.87	\$2.00	6.50%	3.94%	4.30%	4.30%	4.30%	6.50%	6.35%	6.20%	6.05%	5.90%	5.75%	5.60%	5.60%	9.70%				
SCANA Corporation	SCG	\$70.94	\$2.30	4.50%	5.70%	5.30%	5.30%	5.30%	5.70%	5.68%	5.67%	5.65%	5.63%	5.62%	5.60%	5.60%	9.19%				
Sempra Energy	SRE	\$102.74	\$3.02	8.00%	6.50%	7.40%	7.40%	7.40%	8.00%	7.60%	7.20%	6.80%	6.40%	6.00%	5.60%	5.60%	9.36%				
Vectren Corporation	VVC	\$53.43	\$1.68	9.00%	4.57%	5.30%	5.30%	5.30%	9.00%	8.43%	7.87%	7.30%	6.73%	6.17%	5.60%	5.60%	9.88%				
Wisconsin Energy Corporation	WEC	\$68.04	\$2.08	6.00%	6.73%	6.00%	6.00%	6.00%	6.73%	6.54%	6.35%	6.16%	5.98%	5.79%	5.60%	5.60%	9.84%				
Xcel Energy Inc.	XEL	\$40.97	\$1.36	5.50%	5.65%	5.40%	5.40%	5.40%	5.65%	5.64%	5.63%	5.62%	5.62%	5.61%	5.60%	5.60%	9.26%				
Mean																	9.62%				
Median																	9.55%				
High																	10.65%				
Midpoint between Median and High																	10.10%				

Notes

[1] Source: Bloomberg Professional, equals 3-Month average as of February 28, 2017

[2] Source: Bloomberg Professional

[3] Source: Value Line

[4] Source: Yahoo! Finance

[5] Source: Zacks

[6] Equals Maximum ([3], [4], [5])

[7] Equals [6] + ([12] - [6]) / 6

[8] Equals [7] + ([12] - [6]) / 6

[9] Equals [8] + ([12] - [6]) / 6

[10] Equals [9] + ([12] - [6]) / 6

[11] Equals [10] + ([12] - [6]) / 6

[12] Source: Exhibit __ (AEB-2)

[13] Equals internal rate of return of cash flows for Year 0 through Year 200

Testimony of Ann E. Bulkley

Exhibit __ (AEB-2)

Calculation of Long-Term GDP Growth Rate

CALCULATION OF LONG-TERM GDP GROWTH RATE

Step 1

Real GDP (\$ Billions) [1]	
1929	\$ 1,056.6
2016	\$ 16,659.8
Compound Annual Growth Rate	3.22%

Step 2

Consumer Price Index (YoY % Change) [2]	
2023-2027	2.30%
Average	2.30%

Consumer Price Index (All-Urban, 1982-84 = 1.00) [3]	
2027	3.12
2040	4.27
Compound Annual Growth Rate	2.44%

GDP Chain-type Price Index (2009 = 1.00) [3]	
2027	1.40
2040	1.85
Compound Annual Growth Rate	2.17%

Average Inflation Forecast 2.30%

Long-Term GDP Growth Rate 5.60%

Notes:

[1] Bureau of Economic Analysis, Feb 28, 2017

[2] Blue Chip Financial Forecasts, Vol. 35, No. 12, Dec 1, 2016, at 14

[3] Energy Information Administration, Annual Energy Outlook Early Release 2016, Table 20 Macroeconomic Indicators

Testimony of Ann E. Bulkley

Exhibit __ (AEB-3)

Bank of America Merrill Lynch Quantitative Profiles: After beta, its value

Quantitative Profiles

After beta, it's value

**Bank of America
Merrill Lynch**

12 December 2016

2016's beta rally is in full swing. Now what?

We pointed out [early this year](#) that the valuation of "safe" versus "risky" stocks (measured by low vs. high beta) reached an all-time high, and it felt as though something had to give. And it did. 2016 saw the highest beta stocks outperform most other factor baskets from that point, surging 12% in November amid the so-called Trump rally. And this is not surprising: generally, early anticipation of cyclical recoveries begins with a risk rally led by higher beta, riskier, smaller companies. But beta rallies are typically short-lived and give way to more extended periods during which Value outperforms by the widest margin. Over the last twenty years, there have been four beta rallies of consequence, and *each one* has been followed by a period during which valuation metrics were the strongest predictors of outperformance (Chart 1, below). See page 10 inside for our current Low P/E screen.

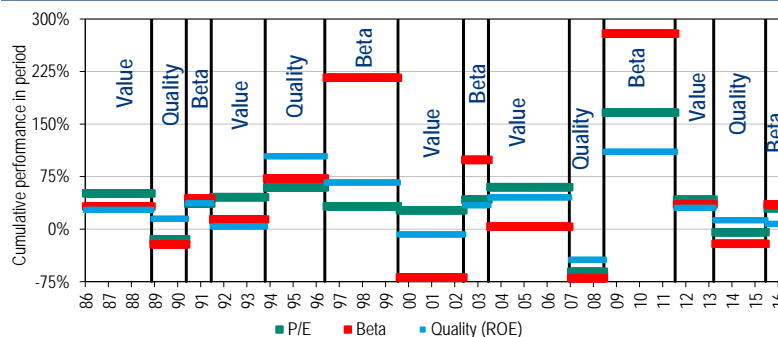
Value already ahead of growth, EPS trends say stick with it

Value factors have already begun to outperform growth factors this year [as we anticipated](#), and not only are beta rallies typically followed by value-driven markets, but our earnings outlook suggests this should continue. Our work suggests the most important determinant between growth and value performance is the scarcity or abundance of growth. When growth is scarce, investors tend to pay up for unassailable growth. But when growth troughs and begins to broaden out, as we have seen since the end of [1016](#), investors become price-sensitive and tend to seek out inexpensive growth. This year, Low Price to Book Value and Low Price to Earnings have outperformed the market by 15.5ppt and 8.9ppt, respectively, but the run may have just begun.

Short-term momentum worked, long-term did not

Momentum factors (+6.3% on avg.) outperformed the index last month, as they have slowly morphed from quality and growth to risk and value – shorter term, more adaptive factors generally fared well, with 3-month Momentum and 5wk/30wk Relative Strength among the top five factors in November. Meanwhile, longer term momentum factors were weak, with 12-mth Momentum and 30wk/75wk Relative Strength among the bottom five factors in November. But 2016 has not been a momentum year – the technical factors we follow trail the benchmark by 6.4ppt, and remain behind all other factor groups.

Chart 1: Cumulative performance of Value, Quality & Beta factors during various regimes, 1986-11/30/16



Source: BofA Merrill Lynch US Equity & US Quant Strategy

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Refer to important disclosures on page 64 to 65.

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Top 5 screens in November	Perf.
Low Price to Book Value	12.4%
High Beta	11.9%
Price Returns (3-Month)	11.0%
Relative Strength (5wk/30wk)	11.0%
Upward Estimate Revisions	10.9%
S&P 500 (Equal weighted)	5.0%

Bottom 5 screens in November	Perf.
High Duration	1.2%
Price Returns (11-Month since 1 yr ago)	1.2%
DDM Valuation	1.4%
Relative Strength (30wk/75wk)	1.5%
Price Returns (12-Month)	1.8%
S&P 500 (Equal weighted)	5.0%

Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

VALUATION STRATEGIES: Dividend Discount Model Alpha

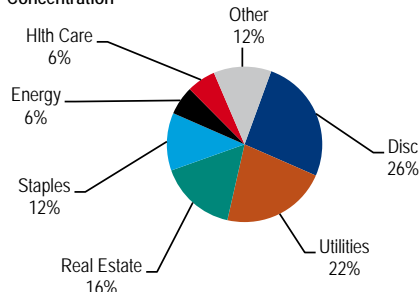
Top S&P 500 Companies By DDM ALPHA

Dividend Discount Model Alpha: The implied return from the BofAML Quantitative

Strategy three-stage dividend discount model less the required return from a

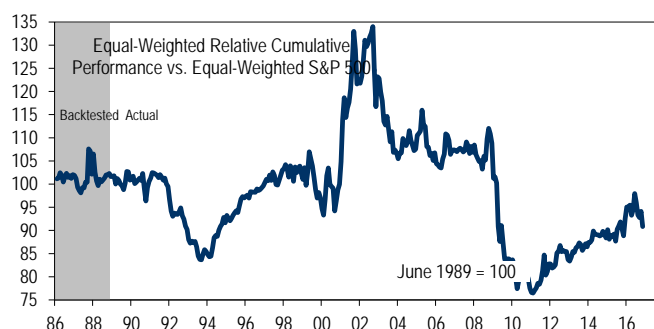
Capital Asset Pricing Model. Presented as a decile rank.

Sector Concentration



Absolute Returns

Last 1 Month	1.37%
Last 3 Months	-0.46%
Last 6 Months	2.30%
Last 12 Months	11.22%
2016 YTD	9.74%
2016 YTD	9.46%



Source: BofA Merrill Lynch US Quantitative Strategy

The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for December

Mo. In Scrn	Company	Ticker	DDM Alpha	Price 11/30/2016	Mo. In Scrn	Company	Ticker	DDM Alpha	Price 11/30/2016
20	CABOT OIL & GAS CORP	COG	1	22.12	14	CONAGRA BRANDS INC	CAG	2	36.69
15	CARNIVAL CORP/PLC (USA)	CCL	1	51.41	New	CONSTELLATION BRANDS	STZ	2	151.14
New	CIMAREX ENERGY CO	XEC	1	137.88	23	DOLLAR TREE INC	DLTR	2	88.16
2	COACH INC	COH	1	36.39	2	ELECTRONIC ARTS INC	EA	2	79.24
37	CONSOLIDATED EDISON INC	ED	1	69.77	17	ENERGY CORP	ETR	2	68.73
14	DARDEN RESTAURANTS INC	DRI	1	73.30	20	EQUINIX INC	EQIX	2	338.76
10	DISCOVERY COMMUNICATIONS INC	DISCA	1	27.09	2	EQUITY RESIDENTIAL	EQR	2	60.01
34	DOMINION RESOURCES INC	D	1	73.29	17	EXELON CORP	EXC	2	32.51
25	DTE ENERGY CO	DTE	1	93.09	New	GAP INC	GPS	2	24.97
9	DUKE ENERGY CORP	DUK	1	73.77	2	GENERAL MOTORS CO	GM	2	34.53
13	FACEBOOK INC	FB	1	118.42	2	HCA HOLDINGS INC	HCA	2	70.89
10	KRAFT HEINZ CO	KHC	1	81.65	4	HERSHEY CO	HSY	2	96.64
16	LILLY (ELI) & CO	LLY	1	67.12	14	MACY'S INC	M	2	42.20
New	NEXTERA ENERGY INC	NEE	1	114.23	New	NEWFIELD EXPLORATION CO	NFX	2	45.22
2	NISOURCE INC	NI	1	21.94	New	PG&E CORP	PCG	2	58.80
42	SOUTHERN CO	SO	1	46.82	5	PINNACLE WEST CAPITAL CORP	PNW	2	73.93
3	URBAN OUTFITTERS INC	URBN	1	31.60	2	PULTEGROUP INC	PHM	2	18.86
3	VENTAS INC	VTR	1	60.42	2	STARBUCKS CORP	SBUX	2	57.97
12	WELLTOWER INC	HCN	1	62.78	New	UDR INC	UDR	2	34.04
New	AMERICAN TOWER CORP	AMT	2	102.27	New	UNDER ARMOUR INC	UA	2	30.80
New	APARTMENT INVST & MGMT CO	AIV	2	42.10	14	UNITEDHEALTH GROUP INC	UNH	2	158.32
60	AUTOZONE INC	AZO	2	783.18	23	VERIZON COMMUNICATIONS INC	VZ	2	49.90
New	AVALONBAY COMMUNITIES INC	AVB	2	164.49	5	VULCAN MATERIALS CO	VMC	2	125.65
14	C H ROBINSON WORLDWIDE INC	CHRW	2	74.85	7	WAL-MART STORES INC	WMT	2	70.43
New	CLOROX CO/DE	CLX	2	115.56	16	WELLS FARGO & CO	WFC	2	52.92

BofAML Universe Sector/Industry Factor Evaluation

	# of Comp	Valuation Analysis					Expectation Analysis										EPS Growth	
		% Univ BofAML	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofAML Adj Beta	P/E Ratio	Price/ Book	Yield	Surprise	Earnings (Decile)			Est. Rev.	PR 5yr Growth	2016E	2017E
Economic Sectors																		
Energy	128	8.63	12.0	12.0	0	31.1	1.10	25.8	1.88	3.3	3	7	5	9	6	4.7	-63	211
Materials	56	3.20	10.8	12.8	-2	33.6	1.19	17.8	3.62	2.0	7	5	6	6	6	11.3	6	19
Industrials	128	9.70	10.5	11.4	-0.9	32.9	1.04	17.8	3.90	2.1	7	5	5	4	6	8.6	0	4
Consumer Discretionary	181	12.57	11.7	11.8	-0.1	31.5	1.09	18.4	4.07	1.5	5	4	6	5	6	18.9	13	10
Consumer Staples	50	8.61	10.0	8.9	1.1	33.3	0.77	19.1	4.11	2.8	6	3	5	3	5	8.7	4	8
Health Care	162	13.79	10.7	10.7	0	34.0	0.97	15.6	3.38	1.7	6	5	6	3	5	10.6	8	9
Financials	153	12.05	10.9	12.8	-1.9	32.3	1.20	13.2	1.30	2.2	6	5	5	5	4	8.9	3	11
Information Technology	153	22.23	11.8	11.7	0.1	31.1	1.08	16.5	4.43	1.3	4	4	7	5	4	15.7	7	14
Telecommunication Services	13	2.70	9.3	7.9	1.4	35.2	0.66	14.6	2.64	4.1	3	8	5	4	6	5.4	9	6
Utilities	46	2.66	9.7	6.5	3.2	31.6	0.51	16.7	1.73	3.8	5	5	4	2	4	4.2	31	7
Real Estate	108	3.85	10.2	9.0	1.2	31.0	0.78	17.3	2.47	3.8	6	7	5	2	6	7.2	1	5
Capitalization Sectors (\$ Million)																		
28 To 1512	235	0.89	12.0	13.6	-1.6	30.7	1.28	22.6	1.41	2.8	5	7	5	7	6	16.6	-8	66
1517 To 3501	236	2.77	11.0	12.3	-1.3	33.7	1.14	19.1	2.01	1.9	6	6	5	6	6	12.4	15	21
3505 To 7451	236	5.84	10.8	11.1	-0.3	34.0	1.01	17.4	2.24	2.0	6	6	6	5	5	10.8	13	16
7457 To 19941	236	13.64	10.6	11.8	-1.2	34.9	1.08	17.8	2.43	1.9	5	5	6	5	5	11.9	4	15
20033 To 59530	235	76.85	11.1	11.0	0.1	31.7	1.00	16.7	2.98	2.2	5	5	6	4	5	11.2	1	13
Risk Sectors																		
-1.04 To 0.77	180	15.65	10.0	7.5	2.5	32.9	0.62	17.2	3.00	3.2	5	5	4	3	5	7.1	3	6
0.78 To 0.96	183	26.24	11.1	9.9	1.2	32.6	0.88	17.8	3.42	2.0	5	4	6	4	5	11.6	7	16
0.97 To 1.13	186	24.06	10.9	11.5	-0.6	31.8	1.06	17.2	2.97	2.1	5	5	6	5	5	9.2	4	15
1.14 To 1.37	184	19.68	11.4	13.1	-1.7	31.6	1.23	15.1	2.64	2.0	4	5	6	6	5	11.9	-5	12
1.38 To 3.73	184	8.78	11.8	16.0	-4.2	31.4	1.54	16.8	1.83	1.6	5	6	6	6	4	18.0	2	25
Uncoded	261	5.58	10.8			35.0		19.1	2.11	1.5	6	5	6	6	6	19.1	10	17
DDM Alpha																		
Most Undervalued	127	11.18	12.5	8.5	4	27.2	0.72	16.3	2.78	2.5	5	6	5	4	5	18.8	10	10
Undervalued	127	18.47	10.9	9.7	1.2	32.0	0.86	17.5	4.04	1.8	6	4	6	3	5	12.0	8	11
Fair Value	127	22.40	11.1	11.2	-0.1	31.2	1.02	16.3	3.87	2.1	5	4	6	5	5	12.2	4	11
Overvalued	127	13.84	10.5	12.3	-1.8	33.8	1.15	15.9	3.06	1.9	6	5	6	4	5	9.6	9	8
Most Overvalued	127	10.53	10.0	14.4	-4.4	37.2	1.37	15.5	1.78	1.6	5	6	5	5	4	9.4	0	15
Uncoded	543	23.59	10.8	11.5	-0.7	35.0	1.05	19.2	2.14	2.6	5	6	5	6	6	8.1	-12	28

Source: BofA Merrill Lynch US Equity and US Quant Strategy

Quantitative Profiles

Nine shades of value

**Bank of America
Merrill Lynch**

11 January 2017

2016 was the year of risk

Despite weak performance in December, all of the risk factors we follow outperformed the benchmark for the year, handily beating all other groups with an average return of 27.6%. Historically, the most distressed assets tend to rebound hardest following market sell-offs, and 2016 was no exception. The best factors since February and for the full year include Low Price (+38.7%), High EPS Estimate Dispersion (35.7%), and High Beta (+19.9%). Momentum (+2.8%) was the weakest style in 2016, with four out of five of the worst factors within this group. Quality factors were also weak for most of 2016, advancing just 2.1% for the year, and summarily underperforming in 2016 as is typical of risk-led markets.

Get ready for value

Risk rallies like last year's are typically short-lived and give way to more protracted Value cycles – over the last 30 years, there have been [four beta rallies of consequence](#), and each has been followed by a Value run. The profits cycle also bodes well: as profits accelerate, investors tend to become price sensitive and seek out cheap growth. Our forecast for a [9ppt pick up](#) in EPS growth this year suggests that Value should have a long runway.

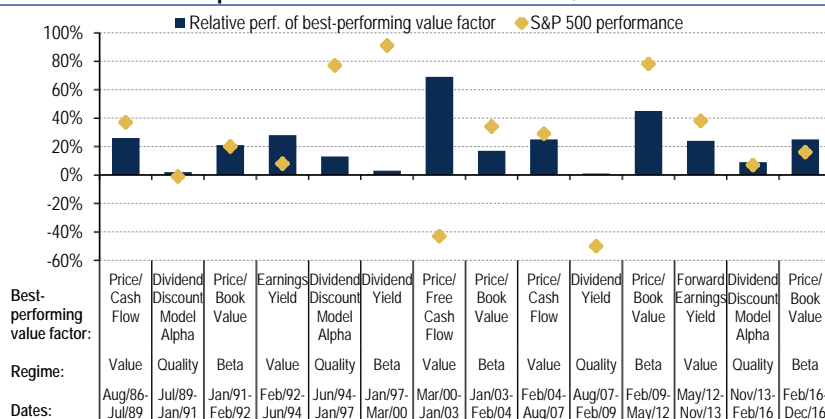
What type of value should work now?

There are many ways to value a company, and of the nine value factors we follow, six outperformed in 2016. Value as a group outperformed the Growth group by 8.1ppt – the widest spread since 2009. Low Price to Book was the best performing value factor in 2016, and is typically an “early cycle” factor that outperforms during risk rallies. In 2017, later-stage valuation factors such as Price to Earnings, Cash Flow, or Free Cash Flow, which generally lead following beta rallies, could work best.

High dividend yield up 37% - despite rising rates

Cash Deployment factors fared best in December, propped up by High Dividend Yield (+3.3%), which returned 37.0% for 2016 despite a pickup in interest rates during the 2H. Outperformance admittedly tapered off amid rising rates but was still positive. If rates continue to rise, we would not abandon the dividend theme altogether given current historically low levels, but we prefer high dividend growth stocks to high div. yield stocks.

Chart 1: Historical relative performance of the best value factor vs S&P 500



Source: BofA Merrill Lynch US Equity and US Quant Strategy

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Refer to Important disclosures on page 64 to 65.

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Top 5 screens in 2016	Perf.
Low Price	38.7%
Dividend Yield (Total Return)	37.0%
High EPS Estimate Dispersion	35.7%
Low Price to Book Value	30.8%
Dividend Yield (Price Return)	30.7% [^]
S&P 500 (Equal weighted)	12.8%

Bottom 5 screens in 2016	Perf.
Price Returns (11-m since 1 year ago)	-0.4%
Price Returns (12-Month)	0.2%
Relative Strength (30wk/75wk)	0.6%
Price Returns (12-Month plus 1-Month)	1.8%
High Duration	3.2%
S&P 500 (Equal weighted)	12.8%

Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

VALUATION STRATEGIES: Dividend Discount Model Alpha

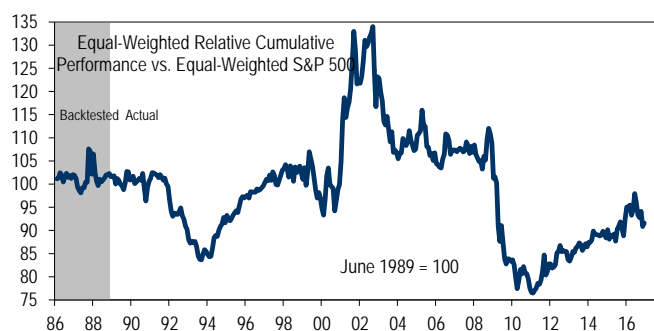
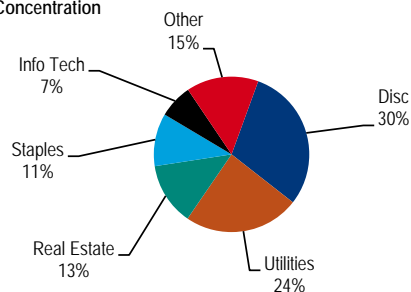
Top S&P 500 Companies By DDM ALPHA

Dividend Discount Model Alpha: The implied return from the BofAML Quantitative

Strategy three-stage dividend discount model less the required return from a

Capital Asset Pricing Model. Presented as a decile rank.

