STATE OF VERMONT
PUBLIC UTILITY COMMISSION

Case No. _____

Petition of Green Mountain Power for approval of	)
a multi-year regulation plan pursuant to 30 V.S.A.	)
§§ 209, 218, and 218d	)

PREFILED TESTIMONY OF JAMES M. COYNE ON BEHALF OF GREEN MOUNTAIN POWER

June 4, 2018

Summary of Testimony

Mr. Coyne's Testimony presents the market information and analyses used to estimate the required Cost of Equity for Green Mountain Power under its proposed Multi-Year Regulation Plan for the period beginning October 1, 2019 through September 30, 2022. Mr. Coyne's analyses incorporate a review of the Company's specific business risks and the impact of the proposed Plan on its overall level of business risk, as well as relative to the peer group from which Mr. Coyne's analyses were developed. While Mr. Coyne is aware that GMP has agreed to a ROE of 9.3 percent in the 2019 Rate Case, this ROE is below the ROE of 10.0 he would otherwise recommend as the starting point for this 3-year Regulation Plan based on his analyses. Mr. Coyne has also provided a recommendation for a ROE Automatic Adjustment Formula that will adjust ROE by 50 percent of the change in long-term bond yields and utility corporate A credit spreads for each successive year under the Plan.

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PREFILED TESTIMONY OF JAMES M. COYNE ON BEHALF OF GREEN MOUNTAIN POWER

I. INTRODUCTION

Q1. Please state your name, affiliation, and business address.

A1. My name is James M. Coyne, and I am employed by Concentric Energy Advisors, Inc. ("Concentric") as a Senior Vice President. Concentric is a management consulting and economic advisory firm, focused on the North American energy and water industries. Based in Marlborough, Massachusetts and Washington, D.C., Concentric specializes in regulatory and litigation support, financial advisory services, energy market strategies, market assessments, energy commodity contracting and procurement, economic feasibility studies, and capital market analyses. My business address is 293 Boston Post Road West, Suite 500, Marlborough, MA 01752.

Q2. On whose behalf are you testifying?

A2. I am submitting this testimony on behalf of Green Mountain Power ("GMP" or the "Company") in this proceeding.

Q3. Please describe your experience in the energy and utility industries and your educational and professional qualifications.

A3. I am among Concentric's professionals who provide expert testimony before federal, state, and Canadian provincial agencies on matters pertaining to economics, finance, and public policy in the energy industry. I regularly advise regulatory agencies, utilities,

generating companies, and private equity investors on business issues pertaining to the utility industry. This work includes calculating the cost of capital for the purpose of ratemaking and providing expert testimony and studies on matters pertaining to rate policy, valuation, capital costs, and performance-based regulation. In addition, I work for regulators, utilities, and independent developers on issues pertaining to the management and development of power generation, distribution, and transmission facilities. I have authored numerous articles on the energy industry, lectured on utility regulation for regulatory commission staff, and provided testimony before the Federal Energy Regulatory Commission ("FERC") as well as state and provincial jurisdictions in the U.S. and Canada. I have also testified before the Vermont Public Utilities Commission (the "Commission" or "PUC"), formerly the Vermont Public Service Board, on matters concerning the cost of capital and performance-based ratemaking. I hold a B.S. in Business Administration from Georgetown University and a M.S. in Resource Economics from the University of New Hampshire. My educational and professional background is summarized more fully in **Exhibit GMP-JMC-1**.

II. PURPOSE AND OVERVIEW OF TESTIMONY

Q4. What is the purpose of your Direct Testimony?

A4. The purpose of my Direct Testimony is to present evidence and provide a recommendation regarding the Company's Return on Equity ("ROE") for the period covered by the proposed Multi-Year Regulation Plan (the "Plan," or "MYRP") from October 1, 2019 through September 30, 2022. My Direct Testimony assesses the impact

on GMP's business risk if the proposed Plan is adopted, how the new Plan compares to GMP's former regulation plan ("Former Plan") or its existing regulation plan ("Interim Plan"), how the Company's business risk under the new Plan compares to that of the proxy group, and how the Plan compares to other recently filed multi-year rate plans in the northeastern region. This Testimony also discusses the Company's capital structure in comparison to the proxy group companies supporting my analysis. My analyses and recommendations are supported by the data presented in **Exhibits GMP-JMC-2** through **GMP-JMC-13**, which have been prepared by me or under my direction.

Q5. What is your conclusion regarding the appropriate cost of equity for the Company?

A5. As I found in my April 13, 2018 Testimony in GMP's 2019 Rate Case, Case No. 18-0974-TF, my analysis continues to support a ROE in the range of 9.9 to 10.4 percent. The mean result of all of my analyses is 9.9 percent, which I consider to be at the low end of a reasonable range of ROEs for GMP, given its business risk profile and the current economic environment. The upper end of 10.4 percent is the mean high result from my analyses. Based on this range, I would recommend a ROE of 10.0 percent on a 50 percent equity ratio as appropriate for GMP for the period covered by the Company's new Plan, in the absence of GMP's agreement to accept a lower ROE through resolution of the 2019 Rate Case, which will serve as the basis for this Plan. I have also proposed an Automatic Adjustment Mechanism that adjusts ROE by 50 percent of the change in forecast bond yields and credit spreads for each successive year of the new Plan. I understand that the

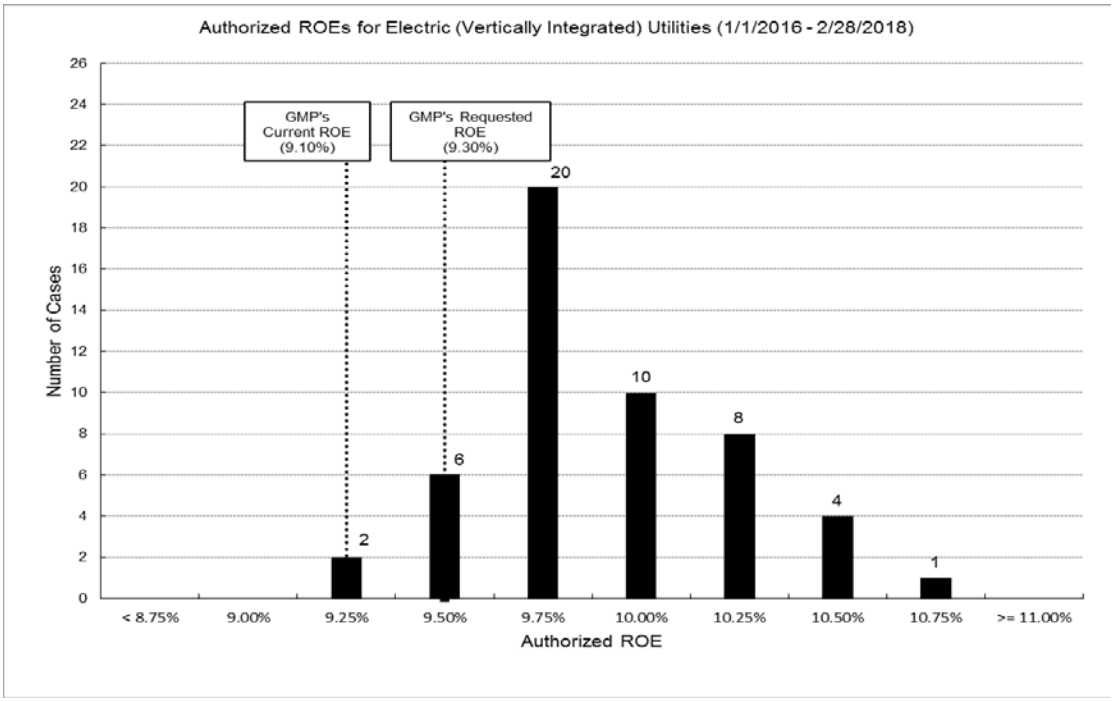
Company has agreed to accept a lower ROE than I have recommended in its rate filing for the 2019 Rate Case. Absent GMP's acceptance of a lower ROE of 9.3 percent, my recommended ROE of 10.0 percent would serve as that starting point for its ROE Automatic Adjustment Mechanism in 2020. The results of my analyses are summarized in **Exhibit GMP-JMC-2** accompanying this Testimony.

Q6. Are GMP's current ROE of 9.1 percent and its requested ROE of 9.3 for the Interim Plan extension from January 1, 2019 through September 30, 2019 aligned with recently authorized equity returns for vertically integrated electric utilities?

A6. No. Both ROEs are at the absolute lower end of allowed ROEs for vertically integrated electric utilities. In fact, its current ROE of 9.1 percent is the lowest authorized return for any vertically integrated electric utility authorized in the U.S. in recent history and is the second lowest going back as far as 1980[1] (as far back as SNL publishes historical regulatory data). Notwithstanding, as I cited in my Testimony filed April 13, 2018, the Company continues to deliver strong outcomes for customers—high reliability, high customer satisfaction—and is at the forefront of innovation in the regulated electric utility sector.

[1] Data from SNL RRA database. The lowest ROE was issued to Maui Electric Company at 9.0% on 56.86% equity in Decision D-2011-092, dated May 31, 2013.

Figure 1: Recently Authorized Vertically Integrated Electric ROEs



As Figure 1 indicates, for the recent historical period of January 2016 to February 2018 the average ROE for vertically integrated electric utilities was 9.78 percent and the median was 9.70 percent. The highest ROE issued during that period was 11.95 percent and the lowest was GMP's ROE of 9.10 percent. Figure 1 shows that a ROE of 9.3 percent would still be among the lowest in the U.S. and based on my current analyses it would be well below the low end of any reasonable range of recommended ROEs for Green Mountain Power for the term of its Plan. My recommendation of 10.0 percent would fall just above the average ROE for vertically integrated utilities and is justified in my opinion based on the factors discussed herein.

Q7. You indicate that based on changing capital market and utility risk conditions, GMP's ROE should be higher than in the last rate case. Can you please summarize the primary factors that support this view?

A7. Yes. Since last year, the primary factors affecting utility cost of capital are rising interest rates and the passage of the Tax Cut and Jobs Act at the end of 2017, both factors indicating a higher required return for investors. I will discuss each in turn. By far, the most dominant factor affecting utility cost of capital determinations is the level of interest rates. Because regulated utilities are capital intensive, they are highly sensitive to changes in interest rates. As interest rates increase, utility valuations decrease, driving up the required utility equity return and accordingly the ROE. Since the filing of my direct testimony in GMP's rate case filed in April 2017, the Federal Reserve Bank (the "Fed") has raised the short-term borrowing rate three times in 25 basis point increments to its current level of 1.50-1.75 percent as of May 2018, and is expected to raise rates twice more in 2018, and three more times in 2019, to bring the targeted federal funds rate to 2.75–3.00 percent by the end of 2019.[2] This translates to an increase in the benchmark borrowing rate of 200 basis points (or "bps") from the time I filed my direct testimony in GMP's April 2017 rate case to the end of 2019 (roughly the starting point for the proposed new Plan). Further, the Fed is expected to raise rates twice more in 2020 bringing the Fed Funds Rate to 3.5 percent, with the long-term expectation that the Fed Funds Rate

[2] Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents under their individual assessments of projected appropriate monetary policy, March 2018. Advance release of Table 1 of the Summary of Economic Projections to be released with the FOMC minutes (March 21, 2018).

will converge very close to 3.0 percent in the long term.[3] Though increases in the federal funds rate do not necessarily correspond to one-for-one changes in treasury bond yields, they do significantly influence the utility bond markets and thus directionally support a higher ROE for GMP for the upcoming rate period.

The second major factor affecting utility cost of capital is the Tax Cuts and Jobs Act of 2017, which decreased the U.S. corporate tax rate from 35 percent to 21 percent. The new tax legislation reduces utility revenues and accordingly negatively impacts utility cash flows and credit metrics. As a result, the risk profile of U.S. utilities has increased, and accordingly, the required ROE for utility investment has also increased. Utility liquidity is of critical importance, particularly given GMP's role as the sole investor-owned utility relied upon to provide service and storm-related recovery for the vast majority of Vermont's electric customers. My detailed review of Economic and Capital Market Conditions that was filed on April 13, 2018, in my Testimony for the 2019 Rate Case is summarized in Appendix A of my Testimony in report format.

Q8. What did you conclude from your review of capital market conditions?

A8. My primary conclusion is that it is necessary to consider the effects of capital market conditions on the inputs and assumptions used in the ROE estimation models and to consider whether current market conditions are sustainable on a forward-looking basis. The Federal Reserve's accommodative monetary policy has resulted in high utility

[3] *Ibid*.

valuations and low dividend yields that are not expected to continue. This violates one of the fundamental assumptions underlying the Discounted Cash Flow ("DCF") model (i.e., a constant P/E ratio) and suggests that the DCF results are understating the forward-looking equity return requirements under current market conditions.[4]

The market expects increases in interest rates that will be realized by the economy slowly as the Fed balances its plans to move the economy towards normalization with policies that are supportive of future economic growth. As interest rates increase, the cost of equity for the proxy companies will increase. I have attempted to capture the effects of forward-looking market indicators in two of my ROE estimation models. I have used a forecasted 30-year Treasury bond yield in both the Capital Asset Pricing model ("CAPM") and Risk Premium analyses in order to take into consideration the market's expectation for higher interest rates. As the DCF model relies on historical dividend yield inputs that do not fully reflect these expectations, I place equal weight on the DCF results as I do the results of the CAPM and Risk Premium methodologies in my ROE recommendation. If one were to rely solely on the DCF results in the current market environment, the resulting ROE estimates would understate the investors' required return on equity.

[4] As the FOMC tightens monetary policy and increases interest rates, it is likely utility dividend yields will increase.

Q9. Please provide a brief overview of the analyses that you conducted to support your ROE recommendation.

A9. My ROE recommendation is based on the range of results produced from three modeling methodologies, the DCF model, the CAPM, and the Risk Premium approach. Analysts and academics understand that ROE models are tools to be used in the ROE estimation process, and that strict adherence to any single approach or the specific results of any single approach can lead to flawed conclusions. No model can exactly pinpoint the correct return on equity, but each model brings its own perspective and informs the estimate of the ROE. Therefore, my analysis considers the range of results produced by these three different models. The DCF model is based on reputable third-party growth rate projections, as well as market-based information on current annualized dividends and recent stock prices. The CAPM analysis is based on both current and forecasted interest rates and projected market risk premiums. The Risk Premium approach calculates the risk premium as the spread between authorized ROEs for electric distribution companies and Treasury bond yields to estimate the ROE.

My recommendation also considers the general economic and capital market environment and the influence that capital market conditions exert over the results of the DCF and CAPM models. In addition, I also consider the Company's business and regulatory risks in relation to a set of proxy companies to assist in the determination of the appropriate ROE from the range of my analytical results.

As when I filed my direct testimony in the 2018 rate case in April 2017 and the 2019 rate case in April 2018, I continue to have concerns about the ability of the DCF

methodology to produce reliable results under existing market conditions due to elevated utility stock valuations and correspondingly low dividend yields. Although I have considered and incorporated the results of differing DCF methodologies into my recommendation, I have also equally weighted the results of the CAPM and Bond Yield Risk Premium analyses. My recommendation is based on an averaging of the results of these three methodologies.

Q10. How is the remainder of your Direct Testimony organized?

A10. The remainder of my Direct Testimony is organized as follows. Section III provides a summary of GMP's proposed Plan and its impact on GMP's business risk profile. Section IV provides a brief description of the data and methodologies used to estimate the cost of equity and summarizes the results of the DCF, CAPM, and Risk Premium models. Section V provides an assessment of the business risk factors I have considered in arriving at an appropriate ROE for GMP. Section VI reviews the Company's capital structure in the context of the proxy group. Section VII presents a formulaic approach to adjusting ROE during the Plan and Section VIII summarizes my results, conclusions, and recommendation. Because I recently filed testimony for Green Mountain Power's ROE on April 13, 2018 for its 2019 Rate Case, and given the proximity of dates between that Testimony and this Testimony, and since there have been no meaningful changes to the results of my analyses since the filing of my 2019 Rate Case testimony, I have not updated my analyses and have appended my previous analyses to this Testimony in full. Should

the Commission seek updated analyses, it will be provided in the rebuttal phase of this proceeding.

III. SUMMARY OF GMP'S REGULATION PLAN

Q11. Please describe Green Mountain Power's proposed regulation Plan.

A11. The proposed Plan has a three-year term that moves GMP to full revenue decoupling and places greater pressure on performance of all controllable aspects of the business. The Plan builds on some features of the Company's Former Plan but I understand it has been updated to improve the process and provide greater certainty for customers in its application through the use of more fixed components, which are set at the beginning of the Plan. Below is a summary of the key elements of the Plan.

- A new feature of this Plan is full revenue decoupling, which is accomplished through a Retail Revenue Adjustor that trues up actual revenue to forecast revenue at quarterly intervals during the year, based on each year's refreshed annual forecast. This is a more transparent and complete decoupling mechanism than the volume formula that was embedded in the Former Plan's Power Supply Adjuster.
- The proposed Plan provides for recovery of forecast energy costs, including capacity, RECs, ancillary services, and transmission O&M, with forecasts refreshed annually. Differences between forecast and actual energy costs, outside a deadband of $150 thousand, are trued up at quarterly intervals during the year through a Power Cost Supply Adjustor.
- Capital expenditures, depreciation and taxes are fully-locked in for each year of the Plan, with limited exceptions for unforeseen strategic investments and customer-focused capital driven by new initiatives.

