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**HYDRO-QUÉBEC DISTRIBUTION  
HYDRO-QUÉBEC TRANSÉNERGIE**

**ROE AND RISK ANALYSIS**

**OCTOBER 31, 2013**

**RÉGIE DE L'ÉNERGIE**

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## Overview

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1. Context for the ROE and Risk Analysis
2. ROE Analysis
3. Risk Analysis
4. Certain Issues raised by the Régie or Intervenors in Information Requests
5. Automatic Adjustment Formula
6. Key Conclusions



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# Context for the ROE and Risk Analysis



## Regulatory Principles and the Fair Return Standard

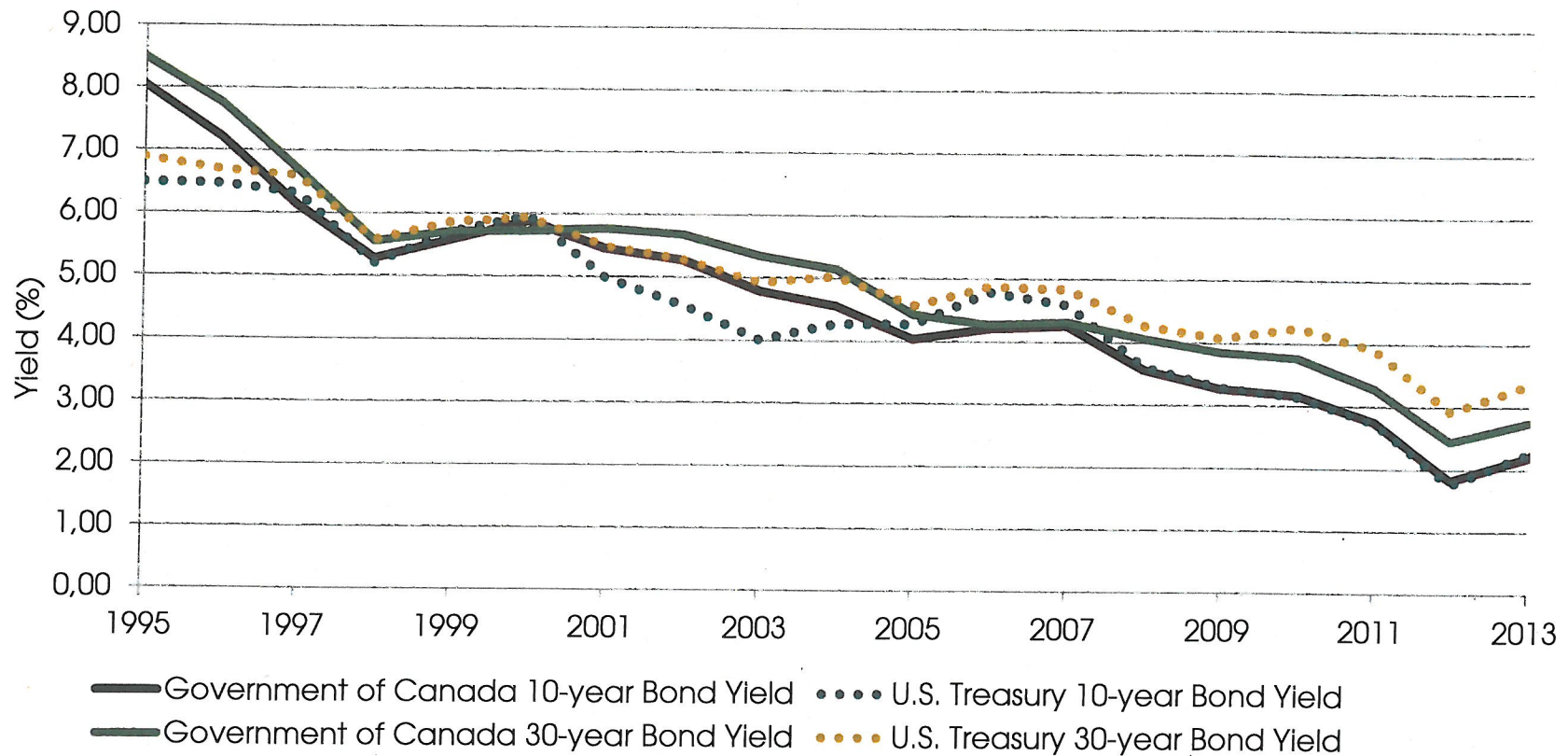
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- The Fair Return Standard has three distinct requirements, as noted by the Régie.
- “Based on these three criteria, a reasonable ROE should:
  - Be comparable to the return available from the application of the invested capital to other enterprises of like risk (comparable investment requirement)
  - Permit incremental capital to be attracted to the enterprise on reasonable terms and conditions (capital attraction requirement)
  - Enable the financial integrity of the regulated enterprise to be maintained (financial integrity requirement)”
- Related key principles in determining a reasonable ROE for a regulated entity
  - The “stand-alone” principle, regardless of ownership
  - The opportunity cost principle, applied from an investor’s perspective
  - It is the result reached, not the method employed which is controlling
  - Reliance on multiple methods and diversified sources of data and information



