Manitoba Hydro

Middle and Back Office Assessment

May 20, 2010

ADVISORY

KPMG

AUDIT ▪ TAX ▪ ADVISORY

Table of Contents

1. Executive Summary

Project Background and Middle Office Vision

Project Background

Specifically, as part of the External Quality Review, management has initiated comprehensive analysis of the Middle Office to:

- Review existing risk policies, control and procedures associated with power sales/purchases, credit management, trading and market activities
- Review industry leading practice methodologies and metrics to measure risk and exposure
- Identify software options to enable market and credit risk measurement
- Review the back office structure, reporting processes and related documentation
- Review staffing of the middle and back office functions.

Export Power Middle Office Vision

- ***…Articulate management's vision or objectives for Manitoba Hydro's Middle Office risk management program program and future state capabilities. E.g..:***

1. Define and measure Export Power risks using appropriate metrics commensurate with leading practice
2. Operate under best practice governance and controls
3. Provide accurate, comprehensive and timely risk reporting
4. Implement risk management technology infrastructure commensurate with Export Power transacting activities and analytical requirements

Manitoba Hydro Operational Context

Operational Context

Manitoba Hydro is a unique utility holding a natural long position in energy supply. Manitoba Hydro's extensive experience transacting in the extraprovincial wholesale electricity business initiated with the first transmission interconnection in 1958. Short-term trading began in 2000.

Manitoba Hydro participates in the wholesale energy markets by exporting surplus power only to capture market opportunities, opportunities, generate incremental income, and to ensure market access for current and future domestic needs. The chart below depicts how Manitoba Hydro has generated incremental revenue through wholesale electricity activities in a consistent manner since 2000.

The overall breadth of Manitoba Hydro's transacting activities are low risk in nature for the following reasons:

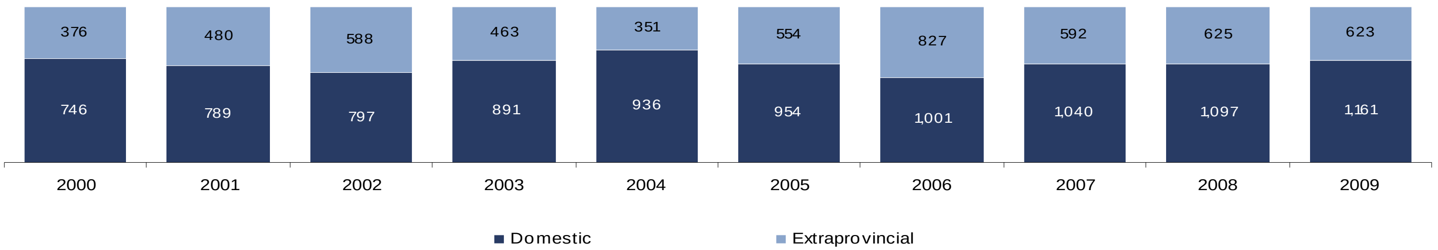
- Manitoba Hydro sells surplus power with a high degree of confidence that sufficient water resources exist prior to the actual sale.
  - Manitoba Hydro sells much of its export power on a short-term basis (i.e., < 3 months) in order to be highly confident that power can be supplied based on current water conditions.
  - Long-term sales are backed by "dependable energy" supplies[1].
- Forward sales are not made unless Manitoba Hydro has sufficient firm capacity and energy resources to serve the load 95% of the time.

Coupling the low risk profile with the conservative risk management practices in place, KPMG is satisfied that Manitoba Hydro Hydro manages the inherent risks associated with wholesale electricity activities in a prudent manner.

It is important to underscore that the recommendations presented in this report represent opportunities for improvement and do do not suggest inadequate risk management practices and / or control weaknesses or deficiencies.

[1] Dependable energy is the hydroelectric power available for sale under the lowest river flow conditions in the historical record, and also includes energy sourced from wind and thermal as well as firm and non-firm imports.

Manitoba Hydro Electrical Revenue



Source: Manitoba Hydro 2009 Annual Report

Note on Leading Practices

Leading Practices

To provide additional context on MH's risk governance practices we prepared a Power Sales Risk Management Maturity Analysis which is set out on slide 11. To prepare this analysis KPMG compared MH to the results of KPMG's utility case study study research. KPMG reviewed 14 other electric utilities as part of its review of risk governance approaches. This research indicates that electric utilities across North America are adapting to their changing environments, a variety of approaches are in in place, largely driven by their unique operating characteristics, regulatory regime and the pace at which they are implementing relevant leading practices. KPMG notes that:

- MH ranks comparatively well for its installed capacity level
- MH has the clear goal to move towards leading practice

Four of the organizations are closer to the "basic" end of the spectrum; six of the organizations are closer to the "advanced" end and four of the organizations fall in a middle cluster between the "basic" and "advanced" ends. The organizations that are are close to the "advanced" end of the spectrum tend to have significantly larger installed capacity than the other organizations organizations in our sample. MH lands in the middle cluster of organizations, and its risk governance structure is similar to the organizations with installed capacity under 10,000 MW.

Further, when reviewing the Gap Analysis, which begins on slide 12, the reader should also keep in mind that leading practices practices are aspirational, continue to evolve and are subject to the following limitations:

- Leading practices offer insight into an organization's risk management capabilities, and serve as a directional compass for an organization's risk management development. However, the development and implementation of such practices does not assure that control objectives will always be achieved.
- Many leading practices reflect the capabilities of organizations that primarily transact and manage risk in the more traditional financial markets. Requirements of organizations transacting in the energy markets can be different, and in this context, priorities should be modified accordingly. In addition, the adoption of leading practices should be considered in the context of cost versus benefits.

Source: Manitoba Hydro 2009 Annual Report

Summary Recommendations

Recommendations

1. **Consolidate various policies and procedures into discrete documents – 1) Policies and 2) Procedures to improve risk governance communication and consistent operational processes.**

   Manitoba Hydro has a number of risk related policies and procedures. It is recommended that a Risk Policy be developed that amalgamates Export Power risks and includes an appendices to document approval authorities.

2. **Prioritize and define functional and technical requirements (risk analysis, valuation, control, and reporting requirements) to properly select an appropriate middle office technology solution**

   KPMG recommends that a detailed list of "business" requirements be developed to properly select a vendor solution. These business requirements should include all contemplated transaction types, audit and operational controls, consolidated near-time position management, as well as valuation and physical/financial exposure methodologies.

3. **Revise the reporting structure so the Credit Analyst positions report into the Middle Office**

   KPMG recommends that the Credit Analyst role, currently reporting to Export Power Marketing (Front Office), report into the Middle Office. Industry practice is for the credit function to be independent from the Front Office (See slide 34).

4. **Develop market risk analytic capabilities to perform stress testing, sensitivity analysis and model backtesting**

   The Export Power Middle Office is systematically evolving beyond its origins as a compliance monitoring function. As the Export Power Middle Office continues its efforts to strengthen its risk management capabilities, market risk analysis should be an immediate area of focus (See Slide 39 for further details). Establishing a market risk function will enable the Export Power Middle Office to provide more value-added support to PS&O and supplement its current risk control activities.

5. **Develop Export Power Middle Office reporting capabilities to include volumetric exposure/position reporting**

   The Export Power Middle Office should explore the ability to extract data directly from webTrader to build out interim risk analysis and exposure reporting functionality. Currently the Business Services Department is extracting information to compile a portion of divisional reporting requirements. This would be useful for assessment of net positions that are exposed to movements in market price.

6. **Consider performing a cost / benefit analysis to understand the potential benefits / limitations of an Earnings at Risk calculation**

   EaR is a complex analytic that may provide MH the ability to better determine its net income exposure to market and volume risk. However, EaR is not a widely adopted metric amongst regulated utilities and requires computational horsepower and a robust historical dataset to calculate an entity level EaR. A cost / benefit analysis would provide MH a good understanding of the potential benefits.

Conclusion

Conclusion

With respect to Manitoba Hydro's middle and back office structure, people, processes and technology, we conclude that Manitoba Hydro demonstrates prudent risk management practices in the following areas:

- Risk oversight and governance
- Delegation of authorities
- Counterparty credit and contract management
- Transaction processing controls
- Compliance and risk monitoring
- Risk reporting

In addition, we recognize that Manitoba Hydro has a number of initiatives underway to improve its risk management practices. practices. Manitoba Hydro should continue its efforts to keep pace with the dynamic energy markets and in doing so should consider our recommendations to further improve its middle and back offices.

2. Risk Policy Assessment

Recommendations

Summary Recommendations

Summary risk policy recommendations include:

1. **Consolidate various policies and procedures into three discrete documents – 1) Policies and 2) Procedures to improve risk governance communication and consistent operational processes.**

