TECHNICAL RESPONSE TO MR. BAUDINO

Mr. Baudino's analyses result in a range of 8.70 percent to 9.35 percent for GMP's cost of equity. He states that he would recommend 9.10 percent, but since GMP's proposed ROE of 9.30 percent falls within the range of his analysis, he supports the company's ROE proposal and capital structure. He also specifies a small adjustment to GMP's cost of debt that is addressed separately by Company witness, E. Ryan. Mr. Baudino uses a constant growth DCF analysis for a proxy group of 16 electric utility companies (the same proxy group utilized in my analysis). Mr. Baudino's recommendation is based on the average results of his DCF analysis, but he also presents the results of a CAPM. My technical response to Mr. Baudino is summarized below.

A. Primary Reliance on the DCF Model

Mr. Baudino and I differ on whether the DCF model is accurately reflecting the cost of capital for utilities under current capital market conditions. In theory, and during times of general economic and capital market stability, the DCF analysis reflects market conditions and investor expectations. However, in the current market environment, the DCF model results are being distorted by the uncommonly low level of interest rates. Because low government bond yields have prevailed for an extended period, income-oriented investors are being forced to search for higher yields in dividend-paying stocks such as utilities. This search for yield has pushed down dividend yields for utility companies to levels below the historical average that are likely unsustainable, particularly in light of market expectations for rising interest rates over the course of the next few years.

Mr. Baudino's testimony includes cites to several sources that have indicated that interest rates and utility dividend yields remain abnormally low. He notes that "even with several recent increases in the federal funds rate, the U.S economy is still in a low interest rate environment."[1] He quotes Value Line's June 2018 observation that "interest rates are still low, by historical standards, and so is the average dividend yield of stocks in the Electric Utility Industry."[2] Because (as I illustrated in my Direct Testimony[3]) utility dividend yields track closely to interest rates, and specifically because of the abnormally low level of dividend yields for utility stocks, the DCF model has been producing mean ROE results in the mid-eight percent range for several years, but as shown in Figure 1, state regulatory commissions have not correspondingly lowered allowed equity returns to these levels.

Mr. Baudino suggests that low interest rates and low dividend yields are the "new normal," and states that interest rates have remained at their extremely low levels for several years and can hardly be described as an "aberration" or "anomalous."[4] As discussed in my Direct Testimony, the Federal Energy Regulatory Commission ("FERC"), has recognized that the DCF model has been impacted by the extreme low interest rate environment, which the FERC has described as anomalous when 10-year Treasury yields are below 3.0 percent. Mr. Baudino concludes that "[s]imply because the FERC made a decision regarding the use of the DCF model does not mean that the Commission should follow suit and agree with the FERC in this case."[5] I maintain the view that the FERC's