## Capital Market Trends

- Bond yields in Canada and the U.S. have bottomed, and are now moving upward
- Regulators are accepting a longer view on risk free rates, especially those reliant on CAPM



Source: Bloomberg Professional



## Capital Market Context

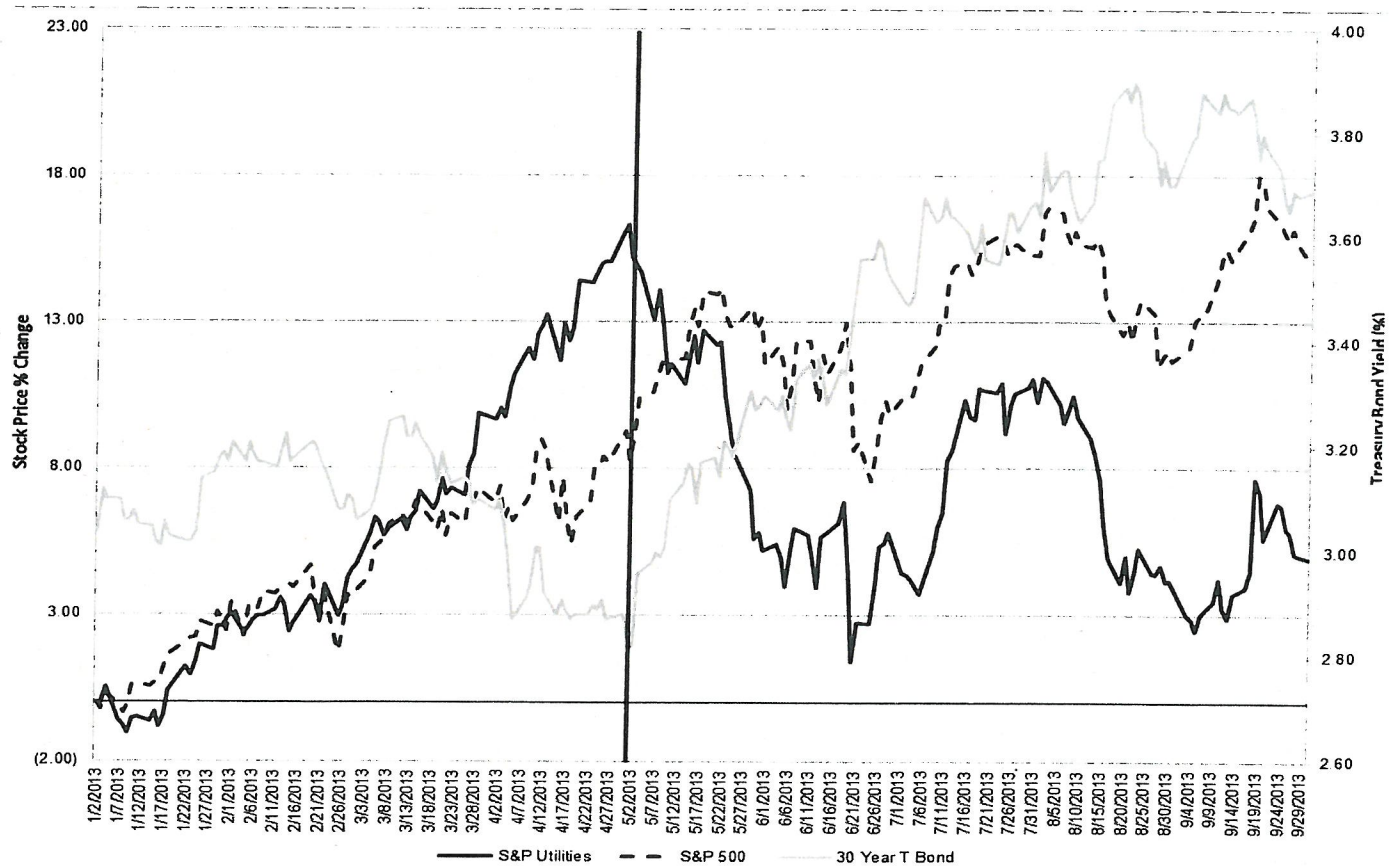
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- Canadian and US economies have been slow to recover from recession
- Accommodative monetary policy has resulted in extraordinarily low interest rates in both countries
- Bank of Canada recently announced its intention to maintain monetary stimulus for longer than expected
- Low interest rate environment has an effect on the models used to estimate the cost of equity, especially those relying on CAPM
- The return to “normal” interest rate levels is already negatively affecting utilities
- With the announced phase-out of Quantitative Easing, the broader market has continued higher, while utility stocks have fallen



# Capital Market Context

**Comparison of Returns for S&P 500 and S&P Utilities Index  
to 30-Year Treasury Yields**



## Comparability of US Utility Regulation

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- A September 2013 Moody's report discussed its evolving view of US utility regulation. Moody's states:
  - Based on our observations of trends and events, we propose to adopt a generally more favorable view of the relative credit supportiveness of the US utility regulatory environment
  - Our updated view considers improving regulatory trends that include the increased prevalence of automatic cost recovery mechanisms, reduced regulatory lag, and generally fair and open relationship between utilities and regulators
  - In the few instances where inconsistent regulatory decisions have led to serious credit stress, courts have proved to be a reliable secondary support for utility creditworthiness through rulings that mandate that regulatory decisions must follow the established regulatory framework
  - Our revised view that regulatory environments and timely recovery of costs is in most cases more reliable than we previously believed is expected to lead to a one notch upgrade of most regulated utilities in the US (Emphasis added)
- Concentric's risk analysis demonstrates that the companies in the Canadian and US proxy groups operate in similar regulatory and economic environments that would not cause a reasonable investor to require different returns