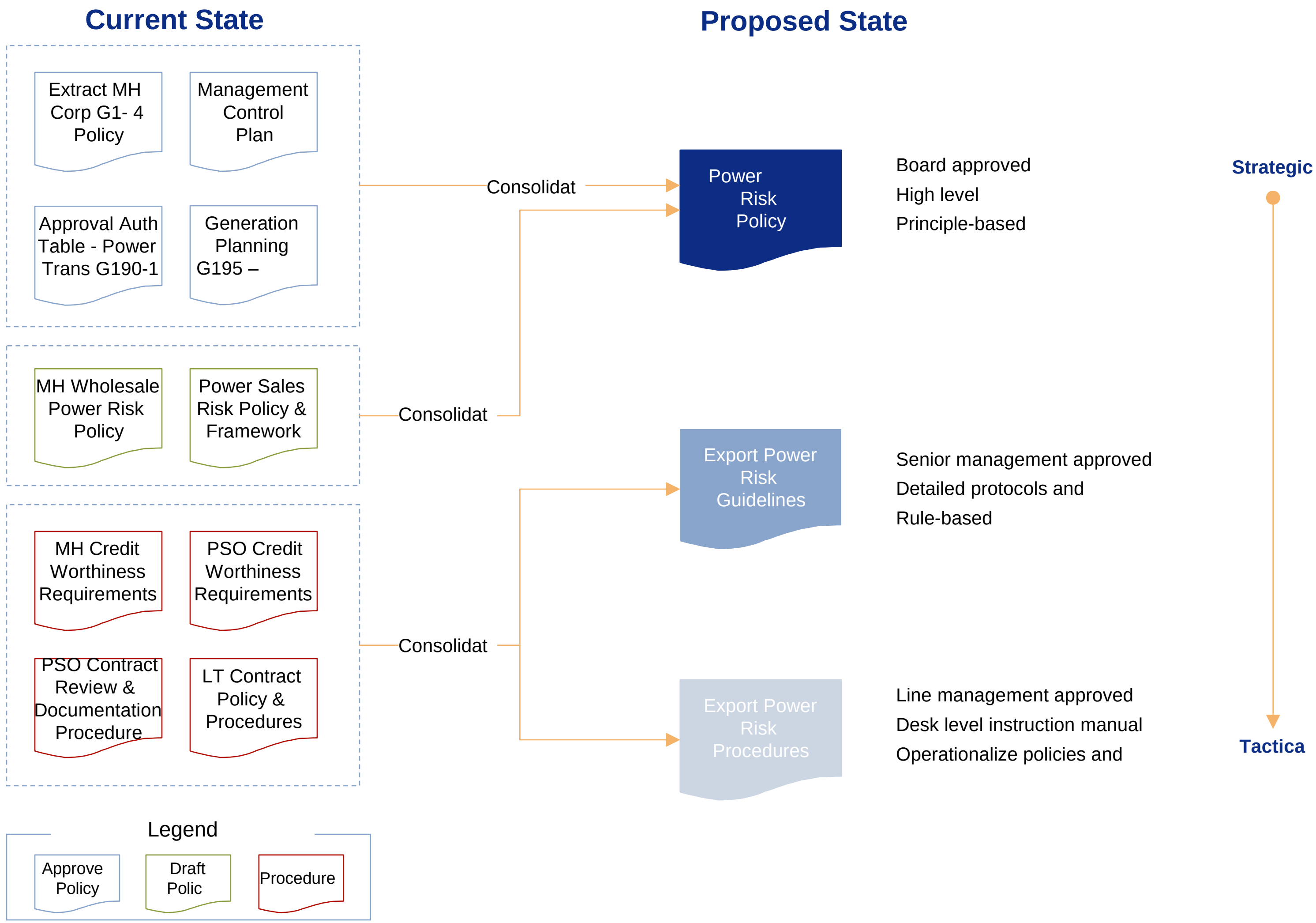
   Manitoba Hydro has a number of risk related policies and procedures. It is recommended that a Risk Policy be developed that amalgamates Export Power risk and includes an appendices for documentation of approval authorities.

2. **Expand risk policy documentation to include the following:**
   - Qualitative or quantitative corporate risk appetite statement
   - Power Supply Business Unit interfaces (e.g., Legal, Tax, Regulatory Affairs, IT, Treasury)
   - Policy maintenance and administration
   - Market risk limit structure and exception protocols
   - Market risk analytics and protocols
   - Credit risk management
   - Major export term sheet internal review process
   - Book structure protocols
   - Transacting Organization Structure
   - Risk Reporting

Current State vs. Proposed State

Current State Observation

MH risk governance documents are fragmented, documented at varying levels of granularity, and exist in dated versions (e.g., (e.g., operating under draft policies and procedures). KPMG recommends consolidating various policies and procedures into three discrete documents – 1) Policies, 2) Guidelines, and 3) Procedures to improve risk governance communication and consistent operational processes.

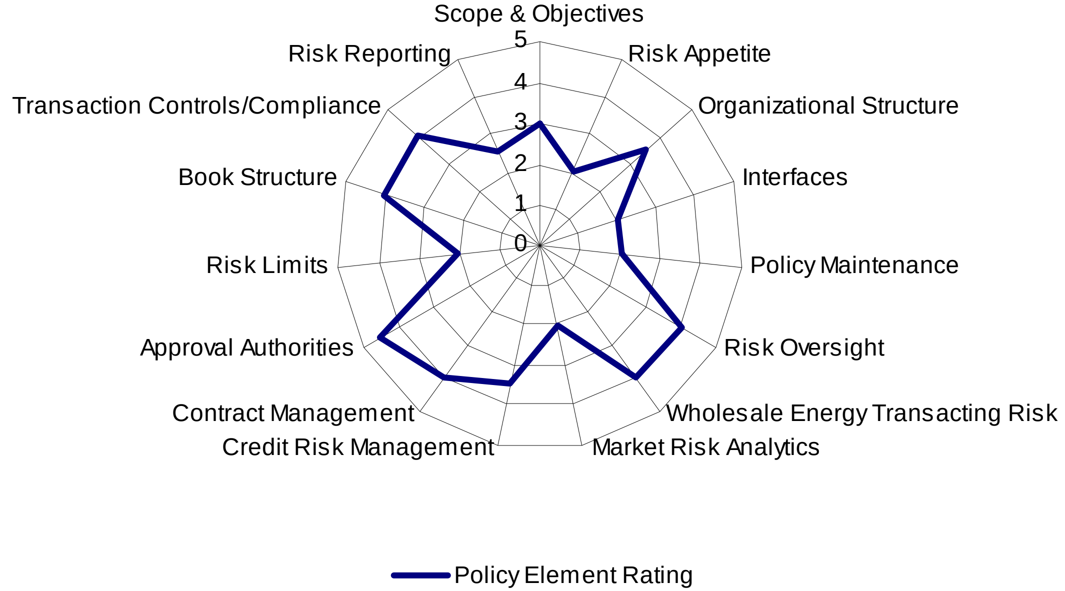


Power Sales Risk Policy Assessment

Current State Risk Policy Maturity

Based on our review of current risk governance documents, KPMG recommends that Manitoba Hydro enhance its policy framework. Specifically, in the areas of corporate risk appetite, policy maintenance, risk reporting, and market risk measurement and analysis.

Manitoba Hydro
Power Sales Risk Policy Maturity Framework



1	2	3	4	5
Inadequate	Improvement Required	Average	Above Average	Leading Practice

Detailed Analysis

Gap Analysis

KPMG performed a high level gap analysis of MH's current risk policies vis-à-vis leading practices[1]. KPMG has identified a set of fundamental policy elements that represent a comprehensive risk policy and our observations and recommendations are documented on the following pages.

Policy Element	Leading Practice	Observation	Recommendations
Scope, Objectives, Purpose	■ Risk policies should include a summary of the scope, objectives, and purpose of the policy document.	■ The purpose and scope are incorporated into the current Draft Wholesale Power Risk Policy. ■ Objectives and purpose are incorporated into MH Creditworthiness Requirements and Power Sales and Operations Creditworthiness Requirements documents.	■ Provide an appropriate overview of the scope and purpose including inherent risks associated with energy transacting and agreed upon risk definitions ■ Define risk management philosophy, risk management objectives, and mission statement
Risk Appetite	■ A risk appetite statement expresses the amount of risk risk an entity is willing to accept in pursuit of value. Risk appetite is directly related to an entity's strategy. It is considered in a strategy setting, where the desired return from a strategy should be aligned with the company's risk appetite.	■ The corporate and PS&O risk appetite is implied through permitted transactions, but could be more clearly quantified.	■ Articulate a quantitative or qualitative statement that reflects strategic growth goals and desired returns from a strategy ■ Differentiate risk appetite from risk tolerance. Risk tolerances are the acceptable levels of variations relative to the achievement of objectives

1

Detailed Analysis

Gap Analysis

Policy Element	Leading Practice	Observation	Recommendations
Organization structure	■ Policies should provide for a structure which ensures the risk function is ultimately accountable to the BOD, or committee thereof, through the company's CFO or delegate. ■ There should be a hierarchy and responsibilities between corporate and business unit risk management.	■ Credit Risk management functions are managed within the front office. ■ The Export Power Middle Office (market risk function) reports to the Corporate Risk Manager who in turn reports to the SVP Finance & Admin and CFO.	■ Document responsibilities for each level by front, middle and back office.
Interfaces	■ Leading practices in risk management should apply across the entire organization and not be contingent upon where these these risks ultimately are managed. Other functional areas have an impact on the risks faced by the company. Therefore, risk management must address, through policy, interfaces with traditional company functions.	■ There is the opportunity to strengthen the existing policy framework by formalizing responsibility for the operational, liquidity, and other business risks embedded in the business infrastructure.	■ Expand policy documentation to articulate the risk management function, both through the governance (committee) and structure, relate to traditional company functions such as Treasury, Legal, Regulatory, Accounting, Information Technology, Operations, and Corporate Planning.

Detailed Analysis

Gap Analysis

Policy Element	Leading Practice	Observation	Recommendations
Policy Maintenance and Administration	■ Leading practice supports creating a living document that is revised as methods and approaches in risk management improve and/or management philosophy towards risk tolerance change.	■ There is no indication embedded how current policies are to be updated and the approval process or requirements.	■ Stipulate ownership of the policy and the process for its review and approval including review and renewal frequency. ■ Specify Board or executive committee approval requirements.
Risk Oversight	■ Risk policy emanates from the highest level of an organization, at the Board of Directors. A clear path for managing risk starts at the BOD and senior management.	■ Oversight responsibility for risk management rests with the MHEB and is delegated to executive/management committees through formal and draft policies.	■ Formalize amendments to the existing governance & oversight framework to ensure it identifies the process for establishing authorities and responsibilities from MHEB through to the EPRMC.
Wholesale Energy Transacting Risks	■ A policy section should clearly identify and define the types of risks and how each contributes to the level of uncertainty around the company's financial performance. ■ Typical risk categories along with high level definitions should be incorporated.	■ MH policies do not contain a comprehensive limit structure, or specify type and and frequency of risk reporting.	■ Define key risk factors covered under the Risk Policy. ■ Describe risk reports, publication frequency and usages. ■ Articulate the corresponding criteria to manage risk within the firm including risk tolerances.

Detailed Analysis

Gap Analysis

Policy Element	Leading Practice	Observation	Recommendations
Market Risk Analytics **(Including price, volume, and operational)**	■ A clear segregation of responsibilities around analysis and management market risks.	■ The Draft Wholesale Risk Policy adequately identifies the middle office responsibilities for analytics however further clarity could be provided on the pre-deal level of involvement and analytics.	■ Articulate market risk assessment, analysis, validation, and/or valuation functions including executing the risk monitoring requirements.
Credit Risk Management	■ Leading practice is to develop a corporate wide credit risk policy to provide guidance on credit risk. ■ To maintain efficiency, credit credit risk management is best performed at a corporate level and independent from the front office.	■ Current PS&O Credit Risk Policy is in draft format. ■ Internal credit scoring and external debt ratings drive the approved credit limit. ■ Policy defined "Credit Exposure" consists of accounts receivable exposure plus mark to market exposure on financial transactions under an ISDA.	■ Incorporate Manitoba Hydro's Draft Creditworthiness Requirements into a comprehensive corporate credit credit framework and policy to provide stewardship over all credit adjudication, mitigation methods, metrics, exposure monitoring, and limit compliance.