Sector Concentration



Absolute Returns

Last 1 Month	1.69%
Last 3 Months	1.95%
Last 6 Months	0.52%
Last 12 Months	11.59%
2016 YTD	11.59%

Source: BofA Merrill Lynch US Quantitative Strategy

The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for January

Mo. In Scrn	Company	Ticker	DDM Alpha	Price 12/30/2016	Mo. In Scrn	Company	Ticker	DDM Alpha	Price 12/30/2016
New	BROADCOM LTD	AVGO	1	176.77	2	CONSTELLATION BRANDS	STZ	2	153.31
21	CABOT OIL & GAS CORP	COG	1	23.36	35	DOMINION RESOURCES INC	D	2	76.59
2	CIMAREX ENERGY CO	XEC	1	135.90	26	DTE ENERGY CO	DTE	2	98.51
3	COACH INC	COH	1	35.02	3	ELECTRONIC ARTS INC	EA	2	78.76
38	CONSOLIDATED EDISON INC	ED	1	73.68	18	ENERGY CORP	ETR	2	73.47
15	DARDEN RESTAURANTS INC	DRI	1	72.72	21	EQUINIX INC	EQIX	2	357.41
11	DISCOVERY COMMUNICATIONS INC	DISCA	1	27.41	3	EQUITY RESIDENTIAL	EQR	2	64.36
24	DOLLAR TREE INC	DLTR	1	77.18	18	EXELON CORP	EXC	2	35.49
10	DUKE ENERGY CORP	DUK	1	77.62	2	GAP INC	GPS	2	22.44
14	FACEBOOK INC	FB	1	115.05	3	HCA HOLDINGS INC	HCA	2	74.02
3	GENERAL MOTORS CO	GM	1	34.84	5	HERSHEY CO	HSY	2	103.43
11	KRAFT HEINZ CO	KHC	1	87.32	New	L BRANDS INC	LB	2	65.84
15	MACY'S INC	M	1	35.81	2	NEXTERA ENERGY INC	NEE	2	119.46
3	NISOURCE INC	NI	1	22.14	2	PG&E CORP	PCG	2	60.77
43	SOUTHERN CO	SO	1	49.19	6	PINNACLE WEST CAPITAL CORP	PNW	2	78.03
4	URBAN OUTFITTERS INC	URBN	1	28.48	3	PULTEGROUP INC	PHM	2	18.38
4	VENTAS INC	VTR	1	62.52	3	STARBUCKS CORP	SBUX	2	55.52
2	AMERICAN TOWER CORP	AMT	2	105.68	2	UNDER ARMOUR INC	UAA	2	29.05
2	APARTMENT INVST & MGMT CO	AIV	2	45.45	15	UNITEDHEALTH GROUP INC	UNH	2	160.04
61	AUTOZONE INC	AZO	2	789.79	6	VULCAN MATERIALS CO	VMC	2	125.15
15	C H ROBINSON WORLDWIDE INC	CHRW	2	73.26	8	WAL-MART STORES INC	WMT	2	69.12
16	CARNIVAL CORP/PLC (USA)	CCL	2	52.06	13	WELLTOWER INC	HCN	2	66.93
2	CLOROX CO/DE	CLX	2	120.02	17	WELLS FARGO & CO	WFC	2	55.11

BofA ML Universe Sector/Industry Factor Evaluation

	# of Comp	% Univ BOFAML	Impl. Return	Reqd Return	Valuation Analysis				Expectation Analysis										EPS Growth	
					DDM Alpha	Eqty. Duration	BoFAML Adj Beta	P/E Ratio	Price/ Book	Yield	Surprise	Earnings (Decile)			Est. Rev.	Growth	PR 5yr Growth	2017E	2018E	
												Risk	Torp	Disp						
Economic Sectors																				
Energy	130	8.73	11.7	12.0	-0.3	32.2	1.11	24.8	1.93	3.2	3	7	5	9	6	11.50	-65	228		
Materials	56	3.14	10.7	12.7	-2	34.1	1.19	17.4	3.61	2.0	6	5	6	6	6	10.80	7	20		
Industrials	127	9.55	10.5	11.4	-0.9	32.8	1.04	17.9	3.92	2.1	7	5	5	4	5	8.70	0	4		
Consumer Discretionary	181	12.28	11.7	11.8	-0.1	31.6	1.09	18.3	4.04	1.5	5	4	6	5	6	19.20	13	10		
Consumer Staples	52	8.82	9.9	8.9	1	33.7	0.77	19.5	4.26	2.7	5	3	5	3	5	8.60	4	8		
Health Care	162	13.62	10.5	10.7	-0.2	35.1	0.97	15.6	3.39	1.7	7	5	6	3	5	10.80	8	9		
Financials	157	12.28	11.1	12.8	-1.7	32.0	1.20	13.3	1.36	2.2	4	5	5	5	4	9.60	4	13		
Information Technology	152	22.07	11.8	11.7	0.1	31.1	1.08	16.5	4.48	1.3	4	4	7	5	4	15.60	9	14		
Telecommunication Services	13	2.86	9.1	7.9	1.2	36.6	0.66	15.7	2.84	3.8	4	8	5	4	6	5.20	9	6		
Utilities	46	2.74	9.6	6.5	3.1	32.3	0.51	17.4	1.81	3.6	6	5	4	2	4	4.40	31	6		
Real Estate	107	3.91	10.1	9.1	1	31.9	0.79	18	2.56	3.7	6	7	5	2	6	7.20	1	5		
Capitalization Sectors (\$ Million)																				
25 To 1527	236	0.88	11.6	13.2	-1.6	33.1	1.24	25.5	1.55	2.6	5	7	5	7	6	17.70	-18	93		
1530 To 3578	237	2.77	10.8	12.5	-1.7	34.3	1.17	18.7	1.96	2.0	6	6	5	6	6	11.10	22	20		
3581 To 7349	237	5.85	10.7	11.3	-0.6	34.5	1.03	17.6	2.29	2.0	6	6	6	5	5	11.60	12	15		
7425 To 19397	237	13.51	10.6	11.6	-1	34.8	1.07	17.9	2.53	1.8	5	5	6	5	5	13.30	5	15		
19500 To 617588	236	76.98	11.1	11.0	0.1	31.9	1.00	16.7	3.03	2.2	5	5	6	4	5	11.70	2	14		
Risk Sectors																				
-1.04 To 0.77	181	17.43	10.6	7.7	2.9	32.5	0.63	18	3.25	2.8	5	5	5	3	5	9.60	5	7		
0.78 To 0.96	181	24.63	10.7	10.0	0.7	33.6	0.89	17.6	3.36	2.0	5	4	6	4	5	10.10	6	15		
0.97 To 1.13	183	23.94	11.0	11.5	-0.5	31.6	1.06	17.2	3.02	2.1	5	5	6	5	5	12.00	4	16		
1.14 To 1.37	186	19.53	11.4	13.1	-1.7	31.9	1.23	15.1	2.70	1.9	4	5	6	6	5	11.80	-4	13		
1.38 To 3.77	182	8.74	11.9	15.9	-4	31.6	1.54	16.4	1.86	1.6	5	6	6	6	4	18.00	2	26		
Uncoded	270	5.73	10.7			35.3		19.2	2.16	1.4	6	5	6	6	5	19.10	11	17		
DDM Alpha																				
Most Undervalued	126	10.08	13.0	8.8	4.2	26.5	0.76	16.4	2.61	2.3	5	6	6	4	5	20.60	12	12		
Undervalued	127	19.58	10.8	9.6	1.2	32.5	0.84	17.2	4.33	1.9	5	4	6	3	5	11.30	7	10		
Fair Value	127	20.95	11.1	11.3	-0.2	31.2	1.03	16.6	3.69	2.0	4	4	6	5	5	12.70	4	12		
Overvalued	127	13.79	10.5	12.3	-1.8	33.9	1.14	16.2	3.05	1.9	6	4	6	4	5	9.80	8	8		
Most Overvalued	127	10.13	9.9	14.2	-4.3	37.9	1.35	15.4	1.89	1.6	5	5	5	5	4	8.90	4	16		
Uncoded	549	25.46	10.7	11.3	-0.6	35.3	1.03	18.8	2.28	2.6	5	6	5	6	6	10.70	-9	27		

Source: BofA Merrill Lynch US Equity and US Quant Strategy

Quantitative Profiles

Financials have momentum

**Bank of America
Merrill Lynch**

08 February 2017

Biggest reversal from 2016: Growth led, Value lagged in Jan

While Growth factors were among the worst performers in 2016, they outperformed all other groups in January (+2.9% on avg.), led by High Projected 5-yr Growth (+4.4%) and High EPS Momentum (+3.7%). Meanwhile, Value factors—which led Growth factors by 8ppt last year—performed generally in-line with the market last month (+2%). The best-performing Value factors were High Fwd EPS Yield (+3.5%) and High FCF/EV (+3.2%)—which we've [found](#) have tended to work better later in the cycle vs. early-cycle factors such as Low P/B (which underperformed last month). Despite Growth's recent resurgence, we continue to expect that [Value will outperform for the full year](#).

Some similarities vs. '16: Risk outperformed, Quality lagged

Despite a number of sector and factor [reversals](#) in January vs. 2016, Risk continued to outperform, led by High Variability of Estimates (+3.8%). High Beta also continued to work (+2.4%). But as we noted [last month](#), beta rallies tend to be short-lived, giving way to more extended periods of Value outperformance. Quality factors continued to lag in January (+1.9% on avg.), and could struggle further given expectations for stimulus. We still favor Quality for the longer-term given these stocks' relatively cheaper valuations relative to their low quality counterparts, along with a depressed VIX.

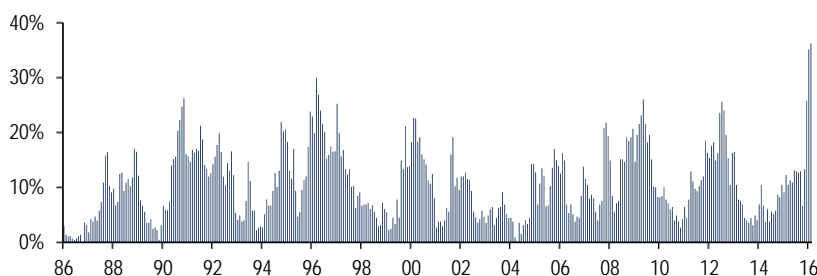
Div Growth beat Div Yield, Foreign Exposure outperformed

Dividend Yield (the second-best performer of 2016) was among the weakest factors last month (+0.8%), while Dividend Growth (+2.9%) outperformed—which we expect can continue as interest rates rise. Helped by a weakening US dollar, High Foreign Exposure (+3.8%) was one of the best-performing factors last month.

Financials have Momentum

Technical/Momentum factors, which lagged in 2016, trailed the market again last month. The underperformance of Financials contributed to the weakness, as Financials' weight in this factor group has jumped to an all-time high (chart below). Historically, when the weight of Financials within this style was over 25%, the sector outperformed the S&P 500 by 7ppt on average over the next five years (cumulatively). Other sectors (including Tech, Health Care and Discretionary) also outperformed over the next five years on avg. when they reached similarly high weights within this factor group. Additionally, a comparison of Financials today to Tech following the Tech Bubble suggests Financials' momentum could continue: Tech peaked in 3/2000 but ten years later outperformed the S&P by 8ppt from 3/2010-3/2015. Financials peaked ten years ago this month, in 2/2007.

Chart 1: Percentage of Financials within the Momentum/Technical factors we track, 1986-1/2017



Source: BofA Merrill Lynch US Equity & US Quant Strategy

BofA Merrill Lynch does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Refer to Important disclosures on page 64 to 65.

Timestamp: 08 February 2017 05:32PM EST

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Top 5 screens in January	Perf.
Low PE to Growth	4.9%
Relative Strength (30wk/75wk)	4.7%
High Projected 5-Yr Growth	4.4%
High Foreign Exposure	3.8%
High Variability of EPS	3.8%
S&P 500 (Equal weighted)	2.0%

Bottom 5 screens in January	Perf.
DDM Valuation	0.4%
Price Returns (12-m plus 1-m)	0.4%
Forecast Positive EPS Surprise	0.4%
Institutional Neglect	0.6%
Dividend Yield (Total Return)	0.8%
S&P 500 (Equal weighted)	2.0%

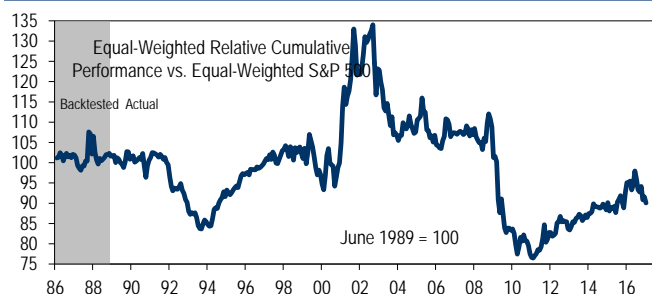
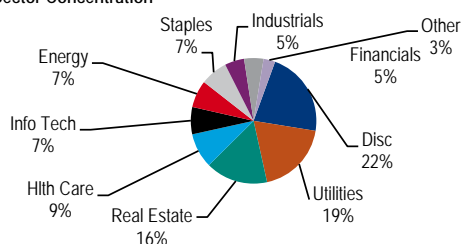
Disclaimer: The valuations and screens contained herein are useful in assessing comparative valuations and comparative earnings prospects and are not intended to recommend transactions relating to any specific security. These indicators should be used in investment decisions only with other factors including financial risk, investment risk, management strategies and operating and financial outlooks.

VALUATION STRATEGIES: Dividend Discount Model Alpha

Top 50 S&P 500 Companies By EARNINGS YIELD

Earnings Yield: Trailing 12-month EPS divided by month-end price.

Sector Concentration



Absolute Returns

Last 1 Month	0.35%
Last 3 Months	3.45%
Last 6 Months	-1.25%
Last 12 Months	15.64%
2017 YTD	0.35%

Source: BofA Merrill Lynch US Quantitative Strategy

The shaded area in performance chart shows back tested results during the period from month end March 1986 to month end December 1988. The unshaded portion represents actual performance since January 1989. Back tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance

Screen for February

Mo. In	Scrn	Company	Ticker	DDM Alpha	Price 01/31/2017	Mo. In	Scrn	Company	Ticker	DDM Alpha	Price 01/31/2017
22		CABOT OIL & GAS CORP	COG	1	21.48	New		DELTA AIR LINES INC	DAL	2	47.24
New		CENTENE CORP	CNC	1	63.27	New		DIGITAL REALTY TRUST INC	DLR	2	107.63
New		CHARTER COMMUNICATIONS INC	CHTR	1	323.95	36		DOMINION RESOURCES INC	D	2	76.28
New		CHEVRON CORP	CVX	1	111.35	27		DTE ENERGY CO	DTE	2	98.64
3		CIMAREX ENERGY CO	XEC	1	135.21	4		ELECTRONIC ARTS INC	EA	2	83.43
4		COACH INC	COH	1	37.35	19		ENTERGY CORP	ETR	2	71.64
39		CONSOLIDATED EDISON INC	ED	1	74.35	New		ENVISION HEALTHCARE CORP	EVHC	2	68.00
16		DARDEN RESTAURANTS INC	DRI	1	73.28	22		EQUINIX INC	EQIX	2	384.98
12		DISCOVERY COMMUNICATIONS INC	DISCA	1	28.35	4		EQUITY RESIDENTIAL	EQR	2	60.77
25		DOLLAR TREE INC	DLTR	1	77.19	19		EXELON CORP	EXC	2	35.88
11		DUKE ENERGY CORP	DUK	1	78.54	New		EXTRA SPACE STORAGE INC	EXR	2	72.05
15		FACEBOOK INC	FB	1	130.32	New		FIFTH THIRD BANCORP	FITB	2	26.10
New		HALLIBURTON CO	HAL	1	56.57	3		GAP INC	GPS	2	23.03
12		KRAFT HEINZ CO	KHC	1	89.29	4		GENERAL MOTORS CO	GM	2	36.61
16		MACY'S INC	M	1	29.54	4		HCA HOLDINGS INC	HCA	2	80.28
3		NEXTERA ENERGY INC	NEE	1	123.72	6		HERSHEY CO	HSY	2	105.47
4		NISOURCE INC	NI	1	22.37	2		L BRANDS INC	LB	2	60.21
44		SOUTHERN CO	SO	1	49.43	7		PINNACLE WEST CAPITAL CORP	PNW	2	77.63
5		URBAN OUTFITTERS INC	URBN	1	26.54	New		REALTY INCOME CORP	O	2	59.63
New		VERTEX PHARMACEUTICALS INC	VRTX	1	85.87	4		STARBUCKS CORP	SBUX	2	55.22
New		WESTERN DIGITAL CORP	WDC	1	79.73	New		SYNCHRONY FINANCIAL	SYF	2	35.82
3		AMERICAN TOWER CORP	AMT	2	103.50	New		TRANSDIGM GROUP INC	TDG	2	216.40
New		AMERICAN WATER WORKS CO INC	AWK	2	73.44	16		UNITEDHEALTH GROUP INC	UNH	2	162.10
3		APARTMENT INVST & MGMT CO	AIV	2	44.07	5		VENTAS INC	VTR	2	61.67
62		AUTOZONE INC	AZO	2	724.98	New		VERIZON COMMUNICATIONS INC	VZ	2	49.01
2		BROADCOM LTD	AVGO	2	199.50	7		VULCAN MATERIALS CO	VMC	2	128.33
16		C H ROBINSON WORLDWIDE INC	CHRW	2	76.06	9		WAL-MART STORES INC	WMT	2	66.74
17		CARNIVAL CORP/PLC (USA)	CCL	2	55.38	14		WELLTOWER INC	HCN	2	66.30
3		CONSTELLATION BRANDS	STZ	2	149.76	18		WELLS FARGO & CO	WFC	2	56.33

BofAML Universe Sector/Industry Factor Evaluation

	# of Comp	Valuation Analysis					Expectation Analysis										EPS Growth	
		% Univ BOFAML	Impl. Return	Reqd Return	DDM Alpha	Eqty. Duration	BofAML Adj Beta	P/E Ratio	Price/ Book	Yield	Surprise	Earnings (Decile)			Est. Rev.	PR 5yr Growth	2017E	2018E
												Risk	Torp	Disp				
Economic Sectors																		
Energy	131	8.39	8.7	12.1	-3.4	45.3	1.11	25.4	1.88	3.3	3	7	7	9	6	11.6	260	24
Materials	56	3.25	10.9	12.9	-2	33.5	1.19	17.9	3.68	1.9	6	5	6	6	6	11.9	24	8
Industrials	128	9.49	10.5	11.5	-1	32.6	1.04	17.8	3.73	2.1	6	5	5	5	6	8.8	5	10
Consumer Discretionary	181	12.48	11.6	12.0	-0.4	31.7	1.09	19.0	4.21	1.4	4	4	6	5	6	19.4	9	13
Consumer Staples	52	8.76	9.8	9.0	0.8	34.3	0.77	19.8	4.34	2.7	6	3	4	2	6	8.3	6	8
Health Care	164	13.67	10.6	10.9	-0.3	35.4	0.97	15.9	3.45	1.7	7	5	6	4	6	11.1	8	12
Financials	158	12.06	11.4	12.9	-1.5	31.0	1.19	13.2	1.37	2.2	4	5	7	5	4	10.1	12	12
Information Technology	151	22.58	12.2	11.8	0.4	30.1	1.08	17.0	4.61	1.3	3	4	6	6	6	17.0	14	12
Telecommunication Services	13	2.76	9.2	8.0	1.2	35.9	0.66	15.9	2.77	3.9	6	8	5	6	7	5.6	3	6
Utilities	46	2.72	9.5	6.6	2.9	32.9	0.51	17.7	1.83	3.6	6	5	4	2	5	4.4	5	7
Real Estate	107	3.84	10.1	9.1	1	31.6	0.78	17.5	2.55	3.7	6	7	4	2	6	7.2	4	14
Capitalization Sectors (\$ Million)																		
49 To 1556	237	0.88	11.7	13.7	-2	32.6	1.28	28.0	1.55	2.6	5	7	5	7	6	16.4	89	28
1560 To 3604	238	2.76	10.8	12.5	-1.7	34.4	1.15	19.4	2.06	1.9	6	6	5	6	6	11.9	20	14
3628 To 7483	237	5.79	10.7	11.3	-0.6	34.3	1.01	17.1	2.26	2.0	6	6	5	5	5	10.7	14	14
7540 To 20128	238	13.49	10.6	11.7	-1.1	35.0	1.06	18.2	2.54	1.8	5	5	6	5	5	13.9	13	13
20244 To 647076	237	77.08	11.2	11.2	0	31.7	1.00	17.0	3.06	2.1	5	5	6	5	6	12.4	14	12
Risk Sectors																		
-1.04 To 0.77	184	17.55	10.6	7.8	2.8	32.5	0.63	18.2	3.30	2.8	6	5	5	3	6	9.9	6	9
0.78 To 0.96	187	24.80	10.9	10.1	0.8	33.0	0.89	17.6	3.31	2.0	5	4	5	5	6	10.5	15	12
0.97 To 1.13	187	24.83	11.0	11.7	-0.7	32.0	1.06	17.6	3.04	2.0	5	5	6	5	5	13.1	16	13
1.14 To 1.37	190	20.08	11.5	13.3	-1.8	31.7	1.23	15.6	2.72	1.9	4	5	6	6	6	13.0	12	12
1.38 To 3.77	183	8.81	12.3	16.1	-3.8	30.8	1.54	16.7	1.90	1.6	6	6	7	6	5	18.5	23	17
Uncoded	256	3.93	10.8			36.1		19.8	2.10	1.6	5	6	6	6	5	18.0	20	14
DDM Alpha																		
Most Undervalued	130	13.25	12.8	9.3	3.5	26.5	0.80	16.9	2.66	2.4	5	6	6	5	4	24.6	15	14
Undervalued	130	20.46	11.3	10.2	1.1	31.1	0.90	17.4	3.94	1.7	4	4	5	4	6	13.0	12	11
Fair Value	130	20.72	11.1	11.3	-0.2	31.7	1.02	16.9	3.64	1.9	5	4	6	4	6	12.8	11	11
Overvalued	130	13.12	10.6	12.5	-1.9	33.7	1.15	16.8	3.14	1.9	6	5	6	4	6	9.8	8	11
Most Overvalued	130	11.04	9.7	14.2	-4.5	39.1	1.33	16.8	2.01	1.6	5	6	6	6	5	9.1	14	15
Uncoded	537	21.41	10.8	11.3	-0.5	36.1	1.02	18.4	2.32	2.8	5	6	6	6	6	7.2	23	13

Source: BofA Merrill Lynch US Equity and US Quant Strategy

Source: BofA Merrill Lynch US Equity and US Quant Strategy

Testimony of Ann E. Bulkley

Exhibit __ (AEB-4)

Capital Asset Pricing Model – Combined Utility Proxy Group

CAPITAL ASSET PRICING MODEL -- COMBINED UTILITY PROXY GROUP

$$K = Rf + \beta (Rm - Rf)$$

	[4]	[5]	[6]	[7]	[8]
	Risk-Free Rate (Rf)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)
Proxy Group Average Value Line Beta					
Current 3-month average of 30-year U.S. Treasury bond yield [1]	3.05%	0.696	12.71%	9.65%	9.77%
Near-term projected 30-year U.S. Treasury bond yield (Q1 2017 - Q2 2018) [2]	3.42%	0.696	12.71%	9.29%	9.88%
Projected 30-year U.S. Treasury bond yield (2018 - 2022) [3]	4.20%	0.696	12.71%	8.51%	10.12%
				Mean:	9.93%
				Median:	9.88%

ZERO BETA CAPITAL ASSET PRICING MODEL -- COMBINED UTILITY PROXY GROUP

$$K = Rf + 0.25 (Rm - Rf) + 0.75 (\beta (Rm - Rf))$$

	[4]	[5]	[6]	[7]	[9]
	Risk-Free Rate (Rf)	Beta (β)	Market Return (Rm)	Market Risk Premium (Rm - Rf)	ROE (K)
Proxy Group Average Value Line Beta					
Current 3-month average of 30-year U.S. Treasury bond yield [1]	3.05%	0.696	12.71%	9.65%	10.51%
Near-term projected 30-year U.S. Treasury bond yield (Q1 2017 - Q2 2018) [2]	3.42%	0.696	12.71%	9.29%	10.59%
Projected 30-year U.S. Treasury bond yield (2018 - 2022) [3]	4.20%	0.696	12.71%	8.51%	10.77%
				Mean:	10.62%
				Median:	10.59%

Notes:

- [1] Source: Bloomberg Professional, 3-month average as of February 28, 2017
- [2] Source: Blue Chip Financial Forecasts, Vol. 36, No. 2, February 1, 2017, at 2
- [3] Source: Blue Chip Financial Forecasts, Vol. 35, No. 12, December 1, 2016, at 14
- [4] See Notes [1], [2], and [3]
- [5] Source: Value Line
- [6] Source: Bloomberg Professional
- [7] Equals [6] - [4]
- [8] Equals [4] + [5] x [7]
- [9] Equals [4] + 0.25 x [7] + 0.75 x [5] x [7]

Testimony of Ann E. Bulkley

Exhibit __ (AEB-5)

Market Risk Premium Derived From Analysts' Long-Term Growth Estimates

MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[10] Estimated Weighted Average Dividend Yield	2.02%
[11] Estimated Weighted Average Long-Term Growth Rate	10.58%
[12] S&P 500 Estimated Required Market Return	12.71%