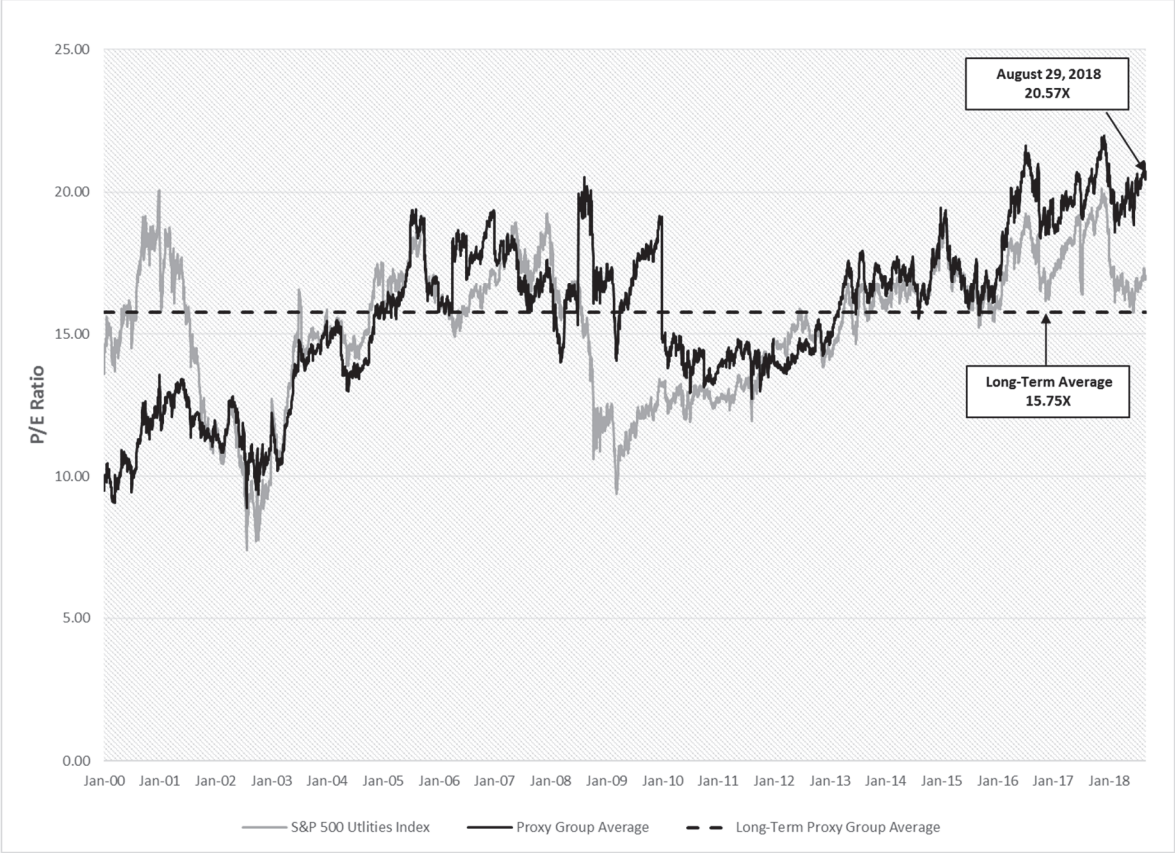
1 Direct Testimony of Richard A. Baudino (Baudino Direct), at 9.
2 Id. at 13.
3 Direct Testimony of James M. Coyne (Coyne Direct), Figure 2, at 18.
4 Baudino Direct, at 42.
5 Ibid.

review was an exhaustive evaluation of this issue, and its use of multiple methods to determine just and reasonable rates is entirely consistent with traditional principles of regulatory decision making. Today, the 10-Year Treasury yield remains below 3.0 percent, and dividend yields, as a result, remain abnormally low, according to the FERC's definition.[6]

In my Direct Testimony, I provided a chart that showed the extent to which utility dividend yields were deflated relative to their long-term average by reviewing P/E ratios from 2000 to the present date.[7] I have updated and reproduced the chart below, adding an indication of the long-term mean P/E ratio. As Figure A shows, the long-term historical P/E ratio for the utility proxy group is 15.75X but the average as of August 29, 2018 is 20.57X. P/E ratios have continued to climb since I drafted my Direct Testimony (19.67X as of March 31, 2018), and still exceed long-term historical levels, a further indication that prices continue to be inflated and dividend yields deflated.

[6] https://www.cnbc.com/quotes/?symbol=US10Y, accessed August 29, 2018 – 10-Year Treasury yield is 2.886%.
[7] Coyne Direct, at 42.

Figure A: Utility P/E Ratios vs. Proxy Group 2000 to Present



The DCF model that Mr. Baudino relies upon is impacted by these same market conditions and does not provide a basis to develop a fully informed assessment. He places no reliance on any other methodologies to derive his conclusion. Mr. Baudino argues the superiority of the DCF model in terms of reliability and accuracy, pointing to the fact that the DCF model employs current stock prices, which he states "are the best indicators of investors' return requirements that we have."[8] Notwithstanding Mr. Baudino's position, it is a widely-accepted practice in the estimation of return on equity for public utilities to utilize multiple methodologies. No methodology is perfect and when one places exclusive reliance on one methodology, the risk of estimation error increases. Consistent with

[8] Baudino Direct, at 43.

