Q. Reference: Transcript, April 6, 2016
Page 13, Lines 23-25

Undertake to file what it is you're referring to from BC (Regression analysis).

A. Mr. Coyne was asked to provide his full response to a filed interrogatory response to CEC in BC that examines the use of a dummy variable in Mr. Coyne's MRP regression. Mr. Coyne is requested by CEC to remove the dummy variable and provide an examination of the resulting regression.

Attachment A provides the series of IR requests from CEC and Mr. Coyne's responses.

FortisBC Energy Inc. Application for Common Equity Component and Return on Equity for 2016

Mr. Coyne's Responses to CEC IR Requests

46. Reference: Exhibit B-1, Appendix B, Pages 49 and 50; Exhibit B-4, CEC 1.1.2

> I have tested my market risk premium estimates by conducting a regression analysis on long Canada bond yields and annual market risk premiums calculated by Morningstar Ibbotson through 2011; and by Duff & Phelps thereafter. As can be seen in Exhibit JMC-6, I have isolated the effects of the global financial crisis in 2008 as an anomalous event that did not align with the normal relationship between treasury yields and market risk premiums. I have set this period aside by assigning a dummy variable to it. My analysis yielded a statistically significant value at the 85 percent confidence level, and in my opinion is informative of the relationship between bond yields and market risk premiums. Note that the coefficient for 30-year bond yields is negative 1.11, such that a negative change in the bond yield results in an almost equal increase in the market risk premium - evidence

that the market risk premium and bond yields are indeed inversely related. Using my 30-year Canadian bond yield forecast of 3.68 percent, the regression formula produced by my analysis yielded a market risk premium of 10.09 percent when the long Canada bond yield is 3.68 percent.

$$(MRP = 14.18\% + (-1.11 \times 3.68\%) + (-45.18 \times 0) = 10.09\%)$$

Accordingly, my estimate of the market risk premium of 7.6 percent is reasonable and appropriate and is more reflective of the current low interest rate environment than the long term average. Applying this MRP to the full expression of the CAPM formula, using the Canadian proxy group average beta of 0.65, would yield an ROE of 10.19 percent, when the Canada long bond is 3.68 percent; and 9.78 percent, when the Canada long bond yield is equal to the August 31, 2015 value of 2.23 percent.[78]

1.2 Please provide the results for the regression analysis if the 2008 period was not set aside.

Response:

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%
Intercept	10.2085509	6.738042772	1.515061753	0.138254	-3.44402	23.86112
Canada Long Bond	-0.745785974	0.799968377	-0.932269318	0.357241	-2.36668	0.875104

46.7 Please provide the market risk premium using the regression formula with all the information included and not excluding the 2008 data.

Response:

Below are the calculations based on the regression formulas, assuming a forecast interest rate of 3.68 percent:

