

**MANITOBA HYDRO**

**CORPORATE  
RISK  
MANAGEMENT  
REPORT**

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## EXECUTIVE SUMMARY

Manitoba Hydro utilizes an extensive management system to control risks that can impact the achievement of the Corporation's mission and mandate. Risks are closely monitored and effectively managed through a systematic and coordinated process outlined in the Corporation's Risk Management Policy. Risks are grouped under 11 categories and 48 subcategories to facilitate their understanding, management and communication across the Corporation. The Corporation summarizes these risks into risk profiles that are updated at least annually. Profiles include an assessment of the potential impact to the Corporation using financial, safety, reliability, environmental, or customer value criteria. Risk tolerances are established to identify an acceptable range of variation in impact and performance and if outside this range, management action is undertaken to further mitigate the risk.

The Corporation has identified the following areas of risk with potential high consequence:

- **Infrastructure Risk - Prolonged Loss of System Supply (D.3) and Dam Safety (D1.1)**  
This risk includes the extended loss of the HVDC transmission system and the potential for dam failures at hydraulic generating sites. Manitoba Hydro manages this infrastructure risk in a manner that makes the potential of occurrence as close to zero as possible. The Corporation is addressing this risk through various capital and maintenance projects and is continually enhancing its emergency response and preparedness processes.
- **Drought Risk - Water Supply / Drought (C.1) and Insufficient Supply (D.2)** On average, there is a high likelihood of a drought occurring about once every ten years. The onset of droughts are very unpredictable and their range in impact can vary significantly. During the past year the cost of a repeat of the worse five year drought on historic record commencing in 2008/09 was updated and is now estimated to be \$2.8 billion. Should this drought coincide with a period of high energy prices, the cost could be much higher.
- **Loss of Export Market Risk - Regulatory Environment (A.2.1) and Regulatory/Legal - Regulation and Licensing (H.1)** Because Manitoba Hydro derives over 1/3 of its revenue from export sales (under median water flows), the potential loss of export markets is one of the major risks faced by the Corporation. The Corporation continues to actively work to mitigate and manage market uncertainties, primarily through lobbying efforts in liaison with other industry representatives. The Corporation is

also pursuing increased diversity in its export markets to reduce singular market dependency.

Several risks are approaching tolerance limits established by the Corporation which allow a range of acceptable variation in performance. Management has the following plans in place to mitigate these risks:

- **Domestic - Uneconomic loads (A.1.1) and Export - Domestic Requirements (A.2.6)**  
The Corporation is experiencing higher domestic demands from energy-intensive industries that are reducing the amount of electricity available for export. To address this, the Corporation has filed a rate application with the Public Utilities Board requesting marginal cost-based rates for energy consumed above predetermined baselines.
- **Export - Regulatory Environment (A.2.1), Special Interest Groups (A.2.4) and Infrastructure - Special Interest Groups (D.7)**  
The Corporation continues to experience pressure from outside interest groups in the Export- Regulatory environment. These issues are being addresses through increased lobbying efforts and increased participation by Manitoba Hydro staff on export/regulatory committees in Canada and the USA.
- **Infrastructure - Dam Safety (D.1.1) and Prolonged Loss of System Supply (D.3)**  
Aging infrastructure requires upgrades and/or replacement and the Corporation has approved capital spending to address the most significant issues including the redevelopment of the Pointe Du Bois Generating Station. Significant enhancements to improve system reliability are currently before the public for consultation.
- **Succession Planning (E.2) and Supply Chain (F.1)**  
The ability to continue to attract and retain staff and outside services is under increasing pressure due to the changing demographic of the workforce. The Succession Planning Program and Integrated Labour Forecast are two of many steps being pursued to ensure that the Corporation's aging workforce will be replaced with skilled and capable people. The corporation is also establishing strategic alliance partners with suppliers and maintaining market intelligence in the services and supply sectors to ensure the ongoing supply of critical items and construction schedules.
- **Legal Compliance (H.3)**  
The pace of change and the vast number of laws and regulations are difficult to manage effectively and the potential changes can have a

significant impact on the Corporation. The requirements of changing to International Financial Reporting Standards (IFRS) will have a major impact on how operating and capital spending is reported and will impact net income. The Corporation has established an IFRS project team with consultant support to address these issues in advance of their required implementation.

