Q. Please provide Page 49 of 67 and Schedule 10 from Ms. McShane's October 2002 report to the Board for Newfoundland Power.

A. Please see Attachment A for copies of the requested information.

Attachment A

NEWFOUNDLAND POWER

PREPARED TESTIMONY

of

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cost. In the presence of inflation, even at moderate levels, absent significant technological advances, replacement cost should exceed the original cost book value of assets. Consequently, the market value of utility shares should be expected to exceed their book value.

To apply a market-derived current cost of equity to an original cost book value, without offsetting opportunities to achieve returns on book equity commensurate with investor return requirements, will tend to produce an uneconomic allocation of scarce capital resources. Hence, when the allowed return on original cost book value is set, the market-derived cost of attracting capital should be converted to a fair and reasonable return on book equity, so that the stream of dollar earnings on book value equates to the investors' dollar return requirements on market value.

EQUITY RISK PREMIUM TEST

Conceptual Underpinnings

The equity risk premium test is derived from the basic concept of finance that there is a direct relationship between the level of risk assumed and the return required. Since an investor in common equity takes greater risk than an investor in bonds, the former requires a premium above bond yields in compensation for the greater risk. The equity risk premium test is a measure of the market-related cost of attracting capital, i.e., a return on the market value of the common stock, not the book value.

The estimation of the required equity risk premium, for either the market as a whole or a specific utility, is not an exact science. Hence, it is necessary to evaluate a broad spectrum of data and alternative risk

premium estimation approaches to arrive at a reasonable determination of the required equity risk premium.

There are two broad approaches to estimating the equity risk premium for a utility. The first begins with an estimate of the expected equity risk premium for the entire equity market (i.e., the equity market portfolio), subsequently adjusted to reflect the risk of a utility relative to the market as a whole. The second approach develops the risk premium directly for a particular stock or industry (e.g., utilities). In both approaches, the estimated equity risk premiums are obtained by subtracting the estimated risk-free rate from the estimated expected return on the market portfolio or the individual industry/stock. The expected equity risk premium can be developed: (1) from an analysis of historic market risk premiums and (2) from prospective market risk premiums based on discounted cash flow (DCF) estimates of the expected market return. DCF-based estimates of the cost of equity comprise the dividend yield plus investor expectations of longer-term constant growth.

It is critical to recognize that the equity risk premium test is a <u>forward looking</u> concept that reflects investor expectations. The magnitude of the differential between the expected return on equities and the yield on bonds is a function of investors' views of such key factors as inflation, productivity, profitability and investors' willingness to take risks.

It is precisely because the risk premium is a forward-looking concept that:

1. Historic risk premium data need to be evaluated in light of prevailing economic/capital market conditions; and,

2. Direct estimates of the forward-looking risk premium need to supplement measurement of the risk premium by reference to historic data.

Risk-Free Rate

The point of departure for applying the equity risk premium test is a forecast of the risk-free rate to which the equity risk premium is applied. Reliance on a long-term government bond yield as the risk-free rate recognizes (1) the administered nature of short-term rates; and (2) the long-term nature of the assets to which the equity return is applicable. The risk-free rate for purposes of this analysis is conceptually identical to that used by the PUB for purposes of its current automatic adjustment formula.

The forecast 30-year yield is based on the consensus forecast of 10-year Canada bonds plus the spread between 10- and 30-year Canadas. *Consensus Forecasts*, Consensus Economics (August 2002) anticipates that the 10-year yield 3-months and 12-months hence will be 5.3% and 6.0% respectively, for an average of 5.65%. Recent and historic average spreads have been in the range of 35-50 basis points, which, when added to the forecast, indicate a long Canada yield of just over 6%. A 6.0% 30-year Canada yield is a reasonable forecast of the risk-free rate for the 2003 test year.

Risk-Adjusted Market Risk Premium[25]

The risk-adjusted market equity risk premium approach to estimating the required utility equity risk premium entails estimating the equity risk premium for the equity market as a whole, and subsequently adjusting it to recognize the risk of a utility relative to the equity market portfolio.

The estimation of the expected market risk premium from achieved market risk premiums is premised on the notion that investors' expectations are linked to their past experience. Basing calculations of achieved risk premiums on the longest periods available reflects the notion that it is necessary to reflect as broad a range of event types as possible to avoid overweighting periods that represent "unusual" circumstances. On the other hand, the objective of the analysis is to assess investor expectations in the current economic and capital market environment. Hence, focus should be placed on periods whose equity characteristics, on balance, are more closely aligned with what today's investors are likely to anticipate over the longer-term.