Detailed Analysis

Gap Analysis

Policy Element	Leading Practice	Observation	Recommendations
Contract Management	■ Leading organizations transact under standard commodity contracts and ISDAs whenever possible. ■ Consideration is given to sections with respect to mitigation of credit risk, remedies and termination.	■ MH executes standard Master Agreements and Market Participation Agreements to minimize deal execution risk.	■ Document acceptable credit contract provisions and required contract documentation.
Approval Authorities	■ A risk management policy should provide for the delegation of the appropriate appropriate authority for deal execution and to manage risk.	■ Approval authorities are embedded in existing documentation including the MCP and approval authority table G190.	■ Document approval authorities as an appendix item to facilitate facilitate policy maintenance and administration. ■ Clarify permitted product use. (e.g., selling uncovered options).
Risk Limits	■ Appropriate risk limits should be embedded in policy. (i.e., Volumetric limits, dollar-transaction limits, stop-loss limits, EaR limits, and authority limits).	■ The policy framework does not contain a comprehensive limit structure for all market and , or specify type and frequency of risk reporting. ■ This is being addressed in current drafted documents.	■ Define key limits and controls such as who can transact (individual commercial staff have defined authorities). ■ Specify quantitative and qualitative limits. ■ Develop risk limit exception protocols and corrective action policies.

Detailed Analysis

Gap Analysis

Policy Element	Leading Practice	Observations	Recommendations
Book Structure	■ Leading practices include a formal book structure that facilitates the proper management of exposure, P&L, and capital at an appropriate level of granularity for the size and scope of commercial activity. activity.	■ Book structure methodology uncertain. ■ Require clarity on Accounting/GST level 3/4 requirements. (Not typically a book structure component).	■ Document book structure methodology. ■ Document book structure maintenance (e.g., adding / deleting books). ■ Document policies addressing interbook transfers.
Transaction Controls & Compliance	■ Policy development should include a summary of key transaction and position controls, control reporting, and any independent monitoring that is required.	■ Transaction controls and compliance requirements are evident in a number of policy and procedure documents.	■ Document key transaction controls including; systems controls, reconciliations, code of conduct, transaction deal validations, and all limit compliance requirements.

Detailed Analysis

Gap Analysis

Policy Element	Leading Practice	Observation	Recommendations
Risk Reporting	■ Risk reporting should include all risks and positions associated with trades, assets, and contracts, and should be reviewed and validated by the middle office. ■ Leading practices include real time risk reporting from a trade capture and risk management system.	■ The policies do not appear contain all risk related metrics, reporting requirements and frequency. ■ The standards for market and credit risk measurement are addressed but can be expanded.	■ Document key reporting requirements for MH's exposures, volumetric positions, and profitability. ■ Document comprehensive risk related metrics, report types and publication frequency for all market risk measurement, credit risk, and risk control reporting.

3. Market and Credit Risk Measurement

Recommendations

Summary Recommendations

Summary market and credit risk measurement recommendations include:

1. **Consider applying MTM practices to measure market risk associated with short-term physical transactions and to measure replacement cost associated with credit risk**

   Fair market value for all open physical and financial positions should be calculated to monitor market risk exposures, identify hedging opportunities, and optimize risk capital allocation. MTM is the foundation to industry-accepted market risk analytics and limiting valuation practices to financial transactions only provides a partial understanding of MH's market risk exposures in its short-term portfolio.

2. **Consider performing a cost / benefit analysis to understand the potential benefits / limitations of an Earnings at Risk calculation**

   EaR is a complex analytic that may provide MH the ability to understand its net income exposure to market and volume risk. However, EaR is not a widely adopted metric amongst regulated utilities and requires computational horsepower and a robust historical dataset to calculate an entity level EaR. A cost / benefit analysis would provide MH a good understanding of the potential benefits.

3. **Develop market risk analytic capabilities to perform stress testing, sensitivity analysis and model backtesting**

   The Export Power Middle Office predominantly serves as a compliance monitoring function. As the Export Power Middle Office continues its efforts to strengthen its risk management capabilities, market risk analysis should be an immediate area of focus (See Slide 39 for further details). Establishing a market risk function will enable the Export Power Middle Office to provide more value-added support to PS&O and supplement its current risk control activities.

Market Risk Analytics

Current State - Market Risk Analytics

MH applies a majority of industry-accepted market risk analytics in a manner commensurate with its export sales activities. One immediate area for improvement is within MTM. MH should perform a cost / benefit analysis to understand the potential benefits of of the more complex EaR analytic.

Increasing complexity →

	1 Mark-to-Market	2 Sensitivity Analysis	3 Scenario Analysis / Stress Testing	4 Earnings at Risk (EaR)	5 Backtesting
Description	▪ Measures unrealized gains and losses prior to contract settlement settlement by calculating the difference between between the forward dated transaction sales / purchase price the forward dated market price	▪ Measure the incremental change in portfolio value by manipulating a single parameter value while holding holding all others constant	▪ Evaluate the potential portfolio loss due to shocking underlying risk factors (e.g., price, volume, correlation)	▪ Measures the downside impact on net income over a specified time horizon (e.g., 12 months) and confidence interval given a change in forward market prices	▪ Measure the precision of the organization's analytical models, assumptions, and projected exposure exposure by comparing forecasted to actual market behavior
Current Application	▪ Financial transactions* * See Appendix Slide 48	▪ Portfolio sensitivity to select variable changes	▪ Portfolio exposure to severe drought	▪ Not in practice	▪ Not in practice
Recommendations	▪ Apply to short-term term physical transactions	▪ No recommendation	▪ Consider a probabilistic stress testing methodology	▪ Perform EaR cost/benefit analysis	▪ Implement backtesting practices
Potential Benefits	+ Measure market-base performance + Identify hedging opportunities + Value embedded derivatives	+ Understand portfolio exposures exposures to certain risk factors + Identify portfolio hedges	+ Measure worst case losses probabilistically + Calibrate drought reserves	+ Measure capital utilization + Articulate corporate risk appetite	+ Create model transparency + Foster balanced decision-making + Control model development

Credit Risk Analytics

Current State - Credit Risk Analytics

MH applies a majority of industry-accepted credit risk analytics in a manner commensurate with its export sales activities. One immediate area for improvement is within the current exposure calculation (i.e., Replacement Cost). MH should also perform a cost cost / benefit analysis to understand the potential benefits of the more complex potential future exposure calculation.

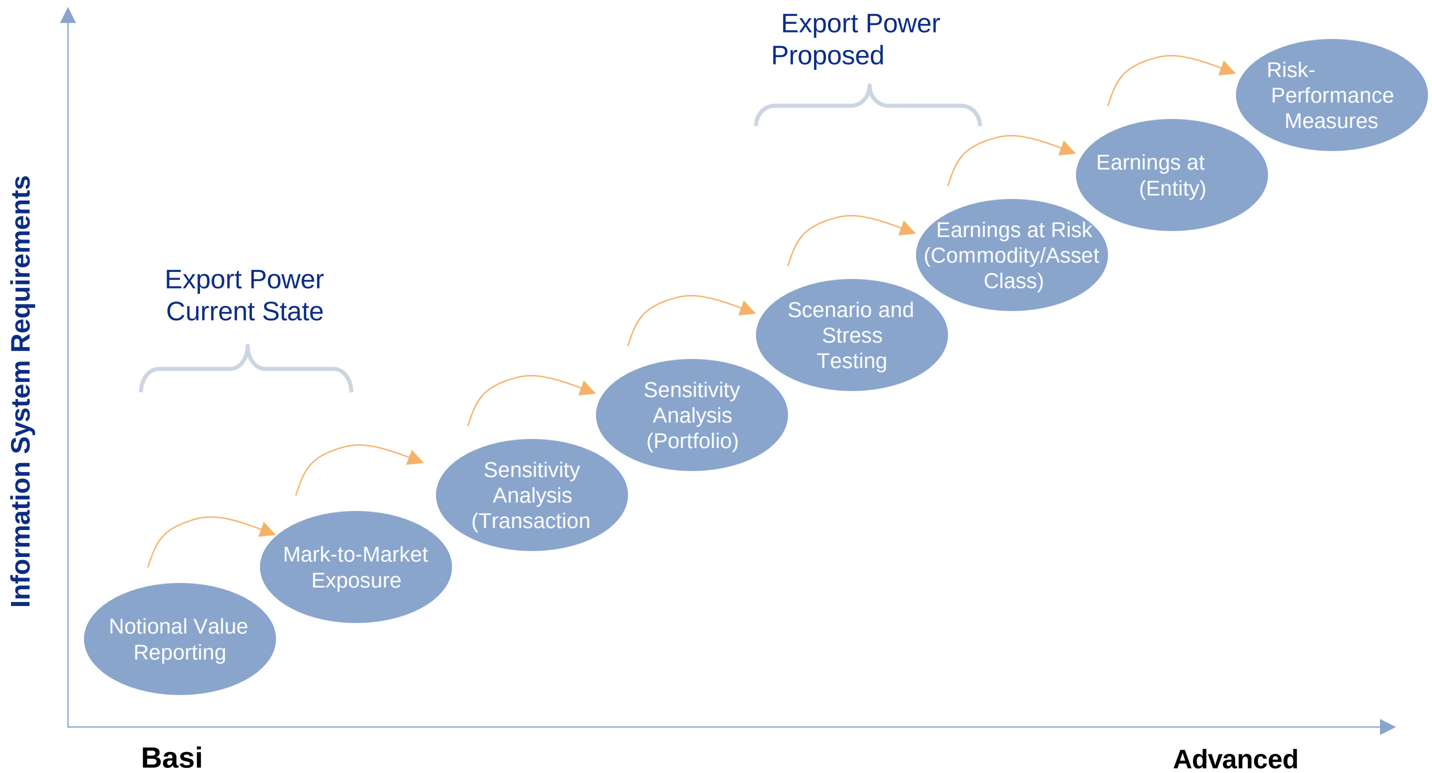
Increasing complexity →

	1 (Net) Accounts Receivables (billed and unbilled)	2 Replacement Cost	3 Expected Loss	4 Potential Future Exposure
Description	▪ Measures the risk that a counterparty defaults subsequent to performance by the other counterparty	▪ Measures the cost associated with purchasing / selling energy at current market prices greater / less than the contract price	▪ Measures credit losses adjusted for default probabilities and expected recovery rates	▪ Measures the potential worst case credit loss based on expected fluctuations in market prices over a specified time horizon
Current Application	▪ All counterparties* * Netting is subject to an executed ISDA agreement	▪ Financial transactions	▪ All counterparties	▪ Not in practice
Recommendations	▪ Negotiate netting agreements, where possible	▪ Measure replacement cost using MTM principles	▪ No recommendation	▪ Monitor consensus on industry-accepted methodology and perform cost / benefit analysis
Potential Benefits	+ Reduce settlement exposure + Improve cash flow and liquidity position	+ Measure credit losses associated with in the money contracts + Request collateral to mitigate replacement costs	+ Calibrate credit reserves + Quantify average credit losses over time, not worst case losses	+ Optimize credit capital + Articulate corporate credit risk appetite