STANDARD AND POOR'S 500 INDEX

		[13]	[14]	[15]	[16]	[17]
Name	Ticker	Weight in Index	Current Dividend Yield	Cap-Weighted Dividend Yield	Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
LyondellBasell Industries NV	LYB	0.17%	3.73	0.01%	3.40%	0.01%
American Express Co	AXP	0.34%	1.60	0.01%	10.82%	0.04%
Verizon Communications Inc	VZ	0.96%	4.65	0.04%	4.82%	0.05%
Broadcom Ltd	AVGO	0.40%	1.93	0.01%	15.29%	0.06%
Boeing Co/The	BA	0.53%	3.15	0.02%	13.83%	0.07%
Caterpillar Inc	CAT	0.27%	3.19	0.01%	7.64%	0.02%
JPMorgan Chase & Co	JPM	1.54%	2.12	0.03%	7.93%	0.12%
Chevron Corp	CVX	1.01%	3.84	0.04%	5.00%	0.05%
Coca-Cola Co/The	KO	0.86%	3.53	0.03%	3.85%	0.03%
AbbVie Inc	ABBV	0.47%	4.14	0.02%	10.85%	0.05%
Walt Disney Co/The	DIS	0.83%	1.42	0.01%	8.10%	0.07%
Extra Space Storage Inc	EXR	0.05%	3.94	0.00%	7.82%	0.00%
El du Pont de Nemours & Co	DD	0.32%	1.94	0.01%	7.10%	0.02%
Exxon Mobil Corp	XOM	1.60%	3.69	0.06%	8.94%	0.14%
Phillips 66	PSX	0.19%	3.22	0.01%	-12.61%	-0.02%
General Electric Co	GE	1.24%	3.22	0.04%	10.24%	0.13%
HP Inc	HPQ	0.14%	3.06	0.00%	2.84%	0.00%
Home Depot Inc/The	HD	0.84%	2.46	0.02%	12.46%	0.10%
International Business Machines Corp	IBM	0.81%	3.11	0.03%	7.20%	0.06%
Concho Resources Inc	CXO	0.09%	n/a	n/a	22.50%	0.02%
Johnson & Johnson	JNJ	1.57%	2.62	0.04%	6.28%	0.10%
McDonald's Corp	MCD	0.50%	2.95	0.01%	9.83%	0.05%
Merck & Co Inc	MRK	0.86%	2.85	0.02%	6.00%	0.05%
3M Co	MMM	0.53%	2.52	0.01%	8.46%	0.04%
American Water Works Co Inc	AWK	0.07%	1.92	0.00%	7.53%	0.00%
Bank of America Corp	BAC	1.17%	1.22	0.01%	11.94%	0.14%
CSRA Inc	CSRA	0.02%	1.34	0.00%	6.20%	0.00%
Pfizer Inc	PFE	0.96%	3.75	0.04%	4.51%	0.04%
Procter & Gamble Co/The	PG	1.11%	2.94	0.03%	7.92%	0.09%
AT&T Inc	T	1.22%	4.69	0.06%	4.60%	0.06%
Travelers Cos Inc/The	TRV	0.16%	2.19	0.00%	6.98%	0.01%
United Technologies Corp	UTX	0.43%	2.35	0.01%	7.97%	0.03%
Analog Devices Inc	ADI	0.12%	2.20	0.00%	11.27%	0.01%
Wal-Mart Stores Inc	WMT	1.04%	2.88	0.03%	3.68%	0.04%
Cisco Systems Inc	CSCO	0.81%	3.39	0.03%	7.73%	0.06%
Intel Corp	INTC	0.81%	2.87	0.02%	7.70%	0.06%
General Motors Co	GM	0.26%	4.13	0.01%	9.67%	0.03%
Microsoft Corp	MSFT	2.35%	2.44	0.06%	9.33%	0.22%
Dollar General Corp	DG	0.10%	1.37	0.00%	10.48%	0.01%
Kinder Morgan Inc/DE	KMI	0.23%	2.35	0.01%	10.00%	0.02%
Citigroup Inc	C	0.79%	1.07	0.01%	5.50%	0.04%
American International Group Inc	AIG	0.30%	2.00	0.01%	9.50%	0.03%
Honeywell International Inc	HON	0.45%	2.14	0.01%	8.65%	0.04%
Altria Group Inc	MO	0.69%	3.26	0.02%	7.91%	0.05%
HCA Holdings Inc	HCA	0.15%	n/a	n/a	11.50%	0.02%
Under Armour Inc	UA	0.02%	n/a	n/a	19.70%	0.00%
International Paper Co	IP	0.10%	3.51	0.00%	6.79%	0.01%
Hewlett Packard Enterprise Co	HPE	0.18%	1.14	0.00%	4.37%	0.01%
Abbott Laboratories	ABT	0.37%	2.35	0.01%	10.56%	0.04%
Aflac Inc	AFL	0.14%	2.38	0.00%	5.00%	0.01%
Air Products & Chemicals Inc	APD	0.15%	2.71	0.00%	8.22%	0.01%
Royal Caribbean Cruises Ltd	RCL	0.10%	2.00	0.00%	18.18%	0.02%
American Electric Power Co Inc	AEP	0.16%	3.52	0.01%	4.75%	0.01%
Hess Corp	HES	0.08%	1.94	0.00%	-11.36%	-0.01%
Anadarko Petroleum Corp	APC	0.17%	0.31	0.00%	-9.43%	-0.02%
Aon PLC	AON	0.14%	1.14	0.00%	9.82%	0.01%
Apache Corp	APA	0.09%	1.90	0.00%	-4.81%	0.00%
Archer-Daniels-Midland Co	ADM	0.13%	2.73	0.00%	11.63%	0.01%
Automatic Data Processing Inc	ADP	0.22%	2.22	0.00%	10.87%	0.02%
Verisk Analytics Inc	VRSK	0.07%	n/a	n/a	10.90%	0.01%
AutoZone Inc	AZO	0.10%	n/a	n/a	13.22%	0.01%
Avery Dennison Corp	AVY	0.03%	2.03	0.00%	7.10%	0.00%
Baker Hughes Inc	BHI	0.12%	1.13	0.00%	47.00%	0.06%
Ball Corp	BLL	0.06%	0.71	0.00%	6.23%	0.00%
Bank of New York Mellon Corp/The	BK	0.23%	1.61	0.00%	17.70%	0.04%
CR Bard Inc	BCR	0.08%	0.42	0.00%	9.45%	0.01%
Baxter International Inc	BAX	0.13%	1.02	0.00%	10.96%	0.01%
Becton Dickinson and Co	BDX	0.19%	1.60	0.00%	10.19%	0.02%
Berkshire Hathaway Inc	BRK/B	1.06%	n/a	n/a	7.00%	0.07%
Best Buy Co Inc	BBY	0.07%	2.54	0.00%	12.26%	0.01%
H&R Block Inc	HRB	0.02%	4.28	0.00%	11.00%	0.00%
Boston Scientific Corp	BSX	0.16%	n/a	n/a	11.80%	0.02%
Bristol-Myers Squibb Co	BMJ	0.45%	2.75	0.01%	14.50%	0.07%
Fortune Brands Home & Security Inc	FBHS	0.04%	1.25	0.00%	12.40%	0.01%
Brown-Forman Corp	BF/B	0.05%	1.50	0.00%	8.85%	0.00%
Cabot Oil & Gas Corp	COG	0.05%	0.37	0.00%	39.17%	0.02%
Campbell Soup Co	CPB	0.09%	2.36	0.00%	5.24%	0.00%
Kansas City Southern	KSU	0.04%	1.49	0.00%	13.00%	0.01%
Carnival Corp	CCL	0.14%	2.50	0.00%	13.00%	0.02%
Qorvo Inc	QRVO	0.04%	n/a	n/a	15.21%	0.01%
CenturyLink Inc	CTL	0.06%	8.90	0.01%	-4.08%	0.00%
Cigna Corp	CI	0.18%	0.03	0.00%	10.80%	0.02%
UDR Inc	UDR	0.05%	3.23	0.00%	6.38%	0.00%
Frontier Communications Corp	FTR	0.02%	14.33	0.00%	1.00%	0.00%
Clorox Co/The	CLX	0.08%	2.34	0.00%	6.99%	0.01%
CMS Energy Corp	CMS	0.06%	2.99	0.00%	6.33%	0.00%
Colgate-Palmolive Co	CL	0.31%	2.14	0.01%	9.24%	0.03%
Comerica Inc	CMA	0.06%	1.29	0.00%	10.60%	0.01%
CA Inc	CA	0.06%	3.16	0.00%	4.57%	0.00%

MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[10] Estimated Weighted Average Dividend Yield	2.02%
[11] Estimated Weighted Average Long-Term Growth Rate	10.58%
[12] S&P 500 Estimated Required Market Return	12.71%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[13]	[14]	[15]	[16]	[17]
		Weight in Index	Current Dividend Yield	Cap-Weighted Dividend Yield	Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Conagra Brands Inc	CAG	0.09%	1.94	0.00%	8.55%	0.01%
Consolidated Edison Inc	ED	0.11%	3.58	0.00%	3.12%	0.00%
SL Green Realty Corp	SLG	0.05%	2.75	0.00%	0.56%	0.00%
Corning Inc	GLW	0.12%	2.25	0.00%	6.26%	0.01%
Cummins Inc	CMI	0.12%	2.76	0.00%	4.73%	0.01%
Danaher Corp	DHR	0.28%	0.65	0.00%	11.62%	0.03%
Target Corp	TGT	0.16%	4.08	0.01%	5.94%	0.01%
Deere & Co	DE	0.17%	2.19	0.00%	9.02%	0.01%
Dominion Resources Inc/VA	D	0.23%	3.89	0.01%	6.10%	0.01%
Dover Corp	DOV	0.06%	2.20	0.00%	11.05%	0.01%
Dow Chemical Co/The	DOW	0.36%	2.96	0.01%	6.62%	0.02%
Duke Energy Corp	DUK	0.27%	4.14	0.01%	3.90%	0.01%
Eaton Corp PLC	ETN	0.15%	3.33	0.01%	8.30%	0.01%
Ecolab Inc	ECL	0.17%	1.19	0.00%	12.71%	0.02%
PerkinElmer Inc	PKI	0.03%	0.52	0.00%	2.50%	0.00%
Emerson Electric Co	EMR	0.18%	3.19	0.01%	7.06%	0.01%
EOG Resources Inc	EOG	0.27%	0.69	0.00%	10.50%	0.03%
Entergy Corp	ETR	0.07%	4.54	0.00%	-3.10%	0.00%
Equifax Inc	EFX	0.07%	1.19	0.00%	10.00%	0.01%
EQT Corp	EQT	0.05%	0.20	0.00%	17.50%	0.01%
XL Group Ltd	XL	0.05%	2.17	0.00%	13.25%	0.01%
FedEx Corp	FDX	0.24%	0.83	0.00%	12.93%	0.03%
Macy's Inc	M	0.05%	4.55	0.00%	5.13%	0.00%
FMC Corp	FMC	0.04%	1.15	0.00%	9.53%	0.00%
Ford Motor Co	F	0.23%	4.79	0.01%	0.49%	0.00%
NextEra Energy Inc	NEE	0.29%	3.00	0.01%	6.65%	0.02%
Franklin Resources Inc	BEN	0.12%	1.86	0.00%	10.00%	0.01%
Freeport-McMoRan Inc	FCX	0.09%	n/a	n/a	9.30%	0.01%
TEGNA Inc	TGNA	0.03%	2.18	0.00%	2.00%	0.00%
Gap Inc/The	GPS	0.05%	3.71	0.00%	6.71%	0.00%
General Dynamics Corp	GD	0.27%	1.60	0.00%	8.59%	0.02%
General Mills Inc	GIS	0.17%	3.18	0.01%	8.22%	0.01%
Genuine Parts Co	GPC	0.07%	2.82	0.00%	7.87%	0.01%
WW Grainger Inc	GWV	0.07%	1.97	0.00%	12.58%	0.01%
Halliburton Co	HAL	0.22%	1.35	0.00%	30.27%	0.07%
Harley-Davidson Inc	HOG	0.05%	2.59	0.00%	9.75%	0.00%
Harman International Industries Inc	HAR	0.04%	1.25	0.00%	17.00%	0.01%
Harris Corp	HRS	0.06%	1.93	0.00%	n/a	n/a
HCP Inc	HCP	0.07%	4.51	0.00%	1.45%	0.00%
Helmerich & Payne Inc	HP	0.04%	4.10	0.00%	4.10%	0.00%
Fortive Corp	FTV	0.09%	0.49	0.00%	9.10%	0.01%
Hershey Co/The	HSY	0.08%	2.28	0.00%	8.33%	0.01%
Synchrony Financial	SYF	0.14%	1.43	0.00%	9.68%	0.01%
Hormel Foods Corp	HRL	0.09%	1.93	0.00%	4.17%	0.00%
Arthur J Gallagher & Co	AJG	0.05%	2.74	0.00%	9.46%	0.00%
Mondelez International Inc	MDLZ	0.32%	1.73	0.01%	10.32%	0.03%
CenterPoint Energy Inc	CNP	0.06%	3.92	0.00%	6.14%	0.00%
Humana Inc	HUM	0.15%	0.76	0.00%	12.50%	0.02%
Willis Towers Watson PLC	WLTW	0.08%	1.65	0.00%	10.00%	0.01%
Illinois Tool Works Inc	ITW	0.22%	1.97	0.00%	8.13%	0.02%
Ingersoll-Rand PLC	IR	0.10%	2.02	0.00%	9.38%	0.01%
Foot Locker Inc	FL	0.05%	1.64	0.00%	10.25%	0.00%
Interpublic Group of Cos Inc/The	IPG	0.04%	2.99	0.00%	6.95%	0.00%
International Flavors & Fragrances Inc	IFF	0.05%	2.04	0.00%	8.87%	0.00%
Jacobs Engineering Group Inc	JEC	0.03%	1.06	0.00%	8.49%	0.00%
Hanesbrands Inc	HBI	0.04%	3.00	0.00%	15.60%	0.01%
Kellogg Co	K	0.12%	2.81	0.00%	7.02%	0.01%
Perrigo Co PLC	PRGO	0.05%	0.86	0.00%	6.73%	0.00%
Kimberly-Clark Corp	KMB	0.22%	2.93	0.01%	7.37%	0.02%
Kimco Realty Corp	KIM	0.05%	4.45	0.00%	10.27%	0.01%
Kohl's Corp	KSS	0.04%	5.16	0.00%	6.32%	0.00%
Oracle Corp	ORCL	0.83%	1.41	0.01%	8.71%	0.07%
Kroger Co/The	KR	0.14%	1.51	0.00%	8.70%	0.01%
Leggett & Platt Inc	LEG	0.03%	2.77	0.00%	19.00%	0.01%
Lennar Corp	LEN	0.05%	0.33	0.00%	10.63%	0.01%
Leucadia National Corp	LUK	0.05%	0.94	0.00%	18.00%	0.01%
Eli Lilly & Co	LLY	0.43%	2.51	0.01%	12.32%	0.05%
L Brands Inc	LB	0.07%	4.56	0.00%	9.30%	0.01%
Charter Communications Inc	CHTR	0.41%	n/a	n/a	18.28%	0.08%
Lincoln National Corp	LNC	0.08%	1.65	0.00%	8.00%	0.01%
Loews Corp	L	0.08%	0.53	0.00%	n/a	n/a
Lowe's Cos Inc	LOW	0.31%	1.88	0.01%	15.24%	0.05%
Host Hotels & Resorts Inc	HST	0.06%	4.45	0.00%	5.53%	0.00%
Marsh & McLennan Cos Inc	MMC	0.18%	1.85	0.00%	11.66%	0.02%
Masco Corp	MAS	0.05%	1.18	0.00%	14.90%	0.01%
Mattel Inc	MAT	0.04%	5.91	0.00%	23.75%	0.01%
S&P Global Inc	SPGI	0.16%	1.27	0.00%	11.00%	0.02%
Medtronic PLC	MDT	0.53%	2.13	0.01%	7.98%	0.04%
CVS Health Corp	CVS	0.39%	2.48	0.01%	11.86%	0.05%
Micron Technology Inc	MU	0.12%	n/a	n/a	10.00%	0.01%
Motorola Solutions Inc	MSI	0.06%	2.38	0.00%	4.30%	0.00%
Murphy Oil Corp	MUR	0.02%	3.53	0.00%	n/a	n/a
Mylan NV	MYL	0.11%	n/a	n/a	n/a	n/a
Laboratory Corp of America Holdings	LH	0.07%	n/a	n/a	11.06%	0.01%
Newell Brands Inc	NWL	0.11%	1.55	0.00%	11.80%	0.01%
Newmont Mining Corp	NEM	0.09%	0.58	0.00%	-7.57%	-0.01%
Twenty-First Century Fox Inc	FOXA	0.15%	1.20	0.00%	9.87%	0.01%
NIKE Inc	NKE	0.36%	1.26	0.00%	11.93%	0.04%
NiSource Inc	NI	0.04%	2.93	0.00%	6.37%	0.00%

MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[10] Estimated Weighted Average Dividend Yield	2.02%
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STANDARD AND POOR'S 500 INDEX

Name	Ticker	[13]	[14]	[15]	[16]	[17]
		Weight in Index	Current Dividend Yield	Cap-Weighted Dividend Yield	Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Noble Energy Inc	NBL	0.07%	1.10	0.00%	10.62%	0.01%
Norfolk Southern Corp	NSC	0.17%	2.02	0.00%	10.94%	0.02%
Eversource Energy	ES	0.09%	3.24	0.00%	6.32%	0.01%
Northrop Grumman Corp	NOC	0.20%	1.46	0.00%	6.97%	0.01%
Wells Fargo & Co	WFC	1.38%	2.63	0.04%	8.17%	0.11%
Nucor Corp	NUE	0.09%	2.41	0.00%	9.07%	0.01%
PVH Corp	PVH	0.03%	0.16	0.00%	6.72%	0.00%
Occidental Petroleum Corp	OXY	0.24%	4.64	0.01%	8.00%	0.02%
Omnicom Group Inc	OMC	0.09%	2.59	0.00%	5.33%	0.01%
ONEOK Inc	OKE	0.05%	4.55	0.00%	12.25%	0.01%
PG&E Corp	PCG	0.16%	2.94	0.00%	5.31%	0.01%
Parker-Hannifin Corp	PH	0.10%	1.71	0.00%	9.61%	0.01%
PPL Corp	PPL	0.12%	4.28	0.01%	0.42%	0.00%
PepsiCo Inc	PEP	0.75%	2.73	0.02%	6.66%	0.05%
Exelon Corp	EXC	0.16%	3.57	0.01%	3.60%	0.01%
ConocoPhillips	COP	0.28%	2.23	0.01%	6.00%	0.02%
PulteGroup Inc	PHM	0.03%	1.63	0.00%	16.33%	0.01%
Pinnacle West Capital Corp	PNW	0.04%	3.19	0.00%	4.88%	0.00%
Pitney Bowes Inc	PBI	0.01%	5.50	0.00%	10.00%	0.00%
PNC Financial Services Group Inc/The	PNC	0.29%	1.73	0.01%	15.94%	0.05%
PPG Industries Inc	PPG	0.13%	1.56	0.00%	7.25%	0.01%
Praxair Inc	PX	0.16%	2.65	0.00%	9.00%	0.01%
Progressive Corp/The	PGR	0.11%	1.74	0.00%	9.25%	0.01%
Public Service Enterprise Group Inc	PEG	0.11%	3.74	0.00%	2.22%	0.00%
Raytheon Co	RTN	0.21%	1.90	0.00%	7.82%	0.02%
Robert Half International Inc	RHI	0.03%	1.99	0.00%	9.71%	0.00%
Ryder System Inc	R	0.02%	2.31	0.00%	15.00%	0.00%
SCANA Corp	SCG	0.05%	3.53	0.00%	6.33%	0.00%
Edison International	EIX	0.12%	2.72	0.00%	5.13%	0.01%
Schlumberger Ltd	SLB	0.53%	2.49	0.01%	8.42%	0.04%
Charles Schwab Corp/The	SCHW	0.26%	0.79	0.00%	17.52%	0.04%
Sherwin-Williams Co/The	SHW	0.14%	1.10	0.00%	13.65%	0.02%
JM Smucker Co/The	SJM	0.08%	2.12	0.00%	6.17%	0.00%
Snap-on Inc	SNA	0.05%	1.67	0.00%	4.60%	0.00%
AMETEK Inc	AME	0.06%	0.67	0.00%	9.86%	0.01%
Southern Co/The	SO	0.24%	4.41	0.01%	4.27%	0.01%
BB&T Corp	BBT	0.19%	2.49	0.00%	8.68%	0.02%
Southwest Airlines Co	LUV	0.17%	0.69	0.00%	9.29%	0.02%
Southwestern Energy Co	SWN	0.02%	n/a	n/a	-10.43%	0.00%
Stanley Black & Decker Inc	SWK	0.09%	1.82	0.00%	10.25%	0.01%
Public Storage	PSA	0.19%	3.52	0.01%	5.63%	0.01%
SunTrust Banks Inc	STI	0.14%	1.75	0.00%	8.34%	0.01%
Sysco Corp	SYI	0.14%	2.50	0.00%	9.87%	0.01%
Tesoro Corp	TSO	0.05%	2.58	0.00%	3.86%	0.00%
Texas Instruments Inc	TXN	0.36%	2.61	0.01%	9.38%	0.03%
Textron Inc	TXT	0.06%	0.17	0.00%	8.92%	0.01%
Thermo Fisher Scientific Inc	TMO	0.30%	0.38	0.00%	12.14%	0.04%
Tiffany & Co	TIF	0.05%	1.96	0.00%	9.62%	0.01%
TJX Cos Inc/The	TJX	0.24%	1.59	0.00%	11.43%	0.03%
Torchmark Corp	TMK	0.04%	0.77	0.00%	7.29%	0.00%
Total System Services Inc	TSS	0.05%	0.73	0.00%	11.00%	0.01%
Johnson Controls International plc	JCI	0.19%	2.38	0.00%	8.50%	0.02%
Ulta Beauty Inc	ULTA	0.08%	n/a	n/a	21.83%	0.02%
Union Pacific Corp	UNP	0.42%	2.24	0.01%	9.38%	0.04%
UnitedHealth Group Inc	UNH	0.75%	1.51	0.01%	14.53%	0.11%
Unum Group	UNM	0.05%	1.64	0.00%	7.00%	0.00%
Marathon Oil Corp	MRO	0.06%	1.25	0.00%	6.50%	0.00%
Varian Medical Systems Inc	VAR	0.04%	n/a	n/a	9.10%	0.00%
Ventas Inc	VTR	0.11%	4.77	0.01%	5.63%	0.01%
VF Corp	VFC	0.10%	3.20	0.00%	7.64%	0.01%
Vornado Realty Trust	VNO	0.10%	2.58	0.00%	5.90%	0.01%
Vulcan Materials Co	VMC	0.08%	0.83	0.00%	25.13%	0.02%
Weyerhaeuser Co	WY	0.12%	3.68	0.00%	7.50%	0.01%
Whirlpool Corp	WHR	0.06%	2.24	0.00%	16.36%	0.01%
Williams Cos Inc/The	WMB	0.11%	4.23	0.00%	10.00%	0.01%
WEC Energy Group Inc	WEC	0.09%	3.45	0.00%	6.00%	0.01%
Xerox Corp	XRJ	0.04%	3.36	0.00%	-0.80%	0.00%
Adobe Systems Inc	ADBE	0.28%	n/a	n/a	15.00%	0.04%
AES Corp/VA	AES	0.04%	4.17	0.00%	4.84%	0.00%
Amgen Inc	AMGN	0.62%	2.61	0.02%	8.08%	0.05%
Apple Inc	AAPL	3.41%	1.66	0.06%	10.53%	0.36%
Autodesk Inc	ADSK	0.09%	n/a	n/a	20.71%	0.02%
Cintas Corp	CTAS	0.06%	1.13	0.00%	11.44%	0.01%
Comcast Corp	CMCSA	0.84%	1.68	0.01%	11.10%	0.09%
Molson Coors Brewing Co	TAP	0.09%	1.63	0.00%	17.88%	0.02%
KLA-Tencor Corp	KLAC	0.07%	2.40	0.00%	6.00%	0.00%
Marriott International Inc/MD	MAR	0.16%	1.38	0.00%	10.81%	0.02%
McCormick & Co Inc/MD	MKC	0.05%	1.91	0.00%	7.91%	0.00%
Nordstrom Inc	JWN	0.04%	3.17	0.00%	9.04%	0.00%
PACCAR Inc	PCAR	0.11%	1.44	0.00%	5.17%	0.01%
Costco Wholesale Corp	COST	0.37%	1.02	0.00%	10.59%	0.04%
Stryker Corp	SYK	0.23%	1.32	0.00%	9.42%	0.02%
Tyson Foods Inc	TSN	0.09%	1.44	0.00%	6.30%	0.01%
Applied Materials Inc	AMAT	0.19%	1.10	0.00%	15.55%	0.03%
Time Warner Inc	TWX	0.36%	1.64	0.01%	10.43%	0.04%
Bed Bath & Beyond Inc	BBBY	0.03%	1.24	0.00%	5.46%	0.00%
American Airlines Group Inc	AAL	0.11%	0.86	0.00%	-9.27%	-0.01%
Cardinal Health Inc	CAH	0.12%	2.21	0.00%	10.10%	0.01%
Celgene Corp	CELG	0.46%	n/a	n/a	20.77%	0.09%

MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[10] Estimated Weighted Average Dividend Yield	2.02%
[11] Estimated Weighted Average Long-Term Growth Rate	10.58%
[12] S&P 500 Estimated Required Market Return	12.71%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[13]	[14]	[15]	[16]	[17]
		Weight in Index	Current Dividend Yield	Cap-Weighted Dividend Yield	Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Cerner Corp	CERN	0.09%	n/a	n/a	13.52%	0.01%
Cincinnati Financial Corp	CINF	0.06%	2.74	0.00%	n/a	n/a
DR Horton Inc	DHI	0.06%	1.25	0.00%	11.36%	0.01%
Flowserve Corp	FLS	0.03%	1.64	0.00%	12.64%	0.00%
Electronic Arts Inc	EA	0.13%	n/a	n/a	15.00%	0.02%
Express Scripts Holding Co	ESRX	0.20%	n/a	n/a	11.83%	0.02%
Expeditors International of Washington Inc	EXPD	0.05%	1.42	0.00%	8.30%	0.00%
Fastenal Co	FAST	0.07%	2.56	0.00%	15.78%	0.01%
M&T Bank Corp	MTB	0.12%	1.80	0.00%	3.88%	0.00%
Fiserv Inc	FISV	0.12%	n/a	n/a	9.03%	0.01%
Fifth Third Bancorp	FITB	0.10%	2.04	0.00%	3.63%	0.00%
Gilead Sciences Inc	GILD	0.44%	2.95	0.01%	0.50%	0.00%
Hasbro Inc	HAS	0.06%	2.35	0.00%	8.80%	0.01%
Huntington Bancshares Inc/OH	HBAN	0.07%	2.26	0.00%	9.69%	0.01%
Welltower Inc	HCN	0.12%	4.94	0.01%	4.72%	0.01%
Biogen Inc	BIIB	0.30%	n/a	n/a	8.19%	0.02%
Linear Technology Corp	LLTC	0.07%	2.04	0.00%	8.77%	0.01%
Range Resources Corp	RRC	0.03%	0.29	0.00%	-13.83%	0.00%
Northern Trust Corp	NTRS	0.09%	1.74	0.00%	12.10%	0.01%
Paychex Inc	PAYX	0.10%	3.00	0.00%	8.71%	0.01%
People's United Financial Inc	PBCT	0.03%	3.54	0.00%	2.00%	0.00%
Patterson Cos Inc	PDCO	0.02%	2.11	0.00%	4.01%	0.00%
QUALCOMM Inc	QCOM	0.40%	3.75	0.01%	8.44%	0.03%
Roper Technologies Inc	ROP	0.10%	0.67	0.00%	12.08%	0.01%
Ross Stores Inc	ROST	0.13%	0.93	0.00%	12.81%	0.02%
IDEXX Laboratories Inc	IDXX	0.06%	n/a	n/a	11.50%	0.01%
AutoNation Inc	AN	0.02%	n/a	n/a	8.31%	0.00%
Starbucks Corp	SBUX	0.39%	1.76	0.01%	17.35%	0.07%
KeyCorp	KEY	0.10%	1.81	0.00%	7.00%	0.01%
Staples Inc	SPLS	0.03%	5.34	0.00%	2.82%	0.00%
State Street Corp	STT	0.14%	1.91	0.00%	7.75%	0.01%
US Bancorp	USB	0.44%	2.04	0.01%	5.96%	0.03%
Symantec Corp	SYMC	0.08%	1.05	0.00%	11.48%	0.01%
T Rowe Price Group Inc	TROW	0.08%	3.20	0.00%	9.83%	0.01%
Waste Management Inc	WM	0.15%	2.32	0.00%	9.56%	0.01%
CBS Corp	CBS	0.12%	1.09	0.00%	14.65%	0.02%
Allergan PLC	AGN	0.39%	1.14	0.00%	12.42%	0.05%
Whole Foods Market Inc	WFM	0.05%	1.83	0.00%	3.17%	0.00%
Constellation Brands Inc	STZ	0.13%	1.01	0.00%	16.24%	0.02%
Xilinx Inc	XLNX	0.07%	2.24	0.00%	8.42%	0.01%
DENTSPLY SIRONA Inc	XRAY	0.07%	0.55	0.00%	8.21%	0.01%
Zions Bancorporation	ZION	0.04%	0.71	0.00%	15.97%	0.01%
Alaska Air Group Inc	ALK	0.06%	1.23	0.00%	11.95%	0.01%
Invesco Ltd	IVZ	0.06%	3.48	0.00%	9.52%	0.01%
Intuit Inc	INTU	0.15%	1.08	0.00%	14.71%	0.02%
Morgan Stanley	MS	0.40%	1.75	0.01%	10.92%	0.04%
Microchip Technology Inc	MCHP	0.07%	1.99	0.00%	17.42%	0.01%
Chubb Ltd	CB	0.31%	2.00	0.01%	7.57%	0.02%
Hologic Inc	HOLX	0.05%	n/a	n/a	8.61%	0.00%
Chesapeake Energy Corp	CHK	0.02%	n/a	n/a	0.68%	0.00%
Citizens Financial Group Inc	CFG	0.09%	1.50	0.00%	17.59%	0.02%
O'Reilly Automotive Inc	ORLY	0.12%	n/a	n/a	15.26%	0.02%
Allstate Corp/The	ALL	0.14%	1.80	0.00%	9.23%	0.01%
FLIR Systems Inc	FLIR	0.02%	1.63	0.00%	15.00%	0.00%
Equity Residential	EQR	0.11%	3.19	0.00%	6.31%	0.01%
BorgWarner Inc	BWA	0.04%	1.33	0.00%	6.38%	0.00%
Newfield Exploration Co	NFX	0.03%	n/a	n/a	20.08%	0.01%
Urban Outfitters Inc	URBN	0.01%	n/a	n/a	11.95%	0.00%
Incyte Corp	INCY	0.12%	n/a	n/a	27.61%	0.03%
Simon Property Group Inc	SPG	0.28%	3.80	0.01%	7.22%	0.02%
Eastman Chemical Co	EMN	0.06%	2.54	0.00%	6.40%	0.00%
AvalonBay Communities Inc	AVB	0.12%	3.09	0.00%	6.24%	0.01%
Prudential Financial Inc	PRU	0.23%	2.71	0.01%	8.33%	0.02%
United Parcel Service Inc	UPS	0.35%	3.14	0.01%	8.70%	0.03%
Apartment Investment & Management Co	AIV	0.03%	3.09	0.00%	5.69%	0.00%
Walgreens Boots Alliance Inc	WBA	0.44%	1.74	0.01%	10.78%	0.05%
McKesson Corp	MCK	0.15%	0.75	0.00%	9.66%	0.01%
Lockheed Martin Corp	LMT	0.37%	2.73	0.01%	6.75%	0.02%
AmerisourceBergen Corp	ABC	0.09%	1.60	0.00%	10.09%	0.01%
Capital One Financial Corp	COF	0.21%	1.70	0.00%	5.78%	0.01%
Waters Corp	WAT	0.06%	n/a	n/a	8.15%	0.00%
Dollar Tree Inc	DLTR	0.09%	n/a	n/a	16.00%	0.01%
Darden Restaurants Inc	DRI	0.04%	3.00	0.00%	10.59%	0.00%
NetApp Inc	NTAP	0.05%	1.82	0.00%	11.56%	0.01%
Citrix Systems Inc	CTXS	0.06%	n/a	n/a	11.00%	0.01%
Goodyear Tire & Rubber Co/The	GT	0.04%	1.14	0.00%	n/a	n/a
DaVita Inc	DVA	0.06%	n/a	n/a	8.84%	0.01%
Hartford Financial Services Group Inc/The	HIG	0.09%	1.88	0.00%	9.50%	0.01%
Iron Mountain Inc	IRM	0.05%	6.05	0.00%	10.70%	0.00%
Estee Lauder Cos Inc/The	EL	0.09%	1.64	0.00%	10.82%	0.01%
Yahoo! Inc	YHOO	0.21%	n/a	n/a	8.38%	0.02%
Principal Financial Group Inc	PFG	0.09%	2.88	0.00%	8.61%	0.01%
Stericycle Inc	SRCL	0.03%	n/a	n/a	10.10%	0.00%
Universal Health Services Inc	UHS	0.05%	0.32	0.00%	10.00%	0.01%
E*TRADE Financial Corp	ETFC	0.05%	n/a	n/a	16.77%	0.01%
Skyworks Solutions Inc	SWKS	0.08%	1.18	0.00%	14.73%	0.01%
National Oilwell Varco Inc	NOV	0.07%	0.49	0.00%	-46.00%	-0.03%
Quest Diagnostics Inc	DGX	0.06%	1.85	0.00%	8.42%	0.01%
Activision Blizzard Inc	ATVI	0.16%	0.66	0.00%	21.21%	0.03%

MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[10] Estimated Weighted Average Dividend Yield	2.02%
[11] Estimated Weighted Average Long-Term Growth Rate	10.58%
[12] S&P 500 Estimated Required Market Return	12.71%

STANDARD AND POOR'S 500 INDEX

Name	Ticker	[13]	[14]	[15]	[16]	[17]
		Weight in Index	Current Dividend Yield	Cap-Weighted Dividend Yield	Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
Rockwell Automation Inc	ROK	0.09%	2.01	0.00%	8.45%	0.01%
Kraft Heinz Co/The	KHC	0.53%	2.62	0.01%	17.44%	0.09%
American Tower Corp	AMT	0.23%	2.02	0.00%	18.34%	0.04%
Regeneron Pharmaceuticals Inc	REGN	0.18%	n/a	n/a	19.57%	0.04%
Amazon.com Inc	AMZN	1.91%	n/a	n/a	37.51%	0.72%
Ralph Lauren Corp	RL	0.02%	2.52	0.00%	3.28%	0.00%
Boston Properties Inc	BXP	0.10%	2.16	0.00%	4.41%	0.00%
Amphenol Corp	APH	0.10%	0.92	0.00%	6.42%	0.01%
Arconic Inc	ARNC	0.06%	0.83	0.00%	14.70%	0.01%
Pioneer Natural Resources Co	PXD	0.15%	0.04	0.00%	20.00%	0.03%
Valero Energy Corp	VLO	0.15%	4.12	0.01%	11.13%	0.02%
L3 Technologies Inc	LLL	0.06%	1.78	0.00%	8.17%	0.01%
Western Union Co/The	WU	0.04%	3.56	0.00%	6.95%	0.00%
CH Robinson Worldwide Inc	CHRW	0.05%	2.24	0.00%	9.00%	0.00%
Accenture PLC	ACN	0.36%	1.98	0.01%	8.20%	0.03%
TransDigm Group Inc	TDG	0.06%	n/a	n/a	7.79%	0.00%
Yum! Brands Inc	YUM	0.11%	1.84	0.00%	12.56%	0.01%
Prologis Inc	PLD	0.13%	3.45	0.00%	6.43%	0.01%
FirstEnergy Corp	FE	0.07%	4.44	0.00%	-1.13%	0.00%
VenSign Inc	VRSN	0.04%	n/a	n/a	8.90%	0.00%
Quanta Services Inc	PWR	0.03%	n/a	n/a	16.80%	0.00%
Henry Schein Inc	HSIC	0.06%	n/a	n/a	10.84%	0.01%
Ameren Corp	AEE	0.06%	3.22	0.00%	5.50%	0.00%
Scripps Networks Interactive Inc	SNI	0.04%	1.49	0.00%	8.47%	0.00%
NVIDIA Corp	NVDA	0.26%	0.55	0.00%	9.53%	0.02%
Sealed Air Corp	SEE	0.04%	1.38	0.00%	3.66%	0.00%
Cognizant Technology Solutions Corp	CTSH	0.17%	1.01	0.00%	13.02%	0.02%
Intuitive Surgical Inc	ISRG	0.14%	n/a	n/a	10.66%	0.01%
Affiliated Managers Group Inc	AMG	0.05%	0.48	0.00%	13.95%	0.01%
Aetna Inc	AET	0.22%	1.55	0.00%	11.06%	0.02%
Republic Services Inc	RSG	0.10%	2.07	0.00%	8.78%	0.01%
eBay Inc	EBAY	0.18%	n/a	n/a	9.38%	0.02%
Goldman Sachs Group Inc/The	GS	0.47%	1.05	0.00%	12.22%	0.06%
Sempra Energy	SRE	0.13%	2.98	0.00%	7.36%	0.01%
Moody's Corp	MCO	0.10%	1.36	0.00%	10.00%	0.01%
Priceline Group Inc/The	PCLN	0.40%	n/a	n/a	17.14%	0.07%
F5 Networks Inc	FFIV	0.04%	n/a	n/a	12.43%	0.01%
Akamai Technologies Inc	AKAM	0.05%	n/a	n/a	14.80%	0.01%
Reynolds American Inc	RAI	0.42%	3.31	0.01%	7.96%	0.03%
Devon Energy Corp	DVN	0.11%	0.55	0.00%	9.55%	0.01%
Alphabet Inc	GOOGL	1.19%	n/a	n/a	16.67%	0.20%
Red Hat Inc	RHT	0.07%	n/a	n/a	16.56%	0.01%
Allegion PLC	ALLE	0.03%	0.88	0.00%	13.53%	0.00%
Netflix Inc	NFLX	0.29%	n/a	n/a	37.09%	0.11%
Agilent Technologies Inc	A	0.08%	1.03	0.00%	8.88%	0.01%
Anthem Inc	ANTM	0.21%	1.58	0.00%	9.39%	0.02%
CME Group Inc	CME	0.20%	2.17	0.00%	11.80%	0.02%
Juniper Networks Inc	JNPR	0.05%	1.43	0.00%	9.62%	0.00%
BlackRock Inc	BLK	0.30%	2.58	0.01%	11.66%	0.03%
DTE Energy Co	DTE	0.09%	3.26	0.00%	5.03%	0.00%
Nasdaq Inc	NDAQ	0.06%	1.80	0.00%	10.98%	0.01%
Philip Morris International Inc	PM	0.81%	3.80	0.03%	10.80%	0.09%
salesforce.com Inc	CRM	0.27%	n/a	n/a	29.51%	0.08%
MetLife Inc	MET	0.27%	3.05	0.01%	9.80%	0.03%
Under Armour Inc	UA	0.02%	n/a	n/a	6.09%	0.00%
Monsanto Co	MON	0.24%	1.90	0.00%	14.35%	0.03%
Coach Inc	COH	0.05%	3.54	0.00%	11.00%	0.01%
Fluor Corp	FLR	0.04%	1.52	0.00%	13.31%	0.00%
CSX Corp	CSX	0.21%	1.48	0.00%	9.10%	0.02%
Dun & Bradstreet Corp/The	DNB	0.02%	1.90	0.00%	8.00%	0.00%
Edwards Lifesciences Corp	EW	0.09%	n/a	n/a	18.07%	0.02%
Ameriprise Financial Inc	AMP	0.10%	2.28	0.00%	n/a	n/a
Xcel Energy Inc	XEL	0.11%	3.29	0.00%	5.20%	0.01%
Rockwell Collins Inc	COL	0.06%	1.38	0.00%	9.15%	0.01%
TechnipFMC PLC	FTI	0.07%	n/a	n/a	-8.55%	-0.01%
Zimmer Biomet Holdings Inc	ZBH	0.11%	0.82	0.00%	9.03%	0.01%
CBRE Group Inc	CBG	0.06%	n/a	n/a	8.63%	0.00%
Mastercard Inc	MA	0.56%	0.80	0.00%	16.37%	0.09%
Signet Jewelers Ltd	SIG	0.02%	1.64	0.00%	10.00%	0.00%
CarMax Inc	KMX	0.06%	n/a	n/a	12.59%	0.01%
Intercontinental Exchange Inc	ICE	0.16%	1.40	0.00%	11.30%	0.02%
Fidelity National Information Services Inc	FIS	0.13%	1.41	0.00%	11.57%	0.01%
Chipotle Mexican Grill Inc	CMG	0.06%	n/a	n/a	20.18%	0.01%
Wynn Resorts Ltd	WYNN	0.05%	2.08	0.00%	23.53%	0.01%
Assurant Inc	AIZ	0.03%	2.14	0.00%	26.91%	0.01%
NRG Energy Inc	NRG	0.02%	0.72	0.00%	-2.55%	0.00%
Regions Financial Corp	RF	0.09%	1.70	0.00%	9.26%	0.01%
Monster Beverage Corp	MNST	0.11%	n/a	n/a	19.57%	0.02%
Teradata Corp	TDC	0.02%	n/a	n/a	4.76%	0.00%
Mosaic Co/The	MOS	0.05%	3.53	0.00%	20.10%	0.01%
Expedia Inc	EXPE	0.08%	0.94	0.00%	19.18%	0.01%
Discovery Communications Inc	DISCA	0.02%	n/a	n/a	15.55%	0.00%
CF Industries Holdings Inc	CF	0.03%	3.82	0.00%	-0.05%	0.00%
Viacom Inc	VIAB	0.07%	1.84	0.00%	2.45%	0.00%
Wyndham Worldwide Corp	WYN	0.04%	2.79	0.00%	9.60%	0.00%
Alphabet Inc	GOOG	1.36%	n/a	n/a	16.67%	0.23%
First Solar Inc	FSLR	0.02%	n/a	n/a	-34.34%	-0.01%
Mead Johnson Nutrition Co	MJN	0.08%	1.88	0.00%	5.70%	0.00%
Cooper Cos Inc/The	COO	0.05%	0.03	0.00%	11.84%	0.01%

MARKET RISK PREMIUM DERIVED FROM ANALYSTS' LONG-TERM GROWTH ESTIMATES

[10] Estimated Weighted Average Dividend Yield	2.02%
[11] Estimated Weighted Average Long-Term Growth Rate	10.58%
[12] S&P 500 Estimated Required Market Return	12.71%

STANDARD AND POOR'S 500 INDEX

		[13]	[14]	[15]	[16]	[17]
Name	Ticker	Weight in Index	Current Dividend Yield	Cap-Weighted Dividend Yield	Long-Term Growth Est.	Cap-Weighted Long-Term Growth Est.
TE Connectivity Ltd	TEL	0.13%	1.99	0.00%	6.35%	0.01%
Discover Financial Services	DFS	0.13%	1.69	0.00%	9.27%	0.01%
TripAdvisor Inc	TRIP	0.03%	n/a	n/a	15.92%	0.00%
Dr Pepper Snapple Group Inc	DPS	0.08%	2.48	0.00%	8.78%	0.01%
Visa Inc	V	0.78%	0.75	0.01%	17.12%	0.13%
Mid-America Apartment Communities Inc	MAA	0.06%	3.39	0.00%	n/a	n/a
Xylem Inc/NY	XYL	0.04%	1.50	0.00%	11.00%	0.00%
Marathon Petroleum Corp	MPC	0.12%	2.90	0.00%	4.44%	0.01%
Level 3 Communications Inc	LVT	0.10%	n/a	n/a	7.50%	0.01%
Tractor Supply Co	TSCO	0.04%	1.35	0.00%	13.10%	0.01%
Mettler-Toledo International Inc	MTD	0.06%	n/a	n/a	11.63%	0.01%
Albemarle Corp	ALB	0.05%	1.26	0.00%	14.35%	0.01%
Transocean Ltd	RIG	0.03%	n/a	n/a	-25.60%	-0.01%
Essex Property Trust Inc	ESS	0.07%	2.98	0.00%	6.08%	0.00%
GGP Inc	GGP	0.10%	3.54	0.00%	8.08%	0.01%
Realty Income Corp	O	0.08%	4.12	0.00%	5.14%	0.00%
Seagate Technology PLC	STX	0.07%	5.23	0.00%	11.38%	0.01%
WestRock Co	WRK	0.06%	2.98	0.00%	6.48%	0.00%
Western Digital Corp	WDC	0.11%	2.60	0.00%	9.87%	0.01%
Church & Dwight Co Inc	CHD	0.06%	1.52	0.00%	8.88%	0.01%
Federal Realty Investment Trust	FRT	0.05%	2.79	0.00%	5.47%	0.00%
Twenty-First Century Fox Inc	FOX	0.11%	1.23	0.00%	9.87%	0.01%
Alliant Energy Corp	LNT	0.04%	3.19	0.00%	6.98%	0.00%
JB Hunt Transport Services Inc	JBHT	0.05%	0.94	0.00%	15.05%	0.01%
Lam Research Corp	LRCX	0.09%	1.52	0.00%	7.64%	0.01%
Mohawk Industries Inc	MHK	0.08%	n/a	n/a	7.12%	0.01%
Pentair PLC	PNR	0.05%	2.38	0.00%	8.76%	0.00%
Vertex Pharmaceuticals Inc	VRTX	0.11%	n/a	n/a	74.50%	0.08%
Facebook Inc	FB	1.52%	n/a	n/a	26.25%	0.40%
United Rentals Inc	URI	0.05%	n/a	n/a	15.14%	0.01%
United Continental Holdings Inc	UAL	0.11%	n/a	n/a	-5.43%	-0.01%
Delta Air Lines Inc	DAL	0.17%	1.62	0.00%	12.07%	0.02%
Navient Corp	NAVI	0.02%	4.15	0.00%	8.00%	0.00%
Mallinckrodt PLC	MNK	0.03%	n/a	n/a	6.61%	0.00%
News Corp	NWS	0.01%	1.52	0.00%	10.73%	0.00%
Centene Corp	CNC	0.06%	n/a	n/a	13.17%	0.01%
Macerich Co/The	MAC	0.05%	4.21	0.00%	5.97%	0.00%
Martin Marietta Materials Inc	MLM	0.06%	0.78	0.00%	22.38%	0.01%
Envision Healthcare Corp	EVHC	0.04%	n/a	n/a	n/a	n/a
PayPal Holdings Inc	PYPL	0.24%	n/a	n/a	16.56%	0.04%
Coty Inc	COTY	0.07%	2.66	0.00%	1.47%	0.00%
Alexion Pharmaceuticals Inc	ALXN	0.14%	n/a	n/a	22.21%	0.03%
Endo International PLC	ENDP	0.01%	n/a	n/a	-2.23%	0.00%
News Corp	NWSA	0.02%	1.56	0.00%	10.73%	0.00%
Global Payments Inc	GP	0.06%	0.05	0.00%	13.00%	0.01%
Crown Castle International Corp	CCI	0.16%	4.06	0.01%	23.17%	0.04%
Delphi Automotive PLC	DLP	0.10%	1.52	0.00%	12.21%	0.01%
Advance Auto Parts Inc	AAP	0.05%	0.15	0.00%	13.28%	0.01%
Michael Kors Holdings Ltd	KORS	0.03%	n/a	n/a	1.97%	0.00%
Illumina Inc	ILMN	0.12%	n/a	n/a	12.55%	0.01%
Acuity Brands Inc	AYI	0.04%	0.25	0.00%	23.25%	0.01%
Alliance Data Systems Corp	ADS	0.06%	0.86	0.00%	14.50%	0.01%
LKQ Corp	LKQ	0.05%	n/a	n/a	15.00%	0.01%
Nielsen Holdings PLC	NLSN	0.08%	2.80	0.00%	10.67%	0.01%
Garmin Ltd	GRMN	0.05%	3.95	0.00%	4.97%	0.00%
Cimarex Energy Co	XEC	0.06%	0.25	0.00%	77.99%	0.04%
Zoetis Inc	ZTS	0.12%	0.79	0.00%	13.90%	0.02%
Digital Realty Trust Inc	DLR	0.08%	3.26	0.00%	5.10%	0.00%
Equinix Inc	EQIX	0.13%	2.13	0.00%	23.52%	0.03%
Discovery Communications Inc	DISCK	0.03%	n/a	n/a	15.55%	0.00%

Notes:

- [10] Equals Sum ([15])
 [11] Equals Sum ([17])
 [12] Equals ([10] x (1 + (0.5 x [11]))) + [11]
 [13] Equals weight in S&P 500 based on market capitalization
 [14] Source: Bloomberg Professional
 [15] Equals [13] x [14]
 [16] Source: Bloomberg Professional
 [17] Equals [13] x [16]

Testimony of Ann E. Bulkley

Exhibit __ (AEB-6)

Proxy Group BETAS

PROXY GROUP BETAS

		[1]
Company	Ticker	Beta
Ameren Corporation	AEE	0.650
Avista Corporation	AVA	0.700
Black Hills Corporation	BKH	0.900
CenterPoint Energy, Inc.	CNP	0.850
CMS Energy Corporation	CMS	0.650
Consolidated Edison, Inc.	ED	0.550
DTE Energy Company	DTE	0.650
NorthWestern Corporation	NWE	0.700
SCANA Corporation	SCG	0.650
Sempra Energy	SRE	0.800
Vectren Corporation	VVC	0.750
Wisconsin Energy Corporation	WEC	0.600
Xcel Energy Inc.	XEL	0.600
Mean		0.696
Median		0.650

Notes:

[1] Source: Value Line as of February 28, 2017

Testimony of Ann E. Bulkley

Exhibit __ (AEB-7)

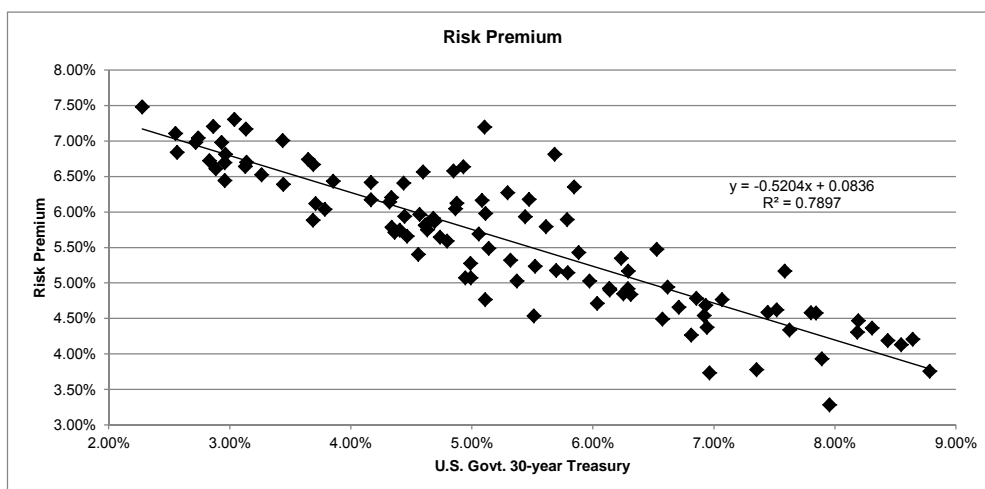
Risk Premium – Electric Utilities

RISK PREMIUM -- ELECTRIC UTILITIES

	[1] Average Authorized Electric ROE	[2] U.S. Govt. 30-year Treasury	[3] Risk Premium
1990.1	12.62%	8.44%	4.19%
1990.2	12.85%	8.64%	4.21%
1990.3	12.54%	8.78%	3.76%
1990.4	12.68%	8.55%	4.13%
1991.1	12.66%	8.19%	4.47%
1991.2	12.67%	8.31%	4.37%
1991.3	12.49%	8.19%	4.31%
1991.4	12.42%	7.84%	4.58%
1992.1	12.38%	7.80%	4.58%
1992.2	11.83%	7.89%	3.93%
1992.3	12.03%	7.45%	4.59%
1992.4	12.14%	7.52%	4.62%
1993.1	11.84%	7.07%	4.77%
1993.2	11.64%	6.86%	4.79%
1993.3	11.15%	6.31%	4.84%
1993.4	11.04%	6.14%	4.90%
1994.1	11.07%	6.57%	4.49%
1994.2	11.13%	7.35%	3.78%
1994.3	12.75%	7.58%	5.17%
1994.4	11.24%	7.96%	3.28%
1995.1	11.96%	7.63%	4.34%
1995.2	11.32%	6.94%	4.37%
1995.3	11.37%	6.71%	4.66%
1995.4	11.58%	6.23%	5.35%
1996.1	11.46%	6.29%	5.17%
1996.2	11.46%	6.92%	4.54%
1996.3	10.70%	6.96%	3.74%
1996.4	11.56%	6.62%	4.94%
1997.1	11.08%	6.81%	4.27%
1997.2	11.62%	6.93%	4.68%
1997.3	12.00%	6.53%	5.47%
1997.4	11.06%	6.14%	4.92%
1998.1	11.31%	5.88%	5.43%
1998.2	12.20%	5.85%	6.35%
1998.3	11.65%	5.47%	6.18%
1998.4	12.30%	5.10%	7.20%
1999.1	10.40%	5.37%	5.03%
1999.2	10.94%	5.79%	5.15%
1999.3	10.75%	6.04%	4.71%
1999.4	11.10%	6.25%	4.85%
2000.1	11.21%	6.29%	4.92%
2000.2	11.00%	5.97%	5.03%
2000.3	11.68%	5.79%	5.89%
2000.4	12.50%	5.69%	6.81%
2001.1	11.38%	5.44%	5.93%
2001.2	10.88%	5.70%	5.18%
2001.3	10.76%	5.52%	5.23%
2001.4	11.57%	5.30%	6.27%
2002.1	10.05%	5.51%	4.54%
2002.2	11.41%	5.61%	5.79%
2002.3	11.25%	5.08%	6.17%
2002.4	11.57%	4.93%	6.64%
2003.1	11.43%	4.85%	6.58%
2003.2	11.16%	4.60%	6.56%
2003.3	9.88%	5.11%	4.76%
2003.4	11.09%	5.11%	5.98%
2004.1	11.00%	4.88%	6.12%
2004.2	10.64%	5.32%	5.32%
2004.3	10.75%	5.06%	5.69%
2004.4	10.91%	4.86%	6.04%