Consequently, I focused on the post-World War II returns. The average post-World War II Canadian risk premiums were in the approximate range of 4.75-5.5% (compound and arithmetic averages respectively). The corresponding U.S. equity risk premiums were in the approximate range of 6.75-7.5% (Schedule 9).

In light of the speculative bubble that characterized the U.S. equity market from the mid-1990s to early in 2000, I also looked at post-World War II

[25] See Appendix B for full discussion.

returns prior to 1990. The comparative results for both Canada and the U.S. are as follows:

AVERAGE EQUITY MARKET RETURNS				
	CANADA		U.S.	
	ARITHMETIC	GEOMETRIC	ARITHMETIC	GEOMETRIC
1947-2001	12.3	11.1	13.7	12.4
1947-1989	13.1	11.9	13.5	12.3

Excluding the 1990-2001 data indicates very little change in the historic U.S. data and higher returns in the Canadian market. History suggests achievable equity market returns in the range of 12-13% and a market risk premium, at a risk-free rate of 6%, of 6-7%.

Based on both compound and arithmetic average risk premiums, and considering both the Canadian and U.S. data, in my opinion, the market equity risk premium is in the range of approximately 6.0-6.5%.

Relative Risk Adjustment

In the context of the Capital Asset Pricing Model (CAPM), investor risk can be captured in a single variable, the stock "beta". The stock "beta" measures risk as the volatility of an individual stock or a portfolio of stocks relative to the volatility of the market.

The equity risk premium applicable to a particular stock or portfolio of stocks is equal to its stock "beta" multiplied by the market equity risk premium. Betas are typically measured by reference to historical relative volatility using simple regression analysis between the change in the

market portfolio return and the corresponding change in an individual stock or portfolio of stock returns.

However, historic betas cannot simply be assumed to fully capture the risk for which investors require compensation. The body of evidence on CAPM leads to the conclusion that, while betas do measure relative volatility, the proportionate relationship between risk (beta) and return posited by the CAPM has not been established.

The following table summarizes recent calculated ("raw") betas for individual major Canadian gas and electric utilities, the TSE Gas/Electric Index, and the S&P/TSX Utilities Index.[26]

Table 5

Canadian Utility Betas (60 months ending in indicated year)								
	1995	1996	1997	1998	1999	2000	2001	6/2002
Six [1/] Electric/Gas Utilities (Median)	.50	.49	.45	.52	.35	.24	.16	.14
TSE 300 Gas/Electric Index	.52	.52	.46	.55	.38	.21	.20	NA
S&P/TSX Utilities Index	.67	.65	.53	.55	.30	.14	-.03	-.05

[1/] B.C. Gas, Canadian Utilities, Emera, Enbridge Inc., Fortis and TransAlta.

Source: Schedule 11.

The observed recent decline in the measured utility betas in 1999-2002 can be traced to three factors: (1) the technology sector bubble in general;

[26] The S&P/TSX Utilities Index was created in 2002, when the TSE 300 was revamped. The new Utilities Index is essentially an amalgamation of the former TSE Gas/Electric and Pipeline sub-indices.

(2) the dominance of the TSE 300 by two firms during this period, Nortel Networks and BCE (together accounting for 35% of the TSE 300 in mid-2000); and (3) the negative impact of rising interest rates on utility stocks as the rest of the equity market was soaring (See Chart 1 in Statistical Exhibit). As a result, the disparate movements in utility equities relative to the TSE 300 produced lower measured utility betas.

The decoupling between utility shares and the rest of the market during the technology bubble (and subsequent melt-down of Nortel and other high tech stocks) should not be interpreted as a change in the relative riskiness of utility shares. Rather, it is an indication of the weakness of beta as the sole measure of the relative return requirement. Utilities are interest-sensitive stocks and thus tend to move with interest rates, which frequently move counter to the equity market. Consequently, utility equity price movements are correlated not only with the stock market, but also with movements in the bond market. The interest-sensitivity of utility shares may not be fully captured in the calculated betas which simply measure the covariability between a stock and the equity market.

Given the infirmities of beta, some recognition should be given to total market risk (including both diversifiable and non-diversifiable risk) as measured by the standard deviation of market returns.

The standard deviations indicate some increase both in the absolute and relative volatility of Canadian utility shares since 1998 and provide further evidence that sole reliance on simple calculated (or "raw") betas would understate the required return for a regulated utility. The standard deviations suggest a relative risk factor of approximately 0.65.