## Recent ROE Decisions in Canada

- Recent allowed ROEs in Canada are significantly higher than what HQD and HQT are authorized to earn under the formula

Operating Company	Date	Authorized ROE	Deemed Equity Ratio	Formula (Y/N)
ATCO Electric Distribution	Dec-11	8.75%	39.00%	N
ATCO Electric Transmission	Dec-11	8.75%	37.00%	N
Nova Scotia Power Inc.	Dec-12	9.00%	37.50%	N
Enbridge Gas Distribution, Inc.	Feb-13	8.93%	36.00%	Y
Fortis Alberta	Dec-11	8.75%	41.00%	N
Fortis BC Power	Aug-12	9.90%	40.00%	Y
Newfoundland Power	Apr-13	8.80%	45.00%	N
Ontario Electric Distributors	Feb-13	8.98%	40.00%	Y
Gaz Metro	Mar-13	8.90%	38.50%	N
Gazifere	Jul-13	9.10%	40.00%	N
Intragaz	May-13	8.50%	46.00%	N
<b>Average</b>		<b>8.94%</b>	<b>40.00%</b>	
<b>Median</b>		<b>8.90%</b>	<b>40.00%</b>	



## Recent Trends in Canadian ROE Determinations

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- Reliance on multiple methods to estimate a fair and reasonable ROE
- Greater weight on DCF results due to concerns with CAPM under-stating the cost of equity under current capital market conditions
- Greater reliance on U.S. data to estimate the cost of equity for Canadian utilities as applicants have demonstrated the comparability of US companies in terms of business/operating and regulatory risk
- Abandoned, suspended or modified the use of automatic adjustment formulas



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# ROE Analysis



## Concentric's Approach

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- Analysis centers on meeting all three requirements of the Fair Return Standard, and addresses previous concerns expressed by the Régie
- Multiple methods
  - DCF (constant growth, sustainable growth and multi-stage)
  - CAPM (simple and reconciled)
  - Canadian and U.S. proxy groups
- Reliance on reliable and commercially accessible data used by investors in Canada and the U.S. to make day-to-day investment decisions driven by opportunity costs
- Why do we need proxy groups?
  - ROE is market-based concept
  - Allows comparisons based on fundamental business and financial analysis of comparable investments
  - Provides basis for utilizing verifiable market data



## Specific concerns of the Régie

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- Specific concerns cited by the Régie concerning the use of U.S. data:
  - Comparability of opportunities in the U.S. in terms of risk
  - The regulatory, institutional, economic and financial contexts of the two countries and their impacts on resulting opportunities for investors
  - Reasons that would justify relying on authorized returns in U.S. as a reference point
  - Comparisons between the authorized and realized returns of regulated U.S. companies with comparable risk
- Concentric has addressed the Régie's concerns by:
  - Comparing the business and economic conditions in Canada and the U.S.
  - Providing a detailed assessment of the business and financial risks of HQD and HQT relative to Canadian and U.S. proxy groups
  - Comparing the earned and authorized ROEs for U.S. electric proxy group at the operating company level



# Selection of Proxy Groups

U.S. Proxy Group	<p>Consolidated Edison</p> <p>NextEra Energy</p> <p>Northeast Utilities</p> <p>Southern Company</p> <p>Wisconsin Energy</p> <p>Xcel Energy</p>	<ul style="list-style-type: none"> <li>• Began with group of 48 regulated electric utility companies</li> <li>• Screened according to credit rating, dividends, analyst coverage, % regulated electric utility operations, size, merger status</li> <li>• Resulted in proxy group of 6 companies</li> </ul>
Canadian Proxy Group	<p>Canadian Utilities Limited</p> <p>Emera Inc.</p> <p>Enbridge Inc.</p> <p>Fortis Inc.</p> <p>TransCanada Corp.</p> <p>Valener Inc.</p>	<ul style="list-style-type: none"> <li>• Selected all publicly traded Canadian utilities (gas and electric)</li> <li>• No additional screens</li> </ul>
Canadian Government Owned Group	<p>British Columbia Hydro</p> <p>ENMAX Corp.</p> <p>EPCOR Utilities Inc.</p> <p>Hydro One Networks</p> <p>Manitoba Hydro</p> <p>Saskatchewan Power</p>	<ul style="list-style-type: none"> <li>• Also compared Hydro-Québec to a group of 6 government-owned Canadian electric T&amp;D companies</li> <li>• BC Hydro and Manitoba Hydro eventually excluded</li> </ul>



## Selection of Proxy Groups

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- Business/operating characteristics similar to HQD's and HQT's from an investor's perspective
- Low-risk U.S. proxy group with a credit rating of A- or higher to ensure that the business and financial risk of the proxy group companies are comparable to HQD and HQT
- U.S. proxy group regulated electric utility operations
  - 86% of operating income and 92% of revenues
- Canadian proxy group regulated electric utility operations
  - 61% of operating income and 59% of revenues