RISK PREMIUM -- ELECTRIC UTILITIES

	[1]	[2]	[3]
	Average Authorized Electric ROE	U.S. Govt. 30-year Treasury	Risk Premium
2005.1	10.56%	4.69%	5.87%
2005.2	10.13%	4.47%	5.66%
2005.3	10.85%	4.44%	6.41%
2005.4	10.59%	4.68%	5.91%
2006.1	10.38%	4.63%	5.75%
2006.2	10.63%	5.14%	5.49%
2006.3	10.06%	4.99%	5.07%
2006.4	10.39%	4.74%	5.65%
2007.1	10.39%	4.80%	5.59%
2007.2	10.27%	4.99%	5.28%
2007.3	10.02%	4.95%	5.07%
2007.4	10.43%	4.61%	5.81%
2008.1	10.15%	4.41%	5.75%
2008.2	10.54%	4.57%	5.97%
2008.3	10.38%	4.44%	5.94%
2008.4	10.39%	3.65%	6.74%
2009.1	10.45%	3.44%	7.01%
2009.2	10.58%	4.17%	6.42%
2009.3	10.46%	4.32%	6.14%
2009.4	10.54%	4.34%	6.21%
2010.1	10.45%	4.62%	5.82%
2010.2	10.08%	4.36%	5.71%
2010.3	10.29%	3.86%	6.43%
2010.4	10.34%	4.17%	6.17%
2011.1	9.96%	4.56%	5.40%
2011.2	10.12%	4.34%	5.78%
2011.3	10.36%	3.69%	6.67%
2011.4	10.34%	3.04%	7.31%
2012.1	10.30%	3.14%	7.17%
2012.2	9.92%	2.93%	6.98%
2012.3	9.78%	2.74%	7.04%
2012.4	10.07%	2.86%	7.21%
2013.1	9.77%	3.13%	6.64%
2013.2	9.84%	3.14%	6.70%
2013.3	9.83%	3.71%	6.12%
2013.4	9.82%	3.79%	6.04%
2014.1	9.57%	3.69%	5.88%
2014.2	9.83%	3.44%	6.39%
2014.3	9.79%	3.26%	6.52%
2014.4	9.78%	2.96%	6.81%
2015.1	9.66%	2.55%	7.11%
2015.2	9.50%	2.88%	6.61%
2015.3	9.40%	2.96%	6.44%
2015.4	9.65%	2.96%	6.69%
2016.1	9.70%	2.72%	6.98%
2016.2	9.41%	2.57%	6.84%
2016.3	9.76%	2.28%	7.48%
2016.4	9.55%	2.83%	6.72%
AVERAGE	10.89%	5.28%	5.61%
MEDIAN	10.75%	5.09%	5.73%



SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.888632725
R Square	0.78966812
Adjusted R Square	0.787683857
Standard Error	0.004455053
Observations	108

ANOVA

	df	SS	MS	F	Significance F
Regression	1	0.007898619	0.007898619	397.9654474	1.12836E-37
Residual	106	0.002103835	1.98475E-05		
Total	107	0.010002454			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.083581043	0.001442582	57.93849466	4.42573E-82	0.080720984	0.086441103	0.080720984	0.086441103
U.S. Govt. 30-year Treasury	-0.520443298	0.026088598	-19.94907134	1.12836E-37	-0.572166481	-0.468720116	-0.572166481	-0.468720116

	[7] U.S. Govt. 30-year Treasury	[8] Risk Premium	[9] ROE
Current 30-Day Average [4]	3.05%	6.77%	9.82%
Blue Chip Consensus Forecast (Q1 2017-Q2 2018) [5]	3.42%	6.58%	10.00%
Blue Chip Consensus Forecast (2018-2022) [6]	4.20%	6.17%	10.37%
MEAN			10.06%

Notes:

- [1] Source: Regulatory Research Associates
- [2] Source: Bloomberg Professional, quarterly bond yields are the average of the last price of each trading day in the quarter
- [3] Equals Column [1] - Column [2]
- [4] Source: Bloomberg Professional, 3-month average as of February 2017
- [5] Source: Blue Chip Financial Forecasts, Vol. 36, No. 2, February 1, 2017, at 2
- [6] Source: Blue Chip Financial Forecasts, Vol. 35, No. 12, December 1, 2016, at 14
- [7] See notes [4], [5] & [6]
- [8] Equals 0.083581 + (-0.520443 x Column [7])
- [9] Equals Column [7] + Column [8]

Testimony of Ann E. Bulkley

Exhibit __ (AEB-8)

Comparison of NMPC and Proxy Group Companies: Risk Assessment

COMPARISON OF NMPC AND PROXY GROUP COMPANIES
RISK ASSESSMENT

			[1]	[2]		[3]		[4]		[5]		
Company	Jurisdiction/Service	Test Year	Authorized ROE			Fuel Cost Recovery Mechanism		Revenue Decoupling		Capital Cost Recovery Mechanism		
Ameren Corporation	Illinois - Electric	Fully Forecast	8.64			N/A		No		Yes		
	Illinois - Gas	Fully Forecast	9.60			Yes		Full		Yes		
	Missouri - Electric	Partially Forecast	9.53			Yes		Partial		Yes		
	Missouri - Gas	Partially Forecast	N/A			Yes		No		Yes		
Avista Corporation	Alaska - Electric	Historic	N/A			Yes		No		No		
	Idaho - Electric	Partially Forecast	9.50			Yes		Partial		No		
	Idaho - Gas	Partially Forecast	9.50			Yes		Partial		No		
	Oregon - Gas	Fully Forecast	9.40			Yes		Partial		No		
	Washington - Electric	Historic	N/A			Yes		Full		No		
	Washington - Gas	Historic	N/A			Yes		Full		No		
	Black Hills Corp	Arkansas - Gas	Partially Forecast	9.40			Yes		Full		Yes	
Black Hills Corp	Colorado - Electric	Historic	9.37			Yes		No		Yes		
	Colorado - Gas	Historic	10.00			Yes		No		No		
	Iowa - Gas	Historic	N/A			Yes		Full		Yes		
	Kansas - Gas	Historic	N/A			Yes		Partial		Yes		
	Nebraska - Gas	Historic	9.60			Yes		No		Yes		
	South Dakota - Electric	Historic	N/A			Yes		Partial		Yes		
	Wyoming - Electric	Historic	9.90			Yes		Partial		Yes		
	Wyoming - Gas	Historic	N/A			Yes		Partial		No		
	CenterPoint Energy, Inc.	Arkansas - Gas	Partially Forecast	9.50			Yes		Full		Yes	
	Louisiana - Gas	Fully Forecast	N/A			Yes		Partial		No		
	Minnesota - Gas	Fully Forecast	9.49			Yes		Full		No		
	Texas - Electric	Historic	N/A			Yes		Partial		Yes		
Texas - Gas	Historic	N/A			Yes		No		Yes			
CMS Energy Corporation	Michigan - Electric	Fully Forecast	10.30			Yes		No		Yes		
	Michigan - Gas	Fully Forecast	N/A			Yes		No		No		
Consolidated Edison, Inc.	New Jersey - Electric	Partially Forecast	9.75			N/A		No		Yes		
	New York - Electric	Fully Forecast	9.00			N/A		Full		Yes		
	New York - Gas	Fully Forecast	9.00			Yes		Full		No		
	O&R - Electric	Fully Forecast	9.00			N/A		Full		Yes		
	O&R - Gas	Fully Forecast	9.00			Yes		Full		No		
DTE Energy Company	Michigan - Electric	Fully Forecast	10.30			Yes		No		Yes		
	Michigan - Gas	Fully Forecast	10.10			Yes		Partial		Yes		
NorthWestern Corporation	Montana - Electric	Historic	9.80			Yes		No		Yes		
	Montana - Gas	Historic	9.80			Yes		No		Yes		
	Nebraska - Gas	Historic	10.40			Yes		No		Yes		
	South Dakota - Electric	Historic	N/A			Yes		No		No		
	South Dakota - Gas	Historic	N/A			Yes		No		No		
SCANA Corporation	North Carolina - Gas	Historic	9.70			Yes		Full		No		
	South Carolina - Electric	Historic	10.25			Yes		No		Yes		
	South Carolina - Gas	Historic	N/A			Yes		Partial		No		
Semptra Energy	California - Electric	Fully Forecast	N/A			Yes		Full		No		
	California - Gas	Fully Forecast	N/A			Yes		Full		No		
Vectren Corporation	Indiana - Electric	Historic	10.40			Yes		Partial		Yes		
	Indiana - Gas	Historic	10.20			Yes		Full		Yes		
	Ohio	Partially Forecast	n/a			N/A		No		Yes		
Wisconsin Energy Group	Illinois - Gas	Fully Forecast	9.05			Yes		Full		Yes		
	Illinois - Gas	Fully Forecast	9.05			Yes		Full		Yes		
	Michigan - Electric	Fully Forecast	10.10			Yes		No		Yes		
	Michigan - Gas	Fully Forecast	9.90			Yes		No		No		
	Minnesota - Gas	Fully Forecast	9.11			Yes		Full		No		
	Wisconsin - Electric	Fully Forecast	10.20			Yes		No		Yes		
	Wisconsin - Gas	Fully Forecast	10.20			Yes		No		Yes		
	Wisconsin - Gas	Fully Forecast	10.30			Yes		No		Yes		
Xcel Energy Inc.	Colorado - Electric	Historic	9.83			Yes		No		Yes		
	Colorado - gas	Historic	9.50			Yes		Partial		Yes		
	Minnesota - electric	Fully Forecast	9.72			Yes		Full		Yes		
	Minnesota - gas	Fully Forecast	10.09			Yes		No		Yes		
	New Mexico	Fully Forecast	N/A			Yes		No		Yes		
	North Dakota - electric	Fully Forecast	9.75			Yes		No		Yes		
	North Dakota - gas	Fully Forecast	N/A			Yes		No		No		
	South Dakota - electric	Historic	N/A			Yes		Partial		Yes		
	Texas - electric	Historic	9.70			Yes		No		Yes		
	Wisconsin - electric	Fully Forecast	N/A			Yes		No		Yes		
Wisconsin - gas	Fully Forecast	N/A			Yes		No		Yes			
				ROE Range		Fuel Cost Recovery		Revenue Decoupling		Capital Cost Recovery		
Proxy Group Average	Fully Forecast	30	Mean	Low	High							
	Partially Forecast	8	9.60%	8.64%	10.30%	Yes	60	Full	19	Yes	44	
	Historic	28	9.53%	9.40%	9.75%	No	0	Partial	15	No	22	
				9.37%	10.40%	N/A	6	No	32			
Niagara Mohawk	New York - electric	Fully Forecast				N/A		Full		Yes		
Niagara Mohawk	New York - gas	Fully Forecast				Yes		Full		Yes		

Notes

[1] Source: "Alternative Regulation for Evolving Utility Challenges," Prepared by Pacific Economics Group Research for Edison Electric Institute, Table 6, November 2015

[2] Source: Regulatory Research Associates

[3] - [5] Source: "Adjustment Clauses: A State-by-state Overview," Regulatory Research Associates, August 22, 2016

Testimony of Ann E. Bulkley

Exhibit __ (AEB-9)

Comparison of NMPC and Proxy Group Companies: Earned ROE

COMPARISON OF NMPC AND PROXY GROUP COMPANIES
EARNED ROE

Company	Jurisdiction/Service	[1]				[2]			
		2015	Authorized ROE		2012	2015	Earned ROE		2012
			2014	2013			2014	2013	
Ameren Corporation	Ameren Illinois	9.25	8.72	9.71	N/A	7.91	8.09	6.73	5.94
	Union Electric	9.80	9.80	9.80	10.20	8.90	9.87	10.00	10.52
Avista Corporation	Alaska - Electric								
	Idaho - Electric								
	Idaho - Gas								
	Oregon - Gas								
	Washington - Electric								
	Washington - Gas								
Black Hills Corp	Arkansas - Gas								
	Colorado - Electric								
	Colorado - Gas								
	Iowa - Gas								
	Kansas - Gas								
	Nebraska - Gas								
	South Dakota - Electric								
	Wyoming - Electric								
	Wyoming - Gas								
CenterPoint Energy, Inc.	CenterPoint Energy Houston Electric	10.00	10.00	10.00	10.00	15.52	18.47	15.35	15.54
	CenterPoint Energy Resources - MN	9.59	9.59	10.24	10.24	NM	7.28	1.50	3.27
CMS Energy Corporation	Consumers Energy Company	10.30	10.30	10.30	10.30	10.88	11.02	11.20	9.71
Consolidated Edison, Inc.	Consolidated Edison Company of NY	9.00	9.20	10.15	10.15	9.60	9.57	9.53	9.76
	Orange and Rockland Utilities	9.40	9.40	9.40	9.40	8.68	9.48	10.95	11.52
DTE Energy Company	Detroit Edison Company	10.50	10.50	10.50	10.50	9.92	10.73	11.01	11.49
NorthWestern Corporation	Montana - Electric								
	Montana - Gas								
	Nebraska - Gas								
	South Dakota - Electric								
	South Dakota - Gas								
SCANA Corporation	Public Service Company of NC	10.60	10.60	10.60	10.60	7.24	7.63	7.38	7.49
	South Carolina Electric and Gas	10.25	10.25	10.25	10.70	9.58	9.85	9.00	9.02
Sempra Energy	San Diego Gas and Electric	10.30	10.30	10.30	10.70	11.41	10.47	9.17	12.19
	Southern California Gas	10.10	10.10	10.10	10.82	14.03	12.39	15.51	13.24
Vectren Corporation	Vectren Utility Holdings - IN	10.40	10.40	10.40	10.40	10.64	10.14	10.00	10.03
Wisconsin Energy Group	Wisconsin Public Service	10.20	10.20	10.30	10.30	8.47	10.10	10.41	11.58
	Wisconsin Electric Power Company	10.20	10.40	10.40	N/A	10.73	11.04	10.57	11.12
Xcel Energy Inc.	Public Service Company of Colorado	9.83	10.00	10.00	10.00	9.37	9.50	9.66	10.37
	Northern States Power - MN	9.83	9.83	10.37	10.37	7.37	8.74	9.26	8.73
	Southwestern Public Service - TX	N/A	N/A	N/A	N/A	7.88	8.79	7.41	9.63
	Northern States Power - WI	10.20	10.20	10.40	10.40	10.08	10.86	10.45	9.55
Proxy Group Average		9.99	9.99	10.18	10.32	9.90	10.21	9.74	10.04
Niagara Mohawk	New York - electric	9.30	9.30	9.30	9.30				
Niagara Mohawk	New York - gas	9.30	9.30	9.30	10.20				

Notes

[1] Source: Regulatory Research Associates

[2] Source: "Quality Measures: Utility Subsidiaries," S&P Global Market Intelligence, Financial Focus, August 31, 2016, Table 1.

Testimony of Ann E. Bulkley

Exhibit __ (AEB-10)

Comparison of NMPC and Proxy Group Companies: S&P Business
and
Financial Profile Scores

COMPARISON OF NMPC AND PROXY GROUP COMPANIES
S&P BUSINESS AND FINANCIAL PROFILE SCORES

		[1]	[2]	[3]	[4]
		S&P			
		Business Profile Rank	Numeric Rank	Financial Profile Rank	Numeric Rank
Alliant Energy Corporation	Interstate Power and Light Company	Excellent	1	Significant	4
	Wisconsin Power and Light Company	Excellent	1	Intermediate	3
Ameren Corporation	Ameren Illinois Company	Strong	2	Intermediate	3
	Union Electric Company	Excellent	1	Intermediate	3
Avista Corporation	Avista Corporation	Strong	2	Significant	4
	Alaska Electric Light and Power Company				
CenterPoint Energy, Inc.	CenterPoint Energy Houston Electric, LLC	Excellent	1	Intermediate	3
	CenterPoint Energy Resources Corp.	Satisfactory	3	Intermediate	3
CMS Energy Corporation	Consumers Energy Company	Excellent	1	Significant	4
Consolidated Edison, Inc.	Consolidated Edison Company of New York, Inc.	Excellent	1	Significant	4
	Orange and Rockland Utilities, Inc.	Excellent	1	Significant	4
Dominion Resources, Inc.	East Ohio Gas Company				
	Hope Gas, Inc.				
	Virginia Electric and Power Company	Excellent	1	Significant	4
DTE Energy Company	Citizens Gas Fuel Company				
	DTE Electric Company	Excellent	1	Significant	4
	DTE Gas Company	Excellent	1	Intermediate	3
NorthWestern Corporation	NorthWestern Corporation	Strong	2	Significant	4
SCANA Corporation	Public Service Company of North Carolina, Incorporated	Excellent	1	Intermediate	3
	South Carolina Electric & Gas Co.	Excellent	1	Significant	4
Sempra Energy	Mobile Gas Service Corporation				
	San Diego Gas & Electric Co.	Excellent	1	Significant	4
	Southern California Gas Company	Excellent	1	Intermediate	3
	Willmut Gas & Oil Company				
Vectren Corporation	Indiana Gas Company, Inc.	Excellent	1	Modest	2
	Southern Indiana Gas and Electric Company, Inc.	Excellent	1	Intermediate	3
	Vectren Energy Delivery of Ohio, Inc.				
Xcel Energy Inc.	Northern States Power Company - MN	Excellent	1	Significant	4
	Northern States Power Company - WI	Excellent	1	Significant	4
	Public Service Company of Colorado	Excellent	1	Significant	4
	Southwestern Public Service Company	Excellent	1	Significant	4
Proxy Group Average		Excellent	1.21	Intermediate/Significant	3.54
National Grid PLC	Niagara Mohawk Power Company	Excellent	1	Significant	4

Notes

[1] Source: S&P Ratings Direct Company Reports

[2] Excellent = 1, Strong = 2, Satisfactory = 3, Fair = 4, Weak = 5, Vulnerable = 6

[3] Source: S&P Ratings Direct Company Reports

[4] Minimal = 1, Modest = 2, Intermediate = 3, Significant = 4, Aggressive = 5, Highly Leveraged = 6

Testimony of Ann E. Bulkley

Exhibit __ (AEB-11)

Comparison of NMPC and Proxy Group Companies:
RRA Jurisdictional Rankings

COMPARISON OF NMPC AND PROXY GROUP COMPANIES
RRA JURISDICTIONAL RANKINGS

		[1]	[2]
		RRA	
		Rank	Numeric Rank
Alliant Energy Corporation	Iowa	Above Average / 3	7
	Minnesota	Average / 2	5
	Wisconsin	Above Average / 2	8
Ameren Corporation	Illinois	Below Average / 1	3
	Missouri	Average / 2	5
Avista Corporation	Alaska	Average / 3	4
	Idaho	Average / 2	5
	Oregon	Average / 3	4
	Washington	Average / 3	4
CenterPoint Energy, Inc.	Arkansas	Average / 2	5
	Louisiana	Average / 1	6
	Minnesota	Average / 2	5
	Mississippi	Above Average / 3	7
	Oklahoma	Average / 2	5
	Texas	Below Average / 1	3
CMS Energy Corporation	Michigan	Average / 1	6
Consolidated Edison, Inc.	New Jersey	Average / 3	4
	New York	Average / 2	5
	Pennsylvania	Average / 2	5
Dominion Resources, Inc.	North Carolina	Average / 1	6
	Ohio	Average / 2	5
	Virginia	Above Average / 2	8
	West Virginia	Below Average / 1	3
DTE Energy Company	Michigan	Average / 1	6
NorthWestern Corporation	Montana	Below Average / 1	3
	Nebraska	Average / 2	5
	South Dakota	Average / 3	4
SCANA Corporation	North Carolina	Average / 1	6
	South Carolina	Average / 1	6
Sempra Energy	Alabama	Above Average / 2	8
	California	Average / 1	6
	Mississippi	Above Average / 3	7
Vectren Corporation	Indiana	Above Average / 3	7
	Ohio	Average / 2	5
Xcel Energy Inc.	Colorado	Average / 1	6
	Michigan	Average / 1	6
	Minnesota	Average / 2	5
	New Mexico	Below Average / 1	3
	North Dakota	Average / 1	6
	South Dakota	Average / 3	4
	Texas	Below Average / 1	3
	Wisconsin	Above Average / 2	8
Proxy Group Average		Average / 2	5.29
Niagara Mohawk Power Company	New York	Average / 2	5

Notes

[1] Source: State Regulatory Evaluations, Regulatory Research Associates, as of March 1, 2017

[2] AA/1= 9, AA/2= 8, AA/3= 7, A/1= 6, A/2= 5, A/3= 4, BA/1= 3, BA/2= 2, BA/3= 1

Testimony of Ann E. Bulkley

Exhibit __ (AEB-12)

Comparison of NMPC and Proxy Group Companies:
S&P Jurisdictional Rankings

COMPARISON OF NMPC AND PROXY GROUP COMPANIES
S&P JURISDICTIONAL RANKINGS

		[1]	[2]
		S&P	
		Rank	Numeric Rank
Alliant Energy Corporation	Iowa	Strong (6)	6
	Minnesota	Strong/Adequate (14)	14
	Wisconsin	Strong (2)	2
Ameren Corporation	Illinois	Strong/Adequate (35)	35
	Missouri	Strong/Adequate (43)	43
Avista Corporation	Alaska	Strong/Adequate (42)	42
	Idaho	Strong/Adequate (32)	32
	Oregon	Strong/Adequate (20)	20
	Washington	Strong/Adequate (48)	48
CenterPoint Energy, Inc.	Arkansas	Strong/Adequate (28)	28
	Louisiana	Strong/Adequate (13)	13
	Minnesota	Strong/Adequate (14)	14
	Mississippi	Adequate (53)	53
	Oklahoma	Strong/Adequate (15)	15
	Texas (RRC)	Strong/Adequate (16)	16
CMS Energy Corporation	Michigan	Strong (4)	4
Consolidated Edison, Inc.	New Jersey	Strong/Adequate (38)	38
	New York	Strong/Adequate (34)	34
	Pennsylvania	Strong/Adequate (18)	18
Dominion Resources, Inc.	North Carolina	Strong (8)	8
	Ohio	Strong/Adequate (36)	36
	Virginia	Strong/Adequate (19)	19
	West Virginia	Strong/Adequate (39)	39
DTE Energy Company	Michigan	Strong (4)	4
NorthWestern Corporation	Montana	Strong/Adequate (51)	51
	Nebraska	Strong/Adequate (33)	33
	South Dakota	Strong/Adequate (29)	29
SCANA Corporation	North Carolina	Strong (8)	8
	South Carolina	Strong (7)	7
Sempra Energy	Alabama	Strong (5)	5
	California	Strong/Adequate (11)	11
	Mississippi	Adequate (53)	53
Vectren Corporation	Indiana	Strong/Adequate (27)	27
	Ohio	Strong/Adequate (36)	36
Xcel Energy Inc.	Colorado	Strong (10)	10
	Michigan	Strong (4)	4
	Minnesota	Strong/Adequate (14)	14
	New Mexico	Strong/Adequate (49)	49
	North Dakota	Strong/Adequate (31)	31
	South Dakota	Strong/Adequate (29)	29
	Texas (PUC)	Strong/Adequate (44)	44
	Wisconsin	Strong (2)	2
Proxy Group Average		Strong/Adequate (25)	24.38
Niagara Mohawk Power Company	New York	Strong/Adequate (34)	34

Notes

[1] Source: Utility Regulatory Assessments for U.S. Investor-Owned Utilities, Standard and Poor's Ratings Services, January 7, 2014

Testimony of Ann E. Bulkley

Exhibit __ (AEB-13)

2018 – 2021 Capital Expenditures as a Percent of 2015 Net Plant

2018-2021 CAPITAL EXPENDITURES AS A PERCENT OF 2015 NET PLANT
(\$ Millions)