- **Strategic (I)** The Corporation is embarking on a major capital expansion program in support of its export sales strategy and to meet domestic load and reliability requirements. These projects, subject to obtaining necessary approvals, will add several billion dollars of assets and related debt to the Corporation's balance sheet over the next decade. As with all new capital projects, there are risks associated with the potential for continued high construction cost escalation, skill shortages and uncertainty with the markets into which the surplus energy produced by these projects will be sold. The Corporation performs numerous sensitivity analyses and alters its outlook accordingly, utilizing appropriate measures to reduce potential risk.

## **PURPOSE**

The Corporate Risk Management Report is updated on an annual basis to provide information on the status of the major risks facing Manitoba Hydro as it carries out its business activities. The report identifies and assesses each risk, describes management activities used to manage the risk and estimates the potential residual impact to the Corporation in terms of likelihood and consequence after risk mitigation actions have been taken. The Corporation's tolerance for each risk and an assessment of whether the risk is within or outside the desired tolerance level is also provided.

Most risk management efforts are focused on reducing the likelihood of negative events occurring. However, the Corporation also has plans in place to reduce the consequences should a negative event occur. These plans are under continual assessment to ensure that the Corporation is prepared for emergencies and is ready to respond in an effective and coordinated manner.

The Corporate Risk Management Report also outlines risk management policy and strategy, identifies risk assessment criteria and risk tolerance levels. An updated Corporate Risk Map with a ranking of areas of significant risk is also provided.

## **RISK MANAGEMENT POLICY AND STRATEGY**

Manitoba Hydro's Risk Management Policy is: "to manage business and operational risks through a systematic, proactive and integrated process which is designed to balance the objectives of:

- a) identifying threats that affect the achievement of the Corporation's mission and mandate;
- b) mitigating the consequences of negative occurrences; and
- c) taking advantage of opportunities to provide benefits to all stakeholders."

In applying its Risk Management Policy, the Corporation has adopted the following six-step process to identify and manage risks:

**1) Mission / Mandate**

The process of identifying and managing risk is initiated at the Corporate, Business Unit, Division, Department, or project level by focusing on the underlying mission / mandate and specific strategic goals established for that particular area of the Corporation.

**2) Risk Identification**

Risks are identified based on the factors that influence the performance of the area of the Corporation being assessed.

**3) Potential Impact**

Risks are analyzed for potential impact and measured in terms of consequence and likelihood. Consequence is quantified in terms of system reliability, safety, finance, environmental impact and customer satisfaction. For each consequence identified, the likelihood (probability) is determined of the event occurring.

**4) Risk Treatment**

Actions are taken to reduce the likelihood of a negative event occurring or to reduce the negative consequences should a negative event occur. Risk treatment can include a reduction of the risk through modification of operational activities, a sharing of the risk through external insurance or acceptance of the risk as a normal consequence of the business and/or operations. The acceptance of risk is subject to that risk being within the approved tolerance levels of the Corporation.

**5) Residual Risk**

Certain levels of residual risk may remain even after actions have been taken to reduce their likelihood and consequences. An assessment is performed to confirm that the residual risk levels are within approved tolerances.

**6) Reporting and Monitoring**

Systems are implemented to monitor key risks, and information provided by these systems are used to facilitate management actions. Reporting systems ensure that

senior management and other stakeholders are appropriately informed and risks are managed within the Corporation's approved risk tolerances.

## **CORPORATE RISK CATEGORIES**

A detailed listing of 11 major categories and 48 subcategories of risk is provided on page 7. Categorizing key risks facilitates the understanding, management and communication of risks across the Corporation. The subcategory of Emergency Response / Business Continuity (D.8) was added to this year's report under the Infrastructure category.