## The Issue of Generation Assets

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- Both Canadian and U.S. proxy companies contain some generating assets
- We considered another screening criteria to exclude generation assets in rate base
  - Five companies in the Value Line universe do not have regulated generation in rate base
  - But, these five T&D companies do not pass other screening criteria
  - Authorized ROE for those five companies is 9.70% and authorized equity ratio is 48.17%
- Difference in authorized ROE for vertically-integrated U.S. utilities and T&D companies approximately 41 basis points
- More than offset by the difference in financial risk between HQD, HQT and the Canadian and U.S. proxy groups





## Estimation of ROE using CAPM and DCF Models

Capital Asset Pricing Model	
Inputs	CAPM Reconciled
Risk Free Rate	4.23%
Beta	0.59
Market Risk Premium	6.67%
Sub-Total	8.17%
Flotation Cost	0.30%
Sub-Total	8.47%
Adjustment for Other Models	0.75%
Total	9.22%

Discounted Cash Flow				
Market Averaging Period	Constant Growth	Sustainable Growth	Multi-Stage	Average
Canadian Utility Proxy Group				
Average ROE	11.92%	-	9.15%	10.54%
Flotation Cost	0.30%	-	0.30%	0.30%
Average ROE with Flotation Cost	12.22%	-	9.45%	10.84%
U.S. Electric Utility Proxy Group				
Average ROE	9.28%	8.90%	9.14%	9.11%
Flotation Cost	0.30%	0.30%	0.30%	0.30%
Average ROE with Flotation Cost	9.58%	9.20%	9.44%	9.41%



## Interpretation of Results

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- Concentric has placed more weight on DCF results for U.S. proxy group of electric utilities because our risk analysis shows those companies are more comparable to HQD and HQT
- Concentric has considered the results of the CAPM, adjusted to take into account the effect of financial market conditions, to inform our judgment as to where within the range of results a reasonable ROE for HQD and HQT should fall
- The 75 basis point adjustment is appropriate because:
  - Monetary policy in Canada and the U.S. has kept the risk free rate artificially low
  - Financial markets are still returning to normal after the disruptions in 2008-2009
  - Betas for utilities remain somewhat lower than normal
  - Market Risk Premium is based on average long-term government bond yield of 5.1%, higher than those of today, and there is an inverse relationship between interest rates and the MRP. Therefore, one would expect a higher MRP today in relation to history.
  - Forecast bond yields and forward-looking MRP only partially account for these effects
  - Coincides with the low end of the DCF estimates
  - Directionally consistent with the Régie's adjustment for Gaz Metro in 2012 decision



## Comparison of Concentric's and Dr. Booth's CAPM Analysis

	Concentric Reconciled CAPM	Booth CAPM (Low)	Booth CAPM (High)
Risk Free Rate	4.23%	3.95% (1)	3.95%(1)
Beta	0.59	0.45	0.55
Market Risk Premium	6.67%	5.67% (2)	6.55% (2)
<b>Sub-Total</b>	8.17%	6.50%	7.55%
Flotation Cost	0.30%	0.50%	0.50%
<b>Sub-Total</b>	8.47%	7.00%	8.05%
Adjustment for Other Models	0.75%	0%	0%
<b>Total</b>	9.22%	7.00%	8.05%
<b>Recommendation</b>	<b>9.20%</b>	<b>7.50%</b>	

Notes:

- (1) Includes 35 basis point for Operation Twist Adjustment
- (2) Includes market risk premium of 5.0% to 6.0%, adjusted for credit spread differential of 30 basis points, which is then divided by the range of betas from 0.45 to 0.55.



## Comparison of Concentric's and Dr. Booth's DCF Analysis

	Concentric DCF - US	Concentric DCF - Canada	Booth DCF
Constant Growth	9.58%	12.22%	
Sustainable Growth	9.20%		
Multi-Stage	9.44%	9.45%	
<b>Average</b>	<b>9.41%</b>	<b>10.84%</b>	
Canadian equity market return			<b>9.23% - 9.85%</b>
Low risk US sample			<b>9.08%</b>

- Dr. Booth “judges” the overall equity market return in Canada to be in a range of 9.23-9.85%
- His only company-specific analysis is for a group of six US gas utilities and a range of growth rates from an unspecified source producing a median result of 9.08%



## Key Differences between Concentric's and Dr. Booth's Analysis

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Concentric	Dr. Booth
Proxy groups of US and Canadian utilities	No proxy groups
Risk analysis at the operating company level	No company specific risk analysis
Reliance on DCF and CAPM models	Reliance on CAPM
Primary reliance on financial market and 3 <sup>rd</sup> party inputs, which are commercially available and used by investors	Primary reliance on judgment