- For the term of this Plan, forecasted Base O&M costs are fully locked in for each year of the Plan, subject to a merger savings O&M platform that will be flowed through entirely to ratepayers in 2021 and 2022. Non-platform O&M forecast costs will be refreshed annually.
- Other revenue and expense items (such as taxes and equity in affiliates) are forecast for each rate year 2020-2022, subject to an annual refresh of the forecast prior to each rate year.
- Debt costs will be forecast for each year of the Plan starting with known and measurable costs for rate year 2019, with an annual refresh of the forecast prior to the rate year.
- The cost of equity will be established in this proceeding for the inception of the Plan and will be adjusted each successive year under the Plan by an Annual Adjustment Mechanism.
- The Plan continues the exogenous adjustor which is primarily focused on storm recovery, with some changes from the Former and Interim Plans in the certainty and pace of the collection mechanism that will help alleviate accumulated unrecovered storm costs and provide a storm cost reserve, returning any over recoveries to customers. GMP will absorb the first $1.2 million of major storm costs before pursuing recovery from customers.
- The Plan also includes Performance Incentive Mechanisms (PIMs) which require GMP to meet its state service quality and reliability standard, and which provide a limited ROE benefit if the Company substantially exceeds those standards.
- The last key element of the Plan is the Earnings Adjustor Sharing Mechanism, which is proposed to include a deadband of 50 basis points above or below the authorized ROE, and a symmetrical 50/50 sharing of over or under earnings beyond the deadband between GMP and its customers.

- Finally, the Plan continues GMP's Innovative Pilot Program to deliver customer-facing transformative energy projects that decrease fossil-fuel consumption and greenhouse-gas emissions through strategic electrification.

Q12. Please discuss the evolution of the Plan proposal.

A12. The Company's current Interim Plan was developed to include some elements of the Former Plan which initially expired September 30, 2017 and was extended to December 31, 2017.[5] The Interim Plan covers the period from January 1, 2018 through December 31, 2018, with the option to extend for one year.[6] On May 24, 2018, the PUC approved Green Mountain Power's request to extend the Interim Plan from January 1, 2019 through September 30, 2019, or the date the new Plan will go into effect. The new MYRP is proposed to go into effect on October 1, 2019 through September 30, 2022 to align with GMP's fiscal year.

Q13. How does Green Mountain Power's proposed Plan compare to its current Interim Plan and its Former Plan?

A13. While the proposed Plan maintains some elements of the Interim and Former Plans, there are significant differences between the proposed Plan and GMP's previous plans. Green Mountain Power's current Interim Plan continued four key aspects of the Former Plan: 1) the Power Cost Adjustor, with an embedded volume formula; 2) the Exogenous

[5] Vt. Pub. Serv. Bd. Order, *Petition of Green Mountain Power for approval a limited three-month extension of its alternative regulation plan*, Case No. 8871 (March 15, 2017) at 1.

[6] Vt. Pub. Util. Comm'n. Order, *Petition of Green Mountain Power Corporation for approval of a temporary limited regulation plan pursuant to 30 V.S.A. §§209,218 and 218d*, Case No. 17-3232-PET (November 29, 2017) at 6.

Change Adjustment; 3) the Merger Savings Adjustment; and 4) the Innovative Pilot Program. Though there are subtle differences between the Former Plan and the Interim Plan in these areas, cost recovery protection for those key elements is comparable. The Interim Plan, however, excluded certain key elements of the Former Plan, such as the annual base-rate adjustment (partial revenue decoupling) and the earnings sharing mechanism. Both the base-rate adjustment and the earnings sharing mechanism are proposed as components of the new Plan, albeit in different forms. The new Plan will for the first time include a full revenue decoupling mechanism through a Retail Revenue Adjustor, which will true up actual revenue with forecasted revenue on a quarterly basis. The new Plan will continue the Power Supply Adjustor but will implement the true up under that provision on a quarterly basis, consistent with the revenue adjustment. The new Plan also provides for recovery of capital expenditures, depreciation and property taxes based on set amounts that are locked in at the beginning of the Plan with limited exceptions. This approach to capital is significantly different from prior plans, which have included annual "mini rate cases" to evaluate every aspect of capital spending on a yearly basis. O&M expense continues to be subject to a Merger Savings Adjustor through the term of the Plan, and the new Plan will continue to allow O&M forecasts to be refreshed annually for those limited categories of expenses not subject to the Merger Savings Adjustor. The new Plan will also continue the Company's commitment to its Innovation Pilot Program.

Q14. Would you expect Green Mountain Power's business risk and ROE to change if the proposed regulation Plan is adopted?

A14. Not significantly, because there are risk trade-offs in their Plan. While the new Plan increases the risk to the Company with respect to capital spending, restricts any chance of overearning due to increased revenue through its Retail Revenue Adjustor (full decoupling mechanism), and limits the Company's ability to over-earn by its Earnings Sharing Mechanism. But, the new Plan also results in a more transparent, smoother annual process that provides the opportunity for full recovery of the Company's revenue requirement. On balance, the features of the new Plan present a similar risk profile compared to prior regulation plans under which the Company has operated. The ROE that will be determined in the associated proceeding, where I filed testimony on April 13, 2018, is sufficiently forward-looking and is premised on the fact that the new Plan will offer similar regulatory protection as Green Mountain Power has experienced under its Former Plan and current Interim Plan. I expect that the transition to the new Plan would maintain the Company's risk profile near its current level as it contains many of the same elements as its Former and Interim Plans.[7] Therefore, I view the new Plan as being risk neutral when compared to the Former Plan.

[7] Coyne Prefiled Direct Testimony at p. 64, ln 1-10.

Q15. Have you examined the prevalence of alternative regulation plans within the proxy group?

A15. Yes. In **Exhibit GMP-JMC-3**, I have developed an analysis of the major electric operating companies that are owned by the proxy group companies. In this exhibit, I have identified companies subject to multi-year rate plans or formula rate plans. I have also identified mechanisms among the proxy group companies that are often found in rate plans but are not part of a formal plan. The majority of the operating companies in my proxy group operate under a cost of service framework. Approximately 45 percent of the operating companies operate under a partially forecast or fully forecast test year, and the remainder use a historic test year adjusted for known and measurable changes. Nearly all (95 percent) of the operating companies recover fuel and energy costs through a fuel pass-through adjustment mechanism, and the vast majority (78 percent) recover costs associated with conservation, i.e. DSM or energy efficiency programs through recovery mechanisms. Approximately 37 percent of the proxy group companies operate under some form of decoupling, with 9 percent operating under full decoupling mechanism and 28 percent operating under partial decoupling. I found that 14 percent of proxy group operating companies are currently regulated under multi-year rate plans, and several of these operating companies employ ROE adjustment formulas. A high percentage of the companies in the proxy group have the opportunity for earning additional incentives for achieving service quality targets or shared savings, comprising 64 percent of the proxy group operating companies. Green Mountain Power's proposed Plan provides only limited specific incentives but does provide for shared savings under the ESAM. Other

recovery mechanisms found in the proxy group depend on the particular utility and its agreements with stakeholders on other program objectives. Along those lines approximately 50 percent of the operating companies recover expenses associated with renewable energy development, environmental compliance, generation capacity, and generic infrastructure through specific riders and recovery mechanisms such as capital trackers. Approximately 36 percent of the operating companies recover RTO transmission costs through a pass-through mechanism, and 62 percent of the operating companies include additional recovery mechanisms, such as franchise fees, bad debts, and property taxes in their suite of cost recovery mechanisms.

Q16. What do you conclude from your review of the key elements of Green Mountain Power's regulation Plan as it compares to the overall proxy group?

A16. I find that Green Mountain Power's new Plan will limit any volumetric risk (and/or upside) but will also set capital expenditure limitations at historically lean levels. Further, the majority of savings on O&M costs will be passed on entirely to customers through the term of the Plan. GMP's ability to forecast its revenue requirement and recover shortfalls through Retail Revenue Adjustor (full decoupling), and Power Supply Adjustor provide a high degree of cost recovery assurance. However, any revenues earned in excess of the revenue requirement will be shared with customers under the ESAM, thereby limiting any upside. Though there are outs in the Plan for significant unforeseen capital initiatives or capital-intensive customer initiatives, the Company will be pressed to manage capital expenditures within established levels. I view Green

Mountain Power's proposed Plan as shifting GMP's risk in a few key areas, but overall neutral to its ability to earn its allowed return and slightly reducing its ability to earn in excess of its allowed return when compared to its Former Plan. Given that GMP has had one of the lowest returns in the country and having only a limited opportunity to earn in excess of that return creates additional risk, particularly if the ROE is not set appropriately at the onset. In the context of the business risk profile of the proxy group operating companies, I view GMP's proposed Plan as providing enhanced assurance of revenue requirement recovery, while at the same time placing more stringent restrictions on capital and O&M cost recovery, and significantly limiting the Company's ability to earn in excess of its allowed return. On balance, I find that these positive and negative aspects of the Plan are largely offsetting in terms of business risk, and the impact of the Plan itself provides a risk profile for GMP that is comparable to the risks that exist among the proxy companies. Further, as I will discuss later in this Testimony, there are other business risk elements in the risk assessment that contribute to GMP's overall risk profile, such as its small size, the effects of passing the benefits of tax reform to customers, and the continued declines in customer loads that are the inevitable outcome of Vermont's conservation and distributed energy initiatives. On balance, given these risk tradeoffs, I find that GMP's overall risk profile is comparable to slightly higher in relation to the proxy group as a whole. I address these matters more fully in Section V of this Testimony.

Q17. How does the proposed regulation Plan compare to other alternative regulation plan filed recently in the region?

A17. Several plans have been filed recently in Massachusetts and New York. Because the companies operate in jurisdictions that have unbundled and de-regulated generation, these companies have not been reflected in my proxy group, as one of my key selection criteria was that the proxy companies must be vertically integrated, i.e. own at least 20 percent regulated generation as does Green Mountain Power. But for context in the region, I provide a review of two of the recent New England Plans, Eversource (Massachusetts) and National Grid (New York).

Q18. Please describe the Eversource Regulation Plan in Massachusetts?

A18. The Eversource Plan is a 5-year rate plan that relies on a revenue cap formula to adjust rates in tandem with a full decoupling mechanism. The Eversource Plan sets the base revenue requirement by formula which serves as the target for the decoupling formula. The formula for adjusting rates is:

Base Rate Adjustment = (I – X – CD) + [Z / Base Revenue T-1], where

I = price inflation index,
X = productivity offset.
CD = consumer dividend,
Z = exogenous cost adjustment, and
Base Revenue = base distribution revenue requirement.

The productivity offset was set by the MA DOE at -1.56 percent. A consumer dividend of 25 basis points will be passed on to consumers when inflation exceeds 2.0 percent. The Z factor recovers costs only from changes in accounting requirements, regulatory, judicial

or legislative directives, or enactments that are material and unique to the electric distribution industry. The Plan also has an asymmetric earnings sharing mechanism, where earnings above a deadband of 200 bps are shared 75 percent with customers and 25 percent with shareholders. There is no sharing if earnings fall below the allowed ROE. Recovery mechanisms for significant capital programs are external to the Eversource Plan. The Department authorized a ROE of 10.0 percent on 53.34 percent equity for setting rates under the multi-year plan.

Q19. What is your assessment of the Eversource Plan relative to the Green Mountain Power proposed Regulation Plan?

A19. The Eversource formula employs a negative productivity offset which assures that rates increase by roughly 3.5 percent per year. Further, though storm costs are not allowed recovery through the exogenous factor in the Eversource Plan, differing from Green Mountain Power's MYRP where it is anticipated that storm related costs will make up the majority of exogenous charges recovered under the Plan, Eversource has obtained approval for storm cost recovery external to its rate plan through its storm cost recovery mechanism. Lastly, though O&M expenses are capped at I-X, the plan allows recovery outside of the plan for approximately 2/3rds of total O&M costs, including employee benefit costs, payroll expense, insurance expense, vegetation management, storm costs, rate case expense, and information systems expense, among others. On balance, I view the plans as risk comparable. The ROE of 10 percent and 53.34 percent equity ratio for Eversource are significantly higher than the Company has agreed to in the 2019 Rate

Case, though they are nearly identical to the ROE and equity ratio I have recommended for Green Mountain Power. This is significant since I would rate Green Mountain Power to have greater business risk than Eversource as I discuss later in this Testimony.

Q20. Please describe the National Grid Regulation Plan in New York.

A20. The National Grid Plan for Niagara Mohawk in New York is a three-year rate plan for the term beginning April 1, 2018 through March 31, 2021. This multi-year rate plan provides for stepped increases to the revenue requirement of 1.7 percent in year 1, and 3.4 percent in years 2 and 3. National Grid's plan provides a base ROE of 9.0 percent on 48 percent equity, which according to the Commission's Order reflects a premium associated with fixing ROE for the term of the multi-year plan and incremental productivity savings.[8] It should be noted that National Grid is not a vertically integrated utility, and the ROE for utilities that have no generation risk tend to be slightly lower on balance than for vertically integrated utilities, such as GMP. The National Grid plan provides opportunities for earnings incentives for delivering the following beneficial outcomes: 1) improving electric system efficiency through peak reduction and distributed energy resource utilization; 2) improving energy efficiency by incentivizing the company to achieve further energy efficiency savings, increased LED street lighting conversions, and reduced residential and commercial energy usage; 3) increasing the effectiveness of the company's Distributed Generation interconnection process; and 4) increasing

[8] N.Y.P.S.C. Order, Cases 17-E-0238 et al., *Order Adopting Terms of Joint Proposal and Establishing Electric and Gas Rate Plans*, (March 15, 2018) at 15-16.

environmentally beneficial electrification through the adoption of electric vehicles and electric heat pumps that displace fossil fuel technologies. These performance incentive mechanisms are tied to specific financial benefits if the company achieves established targets. According to the Order, the maximum incentives for the electric utility under the multi-year plan are $19.49 million in Year 1, $22.22 million in Year 2, and $23.59 million in Year 3.[9] On a rate base of $5.261 billion in Year 1, $5.605 billion in Year 2, and $5.952 billion in Year 3, at 48 percent common equity, the incentives could add as much as an approximately 80 plus basis points to earned returns.[10] Under the National Grid plan, Niagara Mohawk would continue operating under its existing reconciliation mechanisms, applying to among other areas: revenue decoupling, major storm expense, energy efficiency program costs, vegetation management, pension and other post-employment benefits, low income program costs, economic development fund and grant programs, among others.[11] The National Grid plan has an earnings sharing mechanism that goes into effect when ROE exceeds 9.5 percent. If triggered, earnings above 9.5 percent up to 10 percent would be shared equally between customers and shareholders. Customers would receive 75 percent of anything over 10 percent but below 10.5 percent, and 90 percent of any earnings over 10.5 percent.

[9] *Id.*, at 25.

[10] Calculated by dividing maximum incentives, by the product of rate base and equity ratio for each year as stated in the Joint Proposal among Niagara Mohawk Power Corporation d/b/a National Grid and Intervening Parties in Case No. 17-E-0238, *Proceeding on Motion of the Commission as to the Rates, Charges, Rules and Regulations of Niagara Mohawk Power Corporation d/b/a National Grid for Electric Service* [et al], dated January 19, 2018, at 9.

[11] *Op Cit*. N.Y.P.S.C. Order, Cases 17-E-0238 et al, at 20-21.

Q21. What is your assessment of the National Grid Plan relative to the Green Mountain Power proposed Plan?

A21. I view these plans as roughly comparable, though the National Grid plan allows the shareholders to earn greater returns for achieving Performance Incentive Metrics and productivity targets in exchange for more risk elsewhere (such as the Earnings Sharing). Both plans provide for forecast revenue requirement increases and full decoupling. Both plans restrict adjustment for capital expenditures during the term of the plan, although the National Grid plan provides for a forecast of capital expenditures at the inception of the Plan. Under the GMP Plan, capital investments are capped at minimal levels of $85 million per year for the term of the Plan, though there are outs for significant unforeseen expenditures. Both companies' plans provide for storm cost recovery and full decoupling, and cost recovery for significant programs. The key differentiating features of the National Grid multi-year plan and Green Mountain Power's new Plan are the level of incentives embedded in the National Grid Plan. The other key differentiator is the equity return associated with the National Grid plan at 9.0 percent, which is low by industry standards, even for non-vertically integrated utilities. However, when considered in the context of the possible incentives of more than 80 basis points, and that Niagara Mohawk is a large electric utility without regulated generation, the difference between National Grid's ROE and the GMP ROE I have recommended in this Testimony is accountable.

Q22. What do you conclude from this review of other Regulation Plans in the Northeast region?

A22. Generally, while the specifics of the plans differ, Green Mountain Power's proposed Plan is aligned in terms of cost recovery and major programs. The utilities are incented to embrace innovation, and expand environmental and conservation related programs, such as encouraging distributed generation in their service territories, as well as advancing energy efficiency, DSM, and the proliferation of electric vehicles, although in Vermont many of these measures are required by separate statute, rather than expressly through the Plan itself. The regional utilities with multi-year rate plans are fully decoupled as GMP proposes, though by comparison GMP's proposed Plan provides more limited upside. I view these regional plans to be roughly comparable in terms of business risk, although GMP's base business risk differs from these companies.