Many major investment advisory firms report betas that are adjusted toward a market mean of 1.0. The betas for Canadian utilities, if adjusted in a manner similar to such services, e.g., *Value Line* and Bloomberg,[27] have been approximately 0.60 (See Schedule 11).

Based on my analysis, I conclude that a reasonable relative risk adjustment for an average risk Canadian utility is approximately 0.60-0.65.

At a market risk premium of 6.0-6.5% and a relative risk adjust of 0.60-0.65, the indicated equity risk premium for an average risk Canadian utility, e.g., Newfoundland Power, is approximately 4.0%.

Historic Utility Risk Premiums

The historic experienced returns for utilities provide an additional perspective on a reasonable expectation for the forward looking utility equity risk premium. Over the longer-term, achieved utility equity risk premiums were 4.4-4.9% for Canadian gas and electric utilities (TSE 300 Gas/Electric Sub-Index) over the period 1956-2001, based on both arithmetic and geometric average returns. For U.S. LDCs, the historic equity risk premiums averaged approximately 5.7-6.3% (based on arithmetic and geometric averages) over the entire post-World War II period (1947-2001). For U.S. electric utilities, the corresponding risk premiums have been 4.4-5.2% (Schedule 10). The historic risk premiums for both Canadian and U.S. utilities support an expected equity risk premium estimate for an average risk Canadian utility of approximately 4.75% to 5.0%.

[27] Adjusted utility beta = 2/3 ("raw" beta) + 1/3 (market beta of 1.0).

DCF-Based Equity Risk Premium Test

A forward-looking equity risk premium test was also performed, using the discounted cash flow model (DCF) to estimate expected utility returns over time. Monthly DCF estimates were constructed for a sample of U.S. LDCs, for the period 1993-2002 (2nd Qtr.)[28] using a consensus of analysts' forecasts of long-term normalized earnings growth, as compiled by I/B/E/S International (a Thomson Financial Company) plus the corresponding expected dividend yield to measure the expected utility return (Schedule 14). The monthly risk premium was equal to the difference between the median DCF cost of equity for the sample and the corresponding 30-year Treasury yield.[29]

In conducting this test, I relied on U.S. LDCs for several reasons. First, although there are company-specific business and financial risk differences which must be recognized, U.S. and Canadian utilities are reasonable proxies for one another, particularly in today's global capital market. Second, there is a dearth of forward-looking estimates of growth for Canadian utilities which would permit the creation of a consistent series of DCF costs of equity and corresponding risk premiums from Canadian data. Third, LDCs were selected in lieu of electric utilities because U.S. LDCs have not experienced the same degree of restructuring as electric utilities. Hence, reliance on the gas industry ensures a series of observations which reflect a relatively stable regulatory environment, and thus allow the estimation of the relationship between the equity risk

[28] Subsequent to Open Access implemented via FERC Order 636.
[29] The yield on long-term issues (over 25 years to maturity) is used in place of the 30-year Treasury yield subsequent to February 2001, when the Federal Reserve stopped reporting 30-year Treasury yields.

premium and interest rates. Fourth, the level of business risk faced by U.S. LDCs is quite similar to that of Newfoundland Power.

The selection criteria for the sample of LDCs are delineated in Appendix C, Discounted Cash Flow Test. As evidenced by the available betas for Canadian utilities compared to those of U.S. LDCs (Schedules 11 and 12) and debt ratings (Schedules 5 and 15), it is possible to infer that the capital market views the typical Canadian utility and U.S. LDCs to be of approximately similar investment risk.[30] To the extent that the sample of U.S. LDCs faces higher business risk than a typical electric or gas Canadian utility, the higher risk is offset by lower financial risks, as indicated by the differences in capital structure. The average three-year (1999-2001) total debt ratio for the sample of U.S. LDCs was 53%; the average for the major Canadian utilities (2001) was 58% (based on total capital) (Schedules 6 and 8).

The average risk premium over the 1993-2002 (2nd Qtr.) period was 4.4%; the corresponding average long term government bond yield was 6.3%. However, the average masks the fact that the risk premiums have been higher at lower levels of interest rates and vice versa. The average risk premium when 30-year Treasuries were between 5.5-6.5% – encompassing the level forecast for 30-year Canadas – was in the range of approximately 4.4-4.8% (Schedule 14).

A simple regression between the 30-year Treasury yields and the corresponding equity risk premiums shows the following:

[30] In addition, the two regulated Canadian companies followed by *Value Line*, TransAlta Corporation and TransCanada PipeLines have both been assigned Safety Ranks of "3", equal to the median Safety Rank for the LDC sample.

