

April 21, 2022

Norman Ross
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Re: Response to Comments on the 2022 Capitalization Rate Study for Electric Utilities

Mr. Ross:

The department would like to thank you for taking the time to review our study and for providing additional information for us to consider. The following summarizes the main areas identified for further consideration:

- Comments provided and considered prior to initial study:
 - Selection of guideline companies
 - Relationship between Yield and Direct Capitalization
- Comments considered in issuing the final study:
 - Capital Asset Pricing Model – Damodaran Implied Equity Risk Premium
 - Debt in the capital structure
 - Growth in the Dividend Discount Model

Based on the comments, we adjusted the growth rate used in the Dividend Discount Model and lowered our weighting placed on Damodaran's Equity Risk Premiums when selecting our Equity Risk Premium in the Capital Asset Pricing Model.

A more detailed discussion on how we arrived at these conclusions follows:

Selection of Guideline Companies

Comments pertaining to the guideline companies were provided and considered prior to our initial study being published. Although we did not include all of the guideline companies requested, we did increase the number of guideline companies utilized in our study.

Relationship between Yield and Direct Capitalization

The following comments were provided:

The Department should take note of the well-known relationship between direct and yield rates when considering the reasonableness of the state's equity yield rate or cost of equity capital. See my February 23rd email for a more detailed discussion of this subject.

At a very high level the argument being presented is that when converting a discount rate to a capitalization rate the difference is attributable to growth. This is true when comparing two rates developed for the same level of income. However, the NOI Direct Capitalization rate is meant to be

applied to Net Operating Income After Tax and the Yield Capitalization Rate is meant to be applied to Net Cash Flow. These are developed from and meant to be applied to two different levels of income.

Shannon Pratt in his text *Valuing a Business* explains, that a discount rate applicable to net cash flow would have to be adjusted for the relationship of net income to net cash flow to make a rate developed for net cash flow comparable to net income and that this ratio would have to remain constant over time. He further goes on to caution that this assumption is rarely met in the real-world.¹

This text also explains that, Net cash flow is generally lower than net income or any other economic income measures that the appraiser is likely to discount or capitalize. Therefore, the discount rate applicable to other measures is almost inevitably higher than the discount rate applicable to net cash flow.²

This is consistent with our experience and is supported by the fact that in most of our appraisals our free cash flow to the firm is less than the company's net operating profit after tax. This ratio or difference would have to be considered when comparing our Net Cash Flow discount rate to our Net Income Direct Capitalization Rate.

Capital Asset Pricing Model – Damodaran Implied Equity Risk Premium

The following comments were provided:

The Department's use of Damodaran's implied equity risk premiums despite the fact that the returns on the market derived from his use of 10 year treasury yield rates as a proxy for long-term growth have substantially understated market returns since the early 1960s. See my February 16th email for a more detailed discussion of this subject.

We appreciate the additional analysis and do understand the methodology utilized by Damodaran. Damodaran provides ample supporting worksheets, documentation, and even videos detailing his approach. When selecting our cost of equity estimate we place weight on the various equity indicators based on their applicability to our valuation approaches.

Further, Damodaran provides the following analysis when considering which approaches are "best" at predicting the cost of equity.³

To answer this question, we looked at the implied equity risk premiums from 1960 to 2020 and considered four predictors of this premium – the historical risk premium through the end of the prior year, the implied equity risk premium at the end of the prior year, the average implied equity risk premium over the previous five years and the premium implied by the Baa default spread. Since the survey data does not go back very far, we could not test the efficacy of the survey premium. Our results are summarized in table 26:

¹ Shannon Pratt, *Valuing a Business*, 5th ed., Pg. 225-227.

² *Ibid*, Pg. 226.

³ Damodaran, *Equity Risk Premiums (ERP): Determinations, Estimation, and Implications – The 2021 Edition Updated: March 23, 2021*, Accessed at: <https://ssrn.com/abstract=3825823>, Pg. 127-128.

Table 26: Predictive Power of different estimates- 160 – 2020

Predictor	Correlation with implied premium next year	Correlation with actual return- next 5 years	Correlation with actual return – next 10 years
Earnings Yield	0.425**	0.219	0.429**
Dividend Yield	0.147	0.246	0.432**
Current implied premium	0.768**	0.450**	0.568**
Average implied premium: Last 5 years	0.728**	0.356**	0.499**
Historical premium	-0.512**	-0.455**	-0.559**
Default spread premium	0.028	0.141	0.233

** Significant at 5% level

Over this period, the implied equity risk premium at the end of the prior period was the best predictor of the implied equity risk premium in the next period, whereas historical risk premiums did worst. If we extend our analysis to make forecasts of the actual return premium earned by stocks over bonds for the next five or ten years, the current implied premium remains the best predictor, though the earnings yield does well for ten-year returns. Historical risk premiums perform even worse as forecasts of actual risk premiums over the next 5 or 10 years; in fact, they operate as good contra indicators, with a high historical risk premium forecasting lowered actual returns in the future. If predictive power were the only test, historical premiums clearly fail the test.