IV. DETERMINATION OF THE APPROPRIATE COST OF EQUITY

Q23. Please provide an introduction to your determination of the appropriate cost of equity for Green Mountain Power's MYRP.

A23. First, I preface this section by stating that the analyses I have provided to determine the appropriate cost of equity for Green Mountain Power in my recent Testimony, filed April 13, 2018 in support of GMP's 2019 Rate Case is unchanged. As such, much of the discussion of the regulatory principles, proxy group selection, and technical details of those analyses, is appended to this Testimony, with only a brief summarization of those sections in the main body of this Testimony.

Q24. Please summarize your estimate of the cost of equity for Green Mountain Power.

A24. In determining the fair return on equity we are guided by the bellwether decisions of *Hope* and *Bluefield* and the prior precedent of this Commission, which provide that the ROE in this case should provide Green Mountain Power with the opportunity to earn a return on equity that is: 1) commensurate with returns on investments in enterprises having comparable risks; 2) adequate to attract capital on reasonable terms, thereby enabling Green Mountain Power to provide safe, reliable service; and 3) sufficient to ensure the financial soundness of Green Mountain Power's operations for customers. Accordingly, the allowed ROE should enable Green Mountain Power to finance capital expenditures on reasonable terms and provide the Company with the ability to raise capital under a full range of capital market circumstances. The regulatory principles essential to establishing a fair return on equity in this proceeding should take into consideration the current and expected capital market conditions that Green Mountain Power faces, as well as investors' expectations and requirements regarding both risks and returns. A reasonable ROE is both required for continued investment and to maintain the confidence of credit rating agencies in Vermont's regulatory environment. These returns typically are set without regard to the parent company's ownership, so that returns are set on a stand-alone basis.[12]

[12] The Commission has an established history of setting return on equity based on the analytical results of a proxy group analysis of comparable-risk, investor-owned utilities, as was done in several of the most recent Green Mountain Power rate proceedings. *See, e.g. Investigation into Green Mountain Power Corporation's tariff filing*, Docket Nos. 8190, 8191, Order of Aug. 25, 2014 at 21–22; *Investigation into Green Mountain Power Corporation's tariff filing requesting an overall rate increase in the amount of 4.98%, to take effect January 1, 2018*, Case No. 17-3112-INV, Order of Dec. 21, 2017 at 15.

A more complete review of the Regulatory Principles that apply to setting the cost of equity for Green Mountain Power can be found at Appendix B to this Testimony.

Since the ROE is a market-based concept and Green Mountain Power is not publicly traded, it is necessary to establish a group of companies that is both publicly traded and comparable to Green Mountain Power (a "proxy group"). Even if Green Mountain Power was a publicly traded entity, it is possible that transitory events could bias the Company's market value in one way or another in a given period of time. A significant benefit of using a proxy group is the ability to mitigate the effects of anomalous events that may be associated with any one company. The proxy companies used in my ROE analyses possess a set of business and operating characteristics similar to Green Mountain Power's vertically integrated electric distribution operations, and thus provide a reasonable basis for the estimates of ROE. For a more complete discussion of my selection criteria and the companies selected for my proxy group, please see Appendix C.

Q25. What models did you use in your ROE analyses?

A25. I have considered the results of several ROE estimation models, including the Constant Growth DCF, Multi-Stage DCF, Risk Premium, and CAPM models. When faced with the task of estimating the cost of equity, analysts are inclined to gather and evaluate as much relevant data (both quantitative and qualitative) as can be reasonably obtained. Consistent with the Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591 (1944) ("*Hope*") finding, "[I]t is the result reached, not the method employed, which

is controlling." I weight the results of these three primary methodologies equally to arrive at my recommendation. My technical ROE analyses can be found in Appendix D.

Q26. Please provide the results of your various models in determining the appropriate ROE for Green Mountain Power.

A26. My results are shown below in Figure 2.

Figure 2 Summary of ROE Analyses Results

Constant Growth DCF			
	Mean Low	Mean	Mean High
30-Day Average	7.93%	8.91%	9.89%
90-Day Average	7.67%	8.65%	9.62%
180-Day Average	7.65%	8.62%	9.60%
Multi-Stage DCF - Forecasted GDP Growth			
	Mean Low	Mean	Mean High
30-Day Average	8.08%	8.37%	8.67%
90-Day Average	7.80%	8.07%	8.36%
180-Day Average	7.78%	8.05%	8.33%
Multi-Stage DCF - Historical GDP Growth			
	Mean Low	Mean	Mean High
30-Day Average	9.08%	9.36%	9.65%
90-Day Average	8.81%	9.07%	9.35%
180-Day Average	8.79%	9.05%	9.32%
Overall DCF Average Result	**8.18%**	**8.68%**	**9.20%**
Capital Asset Pricing Model			
	Bloomberg Beta		Value Line Beta
CAPM	10.33%		11.60%
Overall CAPM Average Result	**10.97%**		
Treasury Yield Plus Risk Premium			
	Current 30-day Average Treasury Bond Yield	Near-Term Blue Chip Forecast Yield	Long-Term Blue Chip Forecast Yield
Risk Premium Analysis	9.87%	10.06%	10.34%
Overall RP Average Result	**10.09%**		
Average of Results			
	Mean Low	**Mean**	**Mean High**
All Methods	**9.46%**	**9.91%**	**10.38%**

V. BUSINESS RISK ANALYSES

Q27. Please provide an overview of your business risk analysis as it relates to the new Plan.

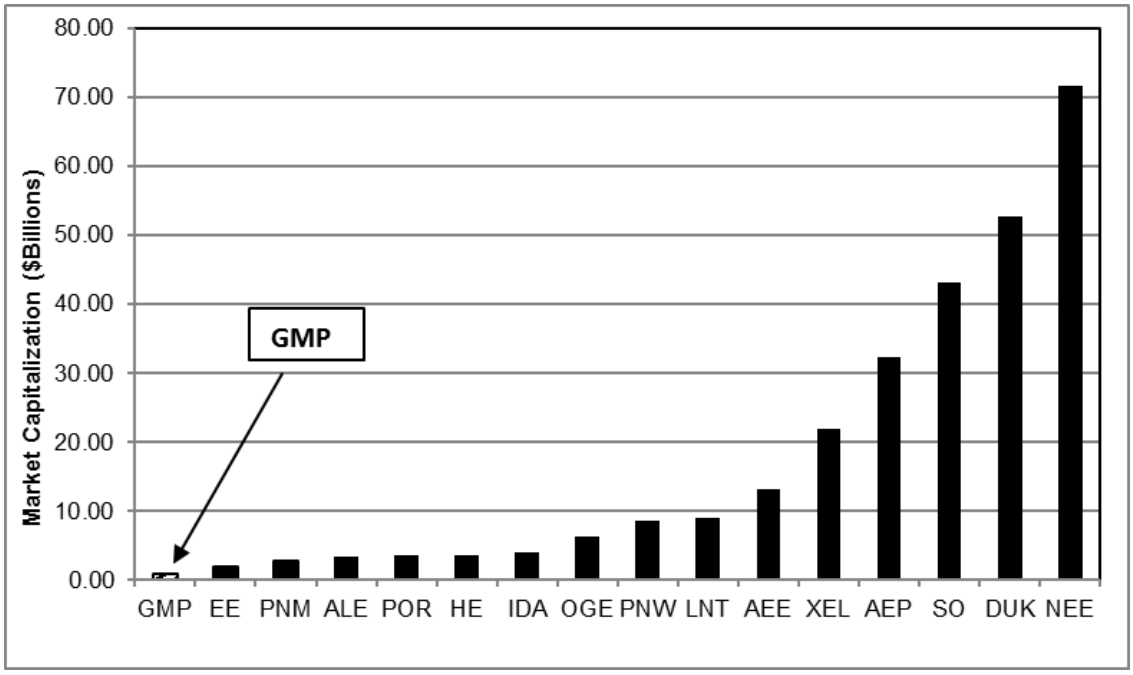
A27. This testimony evaluates business risk for GMP with the new Plan, without it, and how the proposed new Plan impacts GMP's overall level of risk relative to the proxy group. On balance, I find that the new Plan is risk neutral compared to the Former Plan. Revenue requirement recovery is enhanced under the new Plan with full decoupling, but cost recovery for capital additions is capped under the new Plan, which is more challenging than the Former Plan that provided recovery for forecast capital additions. Further, savings achieved by O&M efficiencies under the new Plan are passed fully to customers for the duration of the Plan, eliminating any potential upside for GMP in achieving O&M efficiencies. Further, O&M levels are essentially fixed at the inception of the Plan, with the exception of a few minor O&M categories. Considering the risk profile impact on GMP for the new Plan in concert with other risks in GMP's profile that differentiate it from the proxy group (i.e., effects of small size, tax reform, distributed generation, net-metering) lead me to conclude that GMP's overall business risk is comparable to slightly higher than the proxy group.

A. Small Size

Q28. To what extent does Green Mountain Power's relatively small size affect its risk profile?

A28. The small size of Green Mountain Power relative to the proxy group companies is an important risk factor in determining the Company's cost of equity. Substantial academic literature recognizes that smaller companies require higher returns than larger companies, even after the relative illiquidity of smaller company stock is taken into account. Figure 3 (see also **Exhibit GMP-JMC-4**) shows Green Mountain Power's implied market capitalization relative to that of the proxy group companies.

Figure 3: Market Capitalization of Green Mountain Power vs. Proxy Group



Green Mountain Power's small size relative to the proxy group companies means that the Company's earnings and cash flows may be disproportionately affected by events or

disruptions better absorbed by larger utilities. For example, one single, extremely large storm in GMP's service territory could potentially absorb all available capital resources and threaten GMP's viability, whereas larger utilities are better able to financially handle these events. GMP does not have the customer base or capitalization to absorb costly weather events. These risks affect the return required by investors for smaller companies. As the data above indicates, the Company is very small compared to the proxy group companies used for the ROE analysis.

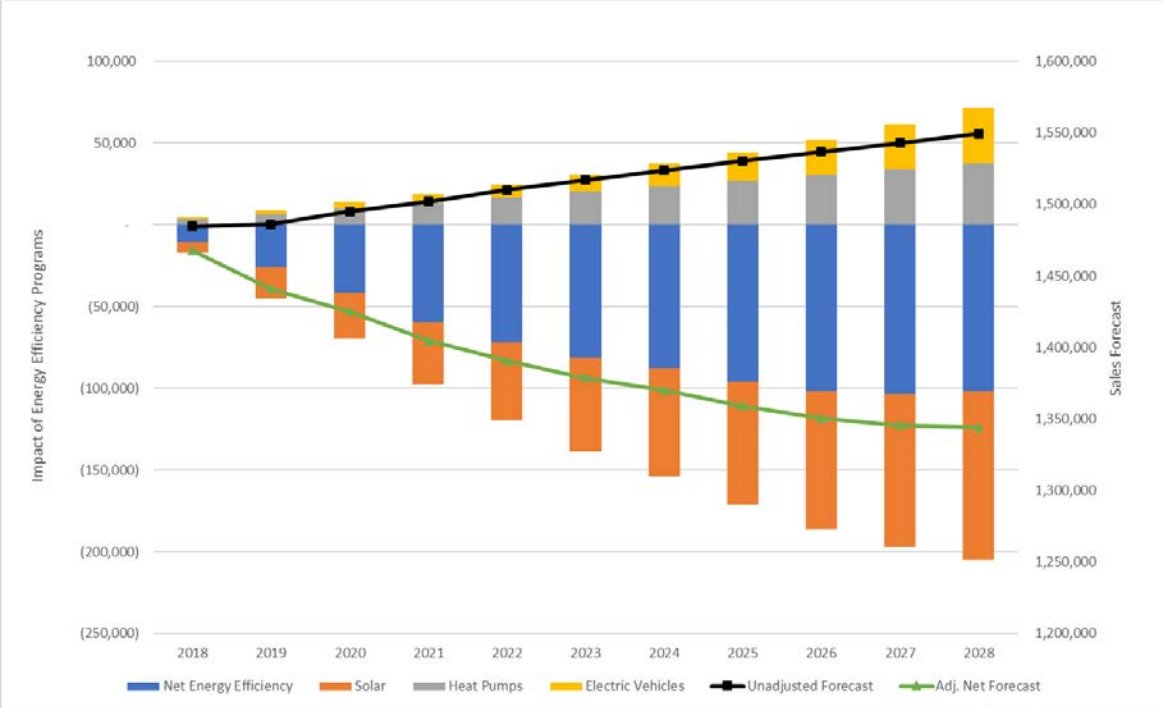
Q29. Is there declining demand on GMP's distribution system?

A29. Most definitely. According to a recent budget forecast report issued by Itron, Inc. for Green Mountain Power, residential MWh sales (comprising approximately 43 percent of total sales revenues) has declined at a rate of roughly 1 percent per year since the recession in 2008 and is expected to continue to decline by roughly the same amount through 2028 (the end of the forecasted period). The last several years have experienced a more dramatic decline of 2.2 percent per year.[13] As shown in Figure 4, GMP's otherwise potentially increasing sales forecast is markedly impacted by the growth of clean energy initiatives on GMP's system. While some of these initiatives, such as heat pumps and electric vehicles, have the potential to increase sales, those increases are more than offset by decreased sales associated with energy efficiency and net-metered solar penetration in GMP's service territory. Together, these two initiatives (efficiency and net-metering) are

[13] Itron, Inc., *Green Mountain Power 2019 Budget Forecast Report*, (April 2, 2018), at pp. 2-6, 33, provided as Exhibit GMP-DCS-2 in the Prefiled Testimony of Douglas Smith in this matter.

expected to offset sales growth by 17,003 MWh in 2018, ramping up to 205,093 MWh by 2028. It will be critical for GMP to continue its ability to recover its revenue requirement despite its declining sales. Historically, GMP's rate plan has partially decoupled revenue and sales, and provided some protection against declines in sales volume. Without a decoupling mechanism to provide this important protection going forward, GMP would be more exposed to earnings volatility and less able to weather unexpected cash flow pressures.

Figure 4: Disaggregated Residential Sales Forecast (MWh) 2018-2028



Source: Itron, Inc. 2019 Forecast, Table 3

B. Regulatory Risks

Q30. Do credit rating agencies consider regulatory risk in establishing a company's credit rating?

A30. Yes, absolutely, it is one of the key drivers of credit rating decisions. S&P, Moody's, and Fitch all consider regulatory risk in establishing credit ratings for public utilities. In particular, Moody's has published a report quantifying the importance of this metric. Moody's establishes credit ratings based on four key factors: (1) regulatory framework; (2) the ability to recover costs and earn returns; (3) diversification; and (4) financial strength, liquidity, and key financial metrics. Of those criteria, regulatory framework and the ability to recover costs and earn returns are each given a broad rating factor of twenty-five percent. Therefore, Moody's assigns regulatory risk a fifty percent weighting in the overall assessment of business and financial risk for regulated utilities.[14]

Q31. How does the regulatory environment affect a utility's access to and cost of capital?

A31. The regulatory environment affects both the access to and cost of capital in several ways. First, the proportion and cost of debt capital available to utility companies are influenced by the rating agencies' assessment of the regulatory environment. As noted by Moody's, "[f]or rate-regulated utilities, which typically operate as a monopoly, the regulatory environment and how the utility adapts to that environment are the most important credit considerations."[15] Moody's further notes:

[14] Moody's Investors Service, *Regulated Electric and Gas Utilities* (December 23, 2013) at 6.
[15] Ibid, at 9.

> Utility rates are set in a political/regulatory process rather than a competitive or free-market process; thus, the Regulatory Framework is a key determinant of the success of the utility. The Regulatory Framework has many components: the governing body and the utility legislation or decrees it enacts, the manner in which regulators are appointed or elected, the rules and procedures promulgated by those regulators, the judiciary that interprets the laws and rules and that arbitrates disagreements, and the manner in which the utility manages the political and regulatory process. In many cases, utilities have experienced credit stress or default primarily or at least secondarily because of a break-down or obstacle in the Regulatory Framework – for instance, laws that prohibited regulators from including investments in uncompleted power plants or plants not deemed "used and useful" in rates, or a disagreement about rate-making that could not be resolved until after the utility had defaulted on its debts.[16]

It also is important to recognize that regulatory decisions regarding the authorized ROE and capital structure have direct consequences for the utility's internal cash flow generation (sometimes referred to as "Funds Flow from Operations," or "FFO"). Since credit ratings are intended to reflect a company's ability to fund financial obligations, the ability to internally generate the cash flows required to meet those obligations (and to provide an additional amount for unexpected events) is of critical importance to debt investors. Two of the most important metrics used to assess that ability are the ratios of FFO to debt and FFO to interest expense, both of which are directly affected by regulatory decisions regarding the appropriate rate of return and capital structure. Rating agencies could become concerned about the adequacy of a utility's funds from operations in light of the combined effect of Tax Reform and interest rate movements in the broader economy, particularly where the utility has a ROE at the low end of the industry. Insights

[16] Ibid.

from the ratings agencies, on the impact of Tax Reform on regulated utilities are included in Appendix A.[17]

Q32. How does Green Mountain Power's regulatory jurisdiction compare to that of the proxy companies?