FERC's recommended approach, and the state regulatory evidence shown in Figure 1 (in this Rebuttal Testimony), it is clearly the consensus of regulators that a more rigorous review, based on multiple models and a critical review of model inputs, is necessary to develop a reasonable assessment of the appropriate ROE in the current market environment.

Mr. Baudino and I also share a few additional methodological differences in the application and presentation of our DCF model results which I detail below. Mr. Baudino has used a dividend growth rate in his survey of analyst growth rates for his DCF analysis, which he has weighted equally with his three earnings growth rates. I do not use dividend growth rates since they are easily subject to actions of management. The earnings growth rate, alternatively, provides a less malleable and better indicator of sustainable dividend and earnings growth for the company. Further, as I have indicated in my Direct Testimony, academic studies suggest that investors base their investment decisions on analysts' expectations of growth in earnings.[9] 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' earnings growth rates. Though the impact of a dividend growth rate is minimal on Mr. Baudino's analysis, it is an area of difference in our methodology.

Additionally, Mr. Baudino has suggested that the Commission should disregard the high and low results I have reported for my DCF analysis. Though my primary results are the mean results as Mr. Baudino suggests are appropriate, the high and low results are also meaningful. Though I place greatest weight on the results produced from the mean of all

[9] Coyne Direct, at 39.

growth rates, I typically look to the low and high mean results as bounding a reasonable range for my recommendation.

B. CAPM Model and its Inputs

Mr. Baudino's CAPM analysis is based on: the average yields on 5-year and 20-year Treasury bonds over the previous six months as the risk-free rate; Value Line betas for the companies in his proxy group; and both a historical and forward-looking market risk premium. Using these assumptions and inputs, Mr. Baudino derives CAPM results ranging from 6.62 – 8.09 percent.[10]

Mr. Baudino's choice of inputs for the risk free rate and market risk premium produce CAPM results lower than mine, and indeed well below the authorized return for any electric utility in at least the last 25 years.[11] On that basis, his CAPM analysis does not produce returns comparable to those available to investors from other similar risk electric distributors, and accordingly does not meet the standard of a just and reasonable return. Ultimately, Mr. Baudino places no reliance on his CAPM results. However, in the paragraphs below, I have summarized our differences in approach which have led to our very different results.

The primary differences between our approaches is Mr. Baudino's reliance on near-term historical averages and the inclusion of a short-term growth rate (5-year Treasury note) for his risk-free rate, whereas I have used a forecast of the 30-year bond yield in my analysis. We also differ in our derivation of the market risk premium ("MRP"), specifically

[10] Baudino Direct, at 33.
[11] Source: Regulatory Research Associates.

his incorporation of a geometric average into his MRP estimate, which I discuss later in this Appendix. We are in agreement as to the appropriate beta for use in the CAPM.

Like all models used to estimate the cost of equity, the CAPM should be forward-looking. My concern with the use of either recent or current yields on government bonds is that they remain abnormally low. Under these market conditions, it is especially appropriate to consider the use of forecast Treasury bond yields, which reflect the market's view that interest rates will continue to normalize and that government bond yields will increase.

There is general consensus among financial market participants that we are in a rising interest rate environment and that the Federal Reserve will continue to raise short-term interest rates. The August 2018 issue of the Blue Chip Financial Forecasts ("Blue Chip") surveyed leading economists and market participants concerning their views about the probability of future increases in short-term interest rates by the Federal Reserve. Blue Chip reports that approximately 95.5 percent of market participants surveyed expect the Federal Reserve to raise the Federal Funds rate again before the end of 2018.[12] In terms of magnitude, 75 percent of those surveyed expect the Federal Reserve will raise the Federal Funds rate by an additional 50 basis points this year, for a total increase in 2018 of 100 basis points.[13] According to Blue Chip, yields on 30-year Treasury bonds are forecasted to increase from the current level of approximately 3.03[14] percent to 4.10 percent by 2020.[15]

