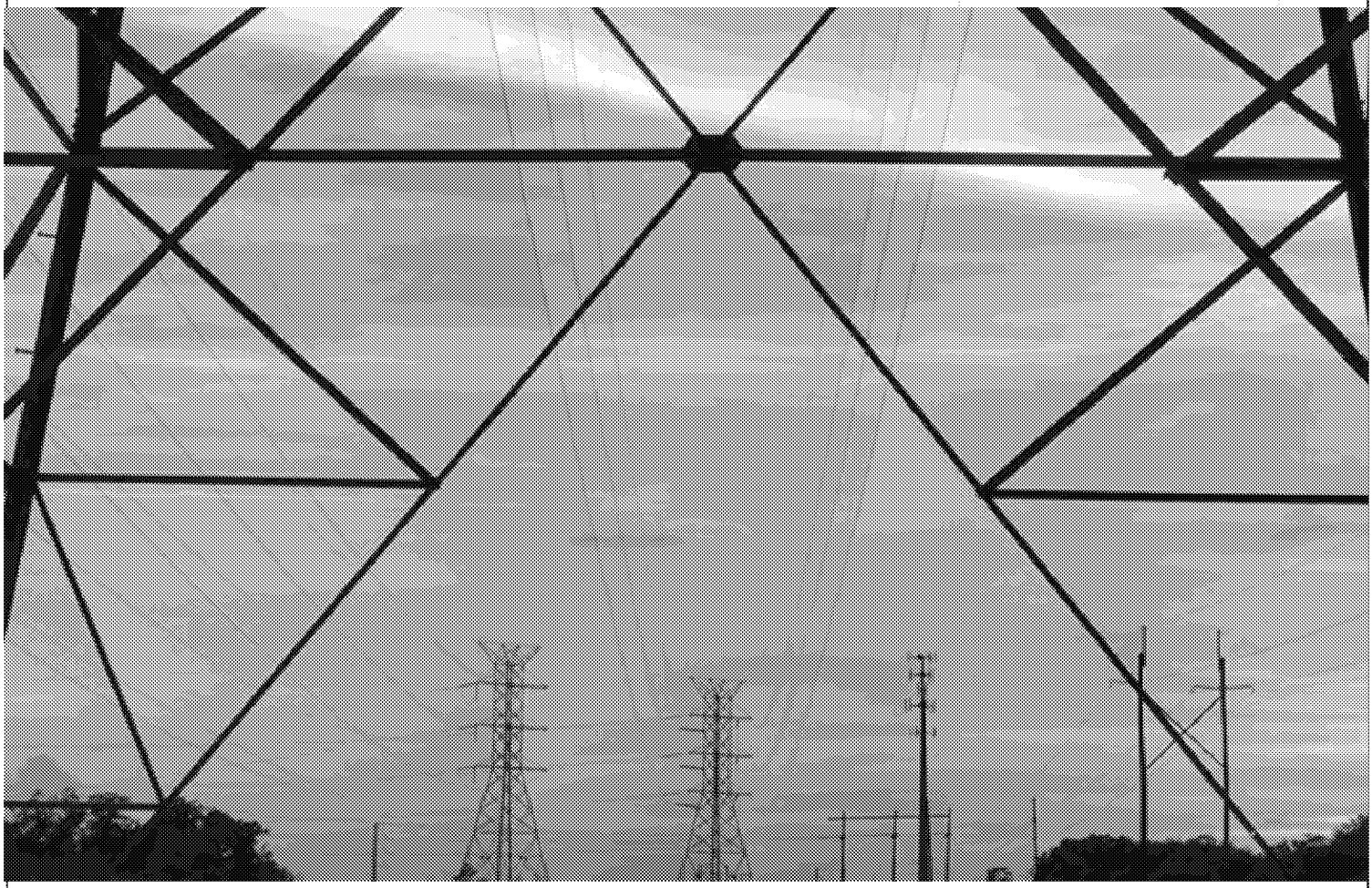

Independent Electricity System Operator

Enterprise Risk Management Maturity Assessment and Leading Practices Review – Final Report

November 16, 2017

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EXECUTIVE SUMMARY

MNP was retained by the IESO to assess the maturity of their enterprise risk management ("ERM") program and identify leading practices to enhance its maturity to the IESO's desired level. This report outlines expected benefits of ERM programs, the role of the Board of Directors in enabling the ERM program to achieve these benefits, the methodology MNP applied to the maturity assessment, the results of the maturity assessment, and leading practices that will enable the IESO to enhance the maturity of their ERM Program.

The Maturity Assessment identified the current level of maturity of the IESO's ERM Program and the Suggested Maturity level, based on MNP's interpretation of discussions with members of the Board of Directors. Maturity is measured for eight key competencies on a five-level scale. Most organizations in the Canadian energy and utilities industry are currently operating at a maturity level of two or lower based on recent surveys completed by the Canadian Electrical Association. MNP advises that the suggested maturity target level should be 4 in the utility industry to be agile, deal with change in market models/new regulation, renewable energy investment, and to develop a continuous improvement mindset.

The review found that the maturity of the IESO's ERM Program is aligned with other similar organisations in the energy and utilities industry; however, further enhancing the maturity of the ERM program will enable the IESO to realise the full benefits of effective ERM programs while positioning the IESO for success in an evolving industry. The table below provides a road-map for enhancing the maturity of the IESO's ERM Program, identifying the role of the Board of Directors in each key competency area.