Risk Measurement Assessment

Export Power Risk Measurement Continuum

Risk management metrics and methodologies are a continuum of choices; typically building upon the more basic valuation methods. For market risk factors, the Export Power Middle Office is currently providing notional value reporting supplemented with Mark-to-Market reporting for financial transactions. For other risk factors, managed by other Power Supply Business Unit departments (e.g., Power Planning Department), scenario and stress testing analysis is performed. KPMG recommends that Export Power Middle Office enhance its risk measurement capabilities to include stress testing and and sensitivity analysis. Export Power Middle Office should recognize that information system requirements must increase commensurate with the contemplated risk methodologies (e.g., Earnings at Risk).



4. Enabling Technology

Recommendations

Summary Recommendations

KPMG recognizes that Export Power has requested an expression of interest from a number of Energy Trading Risk Management (ETRM) vendors. KPMG supports this initiative and recommends that Export Power Middle Office:

1. **Prioritize and define functional and technical requirements (risk analysis, valuation, control, and reporting requirements) to properly select an appropriate middle office technology solution**

   It is recommended that a detailed list of "business" requirements is developed to properly select a vendor solution. These business requirements should include all contemplated transaction types, audit and operational controls, consolidated near-time position management, as well as valuation and physical/financial exposure methodologies.

2. **Utilize available webTrader data export functionality to improve risk reporting capabilities**

   It is recommended that the Middle Office work with the organization's Information Technology group to explore the ability to extract data directly from webTrader to build out interim risk analysis and reporting functionality. Currently the Business Services Department is extracting information to compile a portion of its divisional reporting requirements.

3. **Establish a systems strategy (e.g., select appropriate risk system enhancements) and develop a systems evaluation/selection process.**

   The current systems and data models, for risk control, risk analytics, and credit analytics, are inadequate for both the scope and volume of energy transaction activity. This is being addressed with current system initiatives.

   KPMG recommends Export Power Middle Office correlate the key functional and technical requirements, the complexity of power transactions, and the configurability of any packaged software. There is little benefit in acquiring a highly configurable software that exceeds the complexity of the business. Additionally, MH should recognize that selecting a less configurable product also reduces project risk, decreases delivery time as well as costs. It is therefore recommended that the evaluation and selection process consider current and planned scope of transacting activities, business processes, controls and reporting requirements.

Middle Office Alternative System Solutions

Middle Office Alternative System Solutions

The Export Power Middle Office has commenced initial steps to evaluate energy system vendors to enable market and credit risk analysis, measurement, and reporting. KPMG's understands that Export Power Middle Office is currently evaluating 3 alternative middle office system solutions. The pros and cons of each alternative are summarized below.

	webTrader			Integrated Front-to-Back			Specialized Risk Engine		
	Front	Middle	Back	Front	Middle	Back	Front	Middle	Back
	webTrader	webRisk	webTrader	New System	New System	New System	webTrader	Risk Engine	webTrader
Feature	A comprehensive system for trading, scheduling, and settlement of power transactions.			A fully integrated energy market solution that offers a straight-through-processing (STP) environment Supports the entire transaction management life-cycle covering a comprehensive list of transaction instruments.			A market and credit risk management tool designed to perform robust and complex market and credit risk analytics analytics and potentially compliance. Typically powered by an independent analytics and calculation engine.		
Pro's/Con'	+ Minimal implementation effort and costs + PS&O Market Process and Technology Department can be leveraged for IT support + No integration issues with legacy system – Unproven product and small client base			+ Permits straight through processing including credit and market risk management + Highly customizable + No integration issues – Implementation effort and cost is significant – Requires Corporate IT support and negotiation of Service Level Agreement – Pay for unutilized functionality (assuming legacy system is not replaced)			+ Possess more robust analytical and computational functions than integrated front to back systems + Permits robust user-defined parameters + Provides advanced risk modeling – Requires integration and data interfaces – Risk reporting functionality is not as robust as integrated front to back systems – Requires Corporate IT support and negotiation of Service Level Agreement		

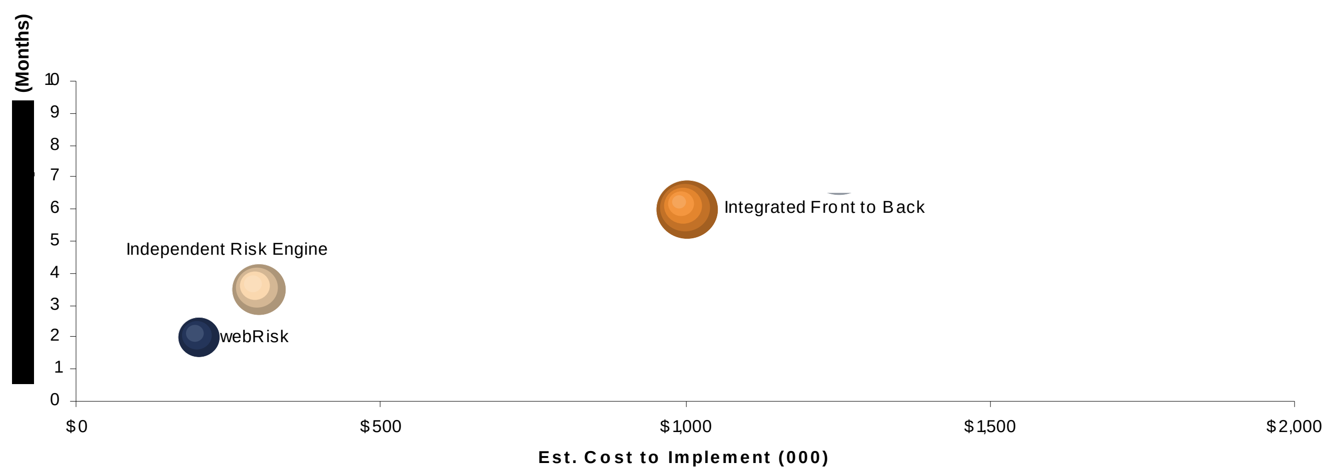
Estimated Implementation Effort and Costs

Current Systems Upgrade Potential

Based on findings previously described and considering Manitoba Hydro's business model, management should:

- Upgrade available data export functionality (from webTrader) to achieve short-term benefits
- Establish a systems strategy (e.g., select a risk system enhancement) and initiate systems evaluation/selection.

Alternative systems solutions: Estimated implementation time and costs



General System Alternative Observations

- A Front-to-Back system upgrade may not be cost effective, and require significant resources with limited incremental benefit.
- webTrader's risk module (webRisk) should be assessed for functionality (against clearly defined business requirements).
- Homegrown systems are generally costly and require extensive implementation effort.
- A specialized risk engine would require appropriate integration with existing systems and data sources.
- Integration (i.e., Middleware) may be required with stand-alone risk engines.

Vendor Comparison - Analytics and Risk Functionality

Systems Capabilities – Analytics and Risk Functionality

Select third-party systems platforms.

System Capabilities	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Correlations/volatilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Partial
Implied volatility curves	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Partial
Simulation/Scenario Analysis	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities
Historical & Monte Carlo VaR	Full Capabilities	Full Capabilities	Full Capabilities	Partial	Full Capabilities	Full Capabilities
Backtesting	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Partial
Real time MTM	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities
ROI capital	Full Capabilities	Gap	Gap	Gap	Full Capabilities	Gap
Supplemental client/prop models	Gap	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Partial
Earnings/Cash-Flow at Risk	Full Capabilities	Full Capabilities	Gap	Gap	Full Capabilities	Full Capabilities
Option Greeks	Full Capabilities	Full Capabilities	Gap	Full Capabilities	Full Capabilities	Full Capabilities
Alarms, authority, limits	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities

Legen Gap Partial Full Capabilities

Vendor Comparison - Analytics and Risk Functionality

Systems Capabilities – Analytics and Risk Functionality

Select third-party systems platforms.

System Capabilities	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Proprietary interpolation additional capacity	🟢	🟢	🟢	🟢	🟢	🟠
Multiple volatility curves by node	🟢	🟢	🟢	🟢	🟢	🟠
Defines price curves from forward data	🟢	🟢	🟢	🟢	🟢	🟢
Graphical display	🟢	🔴	🔴	🟢	🟢	🟢
Historical comparisons	🟢	🟢	🟢	🟢	🟢	◐
Variances – multiple metrics/tenors	🟢	🟢	🟢	🟢	🟢	🟠
Provides data to external VaR	🟢	🟢	🟢	🟢	🟢	🟢
Individual trader/floor limits	🟢	🟢	🟢	🟢	🟢	🟢
Charts	🟢	🔴	🟢	🟢	🟢	🟢
Technical analysis	🟢	🔴	🟢	🟢	🟢	🟠
Parallel shift forward curve	🟢	🟢	🔴	🟢	🟢	🟢

Legen 🔴 Gap ◐ Partial 🟢 Full Capabilities

Vendor Comparison – Credit Risk Management Functionality

Systems Capabilities – Credit Risk Management Functionality

3rd party systems platforms.

