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**MANITOBA HYDRO**  
**2010/11 & 2011/12 GENERAL RATE APPLICATION**

**CORPORATE RISK MANAGEMENT**

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**12.0 OVERVIEW**

Tab 12 provides information on Manitoba Hydro's Risk Governance Structure, Risk Management Program, key risks and impacts on IFF09-1. A copy of the Corporate Risk Management Annual Report is included as Appendix 12.1.

Section 12.1 describes the Corporation's overall approach to managing risk and the Risk Management Program.

Section 12.2 describes the Corporation's Risk Governance Structure.

Section 12.3 provides information on key risks and how they are being actively managed.

Section 12.4 provides a risk analysis of the sensitivity of key risks on retained earnings of IFF09-1.

Appendix 12.2 provides a copy of the ICF Independent Review of Manitoba Hydro Export Power Sales and Associated Risks. This version of the report has been redacted to remove information which is commercially sensitive.

**12.1 APPROACH TO MANAGING RISK**

Manitoba Hydro manages its business and operational risks through a systematic, proactive and integrated process designed to balance the objectives of:

- Identifying threats that affect achieving the mission and mandate;
- Mitigating consequences of negative occurrences; and
- Taking advantage of opportunities to provide benefits to all stakeholders.

The program identifies and documents all material risks facing the utility and helps confirm that the actions being taken are appropriate.

1  
2 Risks are identified based on those factors that influence corporate performance and are  
3 measured for potential impact using financial, customer satisfaction, safety (public/  
4 employee), environmental and reliability criteria. For each consequence identified the  
5 likelihood of the risk event occurring is also determined. Actions are taken to reduce the  
6 likelihood of negative events and/or the impact and can include modification,  
7 enhancement, discontinuance or acceptance of business operations. Risk that remains is  
8 managed by established tolerances in the form of rules, limits, targets and guidelines that  
9 management monitor, taking appropriate action should a risk approach or exceed its  
10 tolerance.

11  
12 On an annual basis the Corporation updates its Corporate Risk Management Report based  
13 on input provided by those areas responsible for managing risk. The report is approved  
14 by Executive Management and presented to the Manitoba Hydro Electric Board. In  
15 addition to the annual Risk Management Report other risk reports are prepared as deemed  
16 required (e.g., report on Pandemic Planning)..

## 17 18 **12.2 RISK GOVERNANCE STRUCTURE**

19  
20 Executive Management is accountable for ensuring that all risks that may affect the  
21 achievement of the Corporation's mandate are appropriately identified and managed.

22  
23 A Corporate Risk Management Steering Committee, with representation from all  
24 Business Units, coordinates risk activities across the Corporation. The Steering  
25 Committee is responsible for management guidance, expertise and process monitoring.

26  
27 Day to day management of risk is the responsibility of management within the individual  
28 Business Units. An exception would be when a risk becomes critical requiring attention  
29 by the Executive Management.

## 30 31 **12.3 KEY RISKS**

### 32 33 Water Supply

34  
35 One of the key risks Manitoba Hydro faces is uncertainty of volume of water supply  
36 available for hydro generation. The severity of impact can range from reduced export  
37 revenue to significant financial losses as a result of a multi year drought. On average,  
38 there is a high likelihood of a drought occurring about once every ten years.

1  
2 To mitigate this risk the system and operations are planned based on the worst drought on  
3 record. The Corporation's generation and transmission facilities are designed and  
4 operated to ensure firm demand can be supplied given a repeat of the lowest river flows  
5 since 1912 (lowest level in 1940/41). The top two operational priorities are maintaining  
6 firm energy supply given the most severe winter weather conditions and adequate  
7 reserves in reservoir storage. Hydraulic Operations constantly monitors supply  
8 conditions, updates inflow forecasts, and reviews long-term weather forecasts.  
9

10 Dependable energy is the expected annual generation assuming that the historic drought  
11 of record recurs. The Corporation will plan to have adequate energy resources to supply  
12 the firm energy demand in the event that the lowest recorded coincident river flow  
13 conditions are repeated. Planning studies, to meet the firm energy demand, may include  
14 up to a maximum of 10% of Manitoba energy demand to be supplied by imports  
15 providing an energy purchase contract is or will be in effect during the time being  
16 studied.  
17

18 Manitoba Hydro plans to serve its firm export contracts from its surplus dependable  
19 supply, which is that available under a repeat of the lowest historic flow conditions.  
20 Should flow conditions be worse than the lowest on record, threatening the supply to  
21 Manitobans, Manitoba Hydro has the contractual right to curtail firm export deliveries in  
22 order to serve Manitoba load first.  
23

24 From a financial perspective, Manitoba Hydro's best risk protection is achieved through  
25 adequate levels of equity (retained earnings). Equity provides a buffer to absorb adverse  
26 events so that compensating rate increases can be smoothed out over a period of time.  
27 Manitoba Hydro's equity targets are discussed in Tab 5 of this Application.  
28

### 29 Infrastructure

30  
31 Manitoba Hydro operates in a capital intensive industry where electricity is considered a  
32 necessity of life. As a result, the Corporation manages its infrastructure risks to maintain  
33 reliability, safety and service. The impact of infrastructure failure or impairment can  
34 range from insignificant to catastrophic. The effect of aging infrastructure that is not  
35 maintained can result in a higher likelihood of failure, increased likelihood of  
36 malfunction, reduced capacity, and increased losses.  
37

1 Numerous actions are taken to mitigate and manage this risk and are detailed in the  
2 Corporate Risk Management Report. These range from the dam safety program to  
3 emergency management program. The capital expenditure program is a key action to  
4 mitigate this risk. Expenditures included in the program provide for the upkeep and/or  
5 new facilities for all infrastructures, prioritized to ensure an ongoing safe and reliable  
6 supply of energy for Manitobans.