		[1]	[2]	[3]	[4]	[5]	[6]	[7]
		2015	2017	2018	2019	2020	2021	
Ameren Corporation	AEE							
Capital Spending per Share			9.00	9.25	9.50	9.50	9.50	
Common Shares Outstanding			242.63	242.63	242.63	242.63	242.63	
Capital Expenditures			2,183.67	2,244.33	2,304.99	2,304.99	2,304.99	
Net Plant		18,799.00						
2017-21 Capital Spending / 2015 Net Plant								48.72%
Avista Corporation	AVA							
Capital Spending per Share			6.60	6.68	6.75	6.75	6.75	
Common Shares Outstanding			65.00	65.75	66.50	66.50	66.50	
Capital Expenditures			429.00	438.88	448.88	448.88	448.88	
Net Plant		3,898.60						
2017-21 Capital Spending / 2015 Net Plant								45.80%
Black Hills Corporation	BKH							
Capital Spending per Share			6.05	6.28	6.50	6.50	6.50	
Common Shares Outstanding			54.25	57.63	61.00	61.00	61.00	
Capital Expenditures			328.21	361.60	396.50	396.50	396.50	
Net Plant		3,259.10						
2017-21 Capital Spending / 2015 Net Plant								47.59%
CenterPoint Energy, Inc.	CNP							
Capital Spending per Share			3.05	2.90	2.75	2.75	2.75	
Common Shares Outstanding			431.00	433.00	435.00	435.00	435.00	
Capital Expenditures			1,314.55	1,255.70	1,196.25	1,196.25	1,196.25	
Net Plant		11,537.00						
2017-21 Capital Spending / 2015 Net Plant								41.99%
CMS Energy Corporation	CMS							
Capital Spending per Share			6.20	5.98	5.75	5.75	5.75	
Common Shares Outstanding			282.00	285.00	288.00	288.00	288.00	
Capital Expenditures			1,748.40	1,702.88	1,656.00	1,656.00	1,656.00	
Net Plant		14,705.00						
2017-21 Capital Spending / 2015 Net Plant								45.36%
Consolidated Edison, Inc.	ED							
Capital Spending per Share			12.25	12.25	11.75	11.25	11.25	
Common Shares Outstanding			306.00	307.00	308.50	310.00	310.00	
Capital Expenditures			3,748.50	3,760.75	3,624.88	3,487.50	3,487.50	
Net Plant		32,209.00						
2017-21 Capital Spending / 2015 Net Plant								44.59%
DTE Energy Company	DTE							
Capital Spending per Share			14.75	14.00	13.25	13.25	13.25	
Common Shares Outstanding			179.50	183.25	187.00	187.00	187.00	
Capital Expenditures			2,647.63	2,565.50	2,477.75	2,477.75	2,477.75	
Net Plant		18,034.00						
2017-21 Capital Spending / 2015 Net Plant								55.44%
NorthWestern Corporation	NWE							
Capital Spending per Share			6.65	6.08	5.50	5.50	5.50	
Common Shares Outstanding			48.75	49.13	49.50	49.50	49.50	
Capital Expenditures			324.19	298.43	272.25	272.25	272.25	
Net Plant		4,095.50						
2017-21 Capital Spending / 2015 Net Plant								27.23%
SCANA Corporation	SCG							
Capital Spending per Share			15.45	11.70	10.23	8.75	8.75	
Common Shares Outstanding			142.90	145.00	147.00	149.00	149.00	
Capital Expenditures			2,207.81	1,696.50	1,503.08	1,303.75	1,303.75	
Net Plant		13,425.00						
2017-21 Capital Spending / 2015 Net Plant								43.26%
Sempra Energy	SRE							
Capital Spending per Share			10.30	10.78	11.25	11.25	11.25	
Common Shares Outstanding			253.00	247.50	242.00	242.00	242.00	
Capital Expenditures			2,605.90	2,666.81	2,722.50	2,722.50	2,722.50	
Net Plant		28,039.00						
2017-21 Capital Spending / 2015 Net Plant								38.64%
Vectren Corporation	VVC							
Capital Spending per Share			6.45	7.00	7.55	7.55	7.55	
Common Shares Outstanding			84.00	85.00	86.00	86.00	86.00	
Capital Expenditures			541.80	595.00	649.30	649.30	649.30	
Net Plant		4,089.50						
2017-21 Capital Spending / 2015 Net Plant								62.18%
Wisconsin Energy Corporation	WEC							
Capital Spending per Share			6.30	6.15	6.00	6.00	6.00	
Common Shares Outstanding			315.65	315.65	315.65	315.65	315.65	
Capital Expenditures			1,988.60	1,941.25	1,893.90	1,893.90	1,893.90	
Net Plant		19,190.00						
2017-21 Capital Spending / 2015 Net Plant								39.72%
Xcel Energy Inc.	XEL							
Capital Spending per Share			7.20	6.98	6.75	6.75	6.75	
Common Shares Outstanding			507.95	507.95	507.95	507.95	507.95	
Capital Expenditures			3,657.24	3,542.95	3,428.66	3,428.66	3,428.66	
Net Plant		31,206.00						
2017-21 Capital Spending / 2015 Net Plant								44.31%
Niagara Mohawk	NiMo							
Capital Expenditures [8]				341.66	403.46	459.63	527.06	
Net Plant		2,685.97						
2017-21 Capital Spending / 2015 Net Plant								64.48%

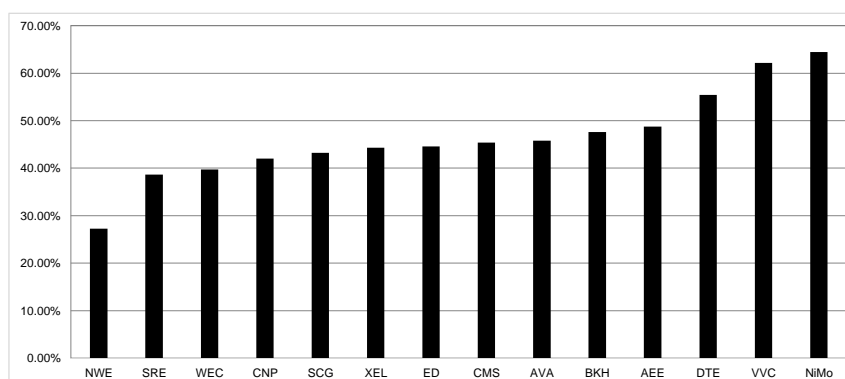
Notes:

[1] - [6] Source: Value Line February 17, 2017, January 27, 2017, and December 16, 2016

[7] Equals Sum ([2], [3], [4], [5], [6]) / [1]

[8] Source: Niagara Mohawk. 2015 Net Plant, 2018-2021 Capital Expenditures.

2018-2021 CAPITAL EXPENDITURES AS A PERCENT OF 2015 NET PLANT
(\$ Millions)



		2018-2021 Capital Spending / 2015 Net Plant
NorthWestern Corporation	NWE	27.23%
Sempra Energy	SRE	38.64%
Wisconsin Energy Corporation	WEC	39.72%
CenterPoint Energy, Inc.	CNP	41.99%
SCANA Corporation	SCG	43.26%
Xcel Energy Inc.	XEL	44.31%
Consolidated Edison, Inc.	ED	44.59%
CMS Energy Corporation	CMS	45.36%
Avista Corporation	AVA	45.80%
Black Hills Corporation	BKH	47.59%
Ameren Corporation	AEE	48.72%
DTE Energy Company	DTE	55.44%
Vectren Corporation	VVC	62.18%
Niagara Mohawk	NiMo	64.48%
Proxy Group Median		44.59%

Testimony of Ann E. Bulkley

Exhibit __ (AEB-14)

Capital Structure Analysis

CAPITAL STRUCTURE ANALYSIS						
LONG-TERM DEBT RATIO						
Combined Utility Proxy Group Company	Ticker	2015	2014	2013	2012	Average
Ameren Corporation	AEE	47.02%	46.39%	44.38%	44.40%	45.55%
Avista Corporation	AVA	45.62%	45.60%	52.62%	53.84%	49.42%
Black Hills Corporation	BKH	47.44%	36.77%	31.14%	33.41%	37.19%
CenterPoint Energy, Inc.	CNP	48.43%	46.16%	45.16%	46.96%	46.68%
CMS Energy Corporation	CMS	49.07%	49.46%	48.29%	48.13%	48.74%
Consolidated Edison, Inc.	ED	50.63%	48.52%	47.38%	48.74%	48.82%
DTE Energy Company	DTE	32.48%	44.21%	44.71%	45.18%	41.65%
NorthWestern Corporation	NWE	52.59%	52.82%	52.59%	52.71%	52.68%
SCANA Corporation	SCG	39.33%	39.16%	39.35%	39.73%	39.39%
Sempra Energy	SRE	43.48%	42.60%	40.58%	42.14%	42.20%
Wisconsin Energy Corporation	WEC	38.02%	38.52%	39.85%	39.17%	38.89%
Vectren Corporation	VVC	45.42%	45.87%	43.96%	43.78%	44.76%
Xcel Energy Inc.	XEL	45.39%	45.24%	44.98%	46.14%	45.44%
MEAN		44.99%	44.72%	44.23%	44.95%	44.72%
LOW		32.48%	36.77%	31.14%	33.41%	37.19%
HIGH		52.59%	52.82%	52.62%	53.84%	52.68%

LONG-TERM DEBT RATIO - UTILITY OPERATING COMPANIES						
Company Name	Ticker	2015	2014	2013	2012	Average
Ameren Illinois Company	AEE	45.70%	45.14%	42.47%	41.18%	43.62%
Union Electric Company	AEE	48.34%	47.63%	46.30%	47.62%	47.47%
Avista Corporation	AVA	49.53%	48.53%	50.79%	50.79%	49.91%
Alaska Electric Light and Power Company	AVA	41.70%	42.67%	54.46%	56.89%	48.93%
Black Hills Corporation	BKH	47.44%	36.77%	31.14%	33.41%	37.19%
CenterPoint Energy Houston Electric, LLC	CNP	55.61%	55.75%	56.40%	55.94%	55.92%
CenterPoint Energy Resources Corp.	CNP	41.25%	36.58%	33.92%	37.98%	37.43%
Consumers Energy Company	CMS	49.07%	49.46%	48.29%	48.13%	48.74%
Consolidated Edison Company of New York, Inc.	ED	49.49%	49.33%	46.87%	47.58%	48.32%
Orange and Rockland Utilities, Inc.	ED	51.77%	47.71%	47.89%	49.91%	49.32%
Citizens Gas Fuel Company	DTE	0.00%	38.22%	38.83%	40.39%	29.36%
DTE Electric Company	DTE	49.53%	49.53%	49.66%	50.69%	49.85%
DTE Gas Company	DTE	47.91%	44.86%	45.66%	44.47%	45.73%
NorthWestern Corporation	NWE	52.59%	52.82%	52.59%	52.71%	52.68%
Public Service Company of North Carolina, Incorporated	SCG	31.51%	32.08%	32.88%	33.34%	32.45%
South Carolina Electric & Gas Co.	SCG	47.14%	46.25%	45.82%	46.11%	46.33%
San Diego Gas & Electric Co.	SRE	43.24%	45.19%	46.22%	46.42%	45.27%
Southern California Gas Company	SRE	43.72%	40.01%	34.93%	37.87%	39.13%
Indiana Gas Company, Inc.	VVC	42.06%	41.99%	38.14%	38.50%	40.17%
Southern Indiana Gas and Electric Company, Inc.	VVC	44.28%	43.46%	43.28%	44.70%	43.93%
Vectren Energy Delivery of Ohio, Inc.	VVC	49.90%	52.16%	50.47%	48.15%	50.17%
Michigan Gas Utilities Corporation	WEC	24.34%	31.93%	32.59%	28.05%	29.23%
North Shore Gas Company	WEC	42.07%	43.16%	45.94%	43.71%	43.72%
Peoples Gas Light and Coke Company	WEC	46.21%	48.51%	47.85%	46.29%	47.21%
Wisconsin Electric Power Company	WEC	42.41%	41.08%	41.64%	42.39%	41.88%
Wisconsin Gas LLC	WEC	26.73%	22.01%	25.17%	32.05%	26.49%
Wisconsin Public Service Corporation	WEC	46.37%	44.41%	45.89%	42.53%	44.80%
Northern States Power Company - MN	XEL	46.30%	46.88%	46.44%	46.33%	46.49%
Northern States Power Company - WI	XEL	45.69%	44.78%	43.54%	47.36%	45.34%
Public Service Company of Colorado	XEL	43.55%	43.08%	43.33%	42.70%	43.17%
Southwestern Public Service Company	XEL	46.04%	46.22%	46.60%	48.17%	46.76%

Notes:

[1] SNL Financial

[2] Operating subsidiaries with insufficient information were excluded from this analysis

CAPITAL STRUCTURE ANALYSIS						
PREFERRED EQUITY RATIO						
Combined Utility Proxy Group Company	Ticker	2015	2014	2013	2012	Average
Ameren Corporation	AEE	1.08%	1.14%	1.25%	1.26%	1.18%
Avista Corporation	AVA	0.00%	0.00%	0.00%	0.00%	0.00%
Black Hills Corporation	BKH	0.00%	0.00%	0.00%	0.00%	0.00%
CenterPoint Energy, Inc.	CNP	0.00%	0.00%	0.00%	0.00%	0.00%
CMS Energy Corporation	CMS	0.34%	0.36%	0.39%	0.50%	0.40%
Consolidated Edison, Inc.	ED	0.00%	0.00%	0.00%	0.00%	0.00%
DTE Energy Company	DTE	0.00%	0.00%	0.00%	0.00%	0.00%
NorthWestern Corporation	NWE	0.00%	0.00%	0.00%	0.00%	0.00%
SCANA Corporation	SCG	0.00%	0.00%	0.00%	0.00%	0.00%
Sempra Energy	SRE	0.19%	0.23%	0.27%	0.77%	0.36%
Wisconsin Energy Corporation	WEC	0.08%	0.41%	0.42%	0.50%	0.35%
Vectren Corporation	VVC	0.00%	0.00%	0.00%	0.00%	0.00%
Xcel Energy Inc.	XEL	0.00%	0.00%	0.00%	0.00%	0.00%
MEAN		0.13%	0.16%	0.18%	0.23%	0.18%
LOW		0.00%	0.00%	0.00%	0.00%	0.00%
HIGH		1.08%	1.14%	1.25%	1.26%	1.18%

PREFERRED EQUITY RATIO - UTILITY OPERATING COMPANIES						
Company Name	Ticker	2015	2014	2013	2012	Average
Ameren Illinois Company	AEE	1.14%	1.25%	1.42%	1.48%	1.32%
Union Electric Company	AEE	1.02%	1.04%	1.08%	1.04%	1.04%
Avista Corporation	AVA	0.00%	0.00%	0.00%	0.00%	0.00%
Alaska Electric Light and Power Company	AVA	0.00%	0.00%	0.00%	0.00%	0.00%
Black Hills Corporation	BKH	0.00%	0.00%	0.00%	0.00%	0.00%
CenterPoint Energy Houston Electric, LLC	CNP	0.00%	0.00%	0.00%	0.00%	0.00%
CenterPoint Energy Resources Corp.	CNP	0.00%	0.00%	0.00%	0.00%	0.00%
Consumers Energy Company	CMS	0.34%	0.36%	0.39%	0.50%	0.40%
Consolidated Edison Company of New York, Inc.	ED	0.00%	0.00%	0.00%	0.00%	0.00%
Orange and Rockland Utilities, Inc.	ED	0.00%	0.00%	0.00%	0.00%	0.00%
Citizens Gas Fuel Company	DTE	0.00%	0.00%	0.00%	0.00%	0.00%
DTE Electric Company	DTE	0.00%	0.00%	0.00%	0.00%	0.00%
DTE Gas Company	DTE	0.00%	0.00%	0.00%	0.00%	0.00%
NorthWestern Corporation	NWE	0.00%	0.00%	0.00%	0.00%	0.00%
Public Service Company of North Carolina, Incorporated	SCG	0.00%	0.00%	0.00%	0.00%	0.00%
South Carolina Electric & Gas Co.	SCG	0.00%	0.00%	0.00%	0.00%	0.00%
San Diego Gas & Electric Co.	SRE	0.00%	0.00%	0.00%	0.96%	0.24%
Southern California Gas Company	SRE	0.38%	0.45%	0.53%	0.58%	0.49%
Indiana Gas Company, Inc.	VVC	0.00%	0.00%	0.00%	0.00%	0.00%
Southern Indiana Gas and Electric Company, Inc.	VVC	0.00%	0.00%	0.00%	0.00%	0.00%
Vectren Energy Delivery of Ohio, Inc.	VVC	0.00%	0.00%	0.00%	0.00%	0.00%
Michigan Gas Utilities Corporation	WEC	0.00%	0.00%	0.00%	0.00%	0.00%
North Shore Gas Company	WEC	0.00%	0.00%	0.00%	0.00%	0.00%
Peoples Gas Light and Coke Company	WEC	0.00%	0.00%	0.00%	0.00%	0.00%
Wisconsin Electric Power Company	WEC	0.49%	0.52%	0.51%	0.51%	0.51%
Wisconsin Gas LLC	WEC	0.00%	0.00%	0.00%	0.00%	0.00%
Wisconsin Public Service Corporation	WEC	0.00%	1.94%	2.00%	2.50%	1.61%
Northern States Power Company - MN	XEL	0.00%	0.00%	0.00%	0.00%	0.00%
Northern States Power Company - WI	XEL	0.00%	0.00%	0.00%	0.00%	0.00%
Public Service Company of Colorado	XEL	0.00%	0.00%	0.00%	0.00%	0.00%
Southwestern Public Service Company	XEL	0.00%	0.00%	0.00%	0.00%	0.00%

Notes:

[1] SNL Financial

[2] Operating subsidiaries with insufficient information were excluded from this analysis

CAPITAL STRUCTURE ANALYSIS						
CUSTOMER DEPOSIT RATIO						
Combined Utility Proxy Group Company	Ticker	2015	2014	2013	2012	Average
Ameren Corporation	AEE	0.51%	0.55%	0.61%	0.61%	0.57%
Avista Corporation	AVA	0.19%	0.24%	0.20%	0.20%	0.21%
Black Hills Corporation	BKH	0.35%	0.41%	0.47%	0.49%	0.43%
CenterPoint Energy, Inc.	CNP	0.71%	0.60%	0.60%	0.57%	0.62%
CMS Energy Corporation	CMS	0.27%	0.31%	0.34%	0.39%	0.33%
Consolidated Edison, Inc.	ED	1.10%	1.13%	1.12%	1.11%	1.11%
DTE Energy Company	DTE	0.24%	0.23%	0.30%	0.35%	0.28%
NorthWestern Corporation	NWE	0.20%	0.21%	0.49%	0.62%	0.38%
SCANA Corporation	SCG	0.67%	0.71%	0.68%	0.69%	0.69%
Sempra Energy	SRE	1.05%	1.18%	1.34%	1.39%	1.24%
Wisconsin Energy Corporation	WEC	0.56%	0.58%	0.59%	0.64%	0.59%
Vectren Corporation	VVC	1.71%	1.77%	1.83%	1.94%	1.81%
Xcel Energy Inc.	XEL	0.39%	0.30%	0.22%	0.28%	0.30%
MEAN		0.61%	0.63%	0.68%	0.71%	0.66%
LOW		0.19%	0.21%	0.20%	0.20%	0.21%
HIGH		1.71%	1.77%	1.83%	1.94%	1.81%

CUSTOMER DEPOSIT RATIO - UTILITY OPERATING COMPANIES						
Company Name	Ticker	2015	2014	2013	2012	Average
Ameren Illinois Company	AEE	0.74%	0.83%	0.98%	0.99%	0.89%
Union Electric Company	AEE	0.28%	0.26%	0.24%	0.23%	0.25%
Avista Corporation	AVA	0.11%	0.17%	0.13%	0.13%	0.13%
Alaska Electric Light and Power Company	AVA	0.28%	0.31%	0.27%	0.27%	0.28%
Black Hills Corporation	BKH	0.35%	0.41%	0.47%	0.49%	0.43%
CenterPoint Energy Houston Electric, LLC	CNP	0.01%	0.01%	0.01%	0.01%	0.01%
CenterPoint Energy Resources Corp.	CNP	1.41%	1.19%	1.18%	1.14%	1.23%
Consumers Energy Company	CMS	0.27%	0.31%	0.34%	0.39%	0.33%
Consolidated Edison Company of New York, Inc.	ED	1.46%	1.45%	1.47%	1.41%	1.45%
Orange and Rockland Utilities, Inc.	ED	0.73%	0.80%	0.78%	0.80%	0.78%
Citizens Gas Fuel Company	DTE	0.12%	0.13%	0.22%	0.13%	0.15%
DTE Electric Company	DTE	0.17%	0.15%	0.20%	0.27%	0.20%
DTE Gas Company	DTE	0.43%	0.42%	0.47%	0.66%	0.49%
NorthWestern Corporation	NWE	0.20%	0.21%	0.49%	0.62%	0.38%
Public Service Company of North Carolina, Incorporated	SCG	0.75%	0.79%	0.76%	0.77%	0.77%
South Carolina Electric & Gas Co.	SCG	0.59%	0.63%	0.60%	0.61%	0.61%
San Diego Gas & Electric Co.	SRE	0.77%	0.78%	0.81%	0.74%	0.77%
Southern California Gas Company	SRE	1.32%	1.57%	1.86%	2.04%	1.70%
Indiana Gas Company, Inc.	VVC	3.37%	3.48%	3.65%	3.83%	3.58%
Southern Indiana Gas and Electric Company, Inc.	VVC	0.72%	0.77%	0.88%	0.88%	0.81%
Vectren Energy Delivery of Ohio, Inc.	VVC	1.04%	1.05%	0.96%	1.11%	1.04%
Michigan Gas Utilities Corporation	WEC	0.10%	0.08%	0.08%	0.13%	0.10%
North Shore Gas Company	WEC	1.25%	1.29%	1.26%	1.24%	1.26%
Peoples Gas Light and Coke Company	WEC	1.47%	1.58%	1.66%	1.85%	1.64%
Wisconsin Electric Power Company	WEC	0.32%	0.33%	0.33%	0.38%	0.34%
Wisconsin Gas LLC	WEC	0.00%	0.00%	0.00%	0.00%	0.00%
Wisconsin Public Service Corporation	WEC	0.21%	0.21%	0.20%	0.22%	0.21%
Northern States Power Company - MN	XEL	0.94%	0.48%	0.04%	0.06%	0.38%
Northern States Power Company - WI	XEL	0.08%	0.08%	0.09%	0.17%	0.11%
Public Service Company of Colorado	XEL	0.26%	0.30%	0.33%	0.45%	0.34%
Southwestern Public Service Company	XEL	0.28%	0.34%	0.43%	0.46%	0.38%

Notes:

[1] SNL Financial

[2] Operating subsidiaries with insufficient information were excluded from this analysis

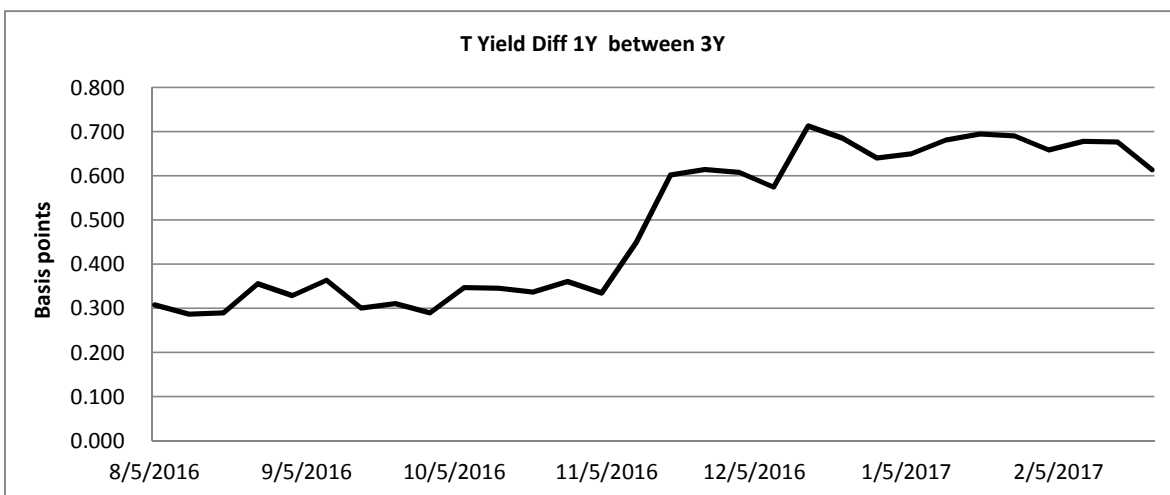
Testimony of Ann E. Bulkley

Exhibit __ (AEB-15)

Utility Debt and Treasury Yields

UTILITY DEBT AND TREASURY YIELDS
February 28, 2017

	[1]	[2]	[3]
Date	US 1 Year	US 3 Year	T Yield Difference (3Y - 1Y)
8/5/2016	0.539	0.847	0.308
8/12/2016	0.534	0.821	0.287
8/19/2016	0.580	0.870	0.289
8/26/2016	0.601	0.957	0.356
9/2/2016	0.580	0.909	0.329
9/9/2016	0.560	0.924	0.364
9/16/2016	0.601	0.902	0.301
9/23/2016	0.575	0.886	0.311
9/30/2016	0.585	0.875	0.290
10/7/2016	0.631	0.978	0.347
10/14/2016	0.657	1.003	0.346
10/21/2016	0.642	0.979	0.337
10/28/2016	0.642	1.003	0.361
11/4/2016	0.601	0.935	0.334
11/11/2016	0.719	1.167	0.449
11/18/2016	0.754	1.357	0.602
11/25/2016	0.780	1.394	0.614
12/2/2016	0.770	1.378	0.608
12/9/2016	0.847	1.421	0.575
12/16/2016	0.883	1.595	0.713
12/23/2016	0.852	1.537	0.686
12/30/2016	0.811	1.451	0.640
1/6/2017	0.831	1.482	0.650
1/13/2017	0.795	1.477	0.681
1/20/2017	0.790	1.485	0.695
1/27/2017	0.785	1.475	0.690
2/3/2017	0.801	1.459	0.659
2/10/2017	0.790	1.469	0.678
2/17/2017	0.795	1.472	0.676
2/24/2017	0.775	1.388	0.614
3-Month Average	0.810	1.468	0.659



Notes:

[1] - [2] Source: Bloomberg Professional as of February 28, 2017

[3] Equals Column [2] - [1]

Testimony of
Stephen H. Caldwell

Before The Public Service Commission

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID

Direct Testimony

of

Stephen H. Caldwell

Dated: April 28, 2017

Testimony of Stephen H. Caldwell

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Testimony of Stephen H. Caldwell

1 **I. Introduction and Qualifications**

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

3 A. My name is Stephen H. Caldwell. My business address is 40 Sylvan Road,
4 Waltham, Massachusetts 02451.

5

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

7 A. I am employed by National Grid USA Service Company, Inc., a subsidiary of
8 National Grid USA (“National Grid”), as Director of Regulatory Strategy &
9 Integrated Analytics in the Regulation and Pricing organization.

10

11 **Q. Please describe your educational background and professional experience.**

12 A. I received a Bachelor of Arts degree in Chemistry and Physics from Harvard College
13 and graduated with a Master of Public Policy (with a concentration in environmental
14 and regulatory policy) from Georgetown University. I worked for several years at
15 Concentric Energy Advisors, a consulting firm that primarily provides strategic,
16 economic, financial, and ratemaking advisory services to regulated energy utilities in
17 North America. I joined National Grid in 2014 and took on my present role where I
18 am responsible for regulatory efforts related to capital structure, cost of capital, and
19 strategic planning matters across National Grid’s multiple operating companies and
20 service territories. In addition, I help develop regulatory strategies and financial and
21 economic analyses such as in the context of New York’s Reforming the Energy
22 Vision (“REV”) proceeding. In my current position, I am familiar with the financing

Testimony of Stephen H. Caldwell

1 activities of Niagara Mohawk Power Corporation d/b/a National Grid (“Niagara
2 Mohawk” or the “Company”).