A32. I understand that the environment has been generally constructive, allowing the Company to maintain a healthy financial profile and to pursue innovative electric initiatives for customers. The Company has in recent years utilized an annual refresh of each element of its cost of service under the Former Plan, which has provided GMP the opportunity to earn its allowed return. I have performed an analysis that compares the ranking of regulatory commissions developed by Regulatory Research Associates ("RRA") for each utility in the proxy group to the Vermont PUC. RRA performs this ranking based on its assessment of how investors perceive the regulatory risk associated with ownership of utility securities in that jurisdiction, specifically reflecting its assessment of the probable level and quality of earnings to be realized by the State of Vermont's ("State") utilities as a result of regulatory, legislative, and court actions. As shown in **Exhibit GMP-JMC-5**, the relative perception of regulatory risk for Green Mountain Power is very similar to the jurisdictions for the proxy group companies. The Vermont regulatory environment is currently ranked "Average", while the proxy group is also ranked as "Average." Maintaining a fair and reasonable ROE in relation to other jurisdictions will be a key factor in keeping this ranking.

[17] *See* pages A-12 through A-14.

Q33. Do you anticipate that GMP's risk profile will be impacted by the transition to the proposed Regulatory Plan?

A33. No, as long as the return is set appropriately, I view the new Plan as overall risk neutral for Green Mountain Power. My ROE recommendation for the 2019 Rate Case was based on the assumption that GMP would continue to have the same level of regulatory and credit support under its new Plan as it had under its Former Plan and Interim Plan. As such, the risk aspects of the new Plan are factored into my recommendations and I assume that such a transition will maintain the Company's risk profile near its current level.

Q34. Has GMP proposed a program to refund tax savings to customers?

A34. Yes, it has. As I discussed in my Direct Testimony filed on April 13, 2018, GMP has established an aggressive plan to refund the significant portion of ADIT it carries on its books that is not "protected" by the IRS rules allowing for straight-line recovery of excess ADIT over the life of the asset. GMP is moving aggressively to refund those amounts to customers as quickly as possible without running afoul of cash flow and debt constraints. GMP has already refunded $6 million to customers for rate year 2018 and plans to refund an additional $27.4 million over the course of 2019. This will impact cash flows and will increase borrowing requirements as excess ADIT is refunded to customers. Tax Reform has significantly and negatively impacted the utility risk profile, especially for utilities such as GMP that have taken an aggressive stance to refund ADIT excesses to customers as soon as practicably possible.

Q35. Are there other regulatory risks that distinguish the Company relative to the proxy group?

A35. Yes. The State has targeted fulfilling ten percent of its electric requirements with distributed generation by 2032.[18] Vermont is ranked No. 2 for states leading the way in clean energy, just behind California, and leads the nation in clean energy jobs per capita.[19] Additionally, as discussed previously in my testimony, aggressive efficiency measures have contributed and are forecast to continue to contribute to declining loads. To achieve its distributed generation and efficiency objectives, the utility will be required to recover its largely fixed cost of service on declining electric sales. This has led to and will continue to cause upward pressure that could render GMP's rates uncompetitive with alternative energy sources and run the risk of stranded system assets. Green Mountain Power has responded by being at the forefront of innovation, providing its customers with the means to self-generate their own electricity and sell back to the grid. The Company is driving change and is focused on creating new revenue paths to support all of the customers it serves. GMP operates in one of the top ten states for solar electric generation per capita driven by solar-friendly net-metering policies, and according to a study performed by IHS Market, GMP's service territory alone ranks 2nd in the country (just behind Hawaii) for estimated distributed solar capacity as a percent of peak load.[20] This

[18] Gideon Weissman, Frontier Group and Bret Fanshaw and Rob Sargent, Environment America Research & Policy Center, *Lighting the Way 4: The Top States that Helped Drive America's Solar Energy Boom in 2015* (July 2016) at 22.
[19] Union of Concerned Scientists, *Clean Energy Momentum, Ranking State Progress* (April 2017) at 2-3.
[20] Green Mountain Power Comments, Biennial Update of Net-Metering Program, Case No. 18-0086-INV (March 15, 2018) at 3.

has led to and will continue to cause upward rate pressure that could render GMP's rates uncompetitive with alternative energy sources and run the risk of stranded system assets. To sustain its financial stability for both the customers and investor, the Company must develop alternative revenue sources to offset its declining customer load, presenting unique risks for Green Mountain Power, particularly when considering its size relative to the proxy group, to weather significant negative events such as large storms, unforeseen capital investment needs, etc. Further exacerbating these risks are the cash flow management challenges presented by the 2017 Tax Reform and GMP's immediate return of customer-funded excess ADIT balances, discussed in the Appendices of this Testimony. These risks are important as GMP sees the significant expansion of distributed generation in its service territory. Given these real risks of cost recovery, it is crucial to have provisions in the regulation plan that mitigate these risks, such as the power supply adjustor and full revenue decoupling proposed in the new Plan which provide the opportunity to recover GMP's revenue requirement and cost of service to the extent that variances exceed deadbands.[21]

Q36. What do you conclude with respect to Green Mountain Power's regulatory risk relative to the proxy group?

A36. In the areas I evaluated, Green Mountain Power has greater business risk than the proxy group with respect to its small size, the potential loss of load from behind-the-meter

[21] The deadband for the Power Supply Adjustor is $150 thousand, the deadband for Earnings Sharing Adjustment Mechanism is 50 basis points, and there is a $1.2 million deductible for major storm cost recovery under GMP's exogenous cost recovery mechanism.

generation and efficiency measures. However, I find the Plan provides some mitigation during the term of the Plan for declining volumetric use and cost recovery certainty through its Revenue Adjustor and its Power Supply Adjustor mechanisms. However, capital additions and O&M are fixed and capped at the inception of the Plan. The Plan also provides some (albeit limited) flexibility to adjust certain costs during its term, providing additional risk mitigation. With the mixture of positive and negative effects of the Plan in addition to GMP business risk that is external to the Plan, I consider Green Mountain Power's overall business risk to be comparable to slightly higher than the proxy group companies, but as I view them to be roughly equivalent I have not recommended a risk adjustment. Without the Plan, GMP would possess greater business risk than the proxy group companies on average.

VI. CAPITAL STRUCTURE

Q37. What is Green Mountain Power's historical and proposed capital structure?

A37. The Company is currently authorized a common equity ratio of 48.60 percent and is proposing in this proceeding that its regulatory capital structure allow 50.0 percent equity during the term of the Plan, which is consistent with its proposal for the 2019 Rate Case.

Q38. How does the capital structure affect the cost of equity?

A38. The capital structure relates to a company's financial risk, which represents the risk that a company may not have adequate cash flows to meet its financial obligations. Having adequate cash flows to meet a Company's financial obligations is a function of the

percentage of debt (or financial leverage) in its capital structure. In that regard, as the percentage of debt in the capital structure increases, so do the fixed obligations for the repayment of that debt. Consequently, as the degree of financial leverage increases, the risk of financial distress (i.e., financial risk) also increases.[22] Since the capital structure can affect a company's overall level of risk, it is an important consideration in establishing the rate of return.

Q39. How did you assess the reasonableness of Green Mountain Power's capital structure with respect to the proxy group?

A39. The reasonableness of GMP's capital structure with respect to the proxy group was assessed by calculating the weighted average capital structures for each of the proxy group operating companies on a quarterly basis for the four quarters through Q3 2017 and comparing that average to GMP's proposed capital structure of 50 percent. Because I have selected a group of risk-comparable companies for GMP's proxy group, it is appropriate to draw conclusions on the reasonableness of GMP's proposed capital structure and the consistency with industry standards for companies with commensurate risk by comparison to the proxy group average common equity ratio. As shown in **Exhibit GMP-JMC-6**, the Company's historical common equity ratio of approximately 50 percent is slightly below the mean common equity ratio of 53.0 to 54.0 percent for the proxy group operating companies over this period.

[22] *See* Roger A. Morin, Public Utility Reports, Inc., *New Regulatory Finance* (2006) at 45-46.

Q40. What is your conclusion regarding the appropriateness of Green Mountain Power's capital structure in this proceeding?

A40. Based on the analysis presented in **Exhibit GMP-JMC-6**, my conclusion is that a capital structure for Green Mountain Power of 53.0 to 54.0 percent would be appropriate, but that a common equity ratio of 50 percent is adequate. Sufficient equity in the capital structure is an important factor for maintaining the Company's financial integrity and an investment grade credit rating.

VII. FORMULAIC APPROACH TO ADJUSTING ROE DURING THE PLAN

Q41. What are the possible approaches to setting ROE for a Multi-Year Rate Plan?

A41. The possible approaches to setting ROE for a multi-year rate plan may vary from setting a fixed ROE for the term of the Plan, annually resetting ROE by rate case, or rebasing ROE at the inception of the rate plan and adjusting ROE by formula for successive years under the Plan. The benefit of a fixed ROE is that it is administratively expedient and transparent but could provide a ROE that is either too high or too low if there are significant changes in the capital market environment over the term of the plan, particularly for plans that are longer term. Resetting ROE on an annual basis provides the benefit of an evidentiary hearing to produce a fair return but is administratively burdensome due to frequent re-litigation. The formulaic methodology provides an approach to approximating the results of periodic rate hearings without expending significant time and resources for a full evidentiary rate hearing on cost of capital. As a result, it is less burdensome than annual resets, and if designed correctly, has the

advantage over fixed ROEs of moving the ROE during the term of the plan to address changing economic conditions.

Q42. How prevalent are automatic adjustment mechanisms in the U.S. and what benefit do they provide?

A42. In the U.S., formulaic approaches to determining ROE have been adopted by several regulatory jurisdictions, including Vermont, typically coinciding with a multi-year or performance-based rate plans. Litigated ROE proceedings remain the prevalent means for setting ROE in the U.S. However, formula adjustment mechanisms that are well-specified, carefully monitored, with a correct starting point, and that bear a reasonable relationship to changes in utility equity returns, can be an expedient methodology for setting the return for ratemaking purposes with minimal regulatory burden during the term of a multi-year plan. A ROE formula should be sufficiently forward looking for the plan period and should adjust not only for changes in the risk-free government bond yield but also the credit spread for corporate bonds.

Q43. Why is it important to incorporate the corporate credit spread into the ROE Adjustment Formula?

A43. Generally, corporate bond yields and government bond yields move closely in tandem. However, during periods of market disruption government bond yields and corporate bond yields may become dislocated from one another and begin moving in opposite directions. During the 2008 and 2009 global financial crisis, government bond yields, which often served as the basis for ROE adjustment formulas continued their decline to

unprecedented low levels while corporate risk premiums and corporate capital costs spiked. These factors illuminated the inherent flaws in ROE adjustment mechanisms based entirely on the movement in government bond yields. Ultimately, a single variable is unlikely to capture the many causes of changes in ROE.

Q44. Has Vermont relied on a formulaic adjustment mechanism for ROE in the past?

A44. Yes. Vermont has historically used an indexing formula to adjust ROE. The ROE adjustment formula in GMP's Former Plan adjusted ROE by 50 percent of the change in 10-year government bond yields. As indicated above, in periods of market disruption, a formula based solely on government bond yields may become dislocated from corporate capital costs and may produce a ROE that does not satisfy the standard for a fair return on equity for regulated utilities. A formula that also considers corporate capital costs separately would be superior to GMP's formula in its Former Plan.

Q45. Please describe the ROE Adjustment Mechanism that you are recommending for Green Mountain Power.

A45. I have studied the issue of developing formulaic adjustments for setting ROE, and in my opinion, the best operating formula in practice is the Ontario Energy Board ("Ontario" or "OEB") formula. This formula adjusts ROE by 50 percent of the change in forecast government bond yields over the upcoming year and also by 50 percent of the change in utility corporate credit spreads. The Ontario formula relies on near term forecasts for 10-year government bond yields, and adds a recent historical term spread between 10-year and 30-year corporate bond yields to derive the 30-year forecast. The formula also uses

recent historical credit spreads, based on the 30-day daily average, between utility corporate A bonds and 30-year government bonds. The formula is similar to other formulas in practice (*e.g.*, the California formula), but has the additional benefit of using forecast parameters where possible, so that it is truly forward looking. My proposed formula, and a brief summary of the history which lead to the Ontario formula are detailed below.

The Ontario Energy Board decided in its 2009 Consultative Process that the specification of the relationship between interest rates and the equity risk premium in the then prevailing Ontario formula would be improved by the addition of a term that incorporates corporate bond yields. The OEB determined that it would use a utility bond spread based on the difference between the Bloomberg 30-year A-rated utility Bond Index yield and the 30-year government bond yield. The OEB also determined that the sensitivity of the formula to bond yields should be reduced from 0.75 to a 0.50 adjustment factor for each 1 percent change in the long-term bond yield forecast. My proposed formula (modeled after the Ontario formula) is given by the following equation:

$$\boldsymbol{ROE_t = ROE_{t-1} + \left[0.50 \times (BF_t - BF_{t-1}) + 0.50 \times \sum_i \frac{30\_UtA\_B_{i,1} - 30\_B_{i,1}}{i_t}\right]}$$

In this formula, the 30-year bond forecast ("BF") is combined in equal weighting with the average daily spread for the most recent month, between A-rated Utility Bonds ($30\_UtA\_B_{i,1}$) and 30-year Government Bonds ($30\_B_{i,1}$). The 30-year bond forecast is

computed as the average of the Blue Chip 30-Year Treasury forecast for 3 and 12 months out; and the A-rated Utility bond spread is calculated by taking the daily difference between the Bloomberg Fair Value Utility A-rated Bond Index (identified as series, "C03630Y" in the Bloomberg terminal) and the actual 30-year Treasury bond yield, averaging the daily difference for a given month.

Q46. Have you considered how the proposed ROE adjustment formula compares to the ROE adjustment formula in the Former Plan?

A46. Yes, I have. A formula tied exclusively to government bond yields, such as the methodology previously used in Vermont, tends to be more variable than the formula I have proposed, whereas the addition of the corporate utility credit spread as a formula parameter offsets to some degree the absolute change in treasury yields and can be considered a moderating feature. In addition, in periods of market distress, treasury yields and corporate capital costs (as measured here by the corporate utility credit spread over the 30-year Treasury) have diverged (*e.g.*, 2008-2009), when government bond yields decreased while corporate credit risk and corporate capital costs were rising. While Vermont's prior methodology could still be considered as a possible indexing method, I view the formula that I have proposed to provide greater stability and robustness to remain effective under a variety of market conditions.

VIII. CONCLUSIONS AND RECOMMENDATION

Q47. What is your conclusion regarding a fair ROE for Green Mountain Power?

A47. I would normally recommend a rate of 10 percent based on the quantitative analyses I provided in my Direct Testimony. In this analysis I average the Multi-Stage and Constant Growth DCF approaches to obtain a single average DCF result that is averaged with the results of my CAPM and Bond Yield Risk Premium Methodologies. I believe this provides an appropriate weighting of my DCF results in today's economic conditions, when utility valuations are unusually high and results from the DCF model understate investor required returns for regulated utilities. The resulting reasonable range is 9.9 to 10.4 percent. GMP is proposing a ROE of 9.3 percent for the inception of its Plan, which is well below the low end of the reasonable range supported by my analysis. This reinforces the importance of having an index mechanism that adjusts the ROE over the course of the MYRP. Though GMP's requested 9.3 percent ROE is below the level I would recommend, my ROE indexing proposal provides the opportunity to participate in potential increases in the cost of equity over the term of its Plan. Thus I find the starting point low, but not unreasonably so, given the Company's ability to participate in future upward movements in ROE.

Q48. Does this conclude your pre-filed Direct Testimony?

A48. Yes, it does.

APPENDIX A: ECONOMIC AND CAPITAL MARKET CONDITIONS

The cost of equity for regulated utility companies is being affected by several key factors in the current and prospective capital markets, including: (1) the prevailing economic conditions, including the still relatively low interest rate environment and the corresponding effect on valuations and dividend yields of utility stocks relative to historical levels; (2) the market's expectation for higher interest rates; and (3) recent federal tax reform. In this section, I discuss each of these factors and how it affects the models used to estimate the cost of equity for regulated utilities.

It is important to consider prevailing and expected conditions in the general economy and financial markets because the authorized ROE for a public utility should allow the utility to attract investor capital at a reasonable cost under a variety of economic and financial market conditions, as underscored by the *Hope* and *Bluefield* decisions. The standard ROE estimation tools, such as the DCF, CAPM, and Risk Premium models, each reflect the state of the general economy and financial markets by incorporating specific economic and financial data. These inputs are, however, only samples of the various economic and market forces that determine a utility's required return. Consideration must be given to whether the assumptions relied on in the current or projected data are appropriate. If investors do not expect current market conditions to be sustained in the future, it is possible that the ROE estimation models will not provide an accurate estimate of investors' forward-looking required return. Therefore, an assessment of fluctuating market conditions is integral to any ROE recommendation.

Each of the ROE estimation models is affected by market conditions. The historically low bond yields prevailing over the last several years have caused a shift in investments away from low-return Treasury bonds into lower-risk equities, such as utility stocks. As prices for utility stocks have increased, the dividend yield (calculated as the dividend divided by price) has decreased, resulting in a lower ROE using the DCF model than would occur during more normal economic conditions.

