coefficients Mr. Proctor observes. As discussed in my Revised Direct Testimony, those policies now are being "normalized".[94]

The question is whether the currently low Beta coefficients adequately reflect expected systematic risk and, therefore, required returns. As discussed below, published research has found low-Beta coefficient companies (such as utilities) have tended to earn returns greater than those predicted by the CAPM. Consequently, the relatively low Beta coefficients Mr. Proctor observes likely under-estimate investors' return requirements. One means of addressing Mr. Proctor's observation is the Empirical Capital Asset Pricing Model, discussed below.

Empirical Capital Asset Pricing Model

Q40. PLEASE BRIEFLY DESCRIBE THE EMPIRICAL CAPITAL ASSET PRICING MODEL ("ECAPM", OR "EMPIRICAL CAPM").

A. The Empirical CAPM adjusts for the CAPM's tendency to under-estimate returns for companies that (like utilities) have Beta coefficients less than the market mean of 1.00, and over-estimate returns for relatively high-Beta coefficient stocks.[95] Fama and French succinctly describe the empirical issue addressed by the ECAPM when they note "[t]he returns on the low beta portfolios are too high, and the returns on the high beta portfolios are too low."[96] Similarly, Dr. Roger Morin observes that "[w]ith few exceptions, the

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94 *Ibid.*, at 72.

95 Roger A. Morin, New Regulatory Finance (Public Utility Reports, Inc., 2006), at 175–176.

96 Eugene F. Fama and Kenneth R. French, The Capital Asset Pricing Model: Theory and Evidence, Journal of Economic Perspectives, Vol. 18, No. 3, Summer 2004, at 33.

empirical studies agree that … low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted."[97] As Dr. Morin also explains, the ECAPM "makes use" of those findings, and estimates the Cost of Equity based on the following equation:[98]

$$k_e = R_f + \alpha + \beta(MRP - \alpha) \quad [1]$$

where α, or "alpha," is an adjustment to the risk/return line, and "MRP" is the Market Risk Premium (defined above). Summarizing empirical evidence regarding the range of estimates for alpha, Dr. Morin explains that the model "reduces to the following more pragmatic form"[99]:

$$k_e = R_f + 0.25(R_m - R_f) + 0.75\beta(R_m - R_f) \quad [2]$$

where:

k_e = the investor-required ROE;

R_f = the risk-free rate of return;

β = Adjusted Beta coefficient of an individual security; and

R_m = the required return on the market.

The relationship between expected returns from the CAPM and ECAPM can be seen in Chart 7, below. That chart, which reflects Mr. Proctor's risk-free rate and Market Risk Premium, illustrates the extent to which the CAPM understates the expected return relative to the ECAPM when Beta coefficients are less than 1.00.

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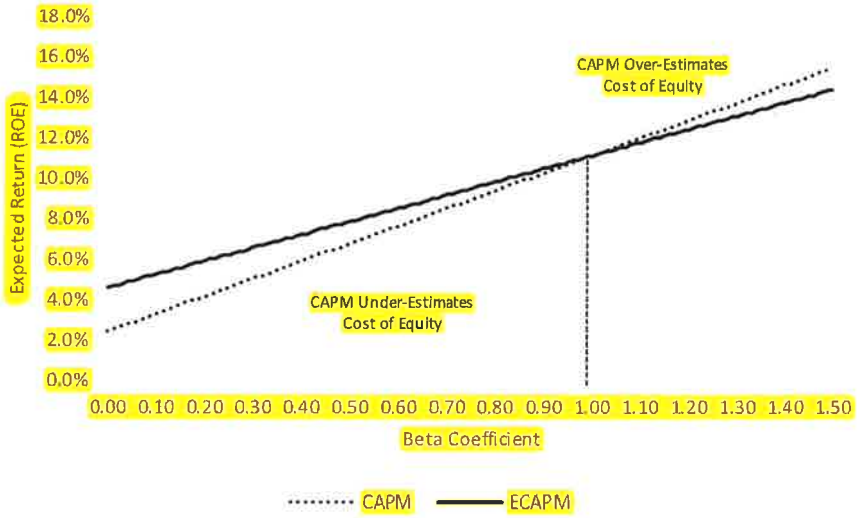
97 Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 175.

98 *Ibid.*, at 189.