### 7 8 Export Markets

9  
10 Manitoba Hydro derives over 1/3 of its revenue from export sales (under median water  
11 flows). Price and demand risk related to the export market can impact net revenue from  
12 export sales positively or negatively and at times exhibit material uncertainty and  
13 volatility. For example, during 2009 market prices in MISO had declined up to 60%  
14 from the prior year and demand (load) was down 14.5%, impacting net export revenue.

15  
16 Price and demand risks are managed in a number of ways. The Corporation, through its  
17 long-term sales contracts, mitigates both price and demand volatility. A mixed portfolio  
18 of long term, short-term, and opportunity type sales is maintained

19  
20 During a drought, the Corporation is subject to significant price risk on power and gas  
21 purchases. Under lowest flow conditions, the Corporation may have to generate power  
22 using more expensive gas-fired generation and/or import power from the market. These  
23 price risks have been mitigated somewhat in the current environment by the collapse of  
24 natural gas prices and declines in power spot prices that have occurred. Import decisions  
25 are timed and distributed appropriately to protect against price risk of electricity  
26 purchases. To protect against gas price risk, purchases are structured such that a portion  
27 of the gas needs are purchased in advance, with the option to take, store or sell the fuel.

28  
29 In addition to price and demand risks, the loss of or restricted access to export markets as  
30 a result of changes to the regulatory environment or non-compliance with market rules  
31 could significantly reduce net export revenue and impede import supply during periods of  
32 low water conditions.

33  
34 The Corporation continues to work to mitigate and manage market uncertainties. When  
35 appropriate, in alliance with other industry participants such as the Canadian Electricity  
36 Association, MISO, Transmission Owners, Manitoba Hydro continues to join in efforts to  
37 lobby MISO, IESO and FERC to develop market rules that support the elimination of

1 barriers to trade and facilitate full participation by Canadian electrical energy producers  
2 within the US markets.

3  
4 The Corporation maintains contractual relationships with Regional Transmission  
5 Operators in the US, specifically MISO, which allows coordination and comparability in  
6 operations and tariffs, while minimizing impacts on corporate structure and maintaining  
7 Manitoba Hydro's sovereignty requirements. The Corporation is also pursuing increased  
8 diversity in its export markets to reduce singular market dependency.

9  
10 Compliance with all market rules is a key requirement for participation. Non-compliance  
11 can result in significant penalty costs for violations as well as negative reputational  
12 impacts.

### 13 Financial Risks

14  
15  
16 While all risks may have financial impacts, interest rates, foreign exchange and credit are  
17 commonly classified as financial risks.

#### 18 – Interest Rate Risk

19  
20  
21 Manitoba Hydro's short-term borrowing program and floating rate long-term debt  
22 portfolio have interest rates that are reset periodically based upon short-term interest  
23 rates in Canada and the United States. These short-term borrowings and the floating  
24 rate long-term debt portfolio are subject to the risk of increases in short-term interest  
25 rates.

26  
27 Manitoba Hydro issues long-term financing to fund the shortfall of internally  
28 generated funds versus investment requirements, and to refinance existing long-term  
29 debt. These financing requirements are subject to the risk of interest rate volatility.

30  
31 Interest rate risk is managed in a number of ways. Floating rate debt cannot exceed  
32 30% of total debt. Fixed rate debt financing and interest rate derivatives are used to  
33 manage interest rates and the level of floating rate debt. Interest rate derivatives are  
34 executed by the Province of Manitoba on behalf of Manitoba Hydro and are  
35 structured such that Manitoba Hydro pays a fixed or floating semi-annual interest on  
36 a specified notional amount of debt. The counterparty (strong credit quality banks)  
37 to the interest rate swap is obligated to pay the opposite (fixed rate if Manitoba Hydro  
38 is paying floating or floating if Manitoba Hydro is paying fixed). These swap

1 transactions are mirrored to the interest payment dates of the underlying debt  
2 obligation and thus can be effectively used to manage the floating rate debt portfolio  
3 or utilized to fix the interest rate on an upcoming financing/refinancing requirement.  
4

5 – Foreign Exchange Risk  
6

7 Manitoba Hydro is potentially exposed to foreign currency risks, due to US export  
8 sales and US denominated debt. Exposure to US foreign exchange rate fluctuations is  
9 managed through the Foreign Currency Exposure Management Program (“EMP”).  
10