With respect to the CAPM and Risk Premium models, yields on Treasury bonds directly affect the calculation of the ROE under both models. Treasury bond yields are used as inputs for the risk-free rate in the CAPM, and similarly, corporate bond yields are priced off Treasury bonds and generally move in tandem. Accordingly, Risk Premium models that use either Treasury or corporate utility bond yields are also directly impacted by the level of interest rates. Generally, low Treasury bond yields result in low estimates of ROE in the CAPM and Risk Premium models, unless there has been an offsetting increase in the risk premium.

The U.S. economy has transitioned from the protracted slowdown that followed the 2008 financial crisis and the ensuing severe economic recession to a period of sustained economic growth. We continue to be in a relatively low interest rate environment, though rates for all maturities have increased over the past two years and all indications are that interest rates will continue to rise over the next several years. As the economy continues to expand, the Federal Reserve is expected to continue gradually increasing short-term interest rates in order to sustain the desired balance between

unemployment and consumer price inflation at 2 percent.[23] Though bond yields have not yet fully responded to the Fed's tightening of monetary policy, Federal policy has clearly entered a new period of transition towards normalization.

In 2017, GDP grew at a nominal year-over-year rate of 4.1 percent[24] and a real rate of 2.3 percent.[25] Real GDP is projected to increase at an annual rate of 2.8 percent for 2018 and 2.5 percent for 2019,[26] indicating a steady progression of real economic growth. The U.S. unemployment rate stands at 4.1 percent as of February 2018, down sharply from its peak of 10.0 percent set in October 2009.[27] The unemployment rate is projected to decline to 3.9 percent in 2018, and 3.6 percent in 2019,[28] while the inflation rate (measured by the Consumer Price Index "CPI") is projected to rise above the Federal Reserve target of 2.0 percent to 2.4 percent in 2018, and 2.2 percent in 2019.[29] The U.S. economy has moderated from a brief period of rapid expansion in the last quarter of 2017, but continues to show growth and positive indications for employment rates and price levels.

A. Prevailing Economic Conditions—Including the Low Interest Rate Environment and Effect on Utility Dividend Yields

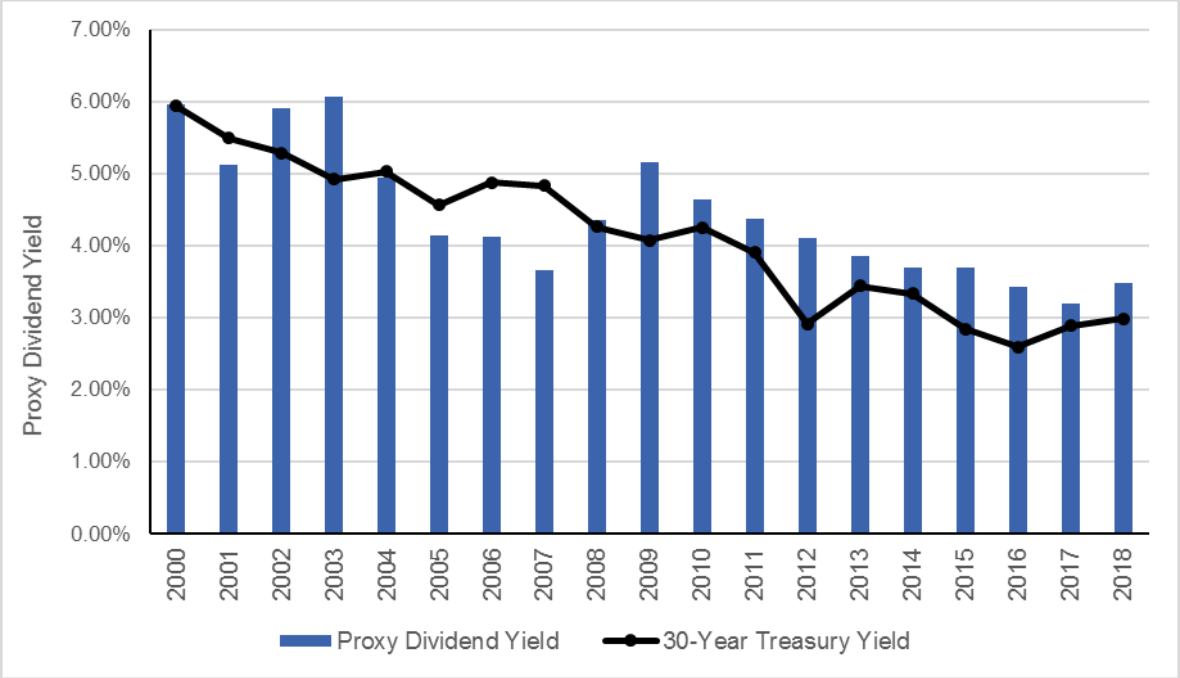
Extraordinary and persistent federal intervention in capital markets has artificially lowered government bond yields after the Great Recession of 2008-09, as the Federal

[23] FOMC, Federal Reserve press release, March 15, 2017.
[24] Bureau of Economic Analysis, Table 1.1.5. Gross Domestic Product, February 28, 2018 (calculated).
[25] Bureau of Economic Analysis, Table 1.1.6. Real Gross Domestic Product, Chained Dollars, February 28, 2018 (calculated).
[26] Blue Chip Economic Indicators, Volume 43, No. 3, March 10, 2018, at 3-4.
[27] Bureau of Labor Statistics, Table A-10. Selected unemployment indicators, seasonally adjusted, extracted March 22, 2018.
[28] Blue Chip Economic Indicators, Volume 43, No. 3, March 10, 2018, at 3–4.
[29] Ibid.

Open Market Committee ("FOMC") used monetary policy (both reductions in short-term interest rates and purchases of Treasury bonds and mortgage-backed securities) to stimulate the U.S. economy. As a result of very low returns on short-term government bonds, yield-seeking investors have been forced into longer-term instruments, bidding up prices and reducing yields on those investments. As investors moved along the risk spectrum in search of yields that met their return requirements, there has been increased demand for dividend-paying equities, such as utility stocks.

The period of abnormally low interest rates has affected the valuations and dividend yields of utilities. The Federal Reserve's accommodative monetary policy resulted in higher asset prices for many common stocks, including shares of public utility companies, as investors sought higher returns and more attractive yields than were being offered by bonds. Consequently, the share prices for many common stocks, especially dividend-paying stocks such as utilities, were driven higher while the dividend yields (which are computed by dividing the dividend payment by the stock price) decreased to levels well below the historical average. As shown in Figure A-1, yields on 30-year Treasury bonds have declined by 108 basis points since 2009, when the Federal Reserve began to actively manage interest rates as a result of the Great Recession, while dividend yields on electric utilities have declined by 204 basis points over this period. These trends have, however, reversed in recent months as bond yields are transitioning to higher levels.

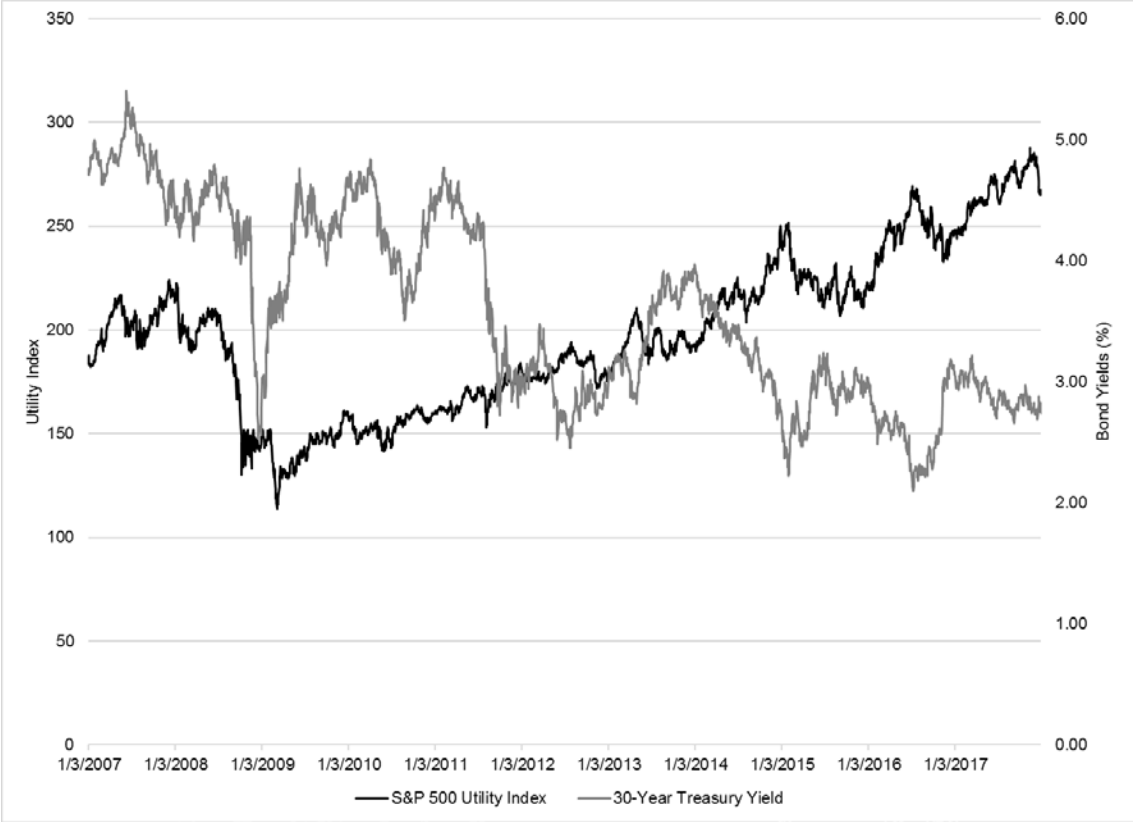
Figure A-1: Dividend Yields for Electric Utility Stocks



Source: Bloomberg

The Standard & Poor's ("S&P") Utilities Index has similarly responded to recent changes in market conditions. Figure A-2, below, compares the S&P Utilities index to the yield on the 30-year Treasury bond from 2007 through February 2018. As shown in the chart, the S&P Utilities index increased steadily from the beginning of 2009 through early November 2017 as yields on 30-year Treasury bonds declined in response to federal monetary policy.

Figure A-2: S&P Utilities Index and U.S. Treasury Bond Yields 2007-2017



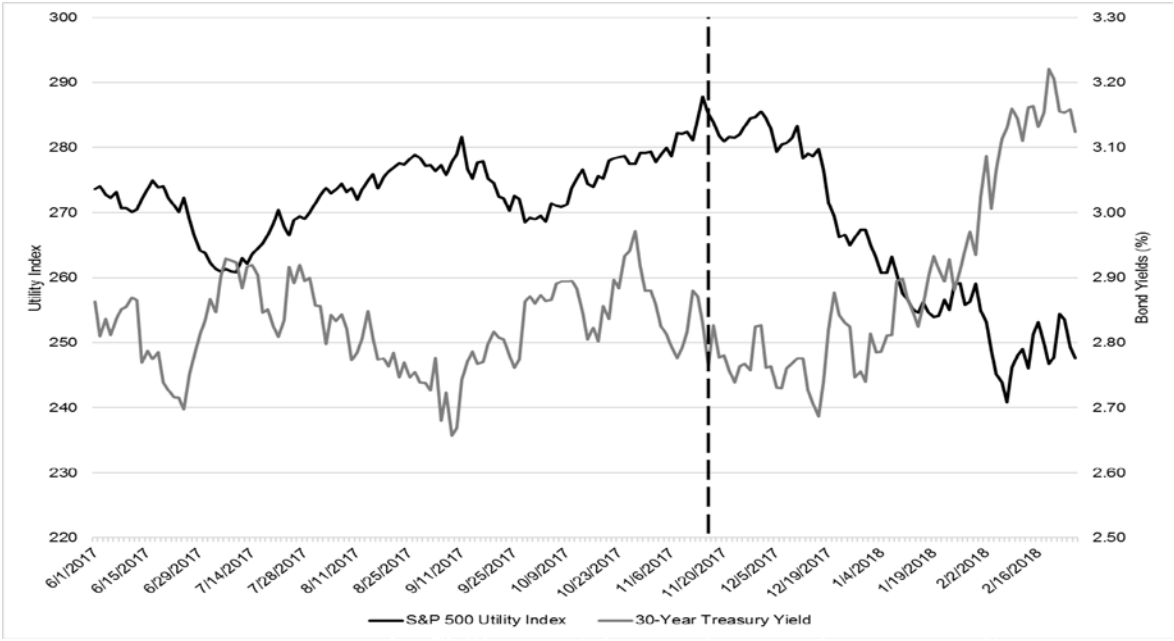
Source: Bloomberg

As shown in Figure A-3, below, recent market conditions, however, have seen some reversal in these trends. Responding to changes in interest rates and Federal tax reform, since the House of Representatives approved the initial version of the tax reform legislation on November 16, 2017 (the dotted vertical line on Figure A-3), the S&P Utilities Index has declined by approximately 12 percent, as yields on 30-year Treasury bonds have increased from 2.81 percent to 3.12 percent.[30] While these concurrent changes in stock valuations and bond yields will have some modest effect on the dividend yield in the DCF model and interest rates in my CAPM and Risk Premium models, they have not

[30] Comparison as of February 28, 2018.

fully reversed the trend of abnormally high utility stock prices and low interest rates and are still understating the forward-looking cost of equity for utility companies. Because of this, I equally weigh my DCF results with my CAPM and Risk Premium models, which rely on forward-looking bond yield projections.

Figure A-3: S&P Utilities Index and U.S. Treasury Bond Yields – 06/2017 – 02/2018



Source: Bloomberg

B. Expectations for Higher Interest Rates

Low interest rates are not expected to prevail for the long term. As much as the economy and borrowers (including utility customers) have benefited from a period of historically low interest rates, a combination of economic growth (and corresponding demand for capital) and gradual easing of accommodative monetary policy are expected to place upward pressure on interest rates as the economic cycle progresses over the next several years. For the month of February 2018, the average daily yield on the 30-year U.S. Treasury bond has increased slightly from where it was at this time last year (3.13 percent

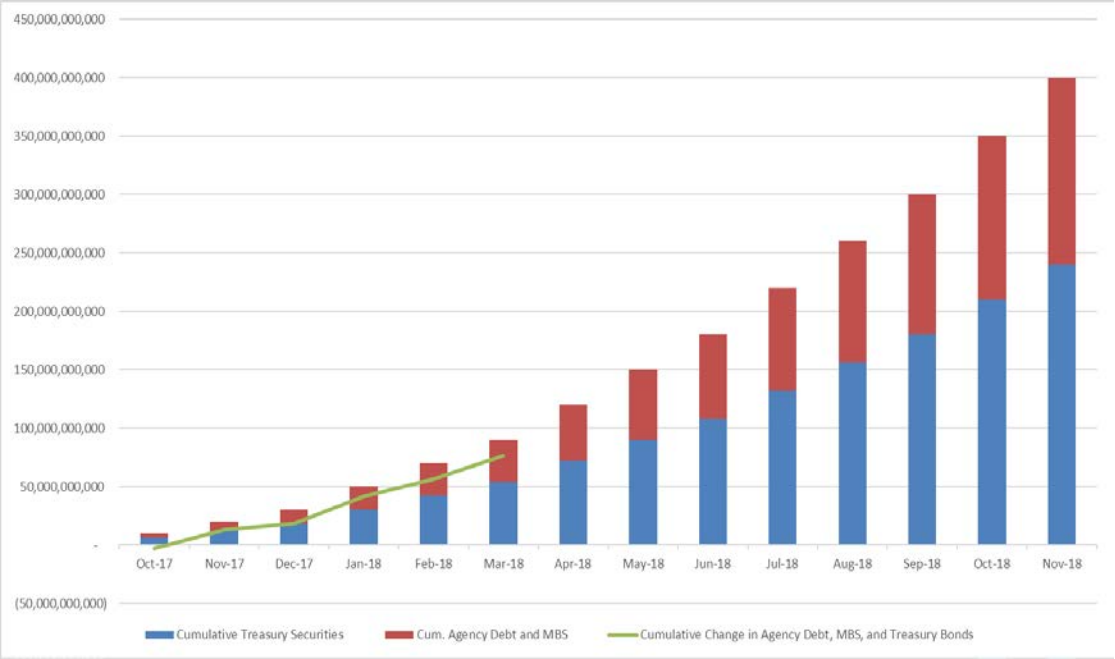
vs. 3.04 percent). In contrast, the consensus among leading economists and market participants is for the average yield on the 30-year U.S. Treasury bond to be 3.80 percent by the end of 2019 and 4.10 percent in the period from 2019 through 2023,[31] representing a projected increase of nearly a full percentage point in U.S. Treasury bond yields over the next several years.