System Capabilities	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Tracks counterparty info	🟢	🟢	🟢	🟢	🟢	🟢
Trade by c/p segregation	🟢	🟢	🔴	🔴	🟢	🟢
Trading limits c/p - contract	🟢	🟢	🟢	🟢	🟢	🟢
Trading limits c/p credit limit	🟢	🟢	🟢	🟢	🟢	🟢
User-defined margin reporting	🟢	🟢	🟢	🟢	🟢	🟢
Alarms/notional c/p limit	🟢	🟢	🟢	🟢	🟢	🟢
Credit score	🟢	🔴	🟢	🟢	🟢	🟢
C/P collateral value	🟢	🟢	🟢	🟢	🟢	🟢
Historical exposure/limits	🟢	🟢	🟢	🟢	🟢	◐
Online doc attachment/retrieval	🟢	🟢	🟢	🟢	🟢	🟠
User defined weighting criteria	🟢	🟢	🟢	🟢	🟢	🟢

Legen 🔴 Gap ◐ Partial 🟢 Full Capabilities

Vendor Comparison – Credit Risk Management Functionality

Systems Capabilities – Credit Risk Management Functionality

Select third-party systems platforms.

System Capabilities	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Integration with G/L real time time	🟢	🟢	🔴	🟢	🟢	🟠
Drill down to transaction	🟢	🟢	🟢	🟢	🟢	🟢
Graphical Presentation Capability	🟢	🟢	🟢	🟢	🟢	🟢
Collateral extension management	🟢	🟢	🟢	🟢	🔴	🔴
Override Capability – Limits	🟢	🟢	🟢	🟢	🟢	🟢
Real Time Available Credit Limits	🟢	🟢	🟢	🔴	🟢	🟢
Ratio Analysis	🟢	🟢	🟢	🟢	🟢	🟠

Legen 🔴 Gap ◐ Partial 🟢 Full Capabilities

Vendor Comparison – Technology Functionality

Systems Capabilities – Technology

Select third-party systems platforms.

System Capabilities	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
3-tier client server	🟢	🟢	🟢	🔴	🟢	
2-tier client server	🟢	🔴	🔴	🔴	🟢	
N-tier client server	🟢	🟢	🟢	🟢	🟢	🟢
Event notification / subscription	🟢	🟢	🟢	🟢	🔴	
Web-enabled	🟢	🟢	🟢	🟢	🟢	🟢
Thin client or resident on workstation	W	TC	TC	W	W	
Reports browser-based	🟢	🟢	🟢	🔴	🟢	🟢
User personalization	🟢	🟢	🟢	🟢	🟢	🟢
XML	🟢	🟢	🟢	🟢	🔴	🟢
Active X/VB Script	🟢	🔴	🔴	🔴	🔴	
JSP/Servlets	🟢	🔴	🟢	🔴	🟢	🟢

Legen 🔴 Gap ◐ Partial 🟢 Full Capabilities

Technology

Systems Capabilities – Technology

3rd party systems platforms.

System Capabilities	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Java	Full Capabilities	Gap	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities
Java script	Full Capabilities	Gap	Full Capabilities	Full Capabilities	Gap	Full Capabilities
Cookies	Gap	Gap	Gap	Full Capabilities	Full Capabilities	Full Capabilities
HTML/DHTML/CSS	Full Capabilities	Full Capabilities	Full Capabilities	Gap	Gap	Full Capabilities
E-mail link	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Gap	Gap
Multi-currency	Full Capabilities	Gap	Gap	Full Capabilities	Full Capabilities	Full Capabilities
Unix DB Server	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities
MS DB Server	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities
Oracle	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities	Full Capabilities
MS SQL	Full Capabilities	Full Capabilities	Gap	Full Capabilities	Gap	Full Capabilities

Legen Gap Partial Full Capabilities

5. Middle and Back Office Structure

Recommendations

Summary Recommendations

Summary Organizational Structure recommendations include:

1. **Establish a Market Risk function to identify market risks, manage risk data, models, and measurements**

   Currently, the responsibility for market risk assessment lies solely with the Senior Risk Management Officer. A position established to conduct market risk analysis and providing independent risk valuations and validations is recommended.

2. **Realign the credit risk management group reporting line to the Export Power Middle Office**

   The Credit Analyst positions report into the Export Power Middle Office. The Credit Analyst role currently reports to the Contract Administration Officer (Front Office). Industry practice is for credit management to report into the Export Power Middle Office which is independent from the Front Office.

3. **Leverage the Head of Export Power Middle Office to perform day to day risk control duties**

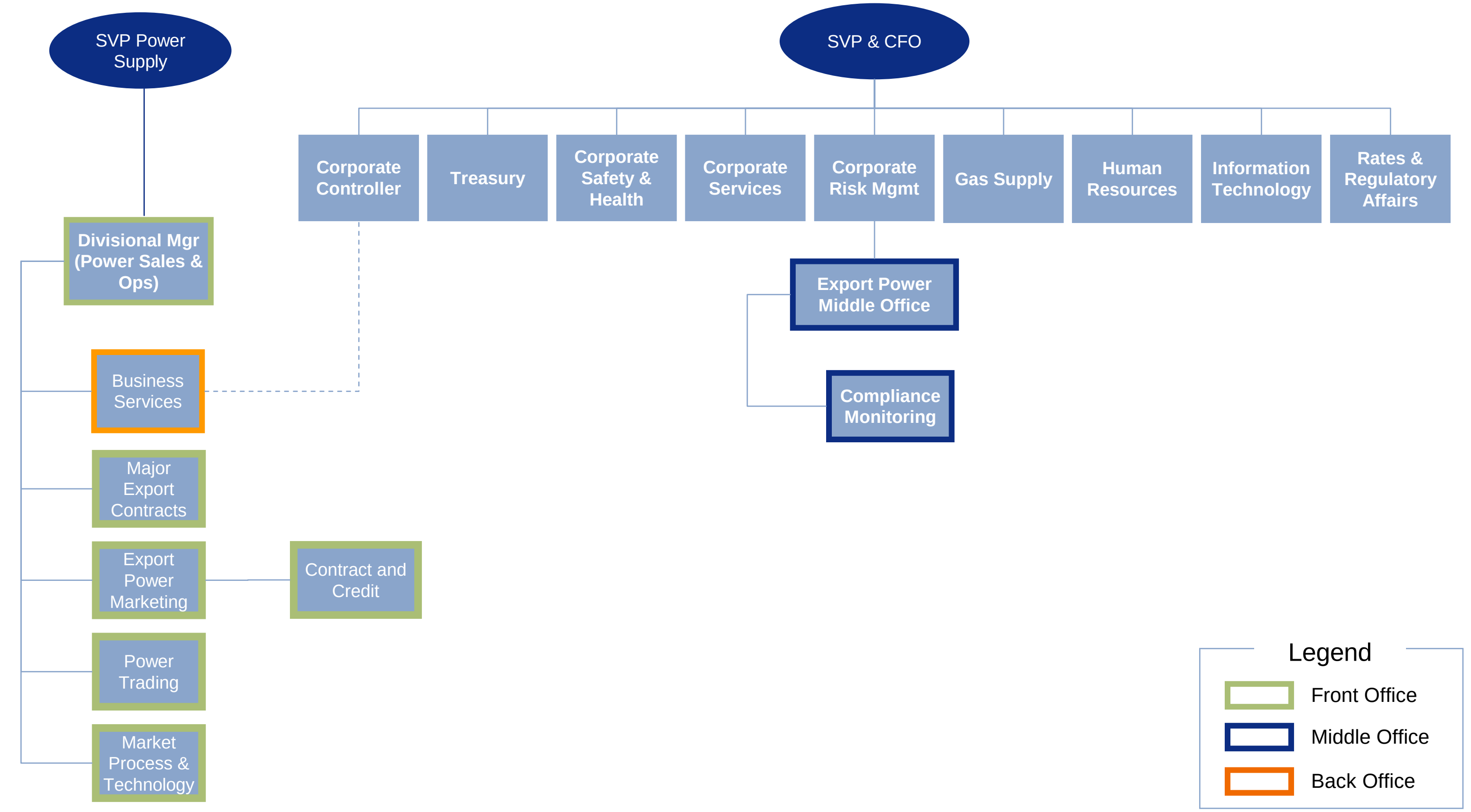
   With the added support of a Market Risk Analyst, the opportunity exists to leverage the other members of the Export Power Middle Office to assist with the performance of day to day risk reporting and control activities. This provides efficiencies until export power activity warrants an additional analyst.

Current Middle and Back Office Structure

Current Organization Structure – Middle and Back Office Organization Structures

The Export Power Middle Office organization may benefit from various enhancements, specifically related to segregation of duties and operational efficiencies (e.g., Contract and Credit Risk Management report to the Head of Export Power Middle Office). The back office organization (i.e., Business Services) provides critical and independent transaction support. KPMG has no recommendations to the current back office structure. However, a proposed middle office structure is presented for management's consideration on the following page.

Current State:

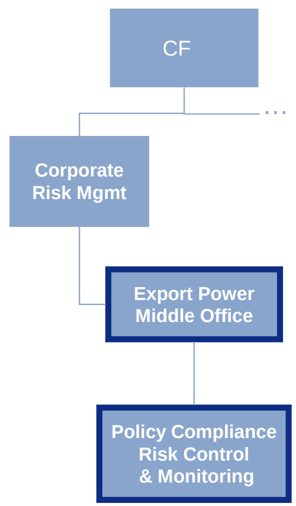


Recommended Middle Office Structure

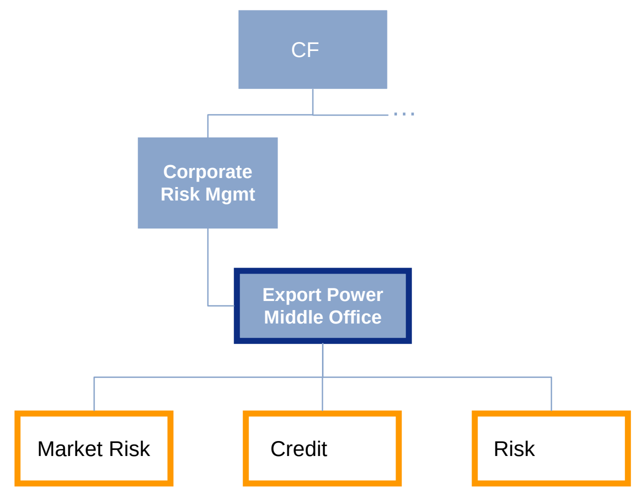
Recommended Organization Structure

KPMG recommends revising the reporting structure so that the Credit Analyst positions report into the Export Power Middle Office. Office. The Credit Analyst role currently reports to Export Power Marketing (Front Office). Industry practice purports credit risk management report into the Middle Office or other independent function. KPMG also recommends an incremental Risk Analyst position to perform market risk analysis. The proposed structure promotes independence and specialization.