## Points of Agreement with Dr. Booth

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- “The result has been that the allowed ROEs for both HQT and HQD have fallen by considerably more than those for other Canadian utilities including Gaz Metro...” (p4)
- “...I consider the general financial and economic outlook since this is what has caused the allowed ROEs of HQT and HQD to deviate from a fair level.” (p4)
- “I also agree with Hydro Quebec that different capital structures adjust for differences in the underlying risk of the two regulated divisions.” (p4)
- “...I give weight to the US evidence for two main reasons. First, most restrictions on keeping Canadian capital within Canada have been removed resulting in significant capital outflows and higher expected returns on Canadian investments ..”(p33)
- “...at the current point in time conditions in the Canadian bond market are largely being driven by external forces. These are still no “average” market conditions, which has been reflected in regulatory decisions since the onset of the financial crisis.” (p34)
- “...the recent very low long Canada bond yields have forced me to re-evaluate this and look at historically what drives the DCF vs. CAPM estimates, since they should be consistent.” (p45)
- “As a result it supports my adjustments to the CAPM estimates and the value of currently looking at DCF estimates.” (p50)
- “..the DCF estimate is particularly appropriate for use in determining the fair rate of return for a regulated utility.” (Appendix D, p4)



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# Risk Analysis



## Concentric's Risk Analysis

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- Purpose of Concentric's risk analysis is to determine whether:
  - It is appropriate to use Canadian utilities and U.S. electric utilities to estimate the required ROE for HQD and HQT
  - Any adjustments are required to ROE estimation models due to risk differentials
- Broadly focused on macroeconomic and regulatory environments
- Specifically evaluated 8 relevant business risk factors for proxy group utilities
  - (1) Ownership of regulated generation
  - (2) Fuel and purchased power cost risk
  - (3) Volume/demand risk
  - (4) Capital cost recovery risk
  - (5) Rate regulation and earnings sharing
  - (6) Regulatory lag
  - (7) Cost recovery mechanisms
  - (8) Longer-term risks
- Also assessed the financial risk of HQD, HQT and the operating companies in the Canadian and U.S. proxy group, including review of:
  - Deemed/Authorized equity ratios
  - Credit metrics such as interest coverage ratios, cash flow ratios, and Debt to EBITDA





## Key Findings

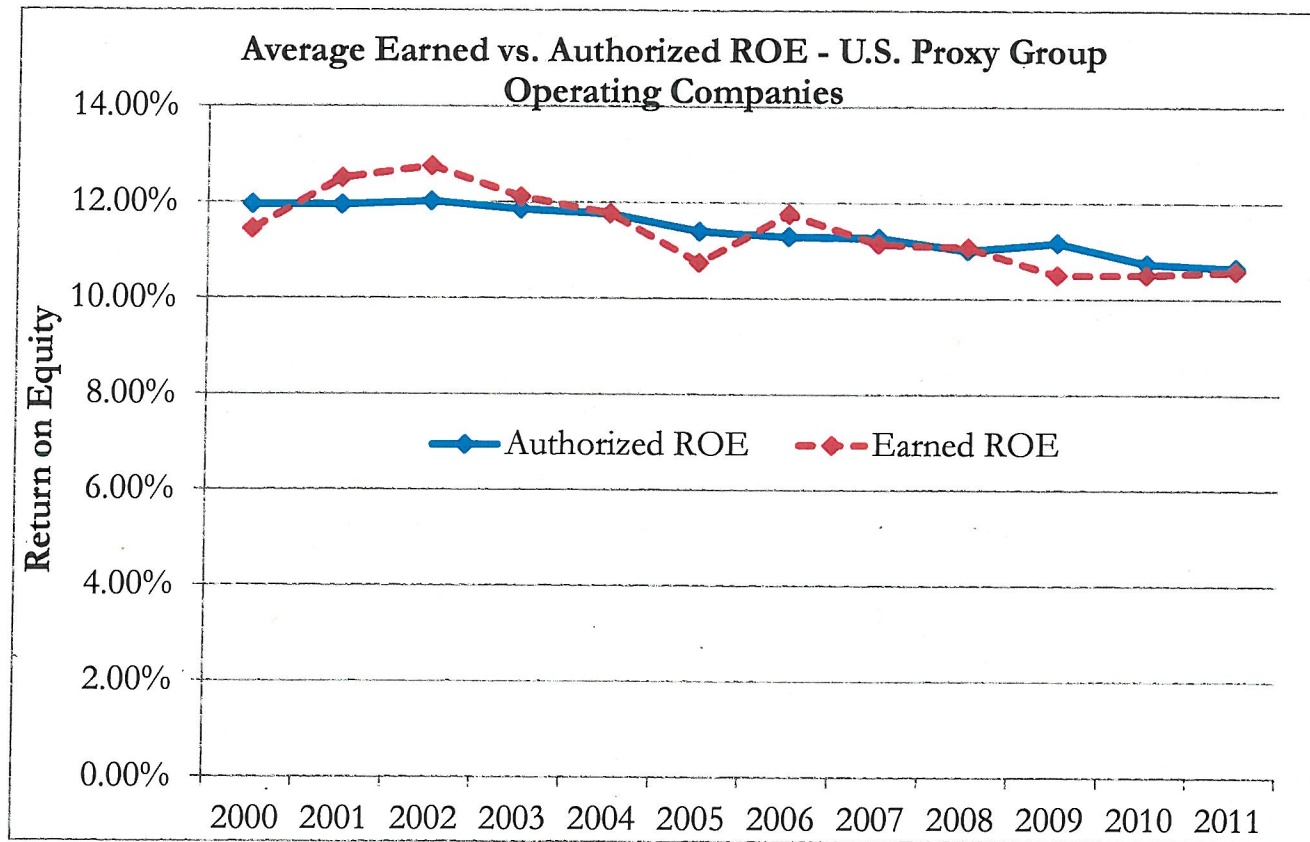
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- Economies of Canada and the U.S. are highly integrated and demonstrate high correlation on important indicators such as GDP growth, consumer prices, interest rates, broad market returns and returns to utility investors
- A reasonable investor would not require a different ROE for HQD or HQT than for U.S. electric utilities that are otherwise comparable
- The only meaningful difference in business risk is that certain Canadian and U.S. proxy group companies own regulated generation
- That risk, however, is more than offset by the higher financial risk of HQD and HQT relative to the Canadian and U.S. proxy groups