Based on the strengthening economic outlook in the U.S. stemming from strong gains in job growth and low unemployment, a relatively stable inflation rate, and steady economic growth, the Federal Reserve is expected to continue raising short-term interest rates to sustain the desired balance between maximum employment and price stability.[32] The Federal Reserve has indicated that it intends to raise short-term rates to a targeted range of 2.10 to 2.40 percent by the end of year, implying two or three additional Fed rate hikes by the end of 2018.[33] Furthermore, in October 2017, the FOMC started reducing the size of the Fed's $4.5 trillion bond portfolio by no longer reinvesting the proceeds of the bonds it holds. In response to the Great Recession, the Fed pursued a policy known as "Quantitative Easing," in which it systematically purchased mortgage-backed securities and long-term Treasury bonds to provide liquidity in financial markets and drive down yields on long-term government bonds. Although the Federal Reserve discontinued the Quantitative Easing program in October 2014, it continued to reinvest the proceeds from the bonds that it held. Under the normalization policy, the FOMC intends to gradually

[31] Blue Chip Financial Forecasts, Volume 36, No. 12, December 1, 2017, at 14.
[32] FOMC, Federal Reserve press release, March 21, 2018.
[33] Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents under their individual assessments of projected appropriate monetary policy, March 2018.

reduce the Federal Reserve's securities holdings by $10 billion per month, initially, ramping up to $50 billion per month by the end of the first twelve months.[34]

Figure A-4: Fed Normalization Policy Relative to Cumulative Caps (2018)



Source: Federal Reserve Bank of New York, System Open Market Account Holdings as of March 28, 2018

As Figure A-4 (above) shows, the Fed has been slowly unwinding the effects of Quantitative Easing, though at a slower rate than the maximum capped levels reflected in the vertical bars. The Federal Reserve's announced unwinding plan informs investors' view that long-term interest rates will increase as the Federal Reserve gradually reverses the Quantitative Easing program that reduced those long-term rates. Furthermore, several analysts have suggested that the Federal Reserve's plan could cause sector rotation, as

[34] Federal Reserve press release, Addendum to the Policy Normalization Principles and Plans, as adopted effective June 13, 2017.

investors shift from utilities and telecom stocks to shares of banks and other sectors that benefit from rising interest rates.[35] This would tend to increase the cost of utility equity. The financial market's perspective also supports continued Fed increases in interest rates. According to the March 2018 issue of Blue Chip Financial Forecasts, 100 percent of those surveyed expected that the Federal Reserve would raise short-term interest rates at the March 2018 meeting,[36] which has been validated by this action. In response to the question regarding the amount of the increase in short-term interest rates by the Federal Reserve for 2018, 45.8 percent of those surveyed expected a total increase of 75 basis points, 41.7 percent expected a total increase of 100 basis points, 8.3 percent expected a total increase of 50 basis points, and 4.2 percent expected a total increase of 25 basis points.[37]

Data compiled by CME Group corroborates these views and shows that investors expect the federal funds rate to increase a total of between 75 and 100 basis points during 2018. The current target federal funds rate is 175 bps after the rate increase set at the March 2018 meeting. Figure A-5 summarizes the federal funds probabilities developed by CME group. The probability of a rate hike is calculated by adding the probabilities of all target rate levels above the current target rate for a given meeting date, e.g., the table indicates a 78.8 percent probability that the federal funds rate will reach a target rate of 175 to 200 basis points by the June 2018 meeting, and a 1.7 percent chance it will increase to between 200 and 225 basis points by June 2018, thus the probability of a rate hike above

[35] Reuters Business News, "Fed meeting could trigger stock sector rotation," September 15, 2017.
[36] Blue Chip Financial Forecasts, Vol. 37, Issue No. 3, March 1, 2018, at 14.
[37] *Id*.

the current level of 150-175 at the June meeting is 80.5 percent. The market expects further rate increases in 2018, shown by high expectations for target federal funds rates above the 150-175 bps range beginning in May 2018 through December 2018, with the greatest concentration of investors expecting two further 25 bps rate increases by the end of the year.

Figure A-5: Investor Expectations of Future Federal Funds Rate Increases[38]

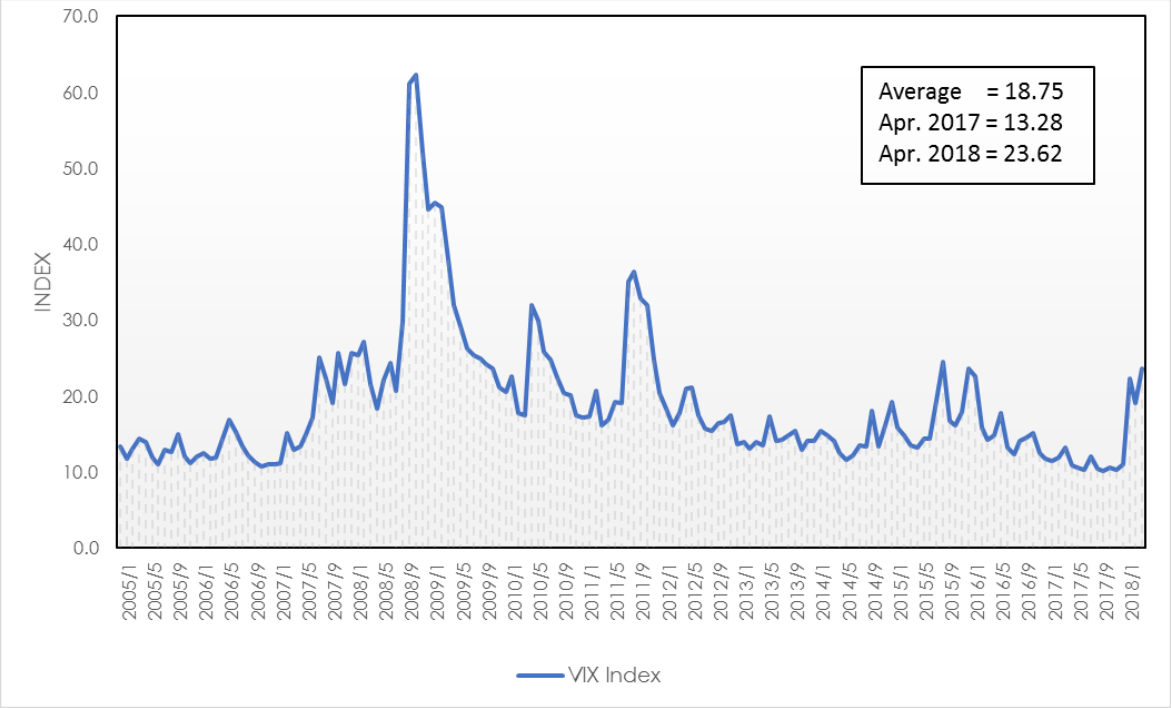
	MEETING PROBABILITIES																		
MEETING DATE	0-25	25-50	50-75	75-100	100-125	125-150	150-175	175-200	200-225	225-250	250-275	275-300	300-325	325-350	350-375	375-400	400-425	425-450	450-475
5/2/2018					0.0%	0.0%	97.9%	2.1%	0.0%										
6/13/2018			0.0%	0.0%	0.0%	0.0%	19.6%	78.8%	1.7%	0.0%	0.0%								
8/1/2018	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.8%	76.4%	4.7%	0.1%	0.0%	0.0%	0.0%						
9/26/2018	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.8%	39.8%	50.3%	3.0%	0.0%	0.0%	0.0%	0.0%	0.0%				
11/8/2018	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	6.0%	35.9%	49.1%	8.6%	0.4%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%		
12/19/2018	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	22.0%	42.9%	27.4%	4.2%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Investor confidence remains relatively high.[39] Market volatility (as measured by the CBOE Volatility Index, or "VIX index") has ticked upward in the last several months. The VIX index measures the implied volatility of the S&P 500 index option over the next 30 days (annualized for the upcoming 12 months) and is understood to be a leading indicator of market stress. As shown in Figure A-6 (below), the market volatility index was 23.62 on April 2, 2018, compared to 13.28 in April 2017 (when I last prepared my evidence for GMP). The average over the period January 2005 to April 2, 2018 is 18.75. Generally, increased volatility implies greater investment risk and increasing cost of equity.

[38] CME Group, FedWatch as of March 22, 2018.

[39] The State Street Investor Confidence Index (accessed through Bloomberg) averaged 102.97 from January 2005 to April 2, 2018. In April 2017 (when Mr. Coyne last filed evidence on behalf of GMP) the confidence metric was 96.9. As of April 2, 2018, the State Street confidence metric has risen to 111.9.

Figure A-6: VIX Index (Monthly Averages - 2005 to present)



Source: Bloomberg

As interest rates increase, the cost of equity for the proxy companies will also increase.

C. Impact of Tax Reform on the Cost of Equity

The negative effect of the recently passed Tax Reform on regulated utilities has drawn the attention of the credit rating agencies. Tax Reform is expected to reduce utility revenues due to the lower federal income taxes and the return of excess accumulated deferred income taxes ("ADIT"). This change in revenue is expected to reduce funds from operations ("FFO") metrics across the sector, and absent regulatory mitigation strategies, is expected to lead to weaker credit metrics and negative ratings actions for some utilities.[40]

[40] FitchRatings, Special Report, What Investors Want to Know, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector", January 24, 2018.

Moody's Investors Services ("Moody's") provided a summary of the implications of Tax Reform for investor-owned utilities. In that summary, Moody's indicated that while Tax Reform was credit positive for many sectors, it has an overall negative credit impact on regulated utility operating companies and their holding companies. This occurs for three primary reasons:

1. Utilities will collect less tax at the lower rate, reducing revenue. While the taxes are ultimately paid out as an expense, under the new law, utilities lose the timing benefit, reducing cash that may have been carried over a number of years.
2. Lowering taxes also creates an overcollection to be refunded to customers.
3. The loss of bonus depreciation means that utilities will be paying taxes starting in 2019 and 2020, earlier than under the prior tax law. This increases the taxable income of the utility.[41]

Moody's expects that the effect of these changes will be a decline in key financial cash flow to debt metrics for utilities, and recently issued a report changing the ratings outlook for several regulated utilities from stable to negative. Moody's noted that the rating change affected companies with a limited cushion for moderating deteriorating financial performance. Moody's expects that Tax Reform will lower key credit metrics for regulated utilities for some time, and it will be necessary for utilities to work with regulators to mitigate its impact.[42]

[41] Moody's Investors Services, "Tax Reform-US: Corporate tax cut is credit positive, while effects of other provisions vary by sector", December 21, 2017, at 6-7.

[42] Moody's Investor Services, Global Credit Research, Rating Action: Moody's changes outlooks on 25 US regulated utilities primarily impacted by tax reform, January 19, 2018.

Fitch Ratings ("Fitch") has also indicated that ratings actions due to Tax Reform will be guided by the response of regulators and the management of the utilities. Fitch notes that the solution will depend on the ability to manage the cash flow implications of Tax Reform, and that seeking an immediate return of tax savings to customers creates a decline in cash flow. Fitch states,

> The Tax Cuts and Jobs Act has negative credit implications for the regulated utilities and several utility holding companies over the short to medium term. A reduction in customer bills to reflect lower federal income taxes and return of excess ADIT to customers is expected to lower revenues and FFO across the sector. Absent mitigating strategies on the regulatory front, this is expected to lead to weaker credit metrics and negative rating actions for those issuers that have limited headroom to absorb the leverage creep.[43]

Fitch notes that strategies such as return of excess unprotected ADIT over a longer-term horizon, accelerated depreciation on some assets (to avoid potential stranded costs), and lower overall capital spending and/or higher authorized equity ratios or returns, could be employed to moderate impacts on credit metrics from passing on the entirety of excess unprotected ADIT immediately.[44]

[43] FitchRatings, Special Report, What Investors Want to Know, "Tax Reform Impact on the U.S. Utilities, Power & Gas Sector", January 24, 2018.
[44] Ibid.

APPENDIX B: REGULATORY PRINCIPLES

The foundations of public utility regulation require that utilities receive a fair rate of return sufficient to attract needed capital to maintain important infrastructure for customers at reasonable rates. The basic tenets of this regulatory doctrine originate from several bellwether decisions by the United States Supreme Court, notably Bluefield Waterworks and Improvement Company v. Public Service Commission of West Virginia, 262 U.S. 679 (1923) ("Bluefield"), and Federal Power Commission v. Hope Natural Gas Company, 320 U.S. 591 (1944) ("Hope"). In Bluefield, the Court stated:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties…
>
> The return should be reasonably sufficient to assure investor confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties.

Later, in Hope, the Court established a standard for the ROE that remains the guiding principle for ratemaking regulatory proceedings to this day:

> [T]he return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.

Regulated utilities rely primarily on common stock and long-term debt to finance permanent property, plant, and equipment, and short-term debt to finance working capital

requirements for expenditures such as power purchases. The allowed rate of return for a regulated utility is based on its weighted average cost of capital, where the costs of the individual sources of capital (i.e., debt and equity) are weighted by their respective book values. The ROE represents the cost of raising and retaining equity capital and is estimated by using one or more analytical techniques that use market data to quantify investor requirements for equity returns.

However, the ROE cannot be derived through quantitative metrics and models alone. To properly estimate the ROE, the financial, regulatory, and economic context in which the analysis takes place must also be considered. As the Commission has noted:

> Neither the law nor regulatory precepts prescribe a specific methodology for setting the appropriate return on equity. Instead, the [Commission] has substantial discretion to weigh factors so as to achieve the overarching goal of authorizing a return on equity that is fair and reasonable to all stakeholders. The critical element is the reasonableness of the result, not necessarily the methodology used to achieve it.[45]

The DCF, CAPM and Risk Premium approaches, while fundamental to the ROE determination, are still only models; one should not assume that the results of these models can be mechanistically applied without also using informed judgment to consider economic and capital market conditions and the relative risk of the utility whose ROE is being estimated compared to a group of proxy companies.

Based on these widely recognized standards, a fair return established for a regulated utility should provide a return on equity that is:

[45] Case No. 17-3112-INV, Investigation into Green Mountain Power Corporation's tariff filing requesting an overall rate increase in the amount of 4.98%, to take effect January 1, 2018. Order entered December 21, 2017, at 15.

- Commensurate with returns on investments in enterprises having comparable risks;
- Adequate to attract capital on reasonable terms, thereby enabling Green Mountain Power to provide safe, reliable service; and
- Sufficient to ensure the financial soundness of Green Mountain Power's operations for customers.

Importantly, a fair return must satisfy all three of these standards. The allowed ROE should enable the utility to finance capital expenditures on reasonable terms and provide the Company with the ability to raise capital under a full range of capital market circumstances. This ability was particularly evident during the financial crisis of 2008-09 when lesser rated companies, including utilities, struggled to raise capital and/or paid substantial premiums for access to capital.

The ratemaking process is premised on the principle that, in order for investors and companies to commit the capital needed to provide safe and reliable utility services, the utility must have the opportunity to recover the return of invested capital, and the market-required return on that capital. Because utility operations are capital intensive, regulatory decisions should enable the utility to attract capital on favorable terms. The financial community carefully monitors the current and expected financial condition of utility companies, as well as the regulatory environment in which they operate. In that respect, the regulatory environment is one of the most important factors considered by both debt and equity investors in their assessments of risk. It is therefore essential that the ROE take into consideration the current and expected capital market conditions that the utility faces, as well as investors' expectations and requirements regarding both risks and

returns. A reasonable ROE is both required for continued investment and to maintain the confidence of credit rating agencies. These returns typically are set without regard to the parent company's ownership, so that returns are set on a stand-alone basis.[46]

[46] The Commission has an established history of setting return on equity based on the analytical results of a proxy group analysis of comparable-risk, investor-owned utilities, as was done in several of the most recent Green Mountain Power rate proceedings, *Investigation into Green Mountain Power Corporation's tariff filing, etc*., Docket Nos. 8190, 8191 (Vt. Pub. Serv. Bd. Aug. 25, 2014) at 21-22; and more recently, Case No. 17-3112-INV, *Investigation into Green Mountain Power Corporation's tariff filing requesting an overall rate increase in the amount of 4.98%, to take effect January 1, 2018,* (Vt. Pub. Utilities Comm. December 21, 2017) at 15.

APPENDIX C: PROXY GROUP SELECTION

Green Mountain Power is an investment holding of Énergir, formerly Gaz Métro Limited Partnership, serving more than 265,000 electric residential and business customers in Vermont. The Company self-generates approximately 15 to 20 percent of its energy requirements, primarily with hydro, renewable, and nuclear power, and a small amount of fossil-fuel-fired peaking facilities. The remainder of the Company's energy requirements are supplied through contracted power purchase agreements and state-mandated energy programs. The company is credited with being at the forefront of electric utility innovation, ranked as the #1 Most Innovative Companies in Energy by Fast Company on February 20, 2018, for partnering with its customers to use solar and battery storage to drive down electricity costs. By encouraging distributed generation and energy storage, GMP has been able to avoid expensive demand peaks and reduce the need for additional investment.[47] The Company recently launched an innovative Bring Your Own Device ("BYOD") program, which partners with customers to provide customer-owned storage to the grid during high-energy-use times.[48] Green Mountain Power currently has a Long-Term Issuer credit rating from S&P of A- (Outlook: Stable).[49]

Since the ROE is a market-based concept and Green Mountain Power is not publicly traded, it is necessary to establish a group of companies that is both publicly

[47] Ben Schiller, *Fast Company, In Vermont, A Forward-Thinking Utility Is Helping Customers Share Solar Power* (Sept. 21, 2015).
[48] Vermontbiz, *Home battery storage owners can reduce energy costs through GMP's 'BYOD' program* (March 22, 2018).
[49] S&P Global Ratings, Research Update: Green Mountain Power Corp. Ratings Affirmed; Outlook Stable, December 2017.

traded and comparable to Green Mountain Power. Even if Green Mountain Power was a publicly traded entity, it is possible that transitory events could bias the Company's market value in one way or another in a given period of time. A significant benefit of using a proxy group is the ability to mitigate the effects of anomalous events that may be associated with any one company. The proxy companies used in my ROE analyses possess a set of business and operating characteristics similar to Green Mountain Power's vertically integrated electric distribution operations, and thus provide a reasonable basis for the estimates of ROE.