Equity Risk Premium = 8.95 - .71 (30-year Treasury Yield)

R^2 = 56%

At a 30-year government bond yield of 6.0%, the indicated utility equity risk premium is 4.7%.

In light of the increasing spreads between government bond yields and utility bond yields in both Canada and the U.S., the study was expanded to test the relationship between the utility equity risk premiums, long-term government bond yields, and the spread between A-rated utility bond yields and long-term government bond yields.

The analysis indicated the following:

LDC Risk Premium = 7.14 - .52 TY + .36 Spread

where,

TY = 30-year Treasury Yield

Spread = Spread between Moody's A-rated Utility Bond Yields and 30-year Treasury Yields

Thus, the data indicate that, while the utility risk premium is negatively related to the level of government bond yields, it has been positively related to the spread between utility bond yields and government bond yields.[31]

[31] Statistics for the equation:

R^2	58.9%
t-statistics:	
Long-term bond yield:	-5.90
Utility/government bond yield spread:	3.19

Using a forecast long Canada yield of 6.0% and an A-rated utility bond/long Canada spread of 1.4%, the indicated utility risk premium is 4.6%.

"Bare-Bones" Cost of Equity

On balance, the various risk premium analyses indicate that the required equity risk premium for an average risk Canadian utility is in the range of 4.0-4.75%. Adding the 4.0-4.75% equity risk premium to the forecast long Canada bond yield of 6.0% results in a cost of equity in the range of 10.0-10.75%. The 10.0-10.75% return on equity range is a "bare-bones" cost, which needs to be adjusted for financing flexibility.

Financing Flexibility

An adjustment to the equity risk premium test result for financing flexibility is required because the measurement of the return requirement based on market data results is a "bare-bones" cost, in the sense that if this return is applied to the book equity of the rate base -- and assuming the expected return corresponds to the approved return -- the market value of the utility would be kept close to book value.

The financing flexibility allowance is an integral part of the cost of capital as well as a required component of the concept of a fair return. That allowance is intended to cover three distinct aspects: (1) flotation costs, comprising financing and market pressure costs arising at the time of the sale of new equity; (2) a margin, or cushion, for unanticipated capital market conditions; and (3) a recognition of the "fairness" principle, in the sense that regulation should not seek to keep the market value of a utility stock close to book value, when industrials of comparable investment risk

have been able to consistently maintain the real value of their assets considerably above book value.

The financing flexibility adjustment recognizes that return regulation remains, fundamentally, a surrogate for competition. Competitive industrials of reasonably similar risk to utilities have consistently been able to maintain the real value of their assets significantly in excess of book value, consistent with the proposition that, under competition, market value will tend to equal the replacement cost, not the book value, of assets. Utility return regulation should not seek to target the market/book ratios achieved by such industrials, but it also should not preclude utilities from achieving a level of financial integrity that gives some recognition to the longer run tendency for the market value of industrials to equate to the replacement cost of their productive capacity. This is warranted not only on grounds of fairness, but also on economic grounds, to avoid misallocation of resources. To ignore these principles in determining an appropriate financing flexibility adjustment is to ignore the basic premise of regulation. A recognition of all three factors warrants a financing flexibility adjustment of no less than 50 basis points. [32]

Adding a financing flexibility adjustment of 50 basis points to the 10.0-10.75% "bare-bones" cost of equity range results in a return on equity in the range of 10.5-11.25% for an average risk Canadian utility.

[32] In P.U. 16, the PUB determined that a financing flexibility adjustment of 50 basis points was appropriate.

CANADIAN AND U.S. UTILITY
HISTORIC EQUITY RISK PREMIUMS

TSE GAS/ELECTRIC INDEX
(1956-2001)

Holding Period	Stock Return	Bond Return	Risk Premium
Arithmetic	12.6	7.7	4.9
Compound	11.6	7.2	4.4

S&P / MOODY'S ELECTRIC INDEX
(1947-2001)

Average	Stock Return	Bond Return	Risk Premium
Arithmetic	11.3	6.1	5.2
Compound	10.0	5.6	4.4

S&P / MOODY'S GAS DISTRIBUTION INDEX
(1947-2001)

Average	Stock Return	Bond Return	Risk Premium
Arithmetic	12.4	6.1	6.3
Compound	11.3	5.6	5.7

Sources: TSE Review, Bank of Canada Review, Standard & Poor's Analysts' Handbook, Ibbotson Associates, Stocks, Bonds, Bills and Inflation, Mergent Corporate News Reports.