## Earned and Authorized ROE

- Electric operating companies in the U.S. proxy group have been able to earn their authorized return, suggesting that they operate in regulatory environments that offer timely cost recovery and the opportunity to earn a fair return



## Cost Recovery Mechanisms

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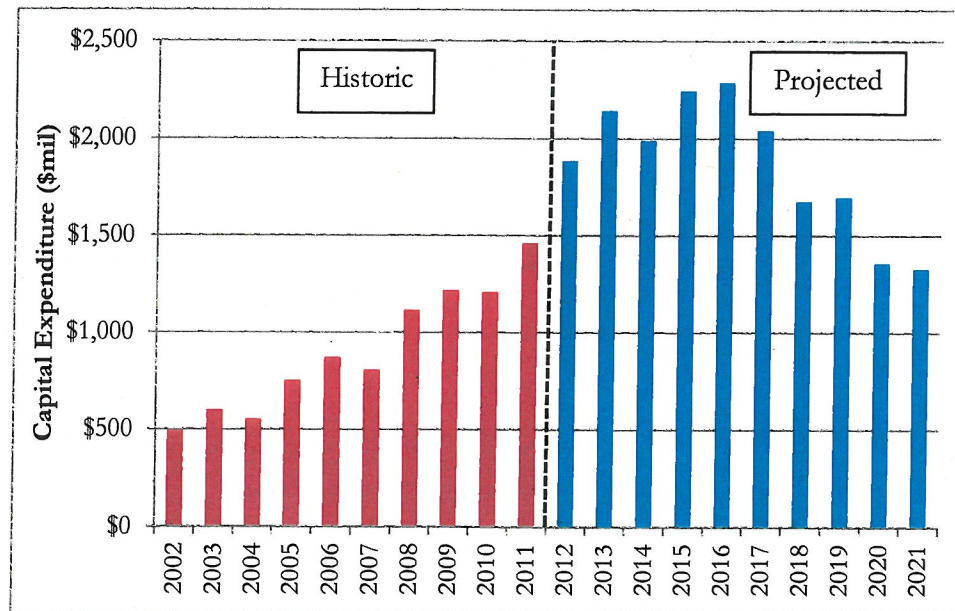
- HQD and HQT have similar regulatory protections as the companies in the Canadian and U.S. proxy groups against specific categories of costs that tend to fluctuate significantly from year to year, are material in nature, and are beyond the control of utility management
- HQD and HQT have higher risk associated with storm cost recovery than the majority of operating companies in the U.S. proxy group, but more protection against variations in pension expenses

Cost	HQD	HQT	Canadian Proxy Group	U.S. Proxy Group
Pension expenses	Yes	Yes	69%	36%
Bad Debt expenses	No	No	5%	13%
Storm Cost Recovery	Limited	No	0%	79%
Interest Rate Change	No	No	9%	17%
Energy Efficiency/DSM	No	N/A	81%	76%



## Capital Expenditures

- HQT is in the midst of a significant capital expenditure program
- Approximately \$17 billion over the next nine years (2013-2021) for growth response and to upgrade existing infrastructure and replace aging transmission lines and equipment



- Timely cost recovery of these capital expenditures represents a substantial business and financial risk for HQT over the next decade



## Credit Metrics

- Credit metrics for HQD and HQT in 2011 were much weaker than for the companies in the Canadian and U.S. proxy groups

<u>Company Name</u>	<u>Ticker</u>	<u>Debt to Capital Ratio</u>	<u>EBIT to Interest Coverage</u>	<u>FFO to Interest Coverage</u>	<u>FFO / Debt Ratio</u>	<u>Debt to EBITDA</u>
Hydro Quebec Distribution		65%	1,88	3,46	0,24	3,98
Hydro Quebec TransEnergie		70%	1,62	2,66	0,19	5,20
<u>U.S. Proxy Group</u>						
Consolidated Edison	ED	48%	3,80	5,10	0,28	3,40
NextEra Energy	NEE	61%	3,37	5,17	0,24	4,11
Northeast Utilities	NU	57%	3,28	4,58	0,22	4,69
Southern Co.	SO	53%	5,07	7,38	0,30	3,28
Wisconsin Energy Corp	WEC	57%	4,29	6,43	0,29	3,85
Xcel Energy Inc.	XEL	54%	3,33	5,11	0,29	3,45
U.S. Proxy Group		55%	3,86	5,63	0,27	3,80
<u>Canadian Proxy Group</u>						
Canadian Utilities Limited	CU	53%	4,07	5,23	0,29	3,14
Emera Incorporated	EMA	66%	2,23	4,03	0,22	5,04
Enbridge Inc.	ENB	64%	3,19	4,22	0,20	4,80
Fortis Inc.	FTS	56%	2,24	3,34	0,19	5,22
TransCanada Corporation	TRP	54%	3,30	4,63	0,21	4,59
Valener, Inc.	VNR [1]	63%	2,67	3,83	0,22	4,42
Canadian Proxy Group		60%	2,95	4,21	0,22	4,54