When considering a higher number means better correlation between the model and its predictive power the implied premium is superior to the historical premium.

Although we continue to believe that Damodaran’s risk premiums should remain in our study and be considered in our selection of our ex ante risk premium, we did decide to place less weight on Damodaran’s risk premium when finalizing our study. In our final study we selected an Ex Ante Equity Risk Premium of 5.91% (vs the initial premium of 5.60%)

Debt in the capital structure

The following comments were provided:

The Department’s practice of using fair value of debt amounts when calculating its capital structure should be discontinued. See my April 5th email for a more detailed discussion of this subject.

The request is to utilize the book value of debt instead of the fair value of debt. The justification being based on purchase price allocation information from past acquisitions by electric utilities.

We did not make this adjustment. As is described by Shannon Pratt and Roger Grabowski in their Cost of Capital text:

In the WACC, we are to use market value weights based on the relative percentage of debt capital and equity capital in a company's capital structure. . . For public companies, you can use the financial statement disclosures prepared under ASC 825, *Financial Instruments*, to determine the market value weight of debt. Under ASC 825, fair value is defined as market prices, if available; otherwise, a discounted cash flow (DCF) value based on future obligations discounted at either (1) the company's current incremental borrowing rate on similar liabilities or (2) the rate required to induce a third party to assume the debt ("settlement rate") can be used.⁴

When determining market value, a market value derived capital structure should be utilized. As such the department did not change its methodology for determining the capital structure.

Growth in the Dividend Discount Model

The following comments were provided:

The Department's multistage dividend discount models are impacted by a mathematical error which understates the estimate of short-term growth and even more affected by the failure to fully account for earnings per share during the years when growth is assumed to decline. See my April 7th email for a more detailed discussion of these issues.

The department reviewed its formula utilized to estimate the short-term growth rate and did determine that the appropriate number of periods to use in our formula for tax year 2022 was 3 periods and not 4 periods. Making this change did increase the indicated equity rate for each Dividend Discount Model. The rate based on dividend growth was determined to be 8.30% and the rate based on earnings growth was determined to be 8.40% (vs the initial rates of 7.65% and 7.70%).

Selected Cost of Equity

The initial and revised Selected Cost of Equity is demonstrated in the table below:

Initial and Revised Selected Cost of Equity

Equity Cost of Capital	Initial	Revised
Capital Asset Pricing Model - Ex Post	8.65%	8.65%
Capital Asset Pricing Model - Ex Ante	6.98%	7.26%
3 Stage Dividend Discount Model - Dividends	7.65%	8.30%
3 Stage Dividend Discount Model - Earnings	7.70%	8.40%
Weighted Average	7.75%	8.15%
Selected Cost of Equity	7.75%	8.15%

⁴ Shannon Pratt and Roger Grabowski, *Cost of Capital Applications and Examples*, 5th ed., Pg. 560.

Overall Weighted Average Cost of Capital

The initial and Revised Weighted Average Cost of Capital is provided below:

Initial Weighted Average Cost of Capital

Weighted Average Cost of Capital (WACC)					
Source of Capital	Capital Structure	Cost of Capital	Marginal Tax Rate	After-tax Cost of Capital	Weighted Cost
Equity	60.00%	7.75%		7.75%	4.65%
Debt	40.00%	3.37%	24.00%	2.56%	1.02%
WACC	100.00%				5.67%
WACC (Rounded)					5.70%

Revised Weighted Average Cost of Capital

Weighted Average Cost of Capital (WACC)					
Source of Capital	Capital Structure	Cost of Capital	Marginal Tax Rate	After-tax Cost of Capital	Weighted Cost
Equity	60.00%	8.15%		8.15%	4.89%
Debt	40.00%	3.37%	24.00%	2.56%	1.02%
WACC	100.00%				5.91%
WACC (Rounded)					5.95%

Again, I would like to thank you for your comments and the additional information you provided for our consideration. I look forward to any further discussion we may have throughout the 2022 appraisal season.

Our final 2022 Capitalization Rate Study for Electric Utilities can be found at:

<https://mtrevenue.gov/publications/cap-rate-studies/>

Sincerely,



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