Current



Proposed



Market Risk

- Market risk analysis & modeling
- Valuation / MTM
- Price, volatilities, and risk system inputs
- Collaboration with commercial business

Credit

- Credit adjudication
- Monitoring
- Mitigation and collateral management
- Measurement

Risk

- Maintain risk policy and documentation
- Monitor authorities, limits and policy compliance
- Position tracking
- Risk reporting

Legend

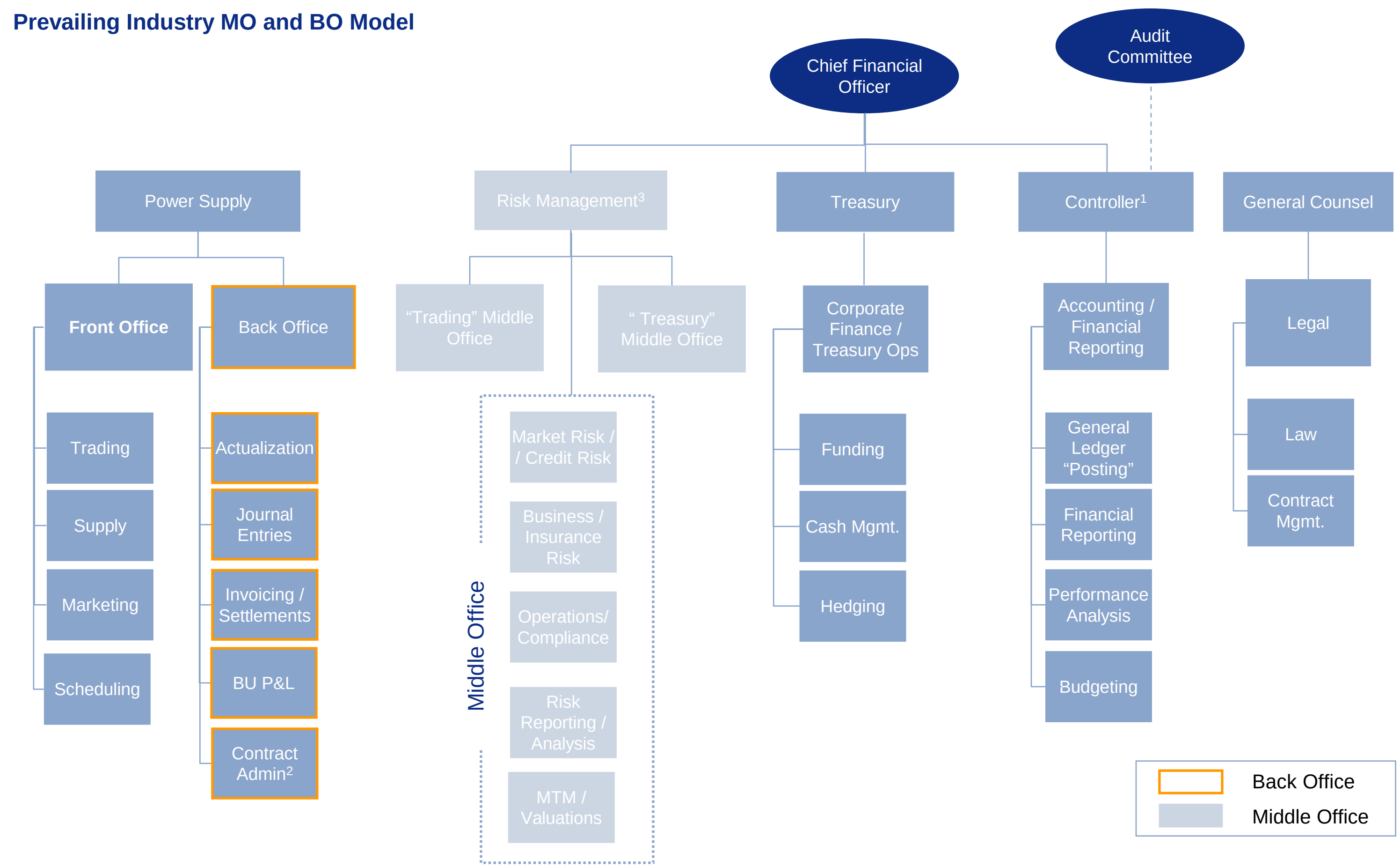
Proposed

Prevailing Industry Perspective - Middle and Back Offices

Prevailing Industry Perspective – Middle and Back Office Organization Structures

For the most part, MH's current Export Power Middle and Back Office structures is consistent with prevailing industry practices. practices. Since the Export Power Middle Office is within the Corporate Risk Management function, the middle office function function is positioned to evolve into a shared service function (i.e., treasury middle office).

Prevailing Industry MO and BO Model



[1] It is increasingly common for the Controller to report directly to the Audit Committee.
[2] Contract Admin may report to General Counsel or the Back Office.
[3] The risk management function manages additional enterprise risks and hedging activities including insurance risk, asset risk and IFRS exposures.

6. Middle and Back Office Roles and Responsibilities

Recommendations

Summary Recommendations

Overall we are satisfied that MH's middle and back offices are consistent with industry-accepted practices recognizing current technology and resource constraints.

Summary Middle and Back Office recommendations include:

1. **Expand Export Power Middle Office reporting to include volumetric exposure/position reporting**

   KPMG recommends that the Export Power Middle Office explore the ability to extract data directly from webTrader to build out interim risk analysis and exposure reporting functionality. Currently the Business Services Department is extracting information to compile a portion of divisional reporting requirements. This would be useful for assessing net positions exposed to movements in market price.

2. **Define Market Risk Analyst roles and responsibilities**

   KPMG recommends that Export Power Middle Office expand its market risk analysis capabilities concurrent with its risk system initiative. This role is necessary to establish and maintain risk measurement data, methodologies, curves, techniques, and assumptions. This quantitative and analytical function will validate valuations, identify market risks, and enhance risk analysis and reporting capabilities.

3. **Regarding the Business Services Department, further assessment should be considered to ensure there is not a gap in regulatory, financial, or performance reporting**

   With ongoing changes in regulatory reporting and oversight, KPMG recommends that the Business Services Department review with Corporate Accounting all current and anticipated regulatory, performance, and financial reporting expectations to ensure reporting complies with accounting standards.

4. **Enhance cross training and succession planning within the Business Services Department**

   KPMG recommends that Manitoba Hydro review the depth of the competencies within the Business Services Department. With the current Manager, Business Services transitioning to a new role, and potential promotion from within the group, it is prudent to re-evaluate the core competencies and skills within the group.

Middle Office - Market Risk Analyst

Roles and Responsibilities – Market Risk Analyst

KPMG recommends Export Power Middle Office incorporate an analytical function to establish and maintain risk measurement data, methodologies, curves, techniques, and assumptions.

Market Risk Analyst

Position	Role	Responsibilities
Market Risk Analyst	Perform market risk analysis which includes providing: ▪ Independent forward valuation/validation and risk assessments ▪ Prices, volatilities, correlations ▪ Collaboration with the commercial business	▪ Participate in new power business assessments to review and support opportunities that involve an expansion of activity, a new strategy, or a complex commercial transaction ▪ Develop, document, and maintain forward curve construction and validation (including correlation matrices, data sources, and illiquid pricing point assumption testing) for power ▪ Validate analysis conducted by Front Office for any material expansion of activity, a new strategy, a new market, or a complex commercial transaction using standardized assumptions, consistent methodologies and appropriate analytical tools ▪ Conduct intrinsic and extrinsic valuations to understand the embedded optionality within complex physical transactions and short term positions ▪ Perform analysis and modeling of scenarios and stress tests to anticipate and mitigate risk of market changes or major events that could impact Manitoba Hydro's PS&O portfolio ▪ Analyzing the distribution of value in the Export Power portfolio of transactions, identifying, and reporting material positions that have significant market risks ▪ Responsible for the implementation and maintenance of required market risk measurement, methodologies, models, and assumptions. (i.e., exposures, MTM, Mark-to-Model, and Earnings at Risk) ▪ Responsible for appropriate backtesting and calibration of all risk models

Middle Office - Credit Risk Analyst

Roles and Responsibilities – Credit Risk Analyst

We found no evidence to suggest there were deficiencies in credit management based on current methodologies and procedures. procedures. KPMG however does recommend enhancements to credit risk methodologies (i.e., inclusion of Mark-to-Market to measure replacement risk). Industry practice includes the replacement cost in the computation of current credit exposure.