To select my proxy group, I began with the 40 investor-owned electric utilities covered by Value Line and then screened companies according to the following criteria:

- Consistently pays quarterly cash dividends;
- Maintains an investment grade long-term issuer rating (BBB- or higher) from S&P;
- Is covered by more than one equity analyst;
- Has positive earnings growth rates published by at least two of the following sources: Value Line, Thomson First Call (as reported by Yahoo! Finance), and Zack's Investment Research ("Zacks");
- The majority of electric generation produced by the Company is regulated by the Commission (based on a 3-year average);
- Self-generates at least 20 percent of its utility electricity sales to customers (based on a 3-year average);
- Regulated revenues make up more than 60 percent of the consolidated company's total revenues (based on a 3-year average);

- Regulated net operating income makes up more than 60 percent of the consolidated company's net operating income (based on a 3-year average);
- Regulated electric revenues make up more than 80 percent of the consolidated company's total revenues (based on a 3-year average);
- Regulated net operating income from regulated electric operations makes up more than 80 percent of the consolidated company's regulated operating income (based on a 3-year average); and
- Is not involved in a merger or other transformative transaction for an approximate six-month period prior to my analysis.

Based on the screening criteria discussed above, and financial information through fiscal year 2016, I arrived at a proxy group consisting of the companies shown in Figure C-1. The results of my screening process are shown in **Exhibit GMP-JMC-7.**

Figure C-1: Proxy Group

ALLETE, Inc.	ALE
Alliant Energy Corporation	LNT
Ameren Corporation	AEE
American Electric Power Company, Inc.	AEP
Duke Energy Corp	DUK
El Paso Electric Company	EE
Hawaiian Electric Industries, Inc.	HE
IDACORP, Inc.	IDA
NextEra Energy, Inc.	NEE
OGE Energy Corporation	OGE
Pinnacle West Capital Corporation	PNW
PNM Resources, Inc.	PNM
Portland General Electric Company	POR

PPL Corporation	PPL
Southern Company	SO
Xcel Energy Inc.	XEL

I have selected this group of electric utilities to best align with the financial and operational characteristics of Green Mountain Power. The proxy group screening criterion requiring an investment grade credit rating ensures that the proxy group companies, like Green Mountain Power, are generally in sound financial condition. Because credit ratings take into account business and financial risks, the ratings provide a broad measure of investment risk for investors. I have only accepted proxy companies that self-generate at least 20 percent of their retail electric requirements to adequately represent the operating characteristics and unique set of risks of a vertically integrated electric utility with electric generation in rate base. Such risks include unplanned outages and/or maintenance, changing environmental regulations applicable to the generation portfolio, delays or overages in plant construction costs, etc. These unique risks are not shared by pure T&D utilities. Additionally, I have screened on the percent of revenues and net operating income from regulated operations to differentiate between utilities that are protected by regulation and those with substantial unregulated operations or market-related risks. Also, I have screened on the percentage contribution of the electric utility segment to regulated consolidated financial results to select utilities that, like Green Mountain Power, derive the majority of their revenues and operating income from regulated electric operations. These screens collectively reflect key risk factors that investors consider in making investments in electric utilities.

As explained in my Direct Testimony, filed April 13, 2018, my proxy group differs from the proxy group that I used last year in testimony for GMP's cost of equity for 2018. Though I have applied the same screening criteria, I have included several companies in my proxy group in this proceeding that did not meet my screening criteria last year. Duke Energy Corporation, Hawaiian Electric Industries, Inc., NextEra Energy, Inc., and Southern Company did not satisfy my merger screen in the prior year. Duke Energy Corporation was acquiring Piedmont Natural Gas Company, Inc., NextEra Energy had attempted to acquire Hawaiian Electric within the 6-month window, and Southern Company acquired AGL Resources within the 6-month window. My proxy group also includes OGE this year, while it did not have sufficient regulated electric revenues to satisfy my screening threshold of 80 percent of total revenues last year. Lastly, PG&E is excluded from the group this year because it suspended its dividend payment in December 2017 as a consequence of the California wildfires and potential financial exposure. I believe my group of 16 vertically integrated electric utilities adequately reflects the broad set of risks that investors consider when investing in a U.S.-regulated vertically integrated electric utility.

APPENDIX D: ROE ANALYSES

I have considered the results of several ROE estimation models, including the Constant Growth DCF, Multi-Stage DCF, Risk Premium, and CAPM models. When faced with the task of estimating the cost of equity, analysts are inclined to gather and evaluate as much relevant data (both quantitative and qualitative) as can be reasonably obtained. Consistent with the Hope finding, "[I]t is the result reached, not the method employed, which is controlling."[50] I weight the results of these three primary methodologies equally to arrive at my recommendation.

A. Constant Growth DCF Model

The DCF approach, which is widely used in regulatory proceedings, is based on the theory that a stock's current price represents the present value of all expected future cash flows. In its simplest form, the DCF model expresses the ROE as the sum of the expected dividend yield and long-term growth rate:

$$k = \frac{D(1+g)}{P_0} + g \qquad [1]$$

Where "k" equals the required return, "D" is the current dividend, "g" is the expected growth rate, and "P" represents the subject company's stock price.

Assuming a constant growth rate in dividends, the model may be rearranged to compute the ROE accordingly, as shown in Formula [2]:

[50] Hope *op. cit.*

$$r = \frac{D}{P} + g \qquad [2]$$

Stated in this manner, the cost of common equity is equal to the dividend yield plus the dividend growth rate.

The Constant Growth DCF model is based on the following assumptions: (1) a constant average growth rate for earnings and dividends; (2) a stable dividend payout ratio; (3) a constant price-to-earnings multiple; and (4) a discount rate greater than the expected growth rate.

I calculated DCF results for each of the proxy group companies using the following inputs:

1. Average stock prices for the historical period, over 30, 90, and 180 trading days through February 28, 2018;
2. Annualized dividend per share as of February 28, 2018; and
3. Company-specific earnings growth forecasts for the term g.

It is important to use an average of recent trading days to calculate the term P in the DCF model to ensure that the calculated ROE is not skewed by anomalous events that may affect stock prices on any given trading day. At the same time, it is important to reflect the conditions that have defined the financial markets over the recent past. In my view, consideration of those three averaging periods reasonably balances those interests.

I adjusted the dividend yield to account for periodic growth in dividends. Utility companies tend to increase their quarterly dividends at different times throughout the year, so it is reasonable to assume that such increases will be evenly distributed over calendar quarters. Given that assumption, it is reasonable to apply one-half of the expected annual

dividend growth for the purposes of calculating this component of the DCF model. This adjustment ensures that the expected dividend yield is representative of the coming 12-month period. Accordingly, the DCF estimates reflect one-half of the expected growth in the dividend yield.[51]

I have used the consensus analyst five-year growth estimates in earnings per share ("EPS") from Thomson First Call and Zacks, as well as EPS growth rate estimates published by Value Line. I focus on earnings per share growth because the Constant Growth DCF model assumes that dividends grow at a constant rate in perpetuity. Accordingly, in order to reduce the long-term growth rate to a single measure, one must assume a constant payout ratio, and that earnings per share, dividends per share, and book value per share all grow at the same constant rate. Over the long term, however, dividend growth can only be sustained by earnings growth. As noted by Brigham and Houston in their text, Fundamentals of Financial Management: "Growth in dividends occurs primarily as a result of growth in earnings per share (EPS)."[52] It is therefore important to focus on measures of long-term earnings growth from credible sources as an appropriate measure of long-term growth in the DCF model.

Though there are other sources of dividend growth rate available to investors, academic studies suggest that investors base their investment decisions on analysts'

[51] The expected dividend yield is calculated as $d_1 = d_0 (1 + ½ g)$.

[52] Eugene F. Brigham and Joel F. Houston, Fundamentals of Financial Management (Concise Fourth Edition, Thomson South-Western), at 317 (emphasis added).

expectations of growth in earnings.[53] I am not aware of any similar findings regarding non-earnings-based growth estimates. In addition, the only forward-looking growth rates that are available on a consensus basis are analysts' EPS growth rates. The fact that earnings growth projections are the only widely accepted estimates of growth provides further support that earnings growth is the most meaningful measure of growth among the investment community.

Higher stock valuations and lower dividend yields for utility companies have affected the results of the DCF model. During periods of general economic and capital market stability, the DCF model adequately reflects market conditions and investor expectations. However, in the current market environment, the DCF model results are distorted by the historically low level of interest rates and the higher valuation of utility stocks. In its commentary on the electric utility industry, Value Line observes that most of the stocks in the electric utility sector are expensively priced and are trading within their three-to-five-year price targets. Furthermore, Value Line recently cautioned investors about electric utility stock prices:

> After the stellar performance of most stocks in the Electric Utility Industry in 2017, share prices of most electric companies declined in the first few weeks of 2018. In our view, this is partly due to reversion to the mean, and partly due to investors' increased concern about the likelihood of a few interest-rate increases by the Federal Reserve this year. The average dividend yield for this industry is up to 3.6%. This is above the level seen in 2017, but is still low, by historical standards.

[53] *See*, e.g., Harris and Marston, *Estimating Shareholder Risk Premia Using Analysts Growth Forecasts*, Financial Management, Summer 1992, at 65; and Vander Weide and Carleton, *Investor Growth Expectations: Analysts vs. History*, The Journal of Portfolio Management, Spring 1988, at 81. Please note that while the original study was published in 1988, it was updated in 2004 under the direction of Dr. Vander Weide. The results of that updated study are consistent with Vander Weide and Carleton's original conclusions.

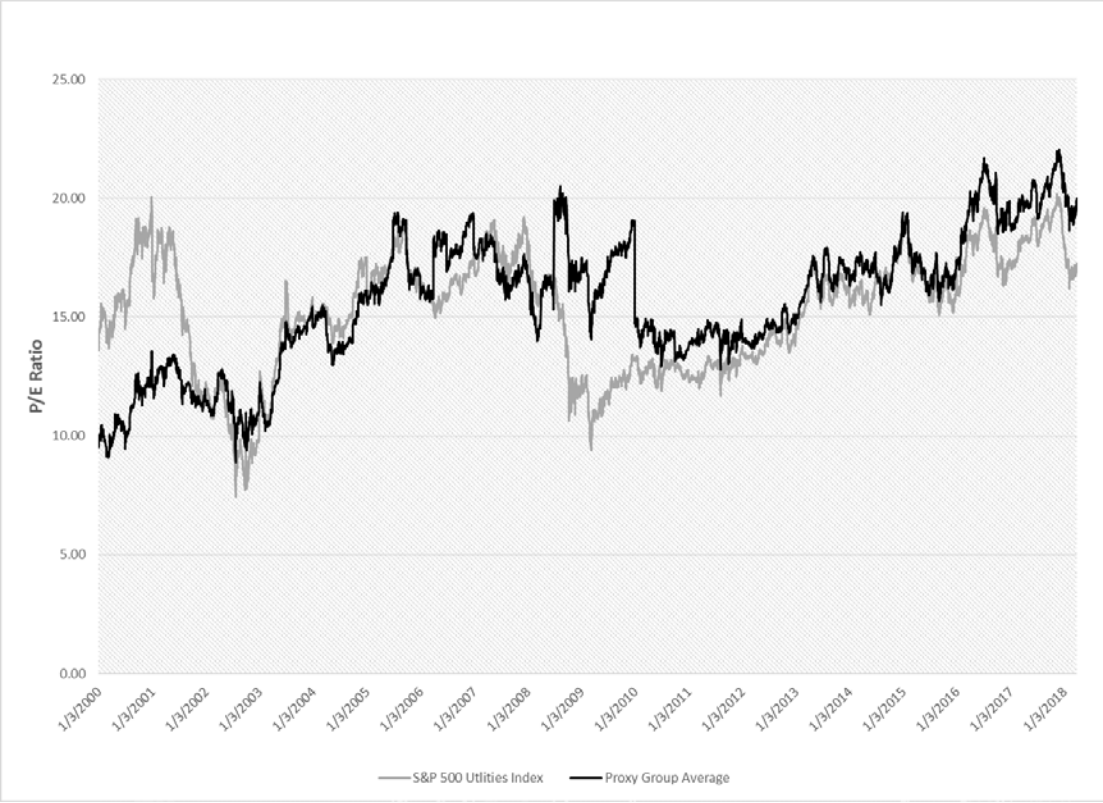
> Moreover, many of these equities continue to trade within their 3- to 5-year Target Price Range.[54]

This expected increase in dividends implies that the ROE calculated using current utility stock valuations and low-dividend yields underestimates the return under the DCF methodology.

This point is further emphasized by analyzing the average Price/Earnings ("P/E") ratio for the proxy companies and utilities in general. As shown in Figure D-1, the proxy group P/E ratio has been steadily climbing since the end of the financial crisis in 2009, and today is very near the highest levels since 2000. As indicated above, a constant P/E ratio is one of the key assumptions of the Constant Growth DCF model. As long as P/E ratios remain abnormally elevated, the DCF model will tend towards understating the forward-looking cost of equity for the proxy group companies.

[54] Value Line Investment Survey, Electric Utility (East) Industry, February 16, 2018, at 137.

Figure D-1: Utility P/E Ratios vs. Proxy Group 2000 to Present



Source: Bloomberg

Regulators have responded to the historically low dividend and bond yields and the corresponding effect on the DCF model. Understanding the important role that dividend yields play in the DCF model, the Federal Energy Regulatory Commission ("FERC") determined that anomalous capital market conditions have caused the DCF model to understate equity costs for regulated utilities at this time.

As is discussed, infra, the level of the dividend yield affects the reliability of the DCF process when that level is lower than the level acceptable to investors that value utility stocks based on their estimated long-term dividend growth. The record creates cause for concern that during a period including the Study Period, investors valuing utility

stocks based solely or primarily on their current yield bid the prices of the proxy group stocks up to levels that rendered their Total Returns unacceptable to investors that valued such stocks based on their estimated long-term dividend growth. For reasons set out below, this record evidence creates further cause for concern that placement of the MISO TOs' Base ROE at the Midpoint may not meet the requirements of Hope.[55]

The FERC also observed that due to anomalous conditions in capital markets (i.e., low Treasury bond yields) the midpoint of the DCF model is not a reasonable estimate of the Cost of Equity at this time:

> The yields of 10-year Treasury Bonds during the Study Period continue to reflect economic conditions that could render inputs to the DCF analysis unrepresentative. During the study period, the yields of 10-year Treasury Bonds averaged 2.21 percent. That yield was 38 basis points higher than the average yield of those bonds during the Opinion No. 531 study period, but 79 basis points below the 3.0 percent level that so concerned the Commission in Opinion No. 531. If the average 10-year Treasury-Bond yields for the Opinion No. 531 study period reflected economic conditions that could serve to render financial inputs into the DCF model unrepresentative, the average bond yields for the study period in this proceeding are close enough to the earlier yields to reflect the same conditions. Accordingly, the level of 10-year Treasury Bond yields during the Study Period create sufficient doubt regarding the representativeness of DCF inputs to warrant an examination of alternative metrics prior to making a final determination as to the level of the MISO TOs' Base ROE.[56]

Following the FERC's logic, yields on 10-year Treasury bonds remain well below 3.0 percent,[57] which is the level that the FERC determined represents "anomalous" capital market conditions. In summary, the results of the DCF models are understating the cost

[55] 155 FERC ¶ 63,030 (June 30, 2016) at para. 128.
[56] Ibid, at paragraph 126.
[57] 2.73% on April 2, 2018.

of equity under current market conditions due to the low-interest-rate environment that has reduced dividend yields and raised valuations on utility shares to unsustainable levels. Consequently, it is necessary to consider the results of Risk Premium models, such as the CAPM and Bond Yield Risk Premium analysis, in order to assess the reasonableness of the DCF results and ultimately determine where to set the appropriate return.

State regulatory commissions have also responded to the effect of recent market conditions on the results of the DCF model. The Pennsylvania Public Utility Commission ("PPUC") in a 2012 decision on a rate case for PPL Electric Utilities, recognized that market conditions were causing the DCF model to produce results that were much lower than other models such as the CAPM and Bond Yield Plus Risk Premium. While noting that the PPUC has traditionally relied primarily on the DCF method to estimate the cost of equity for regulated utilities, the PPUC's Order nevertheless explained:

> Sole reliance on one methodology without checking the validity of the results of that methodology with other cost of equity analyses does not always lend itself to responsible ratemaking. We conclude that methodologies other than the DCF can be used as a check upon the reasonableness of the DCF derived equity return calculation.[58]

The PPUC ultimately concluded:

> As such, where evidence based on the CAPM and RP methods suggest that the DCF-only results may understate the utility's current cost of equity capital, we will give consideration to those other methods, to some degree, in determining the appropriate range of reasonableness for our equity return determination.[59]

[58] Pennsylvania Public Utility Commission, PPL Electric Utilities, R-2012-2290597, meeting held December 5, 2012, at 80.
[59] *Id.*, at 81.