2008 Excluded: MRP = 14.17709 + (-1.1105949 x 3.68) + (0 x -45.184734) = 10.09 percent

2008 Included: MRP = 10.208551 + (-0.745786 x 3.68) = 7.46 percent

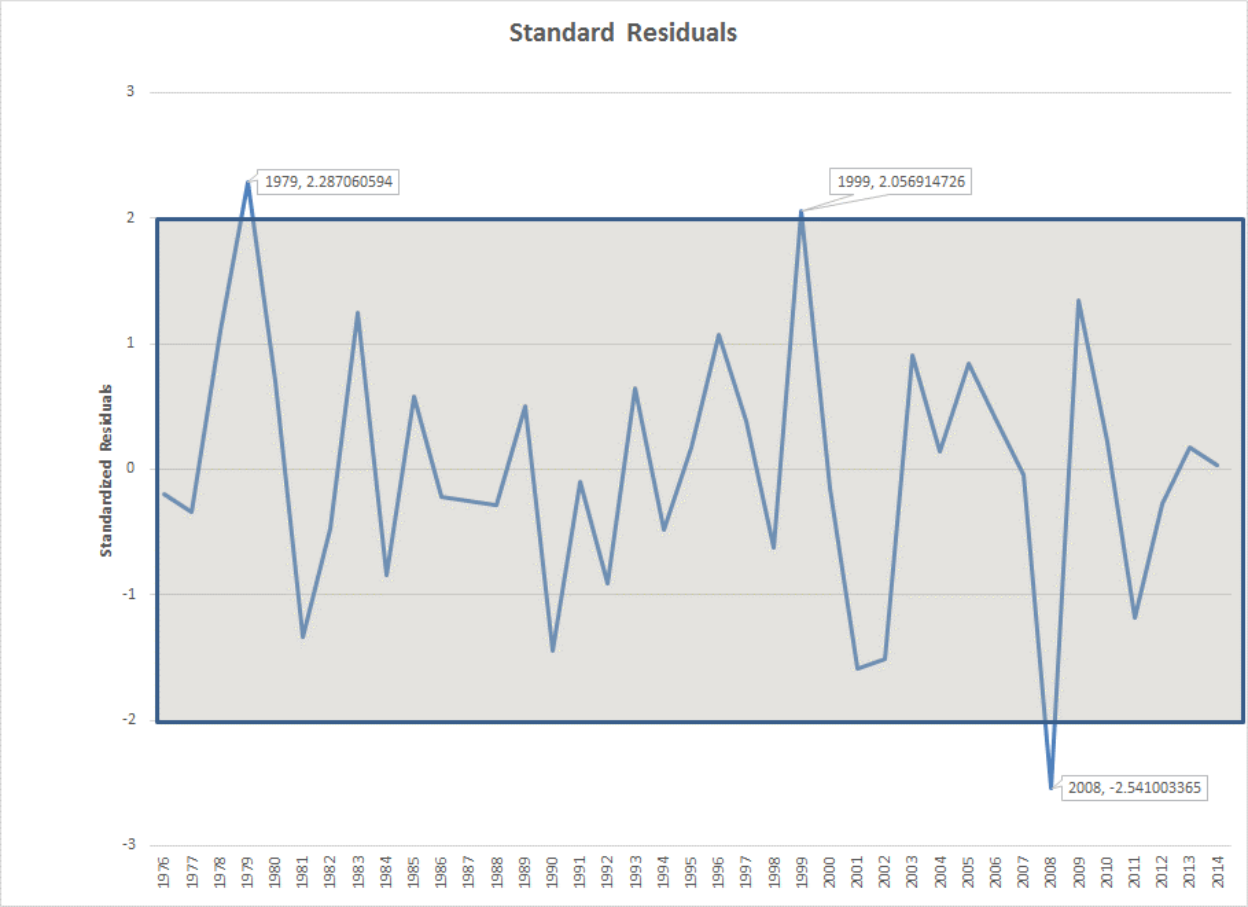
Mr. Coyne notes that the first regression (the regression provided in his testimony) is considerably stronger with an F-statistic of 4.4623 at a significance of 0.0186 (implying 98.14% confidence that model is appropriately inferring the relationship between the bond yields, the market crash of 2008, and the market risk premium) compared to an F-statistic for the second equation (the CEC-requested regression model) of 0.8691 at a significance level of 0.3572 or at 64.28% confidence that the model is correctly inferring the relationship between the dependent and independent variables. The variables of the first model contribute to the overall understanding of the relationship at a higher significance level (nearly 99%) and the exclusion of either independent variable, would undermine the ability of the model to describe the relationship between bond yields and the market risk premium.

46.8 Were there any other 'anomalous' events such as sky-high interest rates in the early 80s which did not align with the normal relationship between treasury yields and market premiums that would have been incorporated into the data and not set aside?

Response:

In reviewing the graph of standardized residuals where all available data is included, it appears there are 3 periods where the standardized residuals exceeds 2, a level that by review of the

data has occurred in only 3 periods over the past four decades. The standardized residual could be interpreted as the number of standard deviations the residual represents from the predicted MRP. Mr. Coyne considers two standard deviations sufficiently large to be considered an 'anomalous' event.



46.8.1 If yes, please provide a list of the anomalous events that did not align with the normal relationship between treasury yields and market risk premiums.

Response:

The periods were: 1979, 1999 and 2008. The 1979 period just proceeded a recession and the 1999 period marked a peak which preceded a significant decline, similar to that of 1979. Removing the three periods above further strengthens the regression results such that all variables are statistically significant at the 95th percentile. The results are shown below. The

below regression equation results in a market risk premium of 8.473 percent, which is greater than the 7.6% used in Mr. Coyne's CAPM analysis.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.665199118
R Square	0.442489867
Adjusted R Square	0.376900439
Standard Error	13.41714775
Observations	39

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	4857.914714	1214.478678	6.746359653	0.000413862
Residual	34	6120.67503	180.0198538		
Total	38	10978.58974			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	12.87812382	5.521703842	2.33227355	0.025744231	1.656671506	24.09957613
Canada Long Bond	-1.196995868	0.64881216	-1.844903566	0.073777439	-2.515540818	0.121549082
1979 Recession	40.49532028	13.71646039	2.952315621	0.005682627	12.62011896	68.3705216
1999 Boom	34.47068754	13.6677071	2.522053428	0.016516606	6.694564831	62.24681025
2008 Recession	-43.53627553	13.81655079	-3.151023449	0.003386043	-71.61488502	-15.45766605

46.8.2 If yes, please explain why all the anomalous events were not set aside.

Response:

According to the chart shown in CEC IR-2.46.8 above, the above noted events were of a lesser magnitude.

46.8.3 If yes, please provide the criteria that were used to determine which anomalous events should be set aside.

Response:

Mr. Coyne selected only the 2008 recession since it was singularly important and already known to him to have resulted in anomalous market activity. However, Mr. Coyne finds the criteria he used in CEC IR-2.46.8.1 provides a reasonable approach to identifying anomalous events.