3

4 **Q. Have you previously testified before the New York State Public Service**
5 **Commission (“Commission”)?**

6 A. Yes. I testified on behalf of the Company’s affiliates, KeySpan Gas East
7 Corporation d/b/a National Grid and The Brooklyn Union Gas Company d/b/a
8 National Grid NY, in Cases 16-G-0058 and 16-G-0059, respectively (“2016
9 KEDLI and KEDNY Rate Cases”).

10

11 **Q. What is the purpose of your testimony?**

12 A. The purpose of my testimony is to present and support Niagara Mohawk’s
13 proposed capital structure and overall cost of capital in this proceeding. My
14 testimony provides information for the Historic Test Year ended December 31,
15 2016, the forecast year ending March 31, 2019 (“Rate Year”) and the years
16 ending March 31, 2020 (“Data Year 1”) and March 31, 2021 (“Data Year 2”)
17 (collectively “Data Years”). Regarding the cost of debt, I will address the
18 Company’s proposal to continue a variable-rate debt true-up mechanism similar to
19 the mechanism approved by the Commission in May 2016,¹ as well as a new
20 long-term debt true-up mechanism for the costs associated with the combined

¹ Cases 15-M-0744 and 15-M-0509, *Petition of Niagara Mohawk Power Corporation, d/b/a National Grid for Authority, Pursuant to Public Service Law Section 69, to Issue Long Term Indebtedness in the Principal Amount of \$2.07 billion for the Purpose of Refunding Existing Obligations and Financing New Construction, et al*, “Order Granting Incremental Cost Relief, in Part, and Authorizing the Issuance of Securities” (Issued and Effective May 19, 2016) (“Financing Order”).

Testimony of Stephen H. Caldwell

1 \$1.7 billion of new debt issuances projected for the Rate Year and Data Years. In
2 addition, I will discuss Niagara Mohawk's proposal to continue the financial
3 protection provisions adopted by the Commission in its approval of the
4 Company's acquisition in 2002 by National Grid plc in Case 01-M-0075 and
5 amended in Cases 12-E-0201 and 12-G-0202 ("Financial Protections"). Finally, I
6 discuss and support the cost of capital component included in the service
7 company asset recovery charges that are charged to National Grid affiliates,
8 including Niagara Mohawk, to recover the costs of shared assets financed and
9 owned by the service companies.

10

11 **Q. Do you sponsor any exhibits as part of your testimony in this proceeding?**

12 A. Yes. Schedule 1 of Exhibit __ (SHC-1) sets forth Niagara Mohawk's historic cost
13 of long-term debt and preferred stock. Schedule 2 contains the projected
14 capitalization and weighted average cost of capital that is proposed for the
15 Company in these proceedings. Schedule 3 sets forth a forecast Sources and Uses
16 of Funds statement and projected financial statistics for the Rate Year and Data
17 Years. The exhibit and schedules were prepared or compiled under my
18 supervision and direction.

19

20 **Q. What is the Company's proposed weighted average cost of capital?**

21 A. Niagara Mohawk's proposed Rate Year weighted average cost of capital, as
22 shown on Schedule 2, Page 5 of 8 of Exhibit __ (SHC-1), is 6.93 percent. This
23 overall rate of return is based on the following capitalization ratios and cost rates:

Testimony of Stephen H. Caldwell

<u>Niagara Mohawk</u>	<u>Capitalization Ratio</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
Long-Term Debt	51.06%	4.32%	2.21%
Customer Deposits	0.48%	0.35%	0.00%
Preferred Stock	0.46%	3.66%	0.02%
Common Equity	48.00%	9.79%	4.70%
Total	100.00%		6.93%

If rates were to be established for three years in a settlement in these proceedings, the Company proposes the following rates of return, including a three-year stay-out premium on its cost of equity, as shown on Schedule 2, Pages 6-8 of Exhibit __ (SHC-1).

<u>Niagara Mohawk</u>	<u>Rate Year</u>			<u>Data Year 1</u>			<u>Data Year 2</u>		
	Capitalization Ratio	Cost Rate	Weighted Cost	Capitalization Ratio	Cost Rate	Weighted Cost	Capitalization Ratio	Cost Rate	Weighted Cost
Long-Term Debt	51.06%	4.32%	2.21%	51.13%	4.38%	2.24%	51.20%	4.43%	2.27%
Customer Deposits	0.48%	0.35%	0.00%	0.44%	0.35%	0.00%	0.41%	0.35%	0.00%
Preferred Stock	0.46%	3.66%	0.02%	0.42%	3.66%	0.02%	0.39%	3.66%	0.01%
Common Equity	48.00%	10.29%	4.94%	48.00%	10.29%	4.94%	48.00%	10.29%	4.94%
Total	100.00%		7.17%	100.00%		7.20%	100.00%		7.22%

In calculating the capitalization ratios shown above, all of the goodwill recorded on Niagara Mohawk's books was excluded from the Company's total capitalization and common equity balances.

1 **II. Ratemaking Capital Structure**

2 **Q. What capital structure does the Company propose for rate-setting purposes in**
3 **these proceedings?**

4 A. For a utility that is part of a holding company structure, Commission precedent
5 supports setting rates using the utility's stand-alone capital structure in cases
6 where the utility can demonstrate that it is financially insulated from its parent
7 and its capital structure is reasonable and in line with its own financial and
8 business risks. Niagara Mohawk is financially insulated from its parent and, as
9 more fully described below, the forecast average actual common equity
10 percentages reflected in the Company's capital structure range between 50.34
11 percent and 50.59 percent in the Rate Year and Data Years. Notwithstanding these
12 circumstances, to mitigate the rate request, Niagara Mohawk is proposing to use a
13 capital structure that contains 48 percent common equity for ratemaking purposes,
14 which is consistent with the common equity component adopted by the
15 Commission in a number of recent cases, including the 2016 KEDLI and KEDNY
16 Rate Cases.

17
18 **Q. Is Niagara Mohawk part of a holding company corporate structure?**

19 A. Yes. Niagara Mohawk is owned by Niagara Mohawk Holdings, Inc. ("NMHI").
20 NMHI is owned by National Grid USA, which is owned by National Grid plc, the
21 ultimate parent of Niagara Mohawk.

Testimony of Stephen H. Caldwell

1 **Q. Is Niagara Mohawk financially insulated from its parent company?**

2 A. Yes. The Company is financially insulated from National Grid plc, and this

3 insulation is recognized by the financial marketplace. Illustrating this point, in its

4 September 2014 rating action for the Company, Moody's explained that Niagara

5 Mohawk's one notch rating upgrade was primarily driven by "additional

6 information regarding the regulatory ring-fencing provisions that [Niagara

7 Mohawk] is subject to" (*i.e.*, the Financial Protections).² This is also reflected in

8 Moody's latest credit opinion for the Company in which Niagara Mohawk's A2

9 rating was affirmed in part due to "strong ring-fencing provisions, which protect a

10 single-A credit rating despite additional leverage at parent companies."³

11 Similarly, in its August 2016 report on the Company, Standard & Poor's ("S&P")

12 stated that "we assess [Niagara Mohawk] as insulated...."⁴ The Company issues

13 debt on a stand-alone basis and has a credit rating separate from its parent

14 companies. Specifically, while Niagara Mohawk has long-term issuer ratings of

15 A2 and A- from Moody's and S&P, respectively, Moody's and S&P rate the

16 ultimate parent company, National Grid plc, as Baa1 and BBB+, respectively.⁵

17 Moreover, Niagara Mohawk has distinct business risks from National Grid plc.

18 Whereas Niagara Mohawk only operates gas and electric distribution businesses

19 in Upstate New York, National Grid plc is an international energy company, with

² Moody's Investors Service, Rating Action: Moody's upgrades ratings of Niagara Mohawk, September 18, 2014, at 1.

³ Moody's Investors Service, Credit Opinion of Niagara Mohawk Corporation, November 10, 2016, at 1.

⁴ Standard & Poor's Ratings Services, "Summary: Niagara Mohawk Power Corp.," August 26, 2016.

⁵ See <http://investors.nationalgrid.com/debt-investors/credit-information.aspx>, accessed March 24, 2017.

Testimony of Stephen H. Caldwell

1 operations in the UK, the US, and other countries, that operates in an array of
2 markets and lines of business.

3

4 **Q. On average, was Niagara Mohawk's capital structure composed of at least 48**
5 **percent common equity in the Historic Test Year?**

6 A. Yes. Niagara Mohawk's average capital structure during the Historic Test Year
7 consisted of 53 percent common equity. Niagara Mohawk also plans to maintain
8 a capital structure during the Rate Year and Data Years that consists of at least 48
9 percent common equity.

10

11 **Q. Please describe the Company's current credit ratings.**

12 A. Niagara Mohawk has long-term issuer ratings of A2 and A- from Moody's and
13 S&P, respectively. As noted above, Moody's upgraded the Company in
14 September 2014 by one notch to A2, and Moody's has affirmed this rating in its
15 latest credit opinion on November 10, 2016. The Company's A- rating from S&P
16 has been unchanged since 2007.⁶

17

18 **Q. Are the Company's current credit ratings consistent with the Commission's**
19 **policy on optimal utility credit ratings?**

20 A. Yes. What is referred to as the "Generic Financing Proceeding" (Case 91-M-
21 0509) resulted in a 1994 Recommended Decision that, although never formally
22 adopted by the Commission, has often been referenced by the Commission when

⁶ See <https://www.snl.com/web/client?auth=inherit#company/creditratings?id=4057014>, accessed March 24, 2017.

Testimony of Stephen H. Caldwell

1 determining the cost of capital to be used in setting rates. The Recommended
2 Decision proposed that the “A” rating should continue to be the long-term target
3 for utilities and that the Commission should continue to offer utilities ratemaking
4 support for an “A” rating.

5

6 **Q. Do customers benefit from “A” credit ratings?**

7 A. Yes. Higher-rated utilities can issue debt at lower costs, which benefits customers
8 by lowering the overall rate of return charged to them.

9

10 **Q. Will Niagara Mohawk’s proposed capital structure and overall rate of return**
11 **support an “A” credit rating?**

12 A. While I cannot speak for the rating agencies, an analysis of the metrics that the
13 agencies use to assess a company’s credit quality indicates that if the Commission
14 authorizes the rate relief requested by the Company in this proceeding, then
15 Niagara Mohawk should be able to maintain its current credit ratings, as shown in
16 Schedule 3 of Exhibit __ (SHC-1).

17

18 **Q. Could the Commission’s decision in this proceeding adversely impact Niagara**
19 **Mohawk’s ability to maintain its current credit ratings?**

20 A. Yes. Failure to authorize a reasonable and achievable return on equity, or
21 adoption of a revenue requirement that fails to provide support for the Company’s
22 credit metrics, could put the Company at risk of credit downgrades to the
23 detriment of customers. Rating agencies indicate that they are particularly

Testimony of Stephen H. Caldwell

1 focused on cash flow metrics, with Moody's most recent report on Niagara
2 Mohawk highlighting that its "[c]ash flow to debt metric falling below the high
3 teens on a persistent basis"⁷ could lead to a downgrade. Similarly, S&P's August
4 2016 credit report cited the ratio of funds from operations ("FFO") to debt and
5 debt to earnings before interest, taxes, depreciation, and amortization
6 ("EBITDA") as the credit metrics considered.⁸ With capital spending and cost
7 deferrals putting downward pressure on these credit metrics, it is critical that the
8 Commission mitigate this downward pressure by authorizing the Company's
9 requested 48 percent equity ratio and a reasonable allowed ROE. Moreover,
10 Moody's has commented on the potential implications of the REV proceeding on
11 New York utilities' credit ratings and cost of capital. Specifically, Moody's
12 expressed the view that "REV is at best credit-neutral for utilities," explaining
13 that any rating impact from REV "will largely depend on the framework's final
14 characteristics and influence of three key credit drivers: (1) the consistency and
15 predictability of regulation, (2) the timeliness of recovery of operating and capital
16 costs; and (3) the sufficiency of rates and returns."⁹ This observation from
17 Moody's further underscores the importance of authorizing a reasonable and
18 achievable return on equity and timely recovery of operating and capital costs.

19

⁷ Moody's Investors Service, Credit Opinion of Niagara Mohawk Corporation, November 10, 2016, at 2. In this credit opinion, Moody's reported the Company's cash flow to debt metric as 21.3 percent, 17.7 percent, and 14.7 percent for the fiscal years ending 3/31/16, 3/31/15, and 3/31/14, respectively.

⁸ Standard & Poor's Ratings Services, "Research Update: Brooklyn Union Gas Co. Ratings Lowered To 'A-' From 'A'; Outlook Stable," October 15, 2015, at 4.

⁹ Moody's Investors Service, "New York's REV: Seeking a Greener Utility Grid for the Environment and Investors," October 19, 2015, at 1, 4.

1 **III. Cost of Debt and Overall Rate of Return**

2 **Q. How was the adjusted Historic Test Year cost rate of long-term debt for the**
3 **Company shown on Exhibit __ (SHC-1) derived?**

4 A. The long-term debt component of Niagara Mohawk’s capital structure consists of
5 fixed-rate taxable bonds and variable-rate tax-exempt bonds issued through the
6 New York State Energy Research and Development Authority (“NYSERDA”), all
7 of which support electric and gas investments. Included in the cost of these bonds
8 are the direct coupon expense, the amortization of debt discounts or premiums,
9 and the amortization of issuance costs where applicable. Also included in the cost
10 of the Company’s long-term debt are the amortizations of call premiums and debt
11 discounts and expenses (“DD&E”) associated with several debt issues that were
12 retired before maturity because it was economically advantageous to do so. These
13 costs are being amortized over the remaining lives of the respective bonds as if
14 they had not been retired early. In its May 6, 2015 letter to the Commission, the
15 Company explained that its redemption of \$75 million of existing debt using the
16 proceeds of its September 2014 new long-term debt issuance yielded net present
17 value economic benefits of approximately \$10 million.¹⁰

18
19 Exhibit __ (SHC-1), Schedule 1, page 1 of 2 shows the actual interest rate and
20 associated expense for the 12 months ended December 31, 2016 – the Historic
21 Test Year.

22

¹⁰ Redemption Letter, dated May 6, 2015, in Case 12-M-0264.

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1 **Q. How did the Company project the cost of debt for the Rate Year and Data**
2 **Years?**

3 A. The cost of debt for the Rate Year and Data Years reflect three material changes
4 to the weighted average cost of debt presented on Exhibit __ (SHC-1), Schedule
5 1, page 1 of 2, specifically: (i) the projected changes in the interest rates on the
6 Company's variable-rate debt; (ii) new long-term debt issuances; and (iii)
7 maturing debt in Data Year 1 .

8
9 **Q. Does Niagara Mohawk have authorization from the Commission to issue new**
10 **long-term debt?**

11 A. Yes. On August 28, 2015, Niagara Mohawk filed a petition (Case 15-M-0509)
12 requesting multi-year authority to issue new long-term debt securities. In the
13 Financing Order, the Commission authorized Niagara Mohawk to issue up to
14 \$2.07 billion of long-term debt, in one or more transactions, no later than March
15 31, 2020. The total issuance of \$2.07 billion of long-term debt can consist of up
16 to \$1.94 billion of new long-term debt and up to \$429.5 million of debt to
17 refinance its existing auction rate debt.¹¹ The Company has not yet issued any
18 debt under this financing authorization.

19

¹¹ Financing Order at 60.

Testimony of Stephen H. Caldwell

1 **Q. Please outline the planned financing activity reflected in the projected costs**
2 **of capital for the Rate Year and Data Years.**

3 A. The Company anticipates issuing a total of \$1.7 billion of additional long-term
4 debt, with issuances expected in the Rate Year and Data Years, to reduce any
5 short-term debt, fund its capital expenditure program, redeem maturing long-term
6 debt, and maintain a capital structure consisting of at least 48 percent common
7 equity exclusive of goodwill. A major driver of this financing need is the \$750
8 million of senior notes that mature on August 15, 2019. The projected costs of
9 capital for the Rate Years and each of the Data Years assume that the Company
10 will issue this new long-term debt as 30-year senior unsecured debt at forecast
11 interest rates of 4.38 percent to 4.52 percent. The Company assumes that the cost
12 to issue this debt will be 0.935 percent of the principal amount issued and that this
13 cost will be amortized over the lives of the debt, which effectively increases the
14 annual interest rates on these securities by three basis points. As explained below,
15 the Company proposes to both update the forecast interest rates during the course
16 of this proceeding with more current market data and implement a new long-term
17 debt true-up mechanism related to this \$1.7 billion of total projected debt
18 issuances.

19

20 **Q. How would the new long-term debt true-up mechanism proposed by the**
21 **Company work?**

22 A. The Company proposes to set base rates based on the forecast interest rates for the
23 planned \$1.7 billion of new issuances. In addition, the Company proposes a new

Testimony of Stephen H. Caldwell

1 long-term debt true-up mechanism to reflect the difference between the forecast
2 costs of the new long-term debt embedded in the authorized rates and the
3 Company's actual costs during each of the Rate Year and Data Years.

4
5 **Q. Does the proposed new long-term debt true-up mechanism promote efficient**
6 **debt financing to the benefit of customers?**

7 A. Yes. As explained above, Niagara Mohawk has \$750 million of debt that will
8 mature during the course of a multi-year rate plan, if such a plan results from
9 settlement in the instant case. This debt maturity and the general need to finance
10 the Company's ongoing investments made to provide safe, reliable, affordable
11 service to customers require the Company to issue a substantial amount of new
12 long-term debt during a multi-year period when interest rate uncertainty is
13 pronounced. In light of this situation, the Company's proposed true-up
14 mechanism allows the Company to obtain the best relative value for customers on
15 the yield curve at the time the Company goes to the debt market.

16
17 **Q. Has the Commission previously approved long term debt true-up**
18 **mechanisms similar to what the Company is proposing in this case?**

19 A. Yes. The proposed new long-term debt true-up mechanism is generally consistent
20 with prior debt true-up mechanisms approved by the Commission for the
21 Company and its affiliates.¹²

22

¹² See the long-term debt true-up mechanisms approved by the Commission in Case 08-G-0609 and Cases 09-G-0795, 09-S-0794.

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1 **Q. Please describe the variable-rate debt that the Company has on its books and**
2 **how the cost of that debt in Exhibit __ (SHC-1) is derived?**

3 A. Niagara Mohawk currently has approximately \$429.5 million of auction rate
4 securities, issued in six separate series, all of which are long-term variable rate
5 bonds tied to short-term interest rates. All six series are also tax-exempt and
6 callable at par. The auctions for these have been failing since 2008. As a result,
7 the interest rates are being set based upon the default rates mandated by the
8 financing documents, which are multiples of commercial paper rates.¹³ In
9 addition, the Company must pay agent fees, remarketing fees, bond insurance,
10 and various administrative fees. For the Rate Year and Data Years, the Company
11 assumed the auctions would continue in failure mode and adjusted the interest rate
12 on the variable-rate debt to reflect the forecast changes in commercial paper rates
13 through Data Year 2.

14
15 **Q. Does the Company propose to continue its true-up mechanism related to the**
16 **cost of the variable-rate debt?**

17 A. Yes. The Company's March 2013 Rate Order in Cases 12-E-0201 and 12-G-0202
18 included a true-up mechanism that reconciled the difference in the actual all-in
19 interest expense on the outstanding auction-rate debt with the level reflected in
20 rates. If the reference rates that set the default rates for the auction-rate securities
21 rise (or are expected to rise), it may be desirable to redeem these securities at par
22 and reissue debt at a fixed rate of interest. The Commission's Financing Order

¹³ Specifically, the failed rate on the auction-rate securities is set to 2.5 times the greater of the 1-month Libor or 30-day AA composite commercial paper rate.

Testimony of Stephen H. Caldwell

1 authorized Niagara Mohawk to issue \$429.5 million of debt, not later than March
2 31, 2020, for the purpose of the optional refunding of its auction-rate debt.¹⁴ If
3 the Company decides that it is beneficial to refinance any variable-rate debt to
4 take advantage of favorable fixed interest rates and avoid future interest rate
5 volatility the Company requests that the actual interest expense of the replacement
6 debt issues (including issuance costs and any credit support) be included in a
7 variable-rate debt true-up mechanism. Under this approach, the Company will
8 reconcile the difference between the actual interest expense of the replacement
9 debt issues (and any remaining variable-rate debt) and the interest expense
10 reflected in rates for the original amount of variable-rate debt, and defer the
11 difference for refund to or recovery from customers.

12
13 **Q. Please summarize the Commission's Financing Order approving a variable-**
14 **rate debt true-up mechanism for Niagara Mohawk.**

15 **A.** In the Financing Order, the Commission explained:

16 Absent such a [variable-rate debt true-up] mechanism, not
17 only would the costs of the new fixed rate issuances not be
18 netted against the targeted [variable-rate debt] costs in
19 rates, but a refunding would require Niagara Mohawk to
20 defer the full amount of the auction rate debt interest
21 expense included in existing rates and absorb the interest
22 expense of the refunding debt. As a result, it is unlikely that
23 the Company would undertake such a refunding even under
24 favorable market conditions. Thus, the modification of the
25 interest true-up mechanism proposed by Niagara Mohawk
26 is in ratepayers' best interest and is approved.¹⁵
27

¹⁴ Financing Order at 60.

¹⁵ *Id* at 56.

Testimony of Stephen H. Caldwell

1 **Q. Please explain why the Company proposes to set base rates using forecast**
2 **interest rates for the variable-rate and new long-term debt even with**
3 **proposed true-up mechanisms specific to each.**

4 A. Interest rate forecasts are widely relied upon by fixed-income investors and other
5 financial market participants, and such forecasts are a superior method of
6 estimating future interest rates than simply assuming current rates will persist in
7 the future. In the interest of minimizing the accumulation of deferral balances for
8 interest rate expense, the Company proposes to set base rates, subject to the
9 aforementioned true-up mechanisms, based on forecast interest rates.

10

11 **Q. How did Niagara Mohawk determine the balances and the cost rates for**
12 **customer deposits shown on Exhibit __ (SHC-1)?**

13 A. The Company's forecast balances of customer deposits were assumed to remain
14 equal to the actual monthly balance as of December 31, 2016, the end of the
15 Historic Test Year. According to the Commission's memo in Case 16-M-0555,
16 the Commission has set the customer deposits rate for investor-owned utilities at
17 0.35 percent, effective January 1, 2017.

18

19 **Q. What cost rate does the Company propose for the common equity component**
20 **of the capital structure?**

21 A. The Company proposes a cost of common equity of 9.79 percent as supported by
22 Company Witness Bulkley in her testimony for the Rate Year. If a three-year
23 settlement is reached, a 10.29 percent cost of common equity should be used to

Testimony of Stephen H. Caldwell

1 reflect the appropriate stay-out premium recommended by Ms. Bulkley for all
2 three years.

3

4 **Q. Does the Company propose to update its projections of both new debt**
5 **issuances and cost rates later in this proceeding?**

6 A. Yes. As discussed above, the Company plans to issue \$1.7 billion of new long-
7 term debt over the course of the Rate Year and Data Years. While the Company
8 has provided its best forecast of the cost of these planned debt issuances and their
9 specific timing and of the expected changes in the cost of auction-rate debt,
10 providing accurate interest rate forecasts is particularly challenging at present
11 owing, in particular, to the changing U.S. interest rate policy as the Federal
12 Reserve continues the process of raising interest rates at an uncertain pace and
13 magnitude. It is likely that interest rate forecasts will change between the time the
14 instant case is filed and the time the Commission reaches a decision. As such, the
15 Company will seek to provide updated projections at each available opportunity
16 during the rate case process. Moreover, these debt market conditions and
17 changing interest rates, warrant the long-term debt true-up mechanism proposed
18 by the Company.

19

1 **IV. Financial Protections**

2 **Q. Is the Company presently subject to any financial protection provisions**
3 **adopted by the Commission?**

4 A. Yes, when it was acquired by National Grid plc in 2002, the Company agreed to a
5 number of Financial Protections that were adopted by the Commission when it
6 approved the Merger Joint Proposal in Case 01-M-0075. These protections were
7 designed to financially insulate or “ring fence” Niagara Mohawk from National
8 Grid plc and its other affiliates. In approving the subsequent merger between
9 National Grid plc and KeySpan, the Commission ordered that the Company adopt
10 additional protections to further insulate it from National Grid plc and its
11 affiliates. Finally, the Financial Protections were amended in the Company’s
12 most recent rate cases, 12-E-0201 and 12-G-0202, in which the Commission
13 adopted Niagara Mohawk’s current Financial Protections.

14

15 **Q. Does the Company believe that the Financial Protections should remain in**
16 **effect in their current form?**

17 A. Yes. The Company proposes no changes to the current Financial Protections. As
18 explained above, these Financial Protections insulate the Company and warrant
19 the Commission’s consideration of the Company’s stand-alone capital structure
20 for ratemaking purposes.

Testimony of Stephen H. Caldwell

1 **V. Service Company Asset Recovery Charge**

2 **Q. What is the service company asset recovery charge?**

3 A. The service companies own or lease a number of shared assets that are used either
4 by service company employees to provide services to affiliates or are used by the
5 affiliates on a shared basis. These are primarily shared office facilities and
6 information technology equipment and software. When the service companies
7 finance and own the shared assets, the service companies charge the affiliates an
8 asset recovery charge based on a pre-tax return on the asset (net of deferred taxes)
9 and booked depreciation expense. This charge is recovered in the Company's
10 rent expense, as discussed in the Revenue Requirements Panel's testimony.