## **CORPORATE RISK PROFILES**

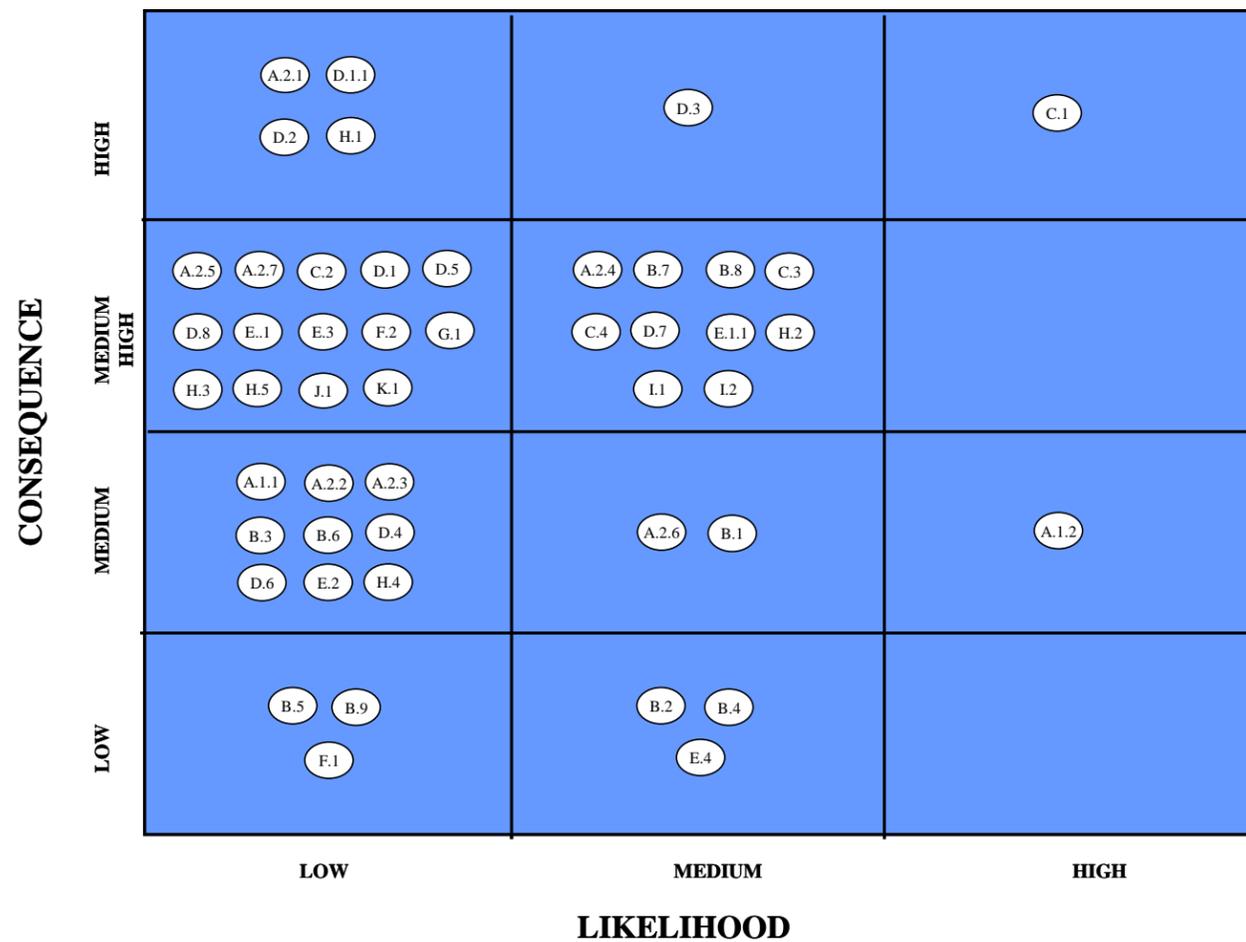
Corporate Risk Profiles, provided in appendix A, are prepared for each subcategory of risk and are updated on a regular basis to ensure that the information provided in the profile is both current and accurate.

One new risk, Emergency Response / Business Continuity (D.8) was added to the Infrastructure category in this year's report. The Corporation's energy infrastructure is exposed to events that can have impacts ranging from insignificant to catastrophic. This new profile was added to better capture the risks associated with not having proper recovery plans in place. Failure to have appropriate emergency response plans can exacerbate otherwise manageable events resulting in the inability to provide safe energy services, protect the environment and reduce the impact on Manitoba's economy and the Corporation's reputation. This risk is rated as having a low likelihood with a medium high consequence.