99 *Ibid.*, at 190. Equations [1] and [2] tend to produce similar results when "alpha" is in the range of 1.00 percent to 2.00 percent. *See* ENO Exhibit RBH-26. As Dr. Morin explains, alpha coefficients in that range are highly consistent with those identified in prior published research.

Chart 7: CAPM and ECAPM Expected Returns[100]



The ECAPM is an adjustment to the risk/return line which, as noted in Chart 7 above, is flatter than the CAPM assumes. That adjustment is required even with the use of adjusted Beta coefficients, such as those provide by Value Line. As Dr. Morin observes:

> Fundamentally, the ECAPM is not an adjustment, increase or decrease, in beta. This is obvious from the fact that the expected return on high beta securities is actually lower than that produced by the CAPM estimate. The ECAPM is a formal recognition that the observed risk-return tradeoff is flatter than predicted by the CAPM based on myriad empirical evidence. *The ECAPM and the use of adjusted betas comprised two separate features of asset pricing...Both adjustments are necessary.*[101]

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100 *See* ENO Exhibit RBH-26. The finding that the ECAPM is not an adjustment to the Beta coefficient is clear in Equation [1] ($k_e = R_f + \alpha + \beta(MRP - \alpha)$), in which the alpha coefficient increases the intercept (the expected return when the Beta coefficient equals zero), and reduces the Market Risk Premium.

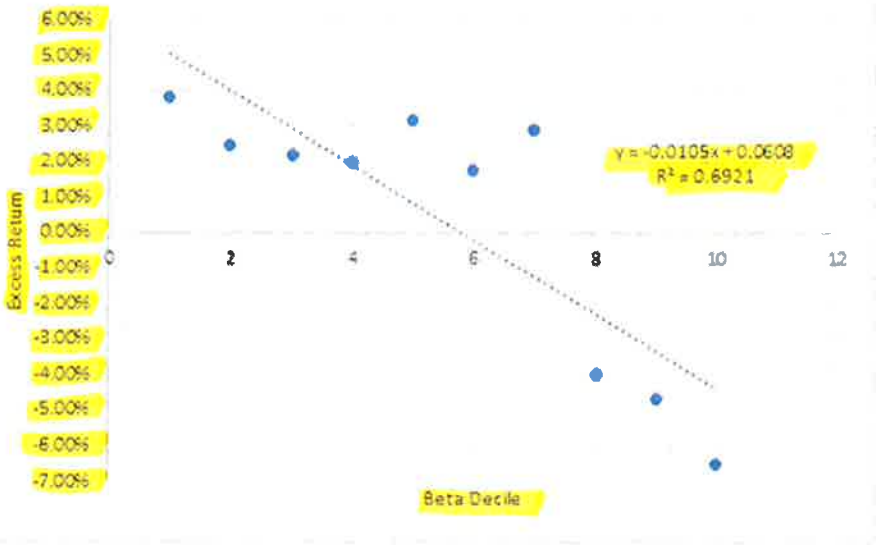
101 Roger A. Morin, New Regulatory Finance, Public Utility Reports, Inc., 2006, at 191 [*emphasis added*].

Q41. HAVE YOU UNDERTAKEN ANY INDEPENDENT ANALYSES TO DETERMINE WHETHER THERE IS A RELATIONSHIP BETWEEN BETA COEFFICIENTS AND EXCESS RETURNS PRODUCED BY THE CAPM AND ECAPM?

A. Yes, I performed an analysis of excess returns[102] produced by the CAPM, by Beta coefficient decile, over the ten years ended 2018. The analysis compared the observed returns of the companies in the S&P 500 Index to expected returns based on the CAPM. Observed returns were calculated as the total return for each company from the first day of a given year to the end of that year. The expected return for each company was calculated using the CAPM as applied to the following annual data: (1) a risk-free rate equal to the average 30-year Treasury yield for that year; (2) an adjusted Beta coefficient as of the beginning of the year using Bloomberg's standard calculation methodology (two years of weekly return data, using the S&P 500 Index as the comparison benchmark); and (3) a market return equal to the S&P 500 Index total return for that year. The companies were grouped into deciles each year based on their Beta coefficients, and the median excess return (or return deficiency) was calculated for each decile group. Excess returns were calculated as the observed return less the return implied by the CAPM. Chart 8 (below) summarizes those results.

[102] As noted below, "excess returns" is defined as the observed return less the return implied by the CAPM.