11

12 **Q. What cost of equity does the Company propose to use for the service**
13 **company asset recovery charge?**

14 A. The Company proposes to use the same cost of equity for the service company
15 asset recovery charge as for Niagara Mohawk's overall cost of capital—*i.e.*, 9.79
16 percent or 10.29 percent for a three-year rate plan.

17

18 **Q. What overall weighted average cost of capital does the Company propose to**
19 **use for the service company asset recovery charge, and how was it derived?**

20 A. The Company proposes to use an assumed 50/50 long-term debt/equity capital
21 structure, which is a lower equity ratio than the current actual service company
22 equity ratio, and the actual cost of long-term debt for the service company asset
23 recovery charge. The table below illustrates the overall weighted average cost of

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1 capital for the service company asset recovery charge, assuming the Company's
2 requested 9.79 percent cost of equity.

<u>Service Company</u>	<u>Capitalization Ratio</u>	<u>Cost Rate</u>	<u>Weighted Cost</u>
Long-Term Debt ¹⁶	50.00%	3.7049%	1.85%
Common Equity	50.00%	9.79%	4.90%
Total	100.00%		6.75%

3

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

5 A. Yes, it does.

¹⁶ National Grid USA Service Company Inc. has 25-year intercompany debt maturing in 2035 with a balance of \$80,000,000 and an interest rate of 5.803% and 10-year intercompany debt maturing in 2022 with a balance of \$395,044,311 and an interest rate of 3.28%. The service company has no planned financing activity during the Rate Year or Data Years.

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Index of Exhibits

Exhibit__ (SHC-1)	Niagara Mohawk's Historic Cost of Long-Term Debt and Preferred Stock
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Exhibit __ (SHC-1)

Niagara Mohawk's Historic Cost of Long-Term Debt and Preferred Stock

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
WEIGHTED AVERAGE COST OF LONG-TERM DEBT
For 12 month period ending December 31, 2016
(\$000)

LONG-TERM DEBT	RATE %	MATURITY DATE	PRINCIPAL AMOUNT	ANNUAL INTEREST & FEES	ANNUAL AMORTIZATION DEBT DISCOUNT AND EXPENSE	TOTAL INTEREST AND ANNUAL AMORTIZATION	EFFECTIVE RATE
4.881% Senior Notes	4.881%	8/15/2019	750,000	36,608	389	36,996	4.93%
4.119% Senior Notes	4.119%	11/28/2042	400,000	16,476	97	16,573	4.14%
2.721% Senior Notes	2.721%	11/28/2022	300,000	8,163	114	8,277	2.76%
3.508% Senior Notes	3.508%	10/1/2024	500,000	17,540	215	17,755	3.55%
4.278% Senior Notes	4.278%	10/1/2034	400,000	17,112	157	17,269	4.32%
1988 Series A Pollution Control Revenue Bonds Due 12/01/23	1.492%	12/1/2023	69,800	865	311	1,177	1.69%
1985 Series B Pollution Control Revenue Bonds Due 12/1/2025	1.310%	12/1/2025	75,000	944	220	1,164	1.55%
1986 Series A Pollution Control Revenue Bonds Due 12/01/26	1.459%	12/1/2026	50,000	608	202	810	1.62%
1987 Series A Pollution Control Revenue Bonds Due 03/01/27	1.268%	3/1/2027	25,760	314	64	378	1.47%
1987 Series B Pollution Control Revenue Bonds Due 07/01/27	1.460%	7/1/2027	93,200	1,134	376	1,510	1.62%
2004 Series A Pollution Control Revenue Bonds Due 7/1/2029	1.494%	7/1/2029	115,705	1,436	595	2,031	1.76%
Amortization of Reacquired Debt Call Premiums & DD&E					2,121	2,121	
			<u>2,779,465</u>	<u>101,200</u>	<u>4,862</u>	<u>106,062</u>	<u>3.82%</u>
<i>Post Test-Year / Pre-Rate Year Repayments and Issuances</i>							
<u>Repayments:</u>							
<u>New Issuances:</u>							
Total Long-Term Debt			<u>2,779,465</u>	<u>101,200</u>	<u>4,862</u>	<u>106,062</u>	<u>3.82%</u>

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
WEIGHTED AVERAGE COST OF PREFERRED STOCK
For 12 month period ending December 31, 2016
(\$000)

PREFERRED STOCK	PAR VALUE	CALL PRICE	RATE %	NET PROCEEDS OUTSTANDING	ANNUAL DIVIDEND	ANNUAL AMORTIZATION ISSUANCE EXP. AND DISCOUNT OR PREMIUM	TOTAL DIVIDEND AND ANNUAL AMORTIZATION	EFFECTIVE RATE
NMK 3.40%	100.0	103.5	3.40%	5,752	196	0	196	3.40%
NMK 3.60%	100.0	104.9	3.60%	13,715	494	0	494	3.60%
NMK 3.90%	100.0	106.0	3.90%	9,517	371	0	371	3.90%
				\$28,985	\$1,060	\$0	\$1,060	3.66%

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
ESTIMATED COST OF SENIOR SECURITIES (RATE YEAR)
AND RATE OF RETURN
(\$000)

Estimated cost of long-term debt for 12 month period ending March 31, 2019

	<u>MATURITY DATE</u>	<u>Principal Amount</u>	<u>Effective Rate</u>	<u>Total Interest and Annual Amortization</u>
As of March 31, 2018		2,779,465	3.82%	\$106,062
<u>Variable Interest Rate Changes:</u>				
1988 Series A Pollution Control Revenue Bonds Due 12/01/23			3.31%	2,309
1985 Series B Pollution Control Revenue Bonds Due 12/1/2025			3.29%	2,467
1986 Series A Pollution Control Revenue Bonds Due 12/01/26			3.33%	1,666
1987 Series A Pollution Control Revenue Bonds Due 03/01/27			3.33%	857
1987 Series B Pollution Control Revenue Bonds Due 07/01/27			3.33%	3,104
2004 Series A Pollution Control Revenue Bonds Due 7/1/2029			3.31%	3,825
<u>Repayments:</u>				
<u>New Issuances:</u>				
4.38% \$400 million 30-Year Senior Notes Issued July 2018	7/15/2048	284,932	4.41%	12,569
Amortization of Reacquired Debt Call Premiums & DD&E				(514)
Total Long-Term Debt		<u>\$3,064,397</u>	<u>4.32%</u>	<u>\$132,345</u>

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
ESTIMATED COST OF SENIOR SECURITIES (DATA YEAR 1)
AND RATE OF RETURN
(\$000)

Estimated cost of long-term debt for 12 month period ending March 31, 2020

	MATURITY DATE	Principal Amount	Effective Rate	Total Interest and Annual Amortization
As of March 31, 2019		3,179,465	4.32%	\$137,420
<u>Variable Interest Rate Changes:</u>				
1988 Series A Pollution Control Revenue Bonds Due 12/01/23			0.88%	615
1985 Series B Pollution Control Revenue Bonds Due 12/1/2025			0.88%	661
1986 Series A Pollution Control Revenue Bonds Due 12/01/26			0.88%	441
1987 Series A Pollution Control Revenue Bonds Due 03/01/27			0.88%	227
1987 Series B Pollution Control Revenue Bonds Due 07/01/27			0.88%	821
2004 Series A Pollution Control Revenue Bonds Due 7/1/2029			0.88%	1,019
<u>Repayments:</u>				
4.88% \$750 million 10-Year Senior Notes Repaid August 2019	8/15/2019	(471,311)	4.93%	(23,249)
<u>New Issuances:</u>				
4.46% \$900 million 30-Year Senior Notes Issued July 2019	7/15/2049	641,803	4.49%	28,824
Amortization of Reacquired Debt Call Premiums & DD&E				1
Total Long-Term Debt		\$3,349,957	4.38%	\$146,780

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
ESTIMATED COST OF SENIOR SECURITIES (DATA YEAR 2)
AND RATE OF RETURN
(\$000)

Estimated cost of long-term debt for 12 month period ending March 31, 2021

	MATURITY DATE	Principal Amount	Effective Rate	Total Interest and Annual Amortization
As of March 31, 2020		3,329,465	4.34%	\$144,629
<u>Variable Interest Rate Changes:</u>				
1988 Series A Pollution Control Revenue Bonds Due 12/01/23			0.55%	384
1985 Series B Pollution Control Revenue Bonds Due 12/1/2025			0.55%	413
1986 Series A Pollution Control Revenue Bonds Due 12/01/26			0.55%	275
1987 Series A Pollution Control Revenue Bonds Due 03/01/27			0.55%	142
1987 Series B Pollution Control Revenue Bonds Due 07/01/27			0.55%	513
2004 Series A Pollution Control Revenue Bonds Due 7/1/2029			0.55%	637
<u>Repayments:</u>				
<u>New Issuances:</u>				
4.52% \$400 million 30-Year Senior Notes Issued July 2020	7/15/2050	284,932	4.55%	12,968
Amortization of Reacquired Debt Call Premiums & DD&E				(1)
Total Long-Term Debt		\$3,614,397	4.43%	\$159,959

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
ESTIMATED COST OF SENIOR SECURITIES (PREFERRED STOCK)
AND RATE OF RETURN
(\$000)

	Principle Amount	Effective Rate	Total Interest and Annual Amortization
<u>Estimated cost of preferred stock for year ending March 31, 2019</u>			
As of December 31, 2016 (per Schedule 1, Page 2)	28,985	3.66%	\$1,060
Sinking Funds	0		
Refundings	0		
New Issuances	0		
Total Preferred Stock	<u>\$28,985</u>	<u>3.66%</u>	<u>\$1,060</u>
<u>Estimated cost of preferred stock for year ending March 31, 2020</u>			
Sinking Funds	0		
Refundings	0		
New Issuances	0		
Total Preferred Stock	<u>\$28,985</u>	<u>3.66%</u>	<u>\$1,060</u>
<u>Estimated cost of preferred stock for year ending March 31, 2021</u>			
Sinking Funds	0		
Refundings	0		
New Issuances	0		
Total Preferred Stock	<u>\$28,985</u>	<u>3.66%</u>	<u>\$1,060</u>

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
ESTIMATED COST OF CAPITAL (RATE YEAR)
AND RATE OF RETURN

(\$000)

For 13 month period ending March 31, 2019

	Long-Term Debt	Short-Term Debt	Preferred Stock	Common Stock	Retained Earnings	Less Goodwill	Total Common Equity	Customer Deposits	Total Capitalization
Balance as of December 31, 2016	2,779,465	(579,771)	28,985	3,218,260	1,320,814	1,289,132	3,249,942	30,484	6,088,875
Changes to March 31, 2018	-	551,471	-	-	(16,999)	-	(16,999)	-	(16,999)
Balance as of March 31, 2018	2,779,465	(28,300)	28,985	3,218,260	1,303,815	1,289,132	3,232,943	30,484	6,071,876
April 2018	2,779,465	(18,605)	28,985	3,218,260	1,328,459	1,289,132	3,257,587	30,484	6,096,521
May 2018	2,779,465	(8,911)	28,985	3,218,260	1,343,714	1,289,132	3,272,842	30,484	6,111,775
June 2018	2,779,465	784	28,985	3,218,260	1,355,915	1,289,132	3,285,043	30,484	6,124,761
July 2018	3,179,465	(149,521)	28,985	3,218,260	1,150,456	1,289,132	3,079,584	30,484	6,318,517
August 2018	3,179,465	(139,827)	28,985	3,218,260	1,183,862	1,289,132	3,112,990	30,484	6,351,924
September 2018	3,179,465	(130,132)	28,985	3,218,260	1,182,525	1,289,132	3,111,653	30,484	6,350,587
October 2018	3,179,465	(120,437)	28,985	3,218,260	1,207,395	1,289,132	3,136,523	30,484	6,375,457
November 2018	3,179,465	(110,743)	28,985	3,218,260	1,230,926	1,289,132	3,160,054	30,484	6,398,987
December 2018	3,179,465	(101,048)	28,985	3,218,260	1,259,423	1,289,132	3,188,551	30,484	6,427,484
January 2019	3,179,465	(91,353)	28,985	3,218,260	1,298,024	1,289,132	3,227,152	30,484	6,466,086
February 2019	3,179,465	(81,659)	28,985	3,218,260	1,330,328	1,289,132	3,259,456	30,484	6,498,389
Eleven Months Total	33,774,115	(951,453)	318,832	35,400,860	13,871,029	14,180,453	35,091,436	335,322	69,520,489
March 2018	2,779,465	(28,300)	28,985	3,218,260	1,303,815	1,289,132	3,232,943	30,484	6,071,876
March 2019	3,179,465	(71,964)	28,985	3,218,260	1,384,717	1,289,132	3,313,845	30,484	6,552,779
Total March 2018 & 2019	5,958,930	(100,264)	57,969	6,436,520	2,688,532	2,578,264	6,546,788	60,968	12,624,655
March 2018 & 2019 Average	2,979,465	(50,132)	28,985	3,218,260	1,344,266	1,289,132	3,273,394	30,484	6,312,327
Twelve Months Total	36,753,580	(1,001,585)	347,816	38,619,120	15,215,295	15,469,585	38,364,830	365,806	75,832,816
Annual Average	3,062,798	(83,465)	28,985	3,218,260	1,267,941	1,289,132	3,197,069	30,484	6,319,336
Capitalization Ratios	48.5%	0.0%	0.5%				50.6%	0.5%	100.0%
Capitalization Ratios for Ratesetting	51.06%	0.0%	0.5%				48%	0.5%	100.0%
Cost Rates	4.32%	2.07%	3.66%				9.79%	0.35%	
Return Components	2.21%	0.00%	0.02%				4.70%	0.00%	6.93%

Notes: ROE is assumed for a one-year rate case.

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
ESTIMATED COST OF CAPITAL (MULTI-YEAR SETTLEMENT RATE YEAR)
AND RATE OF RETURN

For 13 month period ending March 31, 2019									
(\$000)									
	Long-Term Debt	Short-Term Debt	Preferred Stock	Common Stock	Retained Earnings	Less Goodwill	Total Common Equity	Customer Deposits	Total Capitalization
Balance as of December 31, 2016	2,779,465	(579,771)	\$28,985	3,218,260	1,320,814	1,289,132	3,249,942	30,484	6,088,875
Changes to March 31, 2018	-	551,471	-	-	(16,999)	-	(16,999)	-	(16,999)
Balance as of March 31, 2018	2,779,465	(28,300)	28,985	3,218,260	1,303,815	1,289,132	3,232,943	30,484	6,071,876
April 2018	2,779,465	(18,605)	28,985	3,218,260	1,328,459	1,289,132	3,257,587	30,484	6,096,521
May 2018	2,779,465	(8,911)	28,985	3,218,260	1,343,714	1,289,132	3,272,842	30,484	6,111,775
June 2018	2,779,465	784	28,985	3,218,260	1,355,915	1,289,132	3,285,043	30,484	6,124,761
July 2018	3,179,465	(149,521)	28,985	3,218,260	1,150,456	1,289,132	3,079,584	30,484	6,318,517
August 2018	3,179,465	(139,827)	28,985	3,218,260	1,183,862	1,289,132	3,112,990	30,484	6,351,924
September 2018	3,179,465	(130,132)	28,985	3,218,260	1,182,525	1,289,132	3,111,653	30,484	6,350,587
October 2018	3,179,465	(120,437)	28,985	3,218,260	1,207,395	1,289,132	3,136,523	30,484	6,375,457
November 2018	3,179,465	(110,743)	28,985	3,218,260	1,230,926	1,289,132	3,160,054	30,484	6,398,987
December 2018	3,179,465	(101,048)	28,985	3,218,260	1,259,423	1,289,132	3,188,551	30,484	6,427,484
January 2019	3,179,465	(91,353)	28,985	3,218,260	1,298,024	1,289,132	3,227,152	30,484	6,466,086
February 2019	3,179,465	(81,659)	28,985	3,218,260	1,330,328	1,289,132	3,259,456	30,484	6,498,389
Eleven Months Total	33,774,115	(951,453)	318,832	35,400,860	13,871,029	14,180,453	35,091,436	335,322	69,520,489
March 2018	2,779,465	(28,300)	28,985	3,218,260	1,303,815	1,289,132	3,232,943	30,484	6,071,876
March 2019	3,179,465	(71,964)	28,985	3,218,260	1,384,717	1,289,132	3,313,845	30,484	6,552,779
Total March 2018 & 2019	5,958,930	(100,264)	57,969	6,436,520	2,688,532	2,578,264	6,546,788	60,968	12,624,655
March 2018 & 2019 Average	2,979,465	(50,132)	28,985	3,218,260	1,344,266	1,289,132	3,273,394	30,484	6,312,327
Twelve Months Total	36,753,580	(1,001,585)	347,816	38,619,120	15,215,295	15,469,585	38,364,830	365,806	75,832,816
Annual Average	3,062,798	(83,465)	28,985	3,218,260	1,267,941	1,289,132	3,197,069	30,484	6,319,336
Capitalization Ratios	48.5%	0.0%	0.5%				50.6%	0.5%	100.0%
Capitalization Ratios for Ratesetting	51.06%	0.0%	0.5%				48%	0.5%	100.0%
Cost Rates	4.32%	2.07%	3.66%				10.29%	0.35%	
Return Components	2.21%	0.00%	0.02%				4.94%	0.00%	7.17%

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
ESTIMATED COST OF CAPITAL (DATA YEAR 1)
AND RATE OF RETURN

(\$000)
For 13 month period ending March 31, 2020

	Long-Term Debt	Short-Term Debt	Preferred Stock	Common Stock	Retained Earnings	Less Goodwill	Total Common Equity	Customer Deposits	Total Capitalization
Balance as of March 31, 2019	3,179,465	(71,964)	28,985	3,218,260	1,384,717	1,289,132	3,313,845	30,484	6,552,779
April 2019	3,179,465	(58,578)	28,985	3,218,260	1,410,601	1,289,132	3,339,729	30,484	6,578,662
May 2019	3,179,465	(45,192)	28,985	3,218,260	1,426,622	1,289,132	3,355,750	30,484	6,594,683
June 2019	3,179,465	(31,806)	28,985	3,218,260	1,439,436	1,289,132	3,368,564	30,484	6,607,497
July 2019	4,079,465	(918,420)	28,985	3,218,260	1,475,712	1,289,132	3,404,840	30,484	7,543,774
August 2019	3,329,465	(155,034)	28,985	3,218,260	1,510,797	1,289,132	3,439,925	30,484	6,828,859
September 2019	3,329,465	(141,648)	28,985	3,218,260	1,509,393	1,289,132	3,438,521	30,484	6,827,455
October 2019	3,329,465	(128,262)	28,985	3,218,260	1,535,513	1,289,132	3,464,641	30,484	6,853,574
November 2019	3,329,465	(114,876)	28,985	3,218,260	1,560,226	1,289,132	3,489,354	30,484	6,878,287
December 2019	3,329,465	(101,490)	28,985	3,218,260	1,590,154	1,289,132	3,519,282	30,484	6,908,216
January 2020	3,329,465	(88,104)	28,985	3,218,260	1,630,696	1,289,132	3,559,824	30,484	6,948,757
February 2020	3,329,465	(74,718)	28,985	3,218,260	1,664,623	1,289,132	3,593,750	30,484	6,982,684
Eleven Months Total	36,924,115	(1,858,128)	318,832	35,400,860	16,753,773	14,180,453	37,974,180	335,322	75,552,449
March 31, 2019	3,179,465	(71,964)	28,985	3,218,260	1,384,717	1,289,132	3,313,845	30,484	6,552,779
March 31, 2020	3,329,465	(61,332)	28,985	3,218,260	1,721,745	1,289,132	3,650,873	30,484	7,039,807
Total March 2019 & 2020	6,508,930	(133,296)	57,969	6,436,520	3,106,463	2,578,264	6,964,718	60,968	13,592,585
March 2019 & 2020 Average	3,254,465	(66,648)	28,985	3,218,260	1,553,231	1,289,132	3,482,359	30,484	6,796,293
Twelve Months Total	40,178,580	(1,924,776)	347,816	38,619,120	18,307,004	15,469,585	41,456,539	365,806	82,348,742
Annual Average	3,348,215	(160,398)	28,985	3,218,260	1,525,584	1,289,132	3,454,712	30,484	6,862,395
Capitalization Ratios	48.8%	0.0%	0.4%				50.3%	0.4%	100.0%
Capitalization Ratios for Ratesetting	51.1%	0.0%	0.4%				48.0%	0.4%	100.0%
Cost Rates	4.38%	2.42%	3.66%				10.29%	0.35%	
Return Components	2.24%	0.00%	0.02%				4.94%	0.00%	7.20%

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
ESTIMATED COST OF CAPITAL (DATA YEAR 2)
AND RATE OF RETURN

((\$000))
For 13 month period ending March 31, 2021

	Long-Term Debt	Short-Term Debt	Preferred Stock	Common Stock	Retained Earnings	Less Goodwill	Total Common Equity	Customer Deposits	Total Capitalization
Balance as of March 31, 2020	3,329,465	(61,332)	28,985	3,218,260	1,721,745	1,289,132	3,650,873	30,484	7,039,807
April 2020	3,329,465	(39,109)	28,985	3,218,260	1,749,369	1,289,132	3,678,497	30,484	7,067,430
May 2020	3,329,465	(16,886)	28,985	3,218,260	1,766,467	1,289,132	3,695,595	30,484	7,084,529
June 2020	3,329,465	5,337	28,985	3,218,260	1,780,144	1,289,132	3,709,271	30,484	7,103,542
July 2020	3,729,465	(282,440)	28,985	3,218,260	1,728,860	1,289,132	3,657,988	30,484	7,446,921
August 2020	3,729,465	(260,217)	28,985	3,218,260	1,766,304	1,289,132	3,695,432	30,484	7,484,365
September 2020	3,729,465	(237,994)	28,985	3,218,260	1,764,806	1,289,132	3,693,933	30,484	7,482,867
October 2020	3,729,465	(215,771)	28,985	3,218,260	1,792,682	1,289,132	3,721,810	30,484	7,510,743
November 2020	3,729,465	(193,548)	28,985	3,218,260	1,819,057	1,289,132	3,748,185	30,484	7,537,118
December 2020	3,729,465	(171,325)	28,985	3,218,260	1,850,998	1,289,132	3,780,126	30,484	7,569,060
January 2021	3,729,465	(149,102)	28,985	3,218,260	1,894,266	1,289,132	3,823,394	30,484	7,612,327
February 2021	3,729,465	(126,879)	28,985	3,218,260	1,930,474	1,289,132	3,859,602	30,484	7,648,536
Eleven Months Total	39,824,115	(1,687,930)	318,832	35,400,860	19,843,426	14,180,453	41,063,833	335,322	81,547,439
March 31, 2020	3,329,465	(61,332)	28,985	3,218,260	1,721,745	1,289,132	3,650,873	30,484	7,039,807
March 31, 2021	3,729,465	(104,656)	28,985	3,218,260	1,991,438	1,289,132	3,920,566	30,484	7,709,500
Total March 2020 & 2021	7,058,930	(165,987)	57,969	6,436,520	3,713,183	2,578,264	7,571,439	60,968	14,749,306
March 2020 & 2021 Average	3,529,465	(82,994)	28,985	3,218,260	1,856,592	1,289,132	3,785,720	30,484	7,374,653
Twelve Months Total	43,353,580	(1,770,924)	347,816	38,619,120	21,700,018	15,469,585	44,849,553	365,806	88,922,092
Annual Average	3,612,798	(147,577)	28,985	3,218,260	1,808,335	1,289,132	3,737,463	30,484	7,409,730
Capitalization Ratios	48.8%	0.0%	0.4%				50.4%	0.4%	100.0%
Capitalization Ratios for Ratesetting	51.2%	0.0%	0.4%				48.0%	0.4%	100.0%
Cost Rates	4.43%	2.64%	3.66%				10.29%	0.35%	
Return Components	2.27%	0.00%	0.01%				4.94%	0.00%	7.22%

NIAGARA MOHAWK POWER CORPORATION d/b/a NATIONAL GRID
SOURCES AND USES OF FUNDS STATEMENT AND CREDIT METRICS
(\$000)

<u>Sources of Funds</u>	<u>Rate Year</u> <u>Ending 03/31/19</u>	<u>Data Year</u> <u>Ending 03/31/20</u>	<u>Data Year</u> <u>Ending 03/31/21</u>
<u>Internal</u>			
Net Income	320,903	337,028	359,693
Depreciation & Amortization	288,355	304,228	323,347
Deferred Taxes	147,598	119,755	120,922
Changes in Working Capital/Other	(45,192)	(63,643)	(33,639)
Total Internal Sources	711,664	697,368	770,324
<u>External</u>			
Equity Issuance	0	0	0
Long-Term Debt	400,000	900,000	400,000
Money Pool Borrowings	0	10,632	0
Total External Sources	400,000	910,632	400,000
Total Sources of Funds	1,111,664	1,608,000	1,170,324
<u>Uses of Funds</u>			
Capital Expenditures	828,000	858,000	1,037,000
Reimbursement of Treasury	240,000	0	90,000
<u>Redemptions</u>			
Long-Term Debt	0	750,000	0
Short-Term Debt	43,664	0	43,324
Total Uses of Funds	1,111,664	1,608,000	1,170,324
Moody's			
CFO pre-WC + Interest / Interest	5.8 A	5.6 A	5.4 A
CFO pre-WC / Debt	24.2% A	23.8% A	22.0% A
CFO pre-WC - Dividends / Debt	17.1% A	23.8% Aa	19.7% A
Debt / Capitalization**	33.1% Aa	32.7% Aa	34.0% Aa
S&P			
FFO/Debt	26.3% Intermediate	25.4% Intermediate	23.6% Intermediate
Debt/EBITDA (x)	3.1 Intermediate	3.1 Intermediate	3.2 Intermediate

** Includes Long Term Deferred Taxes (per Moody's Definition of Debt / Capitalization)