Mr. Baudino suggests that regardless of whether we are in a rising interest rate environment that "[c]urrent interest rates and bond yields embody all of the relevant

[12] Blue Chip Financial Forecasts, Volume 37, No. 8, August 1, 2018, at 14.
[13] Ibid.
[14] https://ycharts.com/indicators/30_year_treasury_rate 30-year Treasury Rate 3.03% for August 28, 2018.
[15] Blue Chip Financial Forecasts, Volume 37, No. 6, June 1, 2018, at 14.

market data and expectations of investors, including expectations of changing future interest rates;" and "[t]o the extent that investors give forecasted interest rates any weight at all, they are already incorporated into current securities prices."[16] However, academics and practitioners advise to the contrary. In the widely cited book on regulatory cost of capital, which Mr. Baudino himself cites in his testimony, Dr. Morin advises that forward-looking interest rates are the preferred choice for use in the CAPM model relative to actual historical interest rates. He states, "At the conceptual level, given that ratemaking is a forward-looking process, interest rate forecasts are preferable"[17] [to actual interest rates]. Indeed, in his ROE practice, Dr. Morin has regularly relied on the use of the forecast 30-year bond yield for his estimation of the risk-free rate.[18] Even among regulators it is common practice to accept a forecast bond yield in the estimation of the risk-free rate for the CAPM analysis. While it is true that current interest rates contain valuable information as to the future course of interest rates, obtaining this information requires dissecting the interest rate into its term structure and examining the implied forward rate for the respective period. This is a mechanically cumbersome process, the ultimate outcome of which is the derivation of an imputed forecast. Using an actual

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16 Ibid.

17 Roger A. Morin, PhD, New Regulatory Finance, Public Utilities Reports, Inc. (2006) at 172.

18 See Prepared Direct Testimony Roger A. Morin, PhD On Behalf of San Diego Gas & Electric Company (April 20, 2012) at p. 37, where Dr. Morin relied on forecasts from 2013-2015, and beyond, deeming his forecast numbers "conservative as interest rate forecasts [were calling] for even higher interest rates over the [succeeding] several years in response to record high federal deficits, higher anticipated inflation and eventual economic recovery." Also see Prepared Direct Testimony of Roger A. Morin, PhD On Behalf of Southern California Gas Company, (April 20, 2012) where Dr. Morin states that "[he] relied on noted economic forecasts which call for a rising trend in interest rates in response to the recovering economy, renewed inflation, and record high federal deficits." He also noted that the Division of Ratepayer Advocates typically relies on long-term Treasury Bond yield forecasts in its implementation of CAPM. Also see Direct Testimony of Dr. Roger A. Morin on behalf of Public Service Co. of New Hampshire, Docket No. DE 04-177 (March 25, 2005) at 26, where Dr. Morin incorporated the forecast bond yield into his CAPM analysis. Also see Testimony and Exhibits of Roger A. Morin and Andrew E. Dinkel on behalf of National Grid, Niagara Mohawk Power Corporation (January 29, 2010) at 43, where Dr. Morin relied in part on a quarterly economic forecast of interest rates for the succeeding two years and beyond for his estimation of the risk-free rate.

forecast provided by experts is far more practical and provides essentially the same information.