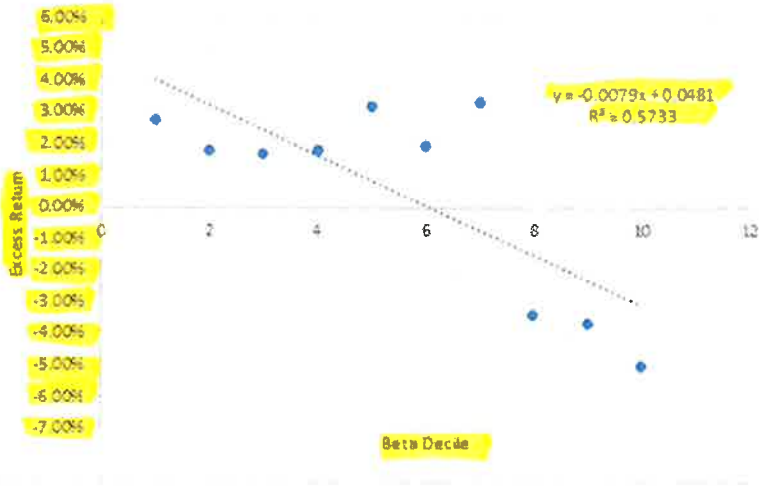
Chart 8: Excess Returns Under CAPM[103]



As Chart 8 demonstrates, the relationship between Excess Return and Beta coefficient deciles is strong, with deciles explaining more than 69.00 percent of the Excess Return. Using the same data and calculating the Excess Return by reference to the ECAPM (as defined by Equation [2], above), produces the same downward sloping relationship, but not to the same degree (*see* Chart 9, below).

103 Source: Bloomberg Professional Services.

Chart 9: Excess Returns Under the ECAPM[104]



There are two principal observations to be drawn from the data presented in Charts 8 and 9. First, under the ECAPM the slope coefficient falls somewhat (relative to the CAPM), suggesting a flatter relationship between Beta coefficient deciles and the excess return. The flatter slope moves closer to the point at which the excess return is zero across all deciles. Second, the excess return values are somewhat moderated under the ECAPM; the high excess returns are lower than under the CAPM, and the low excess returns are higher. Again, that finding suggests the ECAPM mitigates, but does not solve the issue of the CAPM underestimating returns for low Beta coefficient firms.

In summary, Charts 8 and 9 support the position that the CAPM tends to underestimate returns for low-Beta coefficient firms, and the ECAPM moderates but does not eliminate that effect. Because the ECAPM addresses the drift in Beta coefficients

104 Source: Bloomberg Professional Services.

Mr. Proctor observes, I believe it is a reasonable method, and have included results based on the ECAPM in my updated analyses.[105]

E. Discounted Cash Flow Analyses

Q42. PLEASE BRIEFLY DESCRIBE MR. WATSON'S CONSTANT GROWTH DCF ANALYSIS AND RESULTS.

A. Mr. Watson calculates an average dividend yield of 3.38 percent by dividing each proxy company's annualized dividend by its monthly average stock price for the six-month period ending December 2018.[106] For the expected growth rate, Mr. Watson relies on Earnings Per Share growth rate projections from Thomson Reuters.[107] Based on those estimates, Mr. Watson calculates a Constant Growth DCF-based range of 5.13 percent to 12.11 percent, with mean and median results of 8.60 percent and 8.16 percent, respectively.[108]

Q43. WHAT CONCERNS DOES MR. WATSON RAISE REGARDING THE CONSTANT GROWTH DCF METHOD?

A. Mr. Watson summarizes his concern by observing "trees don't grow to the sky".[109] He argues that any company whose expected growth rate exceeds expected GDP growth

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105 *See* ENO Exhibit RBH-18.

106 Exhibit No.__(BSW-4), at 2. 3.38 percent represents the average dividend yield of Mr. Watson's final proxy group.

107 Exhibit No.__(BSW-4), at 2.

108 Exhibit No.__(BSW-4), at 1.

109 Direct Testimony of Byron S. Watson, at 14.

industries can, utilities became less attractive relative to other industry sectors.[148] That change in valuation has been meaningful, and longer-lived than Mr. Proctor supposes.

Third, the TCJA will affect each company differently and rating agencies are evaluating how each has addressed these effects. Moody's stated it would "continue to monitor the financial impact of tax reform on each company, including its regulatory approach to rate treatment",[149] which suggests likewise treatment by equity investors.