11 The objective of the EMP is to effectively manage foreign exchange risk by  
12 maintaining a balance of foreign currency cash inflows and outflows, such that net  
13 income is largely indifferent to changes in foreign exchange rates.  
14

15 A natural hedge has been established between the US cash inflows (from export  
16 revenues and sinking fund income) and US cash outflows (from US interest  
17 payments, sinking fund payments and US purchases). Changes in foreign exchange  
18 rates will be offset on the income statement to the extent that period cash flows are in  
19 balance.  
20

21 On a month by month basis, short term timing differences may occur between US  
22 cash inflows and outflows. To minimize the short term income statement foreign  
23 exchange volatility associated with these variances, the Corporation may use a  
24 number of bridging techniques such as securing Foreign Exchange Forward Contracts  
25 and/or maintaining US investments.  
26

27 – Credit Risk  
28

29 Manitoba Hydro’s electric operations are subject to credit risk from counterparties  
30 defaulting on energy sales and/or the replacement risk of prematurely terminated  
31 export sales contracts.  
32

33 The financial status and credit rating of existing and potential electricity export  
34 customers are evaluated to determine the amount of credit to be extended. The  
35 financial condition and credit ratings of counterparties are monitored in order to  
36 adjust credit limits for changes in creditworthiness. Credit risk for domestic energy  
37 sales is managed through various reporting, control and collection procedures for  
38 overdue accounts. In addition, Manitoba Hydro continues to negotiate with northern

1 communities to resolve the outstanding accounts receivable balance in conjunction  
2 with mitigation issues.

#### 3 4 **12.4 RISK ANALYSIS OF KEY RISKS ON IFF09-1**

##### 5 6 Water Supply

7  
8 A drought sensitivity has been prepared based on an assumed recurrence of the worst five  
9 year drought on record. This drought sensitivity replicates the water flows of the historic  
10 five year drought period between April 1987 and March 1992 beginning in the forecast  
11 year 2011/12 and extending to 2015/16. In order to calculate the impacts of the drought  
12 on export revenues and thermal generation and import costs, a price forecast based on  
13 expected market conditions was assumed. Over the five year drought period, net export  
14 revenue would be reduced by \$2.4 billion (including financing costs) compared to  
15 MH09-1. If a drought of this magnitude (or the even larger 1936 - 1943 drought) were to  
16 coincide with a period of high prices for thermal generation and import purchases the  
17 impact would be much greater.

18  
19 Variability in net export revenues due to fluctuations in water flows is reflected in the  
20 IFF09-1.

##### 21 22 Infrastructure - Capital Program

23  
24 The 2009 capital forecast, totals \$16.5 billion over the ten year period ending 2019/20. It  
25 provides for \$12.8 billion of new major generation and transmission projects and  
26 \$3.7 billion for necessary system refurbishment and upgrades. Details and justification  
27 for all program items can be found in Appendix 6.1.

28  
29 The planned capital investment projects the debt/equity ratio to rise to 80:20 between  
30 2015/16 to 2018/19 from 75:25 in 2011. The equity ratio is expected to strongly recover  
31 in the next decade as the benefits of these capital projects are realized. The capital  
32 coverage target ratio of greater than 1.20 (except excluding new major generation and  
33 transmission) is attained throughout most of the forecast period.

##### 34 35 Export Markets

36  
37 An expected forecast of power prices for export is used in the MH09-1 electricity  
38 forecast. Sensitivity analysis was undertaken on both a low and high price forecast



1 compared to the expected to determine the impact on net revenue from export sales and  
 2 retained earnings.

3  
 4 Interest Rates and Foreign Exchange

5  
 6 Sensitivities on changes in the Canadian dollar of \$0.10 U.S. and +/- 1% change in  
 7 interest rates were run to determine the impact on retained earnings.

8  
 9 The following table (IFF09-1, Appendix 5.2) shows the change in retained earnings  
 10 assuming no change to rate increases and equal annual rate increases/decreases relative to  
 11 IFF09-1 necessary to offset the relevant risk.

12  
 13  
 14  
 15

	2011/12	2015/16	2019/20	Incremental Annual Rate Increase/(Decrease) *	
	Incremental Increase/(Decrease) in Retained Earnings (in millions of dollars)			Electric	Gas
<b>IFF09-1 Baseline</b>	<b>2,396</b>	<b>2,997</b>	<b>4,059</b>	-	-
+ 1% Interest Rates	26	(14)	(279)	0.23%	0.06%
- 1% Interest Rates	(24)	13	254	-0.23%	-0.06%
Cdn \$ down \$0.10 US	33	142	358	-0.34%	N/A
Cdn \$ up \$0.10 US	(26)	(115)	(286)	0.27%	N/A
Low Export Prices	(54)	(363)	(920)	1.05%	N/A
High Export Prices	113	712	1,713	-2.10%	N/A
5 Year Drought (starting in 2011/12)	N/A	(2,405)	N/A	3.37%	N/A

16 \* **NOTE** – the rate increases represent the additional annual percentage (incremental to  
 17 the base case annual rate increases) required to achieve the same level of retained  
 18 earnings in 2019/20 as in the base MH09-1 and CGM09-1.