Similarly, in a recent Massachusetts decision, the Massachusetts Department of Public Utilities (or "MDPU") noted in Docket DPU 17-05 that current Federal monetary policy has pushed Treasury yields to near historic lows. As a result, the MDPU found that it is appropriate to use prospective interest rate expectations in the CAPM.[60]

> Current federal monetary policy that is intended to stimulate the economy has pushed treasury yields to near historic lows. Consequently, the Department has found that a CAPM analysis based on current treasury yields may tend to underestimate the risk-free rate over the long term and, thereby, understate the required ROE. The CAPM is based on investor expectations and, therefore, it is appropriate to use a prospective measure for the risk-free rate component. The Department has found that Blue Chip Financial Forecasts is widely relied on by investors and provides a useful proxy for investor expectations for the risk-free rate.[61]

As these Commissions have determined, the DCF model has been understating the investor-required return for regulated utilities for several years. Though economic conditions are beginning to moderate, utility valuations are still abnormally high and interest rates abnormally low. As such, it is important to moderate the effect of abnormal economic conditions on both the DCF model and the CAPM as I have done, by both shifting weight to alternative analytical methods for determining ROE, and by normalizing inputs where possible, e.g., using a prospective measure of the risk-free rate, as I have done in my CAPM and Risk Premium analyses, discussed later in this testimony.

[60] D.P.U. 17-05, at 693.

[61] D.P.U. 17-05 Petition of NSTAR Electric Company and Western Massachusetts Electric Company, each doing business as Eversource Energy, Pursuant to G.L. c. 164, § 94 and 220 CMR 5.00 et seq., for Approval of General Increases in Base Distribution Rates for Electric Service and a Performance Based Ratemaking Mechanism, November 30, 2017, at 693.

The results of my Constant Growth DCF analysis are provided in **Exhibit GMP-JMC-8** and summarized in Figure D-2.

Figure D-2: Constant Growth DCF Results

	Mean Low	Mean	Mean High
30-day average	7.93%	8.91%	9.89%
90-day average	7.67%	8.65%	9.62%
180-day average	7.65%	8.62%	9.60%

I calculated the Mean High DCF result using the maximum growth rate (i.e., the maximum of the First Call, Value Line, and Zacks EPS growth rates) in combination with the expected dividend yield for each of the proxy group companies. I used a similar method to calculate the Mean Low DCF results, using the minimum growth rate for each company. The Mean results reflect the average growth rate from each source for each company in combination with the expected dividend yield.

The relatively low results from the DCF model can be explained by the accommodative monetary policy of the Federal Reserve that has led to historically low interest rates on government bonds over the past several years. This has pushed investors into riskier asset classes such as common stock and has caused investors to purchase dividend-paying stocks such as utilities in the search for higher yields. As stock prices have increased for the proxy group companies, the average dividend yield for the proxy group has decreased. In turn, this has reduced the DCF results because the dividend yield is an important component of that model. It is not reasonable to conclude that current

stock valuations and dividend yields are sustainable, especially in the face of higher interest rates. Though the 30-day average dividend yield provides some evidence that capital market conditions may be beginning to moderate, utility valuations remain significantly above normal levels as evidenced by the low dividend yields and high P/E ratios. As such, the Constant Growth DCF model does not produce reliable results because one of the fundamental assumptions of the Constant Growth DCF method is that the P/E ratio will remain constant.

B. Multi-Stage DCF Model

In order to address some of the limiting assumptions underlying the constant growth form of the DCF model, I also considered the results of a multi-period (three-stage) DCF model (the "Multi-Stage DCF" model). The Multi-Stage DCF model tempers the assumption of constant growth in perpetuity in the constant growth DCF model with a three-stage approach: near-term, transitional, and long-term growth.

My Multi-Stage DCF analysis approaches the ROE from the perspective of an investment in the stock of each of the proxy group companies. The model calculates the internal rate of return of the cash flow stream such that the present value of the annual dividend cash flows exactly equal the average current stock price of the proxy group companies. The model assumes dividends grow according to the assumed growth rate for each stage.

I applied the Multi-Stage DCF model to the same proxy group. The near-term growth rate refers to the Value Line, Thomson First Call and Zacks EPS forecasts for

Years 1–5, using the mean of these rates as the Overall Mean scenario and the high and low of these rates as Mean High and Mean Low scenarios, respectively. I then transition to a long-term forecast of gross domestic product ("GDP") growth for Years 11 forward. Years 6–10 are linear interpolations of the near-term and long-term growth rates. The Multi-Stage DCF model is useful for testing the assumption that dividends will grow at a constant growth rate over time.

The long-term GDP growth rate is based on a real (constant dollar) GDP growth rate, combined with estimates for inflation. I have used two sources of real GDP growth: (1) the consensus Blue Chip Financial Forecast of 2.00 percent; and (2) the historical real GDP growth rate for the period from 1929-2017 of 3.21 percent, based on data from the Bureau of Economic Analysis. I have applied the inflation estimate to the estimate of real GDP growth to develop the nominal (i.e., post-inflation) GDP growth rate. I have used two alternative estimates for inflation: (1) the Blue Chip Financial forecast for the Consumer Price Index from 2024-2028 (2.20 percent); and (2) the 30-day average spread between the 30-year Treasury bond and the 30-year Treasury Inflation-Protected Securities ("TIPS") bond (2.13 percent), which is an inflation-indexed bond that presents the broader market's view of forward-looking inflation. The results, as shown in **Exhibit GMP-JMC-9**, are nominal GDP growth estimates of 4.21 percent (using projected real GDP growth) and 5.45 percent (using historical real GDP growth).

The results of my Multi-Stage DCF analysis are provided in **Exhibits GMP-JMC-10.1–GMP-JMC-10.6**, and the mean results are summarized in Figure D-3.

Figure D-3: Multi-Stage DCF Results

	Mean Low	Mean	Mean High
	Projected GDP Growth		
30-day average	8.08%	8.37%	8.67%
90-day average	7.80%	8.07%	8.36%
180-day average	7.78%	8.05%	8.33%
	Historical GDP Growth		
30-day average	9.08%	9.36%	9.65%
90-day average	8.81%	9.07%	9.35%
180-day average	8.79%	9.05%	9.32%

While the Multi-Stage DCF model allows for the selection of different growth rates in the three stages of the model, like the Constant Growth DCF model, the Multi-Stage DCF model relies on the historic dividend yield (which is quite low by historical standards) as a starting point and fails to adequately account for the projected increase in interest rates. As was observed with the Constant Growth model, 30-day dividend yields are reflecting recent reductions in utility valuations due to in part to expected changes in interest rates and to the negative effects of Tax Reform. As indicated earlier, even though some moderation is evident, we continue to be in an abnormally low interest rate and utility dividend yield environment. Consequently, as discussed earlier in my testimony, when conditions are anomalous, as they continue to be today, the FERC and other regulators have emphasized the importance of considering the results of Risk Premium models, such

as the CAPM and Bond Yield Risk Premium analysis in order to assess the reasonableness of the DCF results and ultimately determine where to set the appropriate return.

C. CAPM Analysis

The CAPM is a risk premium approach that estimates the cost of equity for a given security as a function of a risk-free return plus a risk premium (to compensate investors for the non-diversifiable or "systematic" risk of that security).[62] As shown in Equation [3], the CAPM is defined by four components, each of which must theoretically be a forward-looking estimate:

$$Ke = rf + \beta(rm - rf) \qquad [3]$$

where:

Ke = the required ROE for a given security;

rf = the risk-free rate of return;

β = the Beta of an individual security; and

rm = the required return for the market as a whole.

The term (rm – rf) represents the Market Risk Premium ("MRP"). According to the theory underlying the CAPM, since unsystematic risk can be diversified away, investors should be concerned only with systematic or non-diversifiable risk. Non-diversifiable risk is measured by Beta, which is defined as:

[62] Systematic risks are fundamental market risks that reflect aggregate economic measures and therefore cannot be mitigated through diversification. Unsystematic risks reflect company-specific risks that can be mitigated and ultimately eliminated through investments in a portfolio of companies and/or market sectors.

$$\beta = \frac{Covariance(r_e, r_m)}{Variance(r_m)} \quad [4]$$

where:

re = the rate of return for the individual security or portfolio.

The variance of the market return, noted in Equation [4], is a measure of the uncertainty of the general market, and the covariance between the return on a specific security and the market reflects the extent to which the return on that security will respond to a given change in the market return. Thus, Beta represents the risk that the selected security will not be effective in diversifying systemic market risks.

Economic and financial market conditions have also affected the CAPM model. Even though the Federal Reserve discontinued its policy of Quantitative Easing in October 2014 and has increased short-term interest rates since the December 2015 FOMC meeting, Treasury yields still remain very near all-time lows. Given the extraordinarily low level of interest rates as compared to historical levels, using current or even near-term projections of government bond yields would distort market expectations for a reasonable risk-free rate. Using the 5-year forecast of bond yields helps alleviate these short-term market factors affecting the risk-free rate, or "rf" in the CAPM formula. As discussed in Appendix A, interest rates are expected to increase as the economy continues to expand. Since both the DCF and CAPM models assume long-term investment horizons, I used the Blue Chip forecast of the yield on 30-year Treasury bonds for 2019-2023 of 4.10 percent

as my estimate of the risk-free rate.[63] That time period reflects a forward-looking view, which is the objective of the ROE analysis.

As shown in Exhibit **GMP-JMC-11.1**, I considered two measures of Beta for the proxy group companies: (1) the reported Beta coefficients from Bloomberg (which are calculated using 24 months of weekly data); and (2) the reported Beta coefficients from Value Line (which are calculated using 60 months of weekly data).

I have estimated the Market Risk Premium ("MRP") by conducting a Constant Growth DCF analysis on each of the S&P 500 companies and calculated the expected total market return, weighted by market capitalization. This market return is that implied by current stock prices and projected earnings growth for each of these companies. I then used the MRP that results from subtracting the risk-free rate (based on the 5-year forecast of the 30-year Treasury bond) from the total market return. My calculation as shown in **Exhibit GMP-JMC-11.2** yielded a market derived ex-ante MRP of 10.62 percent.

The CAPM is inherently a forward-looking model since it is designed to estimate investors' required equity return expectations. The MRP should, therefore, reflect investors' expected equity market returns relative to expected returns on Treasury securities. While these return expectations may be informed by history, they should primarily reflect forward-looking return expectations. This is also consistent with the approach used by the FERC in developing a forward-looking MRP in Opinion No. 531.[64]

[63] Blue Chip Financial Forecasts, Volume 36, No. 12, December 1, 2017, at 14.
[64] FERC Opinion No. 531, at para. 147, footnote 292.

As shown in **Exhibit GMP-JMC-11.3**, the CAPM results are 10.33 percent (using Bloomberg Betas) and 11.60 percent (using Value Line Betas), or an average of 10.97 percent. These forward-looking CAPM results are somewhat higher than my Risk Premium results and my Constant Growth DCF results (which continue to be depressed by abnormally high utility valuations and low dividend yields).

D. Risk Premium Analysis

The Risk Premium approach recognizes that equity is riskier than debt because equity investors bear the residual risk associated with ownership. Equity investors, therefore, require a greater return (i.e., a premium) than a bondholder would. The Risk Premium approach estimates the cost of equity as the sum of the Equity Risk Premium and the yield on a particular class of bonds.

$$ROE = RP + Y \qquad [5]$$

Where:

RP = Risk Premium (difference between allowed ROE and the 30-Year Treasury Yield) and

Y = Applicable bond yield.

Since the equity risk premium is not directly observable, it is typically estimated using a variety of approaches, some of which incorporate ex-ante, or forward-looking estimates of the cost of equity, and others that consider historical, or ex-post, estimates. For my Risk Premium analysis, I have relied on authorized returns from a large sample of electric

utility companies. To estimate the relationship between risk premia and interest rates, I conducted a regression analysis using the following equation:

$$RP = a + (b \times Y) \qquad [6]$$

where:

RP = Risk Premium (difference between allowed ROEs and the 30-Year Treasury Yield);

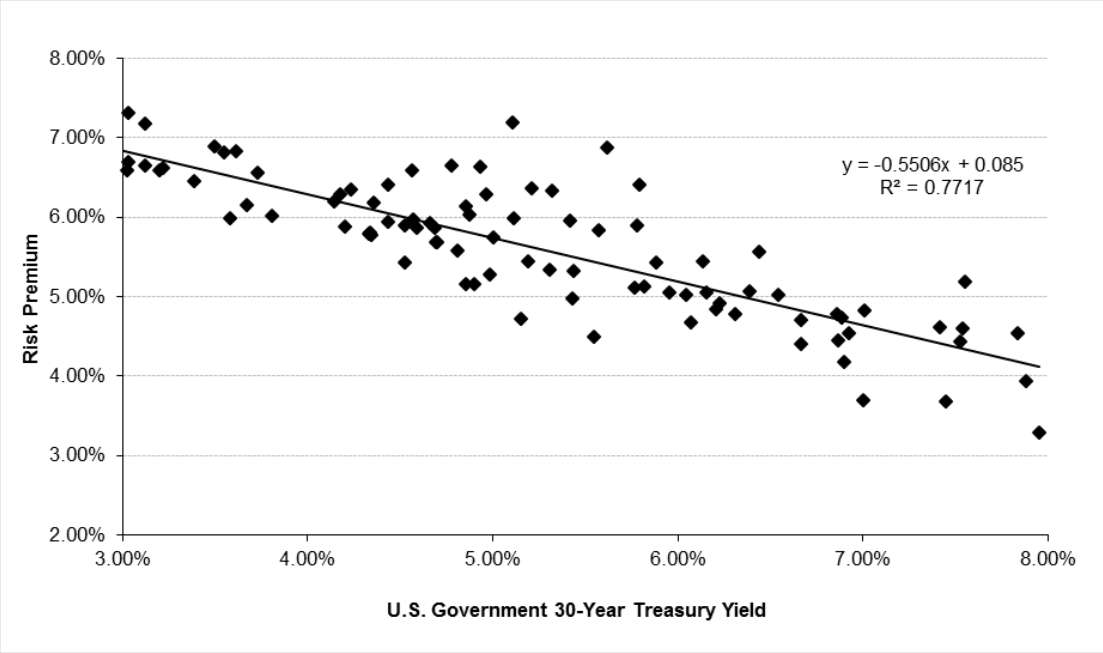
a = Intercept term;

b = Slope term; and

Y = 30-Year Treasury Yield.

Data regarding allowed ROEs were derived from 732 electric utility company rate cases from 1992 through February 28, 2018, as reported by Regulatory Research Associates.

Figure D-4: Risk Premium Results



As illustrated by Figure D-4 (above), the risk premium varies with the level of bond yield, and generally increases as the bond yields decrease, and vice versa. In order to apply this relationship to current and expected bond yields, I consider three estimates of the 30-year Treasury yield, including the current 30-day average, a near-term Blue Chip consensus forecast for Q2 2018–Q2 2019, and a BlueChip consensus forecast for 2019–2023. I find this 5-year result to be most applicable because investors are expecting consistent increases in government bond yields and typically have a multi-year view of their required returns on equity. Based on the regression coefficients in **Exhibit GMP-JMC-12**, which allow for the estimation of the risk premium at varying bond yields, the results of my Risk Premium analysis are shown in Figure D-5.

Figure D-5: Risk Premium Results Using 30-Year Treasury Yield

	Using 30-Day Average Yield on 30-Year Treasury Bond	Using Q2 2018–Q2 2019 Forecast for Yield on 30-Year Treasury Bond[65]	Using 2019-2023 Forecast for Yield 30-Year Treasury Bond[66]
Yield	3.06%	3.48%	4.10%
Risk Premium	6.81%	6.58%	6.24%
Resulting ROE	9.87%	10.06%	10.34%

E. Flotation Costs

Flotation costs are the costs associated with the sale of new issues of common stock. These costs include out-of-pocket expenditures for preparation, filing, underwriting, and other costs of issuance of common stock. To the extent that a company is denied the opportunity to recover prudently incurred flotation costs, actual returns will fall short of expected (or required) returns, thereby diminishing the utility's ability to attract adequate capital on reasonable terms. To appropriately reflect flotation costs, the DCF calculation should be modified to provide a dividend yield that would reimburse investors for issuance costs. Based on the proxy group issuance costs shown in **Exhibit GMP-JMC-13.1**, I conclude that flotation costs for the proxy companies have equaled roughly 3.31 percent of gross equity raised; and to properly reflect these issuance costs in my cost of capital estimates, it would be appropriate to increase ROE by 12 basis points for Green Mountain Power, as shown on **Exhibit GMP-JMC-13.2**.

[65] Blue Chip Financial Forecasts, Vol. 36, No. 3, March 1, 2017, at 2
[66] Blue Chip Financial Forecasts, Vol. 35, No. 12, December 1, 2016, at 14.

I did not make an explicit adjustment for flotation costs to any of my quantitative analyses. Rather, I provide the above result for consideration in my recommended ROE, which reflects the range of results from my DCF, CAPM, and Risk Premium analyses.