Credit Risk Analyst

Position	Role	Responsibilities
Credit Risk Analyst	Perform credit risk analysis which includes providing: ■ Credit adjudication ■ Exposure measurement ■ Exposure monitoring ■ Collateral management ■ Credit provisions (e.g., netting, MAC clauses, liquidated damages)\ ■ Credit reporting ■ Collections	■ Review counterparty contracts to ensure that credit risk is mitigated through contractual arrangements ■ Monitor counterparty credit events and industry/market trends for adverse adverse effects on the counterparty's credit profile ■ Calculate and report, to Senior Management, credit exposures, credit risk metrics, and other relevant information ■ Report any credit risk limit violation, losses incurred, or other exceptions to the limit structure ■ Administer collateral (i.e., margins, parental guarantees, letters of credit). ■ Identify and measure all counterparty risk or credit concerns ■ Determine appropriate credit ratings and associated limits

Middle Office - Risk Control Officer

Roles and Responsibilities – Risk Control Officer

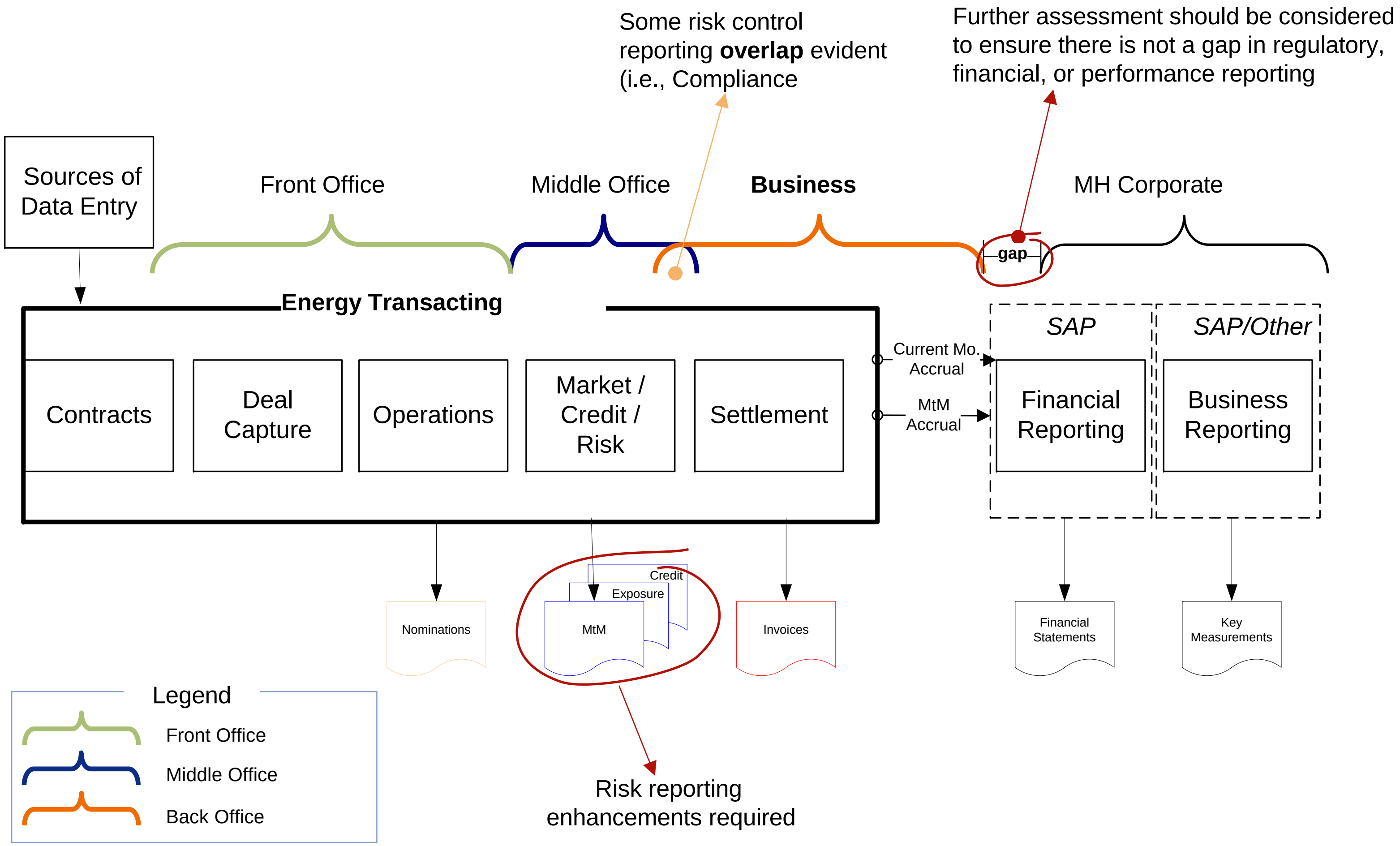
Current risk control duties systematically evolve beyond its origins as a compliance monitoring function. Risk reports are produced monthly and highlight historical compliance matters. KPMG recommends expanded risk control responsibilities in conjunction with recommended policy enhancements (See Slide 8).

Risk Control Officer

Position	Role	Responsibilities
Risk Control Officer	Manage and lead compliance duties related to Export Power transacting activities including the following; ▪ Position tracking, exposure reporting, and monitoring against any trader, book and business unit level limits ▪ Identify opportunities to improve risk management controls, monitoring and reporting ▪ Elevate issues and provide reporting to the EPRMC and Corporate Risk Manager. ▪ Maintain risk governance documentation (i.e., policies and guidelines) ▪ Foster relationships with key related risk areas such as PS&O, Gas Supply, Treasury and Legal	▪ Participate in new product approval process (i.e., identify and vet product risks) ▪ Participate in major export term sheet review, as needed ▪ Maintain trader transaction logs and acknowledgement records ▪ Check trader authorities and reconcile authorities with the appropriate external counterparties, exchanges, brokers, etc. ▪ Monitor transactions comply with permitted transaction and authorized products ▪ Assist with risk system and infrastructure development initiatives ▪ Provide risk reporting to EPRMC and other relevant stakeholders ▪ Monitor compliance with policies and guidelines (e.g., limits, inter-book transfers, operational controls) ▪ Report any violations and develop remediation steps jointly with PS&O

Back Office Roles and Responsibilities

Overview of PS&O Back Office (Business Services) Functional Responsibilities



Middle and Back Office Roles and Responsibilities

Key Activities, Competencies, and Reporting

KPMG is satisfied that the back office role is consistent with industry-accepted practices. The addition of a Market Risk Analyst to the Export Power Middle Office would align the risk management role closer with industry practices. Industry practices also suggest that the credit risk management function should be aligned with the Export Power Middle Office. KPMG also recommends cross-training for Business Services staff to allow for any attrition or transfers. A summary is provided below.

	Risk Analysis	Risk Control	Credit Risk Mgmt.	Business Services
Activities	• Forward curve mgmt. • Risk system data input • Market risk measurement • Modeling and calibration • Risk valuation & analysis	• Limit monitoring • Transaction controls • Policy maintenance • Procedure development • Risk mitigation	• Counterparty ratings • Credit limits • Credit monitoring • Collections • Margin management • Contract/credit mitigation	• Accounting • Reconciliations • Invoicing • P&L aggregation • Volume balancing • SAP journal entries
Competencie	• Power markets/products • Mathematical • Risk modeling • Communication	• Communication • Compliance • Auditing • ISO market knowledge • Operational reporting	• Accounting • Operational knowledge • Financial markets • Communication • Market participants	• Accounting • Communication • Operational knowledge • ISO market knowledge • Financial reporting
Business Reporting	• Risk analysis reports • Valuation reporting • Validation reporting	• Risk control reports • EPRMC risk reporting • MtM reports • Compliance violations	• Margin/collateral reports • Credit exposure • Credit limits/Availability • Credit exceptions	• Power Sales & Expense • Variance analysis • Opportunity Results • Merchant Results • Portfolio Activities Report

With the manager transitioning out, succession planning and cross-training is integral to knowledge transfer

Back Office Roles and Reporting

Power Sales and Expense Report and Power Sales and Expense Summary Report

Observation

1 Reporting period, cumulative and variance are acceptable reporting segmentations

2 Power revenue is segmented initially by market type (bilateral/ISO) then energy specific market and instrument.

3 The "Summary Report" is a consolidation of the Power Sales and Expense Report generated summarized by "System" and "Merchant" transactions with a drill down to "Opportunity and "Dependable" for bilateral transactions.

Assessmen

This report appears to be the key P&L analysis for the division.

4 It is unclear what information is "generated" and what is "derived". Generated reporting directly from systems is preferential.

5 Limited Balance Sheet, Capital, and Cash flow reporting for the division. It is assumed that this is conducted in the Corporate Finance Group.

6 Foreign currency transactions converted at Bank of Canada noon day settlement rate. Forward sales currency hedging should be considered for US denominated sales (Further discussions required).

Power revenue and expense reporting should reflect any changes in the division's book structure going forward.

POWER SALES & EXPENSE REPORT

Exchange Rate

1

Monthly -

Dist -

Div. Mgrs.

Corp - Analy.

	December 2009 MTD (MWh)	December 2009 MTD ($CDN)	Cumulative (9 months to Dec., 2009) YTD (MWh)	Cumulative (9 months to Dec., 2009) YTD ($CDN)	Cumulative Variance F> Favourable, (U)>Unfavourable YTD	Cumulative Variance YTD ($CDN)
POWER SALES						
BILATERAL						
OPPORTUNITY						29,549,407
PHYSICAL						
Real Time	5	131	1,506	65,426		
Day Ahead	0	0	3,866	106,213		
Short Term	65,963	2,588,472	1,903,431	35,274,884		
FINANCIAL						
Real-Time	0	0	0	0		
Day Ahead	0	0	0	0		
Short Term	68,176	2,468,882	466,987	15,023,245		
CFD (Financial Settlement)	0	0	61,600	3,189,639		
DEPENDABLE						(1,357,216)
PHYSICAL	226,296	13,307,791	2,511,985	139,881,633		
FINANCIAL	4,838	176,866	106,112	7,719,151		
CFD (Financial Settlement)		0		0		
Finsched Adjustment						(17,875,583)
Bilateral Sales - Subtotal	365,278	18,542,062	5,055,407	201,260,191		
CFD Market Settlement	0	0	(61,600)	(3,408,639)		**(3,408,639)**
Total Bilateral Sales	**365,278**	**18,542,062**	**4,993,807**	**197,851,551**		**6,907,968**
MARKETS						
AESO						(744,505)
PHYSICAL	3,224	157,304	139,265	4,794,495		
IESO						3,665,347
PHYSICAL [2]	3,856	501,495	195,012	17,914,347		
MISO						(16,321,474)
PHYSICAL						17,875,583
Day Ahead	67,669	2,533,485	2,604,464	52,075,095		
Real-Time	8,176	252,257	158,280	3,662,967		
External Asynchronous Res. [2]	57,250	2,260,633	1,073,435	26,639,543		
FINANCIAL						
Day Ahead	21,675	563,190	507,343	8,340,857		
Real-Time	629	14,553	629	14,553		
DA FINSCHED	(73,014)	(3,103,361)	(569,447)	(17,875,583)		
RT FINSCHED	0	0	0	0		
Virtual Hedging		8,373		234,093		
MISO Subtotal	81,785	2,549,050	3,754,704	73,091,526		
Total Market Sales	**88,865**	**3,207,849**	**4,088,981**	**95,800,368**		**4,474,951**
MERCHANT						
RELATED MERCHANT	71,885	2,774,668	613,493	20,195,254		(4,517,746)
PURE MERCHANT	0	0	0	0		
Total Merchant Sales	**71,885**	**2,774,668**	**613,493**	**20,195,254**		**(4,517,746)**
TOTAL SALES	**526,028**	**24,524,579**	**9,696,281**	**313,847,174**		**6,865,174**