Duff & Phelps, publishers of the Valuation Handbook, U.S. Guide to Cost of Capital, also recommend the use of a normalized risk-free rate rather than a spot rate in certain market conditions. Duff & Phelps offer the following observations:

> … in most circumstances we would prefer to use the "spot" yield on U.S. government bonds available in the market as a proxy for the U.S. risk-free rate. However, during times of flight to quality and/or high levels of central bank intervention, those lower observed yields imply a lower cost of capital (all other factors held the same) – just the opposite of what one would expect in times of relative economic distress – so a "normalization" adjustment may be considered appropriate. By "normalization" we mean estimating a rate that more likely reflects the sustainable average return of long-term risk-free rates. If spot yield-to-maturity were used at these times, without any other adjustments, one would arrive at an overall discount rate that is likely inappropriately low vis-à-vis risk currently facing investors.[19]

It is only necessary to examine the very low discount rate, that Mr. Baudino produces and ultimately discards, to recognize that interest rates remain abnormally low and discount rates should be set at levels that are sustainable. If one were to accept Mr. Baudino's market risk premium and beta, of 7.1 percent and 0.68, respectively, we can back into an implied risk-free rate from recent authorized returns. From June 2018 to present, the median return for a vertically-integrated electric utility was 9.63 percent.[20] Applying beta to Mr. Baudino's market risk premium of 7.1 percent yields a risk premium of 4.83 percent. Subtracting the risk premium from the recent authorized return of 9.63 percent, implies a risk-free rate of 4.80 percent, i.e. 4.80 + 0.68 (7.10) = 9.63 percent. This

[19] Duff & Phelps, Valuation Handbook (2017) at 3-23.

[20] Data per RRA database, listing the following authorized returns for vertically integrated electric utilities since June 2018: Hawaii Electric Light Company, Inc. 9.5% (June 2018), Hawaiian Electric Company, Inc. 9.5% (June 2018), and Duke Energy Carolinas, LLC 9.9% (June 2018), median 9.63%. There were no returns issued in July or August 2018 for vertically-integrated electric utilities.

suggests that Mr. Baudino's market risk premium or risk-free rate, or both, are substantially understated.

Another area of methodological disagreement between Mr. Baudino and me is his use of a short-term (5-year) Treasury yield as the risk-free rate in one of the derivations of his CAPM model. The basic principle for selecting the appropriate horizon for a CAPM analysis is that the time horizon should match the expected useful life of the assets being valued. Specifically, as noted by Morningstar:

> The traditional thinking regarding the time horizon of the chosen Treasury security is that it should match the time horizon of whatever is being valued… Note that the horizon is a function of the investment, not the investor. If an investor plans to hold stock in a company for only five years, the yield on a five-year Treasury note would not be appropriate since the company will continue to exist beyond those five years.[21]

In this case, electric distribution assets such as those included in GMP's rate base are long-lived assets with an expected useful life typically in the range of 30 to 45 years. Since the average useful life of the assets being financed is greater than 30 years, using the yield on 30-year bonds is more appropriate than bonds with shorter terms. This is also consistent with the recommendation of Dr. Morin's regulatory finance text cited by Mr. Baudino, where Dr. Morin states:

> To implement the CAPM methodology, an estimate of the risk-free return is required. As a proxy for the risk-free rate, long-term rates are the relevant benchmarks when determining the cost of common equity rather than short-term or intermediate-term interest rates. There are several reasons for this, both conceptual and practical.
>
> At the conceptual level, because common stock is a long-term investment and because the cash flows to investors in the form of dividends last indefinitely, the yield on very long-term government bonds, namely, the yield on 30-year Treasury bonds, is the best measure of the risk-free rate for use in the CAPM and Risk Premium methods….

[21] Morningstar Inc., Ibbotson SBBI 2013 Valuation Yearbook, at 44.

> …At the practical level, short-term rates are volatile, fluctuate widely, and are subject to more random disturbances than are long-term rates, leading to volatile and unreliable equity return estimates.[22]

In summary, consideration of fundamental economic principles should lead one to the use of the 30-year government bond as the risk-free rate in this proceeding.

Mr. Baudino expressed a concern that long-term bonds are subject to interest rate risk and are not truly risk-free. This, however, is not a valid concern for using a long-term bond for the risk-free rate for the reasons cited below in the passage from Dr. Morin's textbook, where he states:

> While long term Treasury bonds are potentially subject to interest rate risk, and are not theoretically "risk-free," this is only true if the bonds are sold prior to maturity. A substantial fraction of bond market participants, usually institutional investors with long-term liabilities (pension funds, insurance companies), in fact, hold bonds until they mature, and therefore are not subject to interest rate risk.[23]

In practice, I have observed that the 30-year Treasury yield is commonly used as the risk-free rate of the CAPM model in utility regulatory proceedings in the U.S. and Canada.