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## Certain Issues Raised by the Régie or Intervenors



## Evolution of Business Risk Since the Last Rate Case

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- It's been ten years
- Concentric focused on the relative risk of HQD and HQT today with risk-comparable companies in the Canadian and U.S. proxy groups
- This is the relevant time frame for investors
- The Fair Return Standard requires
  - Investment  $A_{(t)}$  vs. Investment  $B_{(t)}$  vs. Investment  $C_{(t)}$ ...

and not:

- Investment  $A_{(t)}$  vs. Investment  $A_{(t-n)}$
- Business risk over time sometimes utilized by regulators in Canada to evaluate need for changes in capital structure, but not conceptually supported by the comparability requirement under the FRS or reflective of investor perspective
- HQD and HQT are not requesting a change in capital structure



## HQD's, HQT's and the Proxy Groups' Allowed Equity Ratios

### Canadian Proxy Group Deemed Common Equity Ratio

Company	Common Equity Ratio
ATCO Electric Distribution	39.00%
ATCO Electric Transmission	37.00%
Nova Scotia Power Inc.	37.50%
Enbridge Gas Distribution.	36.00%
Fortis Alberta	41.00%
Fortis BC Power	40.00%
Newfoundland Power	44.69%
Gaz Métro	38.50%
TransCanada Pipelines	40.00%
Mean	39.30%
Median	39.00%
HQD	35.00%
HQT	30.00%

### U.S. Electric Utility Proxy Group Average Authorized Common Equity Ratio

Company	Authorized Common Equity Ratio
ConEdison of New York	48.00%
Florida Power and Light	N/A
Connecticut Light and Power	49.20%
NSTAR Electric	N/A
Public Service of New Hampshire	52.40%
Western Mass Electric	50.70%
Alabama Power	N/A
Georgia Power	N/A
Gulf Power	38.50%
Mississippi Power	N/A
Wisconsin Electric	52.09%
NSP – Minnesota	52.56%
NSP – Wisconsin	52.37%
Public Service of Colorado	56.00%
Southwestern Public Service - TX	N/A
Mean	50.20%
Median	52.09%





## DCF Model and Analyst Bias

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- Broad use and reliance on DCF model by regulators and investors in Canada and the US
- Research demonstrates that conflicts of interest and analyst or “optimism” bias have been reduced significantly since reforms from Global Settlement in 2003
- Regulated utilities have lower risk profile and more transparent financial reporting, thus less uncertainty regarding fluctuations in earnings compared to analyst forecasts
- Concentric has nonetheless addressed concerns with earnings forecasts
  - Constant Growth form relies on consensus estimates and data from Value Line (a firm that does not offer investment banking)
  - Multi-stage form uses analyst growth rates in the first five years and moves toward GDP growth rate in subsequent years
  - Sustainable growth rate is calculated using Value Line data for U.S. proxy group companies to derive a long-term growth rate



## CAPM and the Use of “Adjusted” Betas

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- Concentric evaluated two alternative sources for Beta – Value Line and Bloomberg
- Concentric considered three alternative methods for computing Beta:
  - Adjust raw Betas to market average
  - Adjust raw Betas to industry average
  - Industry average Beta
- Use of adjusted Betas reflects tendency to revert toward market average or industry average over longer periods
- The Régie has relied on the industry average Beta in the past, at the low end of the range adopted by regulators across Canada
- Concentric adopts an average of the market-adjusted Betas and the industry-adjusted Betas for each respective proxy group
- This analysis is market-based

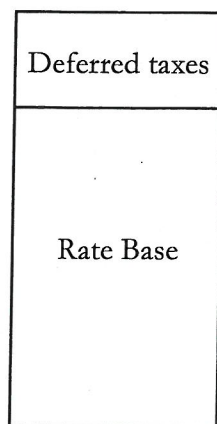


## Deferred Income Taxes

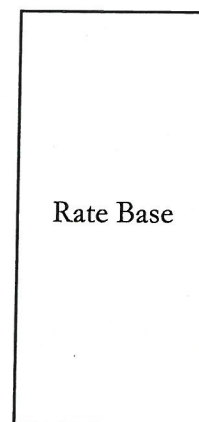
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- Concentric concludes that it is appropriate to compare allowed equity ratios of Canadian and U.S. proxy groups to the deemed equity ratios of HQD and HQT in spite of differences in treatment of deferred income taxes (DIT)
- The examples below present the two methods for treating DIT