Q62. ARE THERE EMPIRICAL METHODS THAT CAN BE USED TO ASSESS THE EFFECT OF AN EVENT SUCH AS THE TCJA ON UTILITY STOCK PERFORMANCE?

A. Yes, a method frequently used is an "event study", or a "cumulative abnormal return" analysis. To understand whether a specific event affected stock prices, it is important to control for factors beyond the event under consideration. The portion of the stock's return that is not attributable to those other factors is considered the "abnormal" or "excess" return; the sum of those excess returns is the "cumulative" abnormal return.

To apply that approach, I defined the abnormal return on a given day as:

$$A_t = R_{i,t} - R_{m,t} \quad [3]$$

148 Revised Direct Testimony of Robert B. Hevert, at 59–60.

149 Moody's Investors Service, *Rating Action: Moody's changes outlooks on 25 US regulated utilities primarily impacted by tax reform,* January 19, 2018.

where A_t is the Abnormal Return on day t, $R_{i,t}$ is the actual return for the proxy group[150] on day t, and $R_{m,t}$ is the expected return for the proxy group defined in Equation [4] below.

$$R_{m,t} = \alpha_t + \beta_{m,t} \quad [4]$$

The expected return, $R_{m,t}$, (sometimes referred to as the "market-adjusted return") is based on a regression equation in which Mr. Watson's proxy group's daily returns[151] are the dependent variable, and the market's daily return (measured by the S&P 500 Index) is the explanatory variable. Because it relies on market-adjusted returns, the approach controls for factors that, like the TCJA, affect companies across market sectors. Consistent with Value Line's approach for calculating Beta coefficients, I applied the regression (*i.e.*, Equation [4]) over five years, using daily (rather than weekly) returns. The equation and slope coefficient both were statistically significant (*see* Table 4, below).

Table 4: Market Model Regression Statistics

	Slope	Intercept
Coefficient	0.3803	0.0002
Std. Err.	0.0293	0.0002
R-Square	0.1180	
F-Stat	168.3746	
t-Stat	12.9759	0.974

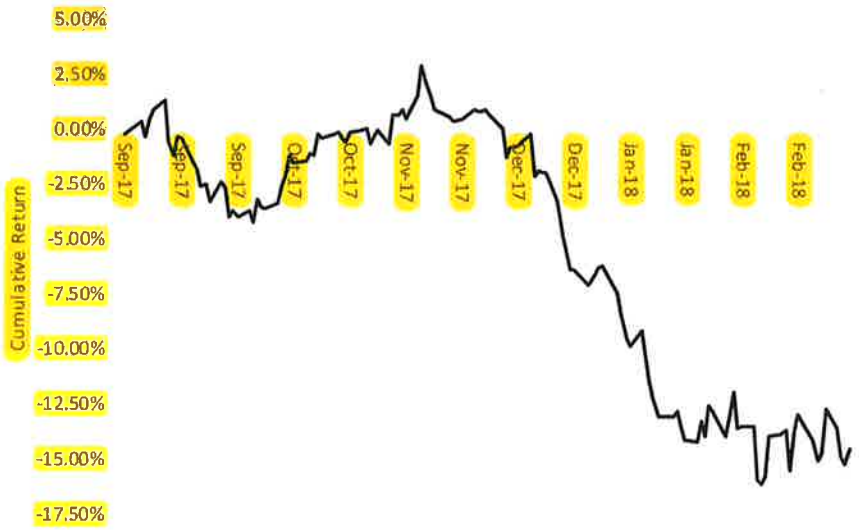
To determine whether the TCJA likely affected the proxy companies' stock valuations, I considered the "event date" to be December 1, 2017. Because it pre-dates the TCJA's enactment, the event date provides for the likelihood that equity investors

150 Calculated as an index. Source: S&P Global Market Intelligence.

151 Calculated as an index. Source: S&P Global Market Intelligence.

were aware of, and began to consider how the TCJA may affect utility risks before the TCJA became law. I then calculated the cumulative abnormal return for each day over a window that spanned from September 1, 2017 to March 1, 2018 (that is, approximately three months before and after December 1, 2017). Chart 10 (below) provides the cumulative abnormal return over that period (*i.e.*, negative 15.27 percent).