**RISK ASSESSMENT**

Each identified risk has been assessed in terms of likelihood and consequence of occurrence. Likelihood is defined in terms of whether the event may occur within the next ten years. Consequences are assessed using a combination of qualitative and quantitative methods including system reliability, safety (employee and public), finance, environmental impacts and customer service. The criteria used in assessing risk are provided in appendix B and the results of the assessment are illustrated in the following Corporate Risk Map. While impact ratings have been outlined for low, medium and medium high, risks that are considered more significant than others in the medium high category are elevated to a high category to signify their higher potential impact on the Corporation. These high consequence risks are Export - Regulatory Environment (A.2.1), Dam and Dike Structures (D.1.1), Insufficient Supply (D.2), Regulation and Licensing (H.1), Prolonged Loss of System Supply (D.3) and Water Supply/Drought (C.1)

**CORPORATE RISK MAP**



**A. Market**

1. Domestic
  1. Competition
  2. Uneconomic Loads
2. Export
  1. Regulatory Environment
  2. Competition
  3. Transmission
  4. Special Interest Groups
  5. Protectionism
  6. Domestic Requirements
  7. Commodity Availability

**B. Financial**

1. Exchange
2. Interest Rates
3. Credit
4. Inflation
5. Gas Price Volatility
6. Gas Derivative Instruments
7. Capital Structure
8. Shortage Pricing / Fuel Price Volatility
9. Power Financial Instruments

**C. Environmental**

1. Water Supply/ Drought
2. Climate Change / Kyoto
3. Operational Impact and Infrastructure
4. Reliability of Supply

**D. Infrastructure**

1. Loss of Plant (all property, all perils)
  1. Dam and Dike Structures
2. Insufficient Supply (drought peril)
3. Prolonged Loss of System Supply
4. System Shutdown (Short Term)
5. System Shutdown (Natural Gas - S.T.)
6. Technology
7. Special Interest Groups.
8. Emergency Response / Business Continuity

**E. Human**

1. Safety / Health / Workplace Violence
  1. Infectious Disease
2. Union / Employee Issues
3. Succession Planning
4. Technology

**F. Business Operational**

1. Supply Chain
2. Operational Controls

**G. Reputation**

**H. Governance / Regulatory / Legal**

1. Regulation and Licensing
2. Export Market Access
3. Legal Compliance
4. Contracts and Ventures
5. NERC/MRO Reliability Standards

**I. Aboriginal**

1. Relationships
2. Legal

**J. Emerging Energy Technologies**

**K. Strategic**

## RISK QUANTIFICATION

All identified risks are quantified within reasonable ranges of materiality. The principal quantified risks are summarized in the following table:

Risk	Potential Range
Infrastructure	Greater than \$2 billion for a major facility long term outage
Drought	\$2.8 billion for worst 5 year drought and higher if it coincides with high energy prices
Loss of export market	Greater than 30% of revenue
Interest rates	Up to \$170 million for a 1% change over a forecast period ending 2017-18
Foreign exchange rates	Up to \$100 million for a \$.10 US change over a forecast period ending 2017-18

Sensitivity analysis is conducted on all major risks to determine the Corporation's risk exposure and to determine the extent to which risks are within established tolerances. Actions are taken to reduce the likelihood of negative events occurring or where appropriate, to reduce the consequences should negative events occur.

In addition to its risk management activities, Manitoba Hydro has a formal Corporate Emergency Response Plan to ensure effective and coordinated responses to emergencies or disasters. The Emergency Response Plan also ensures appropriate communication and coordination with other public authorities and emergency measure organizations as necessary to respond to unexpected events.

## **TOLERANCE**

Tolerance is defined as the allowable or permissible variation from a standard. For Manitoba Hydro's purposes, tolerance is further defined as the extent to which the amount of residual risk is deemed to be reasonably acceptable within the resources available to the Corporation. To the extent that tolerances fall beyond reasonably acceptable levels, actions have been taken (or are being taken) to mitigate that risk.

Typically, risks with high consequence have corresponding low tolerances. Safety / Health / Workplace Violence (E.1) and Reliability of Service (C.4) are examples where the Corporation has a low tolerance for risk due to the severe consequences of negative events.

Tolerance is rated as either, low, medium or high based on the following parameters:

- Low – Zero or limited variability is accepted. Low tolerance is usually associated with an area where the consequences of negative events are significant and the Corporation has the ability to control the risk.
- Medium - Some variability is accepted. Medium tolerance may also be associated with high risk but the ability of the Corporation to control the risk may be limited.
- High – Significant variability is accepted. Consequence is always low.