Mr. Baudino and I also differ methodologically on our respective derivations of the market risk premium for the CAPM model. Mr. Baudino has introduced four measures of the market risk premium in his CAPM analysis: a forward-looking "ex-ante" market risk premium; a historical market risk premium derived by a geometric average of returns; a historical market risk premium derived by an arithmetic average of returns; and a historical risk premium based on a Duff & Phelps study that removes the effects of growth in the P/E

[22] Roger A. Morin, PhD, New Regulatory Finance, Public Utilities Reports, Inc. (2006) at 151-152.
[23] Roger A. Morin, PhD, New Regulatory Finance, Public Utilities Reports, Inc. (2006) at 152.

ratio from the historical risk premium. I take exception to Mr. Baudino's use of a geometrically averaged market risk premium.[24]

The geometric average serves a specific purpose, as do arithmetic returns. The geometric mean is the compound rate that equates a beginning value to its ending value. It is used to determine the exact rate of compounded return between a specific starting and ending point. The arithmetic mean is the simple average of single period rates of return and best approximates the uncertainty associated with returns from year to year. The important distinction between the two methods is that the arithmetic mean assumes that each periodic return is an independent observation and, therefore, incorporates uncertainty into the calculation of the long-term average. By contrast, the geometric mean does not incorporate the same degree of uncertainty because it assumes that returns remain constant from year to year. In his review of literature on the topic, Cooper noted the following rationale for using the arithmetic mean:

> Note that the arithmetic mean, not the geometric mean is the relevant value for this purpose. The quantity desired is the rate of return that investors expect over the next year for the random annual rate of return on the market. The arithmetic mean, or simple average, is the unbiased measure of the expected value of repeated observations of a random variable, not the geometric mean.…[The] geometric mean underestimates the expected annual rate of return.[25]

Using the arithmetic mean return increases Mr. Baudino's historical MRP to 7.0 percent, as shown in Exhibit PSD-RAB-5, which is still below both his forward-looking estimate and mine.

[24] Baudino Exhibit PSD-RAB-5.

[25] Ian Cooper, *Arithmetic versus geometric mean estimators: Setting discount rates for capital budgeting*, European Financial Management 2.2, (1996): 158.

Mr. Baudino argues that my forward-looking market risk premium is not a good proxy for the market because it is based on the S&P 500 index, which is limited to the 500 largest companies in the U.S., and that my estimated market returns are overstated.[26] By comparison, Mr. Baudino has used all the companies in the Value Line Investment Survey to develop his total market return of 10.00 to 10.83 percent.[27] I disagree with Mr. Baudino that my forward-looking market return of 14.72 percent is excessive and not a good proxy for the market return. The S&P 500 is a widely-referenced measure of market returns representative of the broader diversified market and is appropriate for the determination of investor expectations for equity returns. Further, for consistency, the market index employed should closely correspond to the market index used to derive beta, generally either the NYSE index or S&P 500 index.[28]

Though Mr. Baudino disagrees with my methodology, it is taught by academic practitioners and is an accepted basis for calculating a forward-looking market risk premium by the FERC. In Opinion No. 531-B, the FERC accepted the method I have used to calculate the forward-looking market risk premium (i.e., applying a Constant Growth DCF analysis to the S&P 500). Regarding whether using a single-stage DCF analysis of the S&P 500 to calculate the market risk premium for the CAPM analysis produces sustainable results, the FERC writes:

> The rationale for incorporating a long-term growth rate estimate in conducting a two-step DCF analysis of a specific group of utilities does not necessarily apply when conducting a DCF study of the companies in the S&P 500. That is because the S&P 500 is regularly updated to include only companies with high market capitalization. While an individual company cannot be expected to sustain high short-term growth rates in perpetuity, the same cannot be said for a stock index like the S&P 500 that is regularly

[26] Baudino Direct, at 47.
[27] Ibid.
[28] Roger A. Morin, PhD*, New Regulatory Finance*, Public Utilities Reports, Inc. (2006) at 159-160.