Method 1: Deduct DIT from rate base



Method 2: Include DIT at zero cost

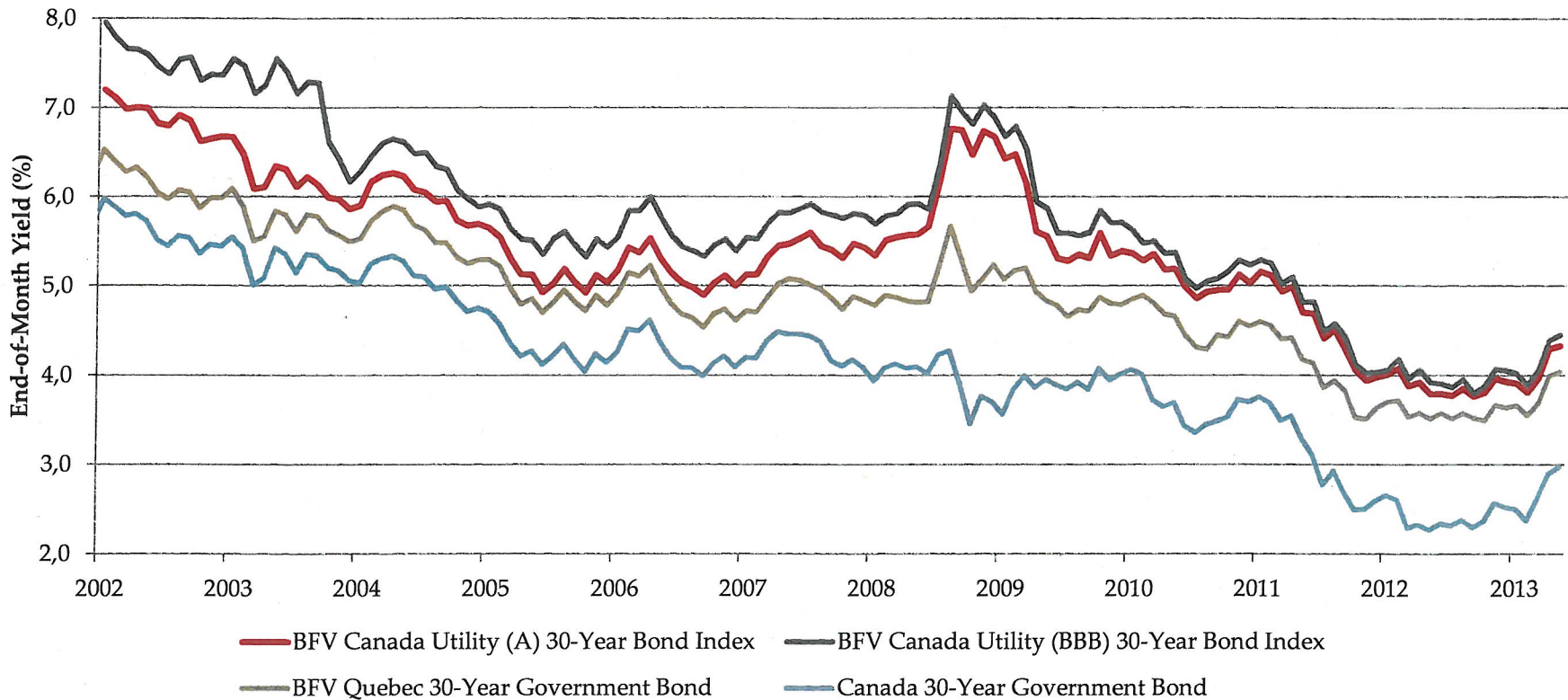


- HQD and HQT have no deferred income taxes
- When calculating credit ratios, Moody's and S&P include DIT in total capitalization, but Concentric does not
- Concentric calculates equity ratios based on  $\text{equity}/(\text{debt} + \text{equity})$ , thus excluding DIT



# Debt "guarantee" cost

- Hydro Quebec government debt guarantee allows same credit rating as the Province
- Cost of debt guarantee is 50 basis points
- Based on spreads between government of Quebec yields and yields on long-term A and BBB-rated utility bonds, debt cost remains reasonable



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# Automatic Adjustment Formula



## Automatic Adjustment Formula

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- Concentric does not recommend the adoption of an AAF for HQD and HQT at this time
- Gaz Métro / Gazifère formulas have been suspended by the Régie
- Essential that base ROE be reasonable if a formula is adopted



## Key Conclusions

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- Recommended ROE for HQD and HQT is 9.20%
- Primary weight placed on DCF results, supported by “Reconciled CAPM” results
- Adjustments to traditional CAPM are consistent with Régie precedent and warranted by financial market conditions
- Sole reliance on the CAPM does not provide a reasonable result; taking into consideration both the DCF and CAPM results provides a more reliable and reasonable estimate of the ROE for HQD and HQT
- Consistent with allowed ROEs for comparable risk Canadian utilities
- Low end ROE estimate for comparable risk U.S. electric utilities
- Regulatory, institutional, economic and financial contexts of Canada and U.S. and their impacts on the resulting opportunities for investors are comparable
- ROE produced by the existing formula, or that recommended by Dr. Booth, would not meet the Fair Return Standard on a stand-alone basis for HQD and HQT
- No adjustments are required to ROE estimation models for risk differentials; risk is handled through the capital structure
- This is a market-based analysis from an investors’ perspective