To ensure adequate control and monitoring of risk, management establishes rules, limits, targets and guidelines and continually monitors these indicators and responses accordingly. The Corporation has created three levels to illustrate this:

- Green: no additional action required at this time as the risk is under control and is not subject to significant change.
- Yellow: there are or appears to be some emerging issues that need to be closely monitored and addressed. Additional action is required to bring the risk back to the established tolerance. Management has time to respond in an orderly manner.
- Red: the risk has become critical to business operations and requires day to day senior management attention. If not resolved quickly, it could have catastrophic impacts on the organization.

The report includes, in Appendix C, a listing of each risk with its risk tolerance as identified as a guideline, limit or rule and the status for each risk to the established tolerance. Where appropriate, additional management actions are included for tolerances that are outside their acceptable tolerance.

## **FUTURE WORK**

The Corporation will continue to develop and improve its integrated risk management program. Areas of focus will be the continued analysis of key risk areas, refinement and further integration of the risk management process with other planning processes and the further development of monitoring and reporting systems to meet the needs of management and other stakeholders. The risk management program will undergo an external review in the upcoming year to assess whether it is appropriate and in line with emerging best practices.

## APPENDIX B - Risk Rating Criteria

### CORPORATE RISK PROFILE RATING CRITERIA

CONSEQUENCE	MEASURES	RATING		
		Low	Medium	Medium High
<b>Financial</b>	Net income / capital investment	\$0 - \$50 million	\$51 - \$150 million	> \$150 million
<b>System Reliability</b>	Domestic Customers	Outage affecting 50 customers for 4 hours. Not life threatening	Outage affecting 500 customers for up to 24 hours. Have ability to serve critical loads. Not life threatening as critical loads served.	Do not have capacity to serve Manitoba load for extended period of time. Life threatening. Loss of public confidence.
	MW generation or interconnection capacity	NERC level 1 In compliance with industry reliability standards.	Loss of 2000 MW. NERC level 2 - load management procedures in effect. In compliance with industry reliability standards.	Loss of > 2000 MW. NERC level 3 - firm load interruption imminent or in progress; and / or non-compliance with industry reliability standards.
<b>Safety - Employee and Public</b>	High risk accidents, severity rate, frequency rate and public contacts.	Minor injuries. In compliance with laws and industry standards.	Disabling injuries. In compliance with laws and industry standards.	Severe injuries and fatalities; and / or non-compliance with legislation and industry standards resulting in imprisonment for MH mgmt, significant fines and loss public trust.
<b>Environment</b>	Environmental impact - air emissions, water mgmt, spills, land & habitat disturbances, etc.	Minor impact to environment. In compliance with stakeholder expectations and laws and regulations. Ability to obtain / renew environmental licensing and operating approvals.	Local and contained damage to environment. In compliance with stakeholder expectations and laws and regulations. Ability to obtain / renew environmental licensing operating approvals.	Severe widespread and uncontained damage to environment; and / or non-compliance with stakeholder expectations, laws, and regulations resulting in imprisonment for MH mgmt, significant fines, loss of public trust and long term operating restrictions
<b>Customer Value</b>	Customer perception service with regard to:			
	Retail electricity rates	No rate increase	Annual increase < 10%	Annual increase > 10%
	Reliability and quality service	Restoration service within 4 hours, no threat to public safety, < 1.3 outages/customer/year, provision energy related services.	Restoration service within 24 hours with no threat to public safety. 2 outages/customer/year.	Outage for extended period of time. Life threatening. Loss of public confidence.
	Reputation	Local media coverage with negligible impact on stakeholders.	A highly visible event attracting national media coverage or environmental concern; and / or a moderate negative impact on stakeholders.	A highly visible event attracting international media coverage or environmental concern; and / or a significant negative impact on stakeholders such as breach of privacy, contractual obligation or environmental stewardship.
<b>LIKELIHOOD</b>		Event is not likely to occur within 10 years.	Event is likely to occur within 5 - 10 years.	Event is likely to occur within 1 to 10 years.

Note: While risk impact ratings are outlined for low, medium and medium-high those considered more significant than others in the medium-high category are elevated to a high category to signify their potential higher impact on the Corporation.