> updated to contain only companies with high market capitalization, and the record in this proceeding does not indicate that the growth rate of the S&P 500 stock index is unsustainable.[29]

Further, Dr. Morin describes the methodology in his book that I have used to develop a forward-looking MRP, based on a DCF analysis of the S&P 500, as one of the common approaches to estimate the MRP:

> A second approach to estimate the MRP is prospective in nature and consists of applying the DCF model to a representative market index, such as the Standard & Poor's 500 Index, Value Line Composite Index, or the New York Stock Exchange Index.[30]

My conclusion is that without reasonable adjustments to the risk-free rate and market risk premium, the results of Mr. Baudino's CAPM analysis are too far below the range of a reasonable return to be considered useful in determining GMP's allowed equity return.

C. Business Risk of Green Mountain Power

Mr. Baudino concludes in his testimony that, other things being equal, GMP has lower risk and a slightly lower expected ROE than the proxy group average.[31] Mr. Baudino has made his risk determination based on a high-level comparative analysis of credit ratings. To the contrary, I find that GMP's business risk profile is distinctly higher than the proxy group average due to the existence of four key risk attributes. First, GMP is substantially smaller than the average proxy group company and small size is accompanied by greater volatility in returns and higher business risk. Second, GMP has taken an aggressive stance towards returning tax overcollections stemming from the Tax Cut and Jobs Act of 2017 which

[29] Federal Energy Regulatory Commission, Opinion No. 531-B, March 3, 2015, at paragraph 113.
[30] Roger A. Morin, PhD*, New Regulatory Finance*, Public Utilities Reports, Inc. (2006) at 159.
[31] Baudino Direct, at 22.

subject its already more volatile returns to a reduced level of cash flow. Third, the Company's steadily declining sales volume due to net-metered solar generation and energy efficiency, along with the level of innovative capital expenditure spending subjects GMP to greater risk associated with recovering its investment and the return on its investment. Lastly, uncertainty around the supportive elements of GMP's Multi-Year Rate Plan that are yet to be determined, increase risk. For these reasons, GMP should be at the upper end of the risk spectrum of the vertically integrated electric utilities in its proxy group.

Mr. Baudino agrees that economic literature recognizes that smaller companies may be considered riskier by investors and command higher required returns as a result. However, he takes the position that GMP is a regulated utility which reduces its risk compared to smaller, unregulated companies. However, even large regulated utilities have advantages over small regulated utilities, particularly from a cash flow perspective. As shown in Figure 14 of my Direct Testimony, the implied market capitalization of GMP is substantially smaller than other companies in the proxy group and accordingly its business risk is higher than the proxy group. Smaller utilities have less financial where-with-all to absorb large unforeseen expenditures or revenue loss. Though regulation does attempt to mitigate this risk, there is an undisputed disadvantage to a small company to manage large earnings shocks compared to a regulated utility many times its size.

Mr. Baudino's credit rating comparison provides little basis for the suggestion that GMP is lower risk and should have a lower ROE than the proxy group companies as a result. He indicates that "any concerns with respect to size and regulatory risk are already considered in the credit rating of GMP and the companies in the proxy group."[32] That may

[32] Baudino Direct, at 49-50.

be true for debt investors, but as I have illustrated in my testimony, GMP has higher relative risk associated with its size, regulatory risk, and its innovative capital initiatives than the proxy group.[33] These risks will primarily affect equity investors – not debt investors. There is no basis for Mr. Baudino's suggestion that GMP's risk warrants a lower ROE.

[33] Coyne Direct, at 56-66.