	December 2009 MTD (MWh)	December 2009 MTD ($CDN)	Cumulative (9 months to Dec., 2009) YTD (MWh)	Cumulative (9 months to Dec., 2009) YTD ($CDN)	Cumulative Variance F> Favourable, (U)>Unfavourable YTD	Cumulative Variance YTD ($CDN)
POWER EXPENSES						
BILATERAL						
OPPORTUNITY						2,320,236
PHYSICAL						
Real-Time	0	0	0	0		
Day Ahead	0	0	314	9,264		
Short Term	0	0	0	0		
FINANCIAL						
Real-Time	0	0	0	0		
Day Ahead	0	0	0	87		
Short Term	0	0	2,500	84,048		
CFD (Financial Settlement)	0	0	63,200	2,429,774		
DEPENDABLE						(562,654)
PHYSICAL	66,242	2,413,613	304,636	15,231,715		
FINANCIAL	18,664	366,271	31,753	510,939		
Bilateral Purchases - Subtotal	84,906	2,779,885	402,403	18,265,827		
CFD Market Settlement	0	0	(63,200)	(2,536,635)		
Total Bilateral Purchases	**84,906**	**2,779,885**	**339,203**	**15,729,192**		**(672,192)**
MARKETS						
AESO						21,000
PHYSICAL	0	0	0	0		
IESO						(482,792)
PHYSICAL	23,588	550,495	78,195	204,792		
MISO						(6,500,291)
PHYSICAL						
Day Ahead	38,217	807,778	39,833	801,306		
Real-Time	19,862	804,334	25,187	1,285,996		
FINANCIAL						
Day Ahead	547	16,009	547	16,009		
Real-Time	21,675	793,407	507,343	8,616,149		
DA Finsched	0	4,976	0	76,831		
RT Finsched	0	0	0	0		
MISO Subtotal	80,301	2,426,504	572,910	10,796,291		
OTHER EXPENSES						
MISO Net FTR		(77,174)		(1,200,093)		531,093
IESO Net TR		428,274		(92,801)		(312,199)
Virtual Hedging Costs		0		(3)		(10,997)
Market Charges		160,127		(4,859,997)		5,207,997
Total Market Purchases & Expenses	**100,889**	**3,488,227**	**651,105**	**4,848,189**		**(1,546,189)**

…

Back Office Roles and Reporting

Monthly PSO Activities Report

Observation

Provides a high level summary of YTD $Sales, Purchases, Sales and electricity volumes for both “System” and “Merchant” “Merchant” transactions to senior management.

The Back Office’s ability to analyze and report business activity is limited by both the current infrastructure and staffing staffing resources.

Assessmen

The “Reporting/Compliance” section could be expanded to include a summary of other items such as outstanding A/R, volume actualization and balancing results, or other reconciliation results.

BUSINESS SERVICES - PSO INFORMATION
December 16, 2009 MONTHLY REPORT

Reporting

1

November 2009 YTD	SALES	PURCHASES	NET	GW.h
Physical Bilateral	159.4	12.8	146.6	3890
Financial Bilateral	19.9	0.1	19.8	483
Net Markets-Physical	92.6	8.0	84.6	3450
Market & Other Expenses		(6.7)	6.7	
Transmission (incl market access)		22.1	(22.1)	
Total System	**$ 271.9 million**	**36.4**	**235.6**	
Merchant	$ 17.4	16.6	0.8	
Net Revenue (Expense)*	**$ 289.3**	**53.0**	**236.3**	

Financial Reporting Notes

- Physical bilateral sales volumes were 88% of the total physical and financial bilateral volume for the 2009/10 fiscal year to date. Financial transactions may not be undertaken without the intent of physical delivery.
- MISO day ahead cleared volumes are to be physically delivered in real time. otherwise a deemed real time purchase from the market occurs.

2

Portfolio Reporting compares the realized contract prices to the current market value.
For the month November 2009 $2.1 million profit ($20.0 YTD)
Opportunity - System (includes CMSC) $1.9 ($18.2 YTD); CMSC $1.4 ($13.9 YTD)
Merchant $0.2 ($1.9 YTD)

** note that BSD is discovering discrepancies on the performance as compared with PTD portfolio reporting (LMP prices, foreign exchange, spreadsheet errors)

Reporting/Compliance

3

Export Billing is based on deals in WebTrader, counterparty verification and written contracts, as applicable. One unsigned contract was included in counterparty invoicing in November. The Approval Authority Table identifies the proper authorization to bind Manitoba Hydro in the execution of wholesale power transactions. No exception noted.

National Energy Board

The *Regulations Amending the National Energy Board Cost Recovery Regulations* were published in the 9 December 2009 *Canada Gazette*, Part II, and come into force on 1 January 2010. The substantive changes in the amended Regulations affect regulated electricity companies only. They require that costs currently recovered from electricity exporters be instead recovered from NEB-regulated power line companies that transport electricity both internationally and inter-provincially. There will also be a levy on newly regulated power line companies equal to 0.2% of the capital cost to construct the applied-for facilities.

Rationale: These amendments will result in a more equitable attribution of the costs of NEB regulation of the electrical industry, which reflects a separation of export and transmission functions that has occurred in the electricity industry. MH was part of the group that requested a review of the cost recovery method.

- Each large power line company shall, on or before February 15, 2010, provide the Board with its forecasts of electricity transmissions for 2010.

Back Office Roles and Reporting

Transaction Performance Report

1

[redacted]

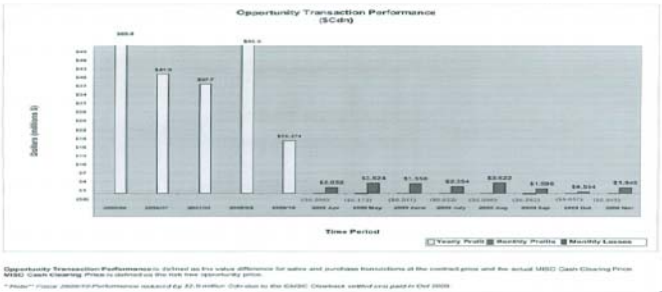
Observation

This report is generated daily and reported monthly.

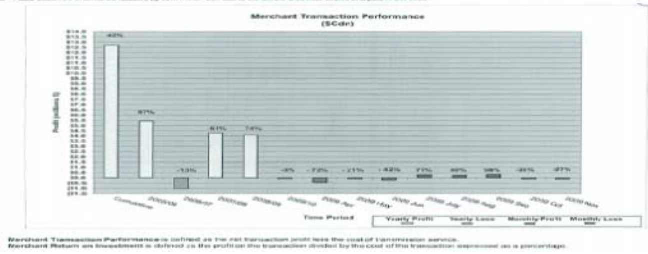
The Opportunity Transaction graph provides the value difference between contract sales/purchases and the actual MISO cash clearing price.

The Merchant Transaction Performance graph provides the profit generated net of the cost of transmission services.

2



3



Assessmen

The Business Services group provides adequate performance reporting recognizing the personnel and system constraints. Division Performance reporting should align with performance metrics established by senior management.

4 …

Appendix

Energy Risk Software Rankings

Market Risk Power		
		14 vendors cited
2010	Vendors	%
1	[redacted]	15.7
2	[redacted]	10.8
3	[redacted]	10.2
4	[redacted]	9.7
5	[redacted]	9.1

Credit Risk		
		16 vendors cited
2010	Vendors	%
1	[redacted]	31.1
2	[redacted]	18.4
3	[redacted]	15.8
4	[redacted]	7.1
5	[redacted]	5.1

Modeling		
		24 vendors cited
2010	Vendors	%
1	[redacted]	21.0
2	[redacted]	17.6
3	[redacted]	8.8
4	[redacted]	5.7
5	[redacted]	5.0

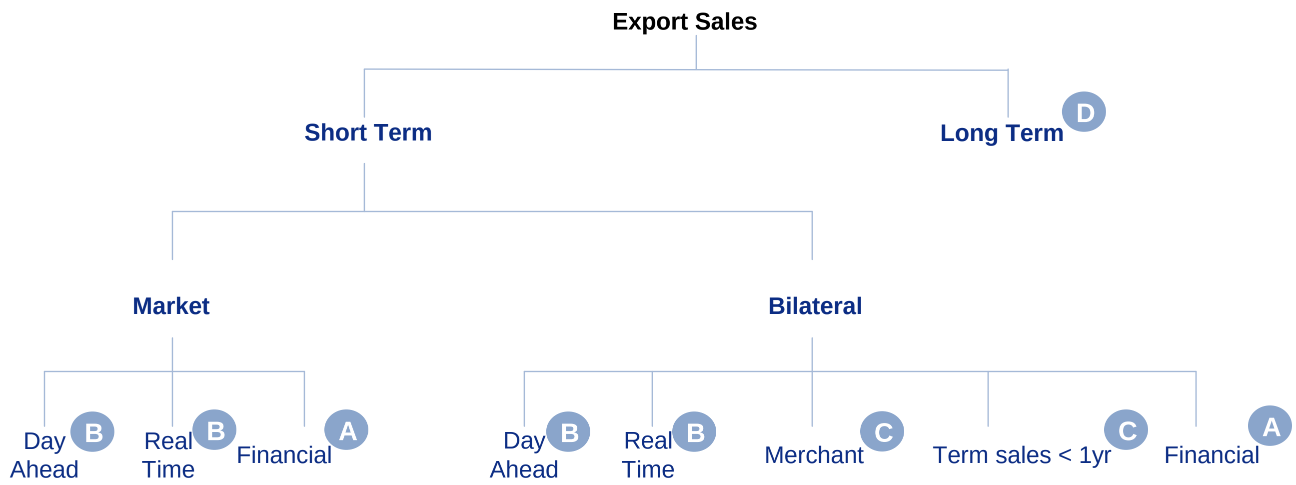
Risk Metrics		
		16 vendors cited
2010	Vendors	%
1	[redacted]	18.9
2	[redacted]	15.8
3	[redacted]	10.1
4	[redacted]	6.6
5	[redacted]	4.4

[redacted]

Current MTM Practices

1. Executive Summary
2. Section 2
3. Section 3
4. Section 4
5. Section 5
6. Section 6
7. Appendix

Current



- MTM only

A MTM currently applied

B MTM not required

C MTM recommended

D MTM for subsequent consideration