Chart 10: Mr. Watson's Proxy Group Cumulative Abnormal Return[152]



To consider Mr. Proctor's view that the TCJA's effect over time is "immaterial", I extended the post-event window to December 31, 2018. Even in that case, with the effect of intervening events, the abnormal return remained well below zero (*see* Chart 11, below).

152 Source: S&P Global Market Intelligence. Based on a t-test, the cumulative abnormal returns are statistically significant.

Chart 11: Cumulative Abnormal Return Extended[153]

Q63. WHAT CONCLUSIONS DO YOU DRAW FROM THOSE ANALYSES?

A. Controlling for market-wide events, the TCJA has had a strong negative effect on Mr. Proctor's proxy group; that effect has continued over time. We therefore reasonably can conclude that aside from actions taken by rating agencies, the TCJA meaningfully – and negatively – affected utility stock prices, and should be considered in determining the Company's ROE.

153 Source: S&P Global Market Intelligence. Based on a t-test, the cumulative abnormal returns are statistically significant.

1.41 percent (December). Simply based on the movement of Treasury yields and credit spreads since 2016, there is no reason to conclude utility bond yields indicate a lower Cost of Equity, as Mr. Baudino suggests. If anything, we may conclude that because both Treasury yields and credit spreads increased during 2018, investors' perceptions of utility risk also have increased.

VI. SUMMARY OF UPDATED RESULTS

Q152. PLEASE SUMMARIZE YOUR UPDATED ROE ANALYSES AND RESULTS.

A. I have updated many of the analyses contained in my Revised Direct Testimony, including the Constant Growth and Multi-Stage DCF analyses, the CAPM, and the Bond Yield Plus Risk Premium approach with data as of February 28, 2019. As noted in my response to the Advisors' ROE Witnesses, I have also included an ECAPM analysis and Expected Earnings analysis. Lastly, I have updated my proxy group based on recent data.[358] My updated analytical results based are provided in Table 11 below.

[358] The July 27, 2018 Value Line report for IDACORP, Inc. states its recent high stock price reflects takeover speculation. Consequently, I have removed IDACORP from my proxy group. Additionally, as enough time has passed since the merger between Great Plains Energy, Inc. and Westar Energy, Inc. to form Evergy, Inc., I have included Evergy, Inc. in my proxy group.

Table 11: Summary of Updated Analytical Results

Discounted Cash Flow	***Mean Low***	***Mean***	***Mean High***
30-Day Constant Growth DCF	8.34%	9.24%	10.23%
90-Day Constant Growth DCF	8.40%	9.31%	10.30%
180-Day Constant Growth DCF	8.48%	9.39%	10.38%
MSDCF-Gordon Method			
30-Day Multi-Stage DCF	8.64%	8.87%	9.13%
90-Day Multi-Stage DCF	8.71%	8.94%	9.20%
180-Day Multi-Stage DCF	8.79%	9.02%	9.30%
MSDCF-Terminal P/E			
30-Day Multi-Stage DCF	8.35%	8.96%	9.64%
90-Day Multi-Stage DCF	8.52%	9.13%	9.81%
180-Day Multi-Stage DCF	8.74%	9.36%	10.04%
CAPM Results		***Bloomberg Derived Market Risk Premium***	***Value Line Derived Market Risk Premium***
Average Bloomberg Beta Coefficient			
Current 30-Year Treasury (3.04%)		8.25%	9.78%
Near-Term Projected 30-Year Treasury (3.25%)		8.47%	10.00%
Average Value Line Beta Coefficient			
Current 30-Year Treasury (3.04%)		9.29%	11.12%
Near-Term Projected 30-Year Treasury (3.25%)		9.50%	11.34%
ECAPM Results		***Bloomberg Derived Market Risk Premium***	***Value Line Derived Market Risk Premium***
Average Bloomberg Beta Coefficient			
Current 30-Year Treasury (3.04%)		9.61%	11.54%
Near-Term Projected 30-Year Treasury (3.25%)		9.83%	11.75%
Average Value Line Beta Coefficient			
Current 30-Year Treasury (3.04%)		10.39%	12.54%
Near-Term Projected 30-Year Treasury (3.25%)		10.60%	12.76%
		Average	**Median**
Expected Earnings		10.34%	10.52%
Bond Yield Risk Premium			
	Low	***Mid***	***High***
Bond Yield Risk Premium	9.93%	9.96%	10.17%