Roadmap to Enhanced Enterprise Risk Management Maturity		
Key Competency Area & Role of the Board of Directors	**Short-Term (< 1 year) Actions**	**Long-Term (> 1 year) Actions**
Risk Leadership **Role of Board of Directors:** Establish and encourage an organizational culture that views ERM as an enabler. Motivate risk dialogue at all levels.	• Shift responsibility of risk assessment to senior leadership as appropriate. • The Board and ELT should approve an ERM Mandate. • The Board and ELT should reallocate accountability for key risks and formally allocate responsibility for risk mitigation strategies.	• Risk management should be a standing agenda item in all regular ELT and Board meetings, to facilitate a proactive top-down approach to risk management. • Establish an annual continuous improvement training course for the Board and ELT

Roadmap to Enhanced Enterprise Risk Management Maturity		
Key Competency Area & Role of the Board of Directors	**Short-Term (< 1 year) Actions**	**Long-Term (> 1 year) Actions**
Risk Appetite & Tolerance **Role of Board of Directors:** Understand the organization's risk philosophy and agree on risk appetite and tolerance.	• The ELT and Board must document the level of risk that IESO must take on an ongoing basis and develop and approve a Risk Appetite Statements. • The IESO's Risk Tolerance should be refined to clearly communicate the maximum level of risk that is acceptable to achieve strategic objectives.	• Risk Tolerance and Risk Appetite should continue to be reviewed, updated, and approved by the Board and ELT on an annual basis.
Risk Policy & Strategy **Role of Board of Directors:** Endorse the organization's risk management policy and strategy including the organization's attitude to risk and structure of ownership and management of risk.	• Current Risk Policy should be reviewed by the ELT and the Board to accommodate for recent organizational changes. • The IESO should develop an Enterprise Risk Strategy which sets expectations for maturity over the next three years. This should include quantifiable targets.	• Business Units should develop risk policies and job descriptions identifying risk management responsibilities to align with the enterprise risk policy and incorporate the risk strategy into business processes. • Risk Policy should be reviewed by ELT and the Board on a three-year cycle.
People **Role of Board of Directors:** Ensure clear reporting lines are established. Empower management to effectively manage and be responsible for risk.	• A member of the ELT should be identified as an ERM champion to lead and guide the integration of ERM in the organization. • Clear lines of communication should be established between the Board, ELT, and manager of ERM. • ERM Training should be provided to staff, executive leadership, and board. Existing materials should be updated to provide practical approaches to integrating risk management into operations.	• ERM training should be provided as part of the IESO's onboarding process for new staff and board members • KPIs relating to risk management should be built into annual incentive targets and performance evaluations of employees across the IESO.

Roadmap to Enhanced Enterprise Risk Management Maturity		
Key Competency Area & Role of the Board of Directors	**Short-Term (< 1 year) Actions**	**Long-Term (> 1 year) Actions**
Framework and Tools **Role of Board of Directors:** Lead and guide the application of a customized risk management framework, tools, and a common risk language across the organization.	• The current risk register needs to be simplified so Board members can easily recite the top risk areas and their linkage to strategy. All risk areas should be defined in a consistent manner and should not exceed a reasonable limit. For example, organisations with higher levels of maturity seldom have more than 20 risks in the risk register. • Clear criteria should be developed to inform what constitutes a risk to prevent constraints or failed controls from being listed as risks. • Criteria should be refined for risk likelihood and impact to enhance clarity. • A new risk register should be developed considering the inherent level of risk, mitigating controls, and the residual risk level. Risks should be linked to strategic objectives.	• Investigate the capability of data analytics platforms for providing dashboard capabilities. • Tools should be developed to provide a dashboard for ELT and the Board of Directors that provides KPI monitoring and concise, pertinent, and relevant information relating to management of key risks. • KPIs should be identified for dashboard reporting.
Risk Management Process **Role of Board of Directors:** Apply risk management framework to strategic planning processes, ensuring risks that may impede meeting strategic objectives are identified and mitigation plans are adequately implemented and monitored for continuous change.	• Identify data that could be collected to monitor and improve risk management performance. • Integrate risk management with the strategic planning process.	• Collect data to monitor and improve risk management performance.

Roadmap to Enhanced Enterprise Risk Management Maturity		
Key Competency Area & Role of the Board of Directors	**Short-Term (< 1 year) Actions**	**Long-Term (> 1 year) Actions**
Risk Monitoring and Reporting **Role of Board of Directors:** Active oversight of key risks and mitigation strategies as the IESO's organizational environment evolves. Review and respond to reports on formal risk identification and analysis.	• Catalogue existing risk monitoring and reporting functions in business units.	• Integrate ERM program with existing risk monitoring and reporting functions in business units to provide an enterprise-wide solution to risk monitoring and reporting. • Measure and report on KPIs from mitigation plans for key risks. • Develop key risk indicators to support mitigation strategies for key risks.
Performance and Outcomes **Role of Board of Directors:** Understand the effectiveness of risk management for meeting strategic objectives and organizational outcomes. Identify areas where sustained improvements are required to fulfill the organization's mandate.	• Plan a framework for measuring performance and outcomes of the ERM Program, including improvements in fulfilling mandate or meeting planned organizational outcomes.	• Implement a framework for measuring performance and outcomes of the ERM Program, including improvements in fulfilling mandate or meeting planned organizational outcomes.

1. BACKGROUND AND CONTEXT

In January 2015, the Ontario Power Authority ("OPA") and Independent Electricity System Operator ("former-IESO") merged to create one integrated entity ("IESO"), broadly responsible for managing and operating Ontario's electricity market and grid, planning for Ontario's electricity future, supporting the evolution of Ontario's electricity sector and market, enabling conservation, and managing generator contracts. Each predecessor organization maintained an enterprise risk management ("ERM") program to identify, assess, monitor, and control risks that could impede the organizations from meeting their mandates. With the merger, the two ERM programs were integrated into one.

MNP was retained by the IESO to assess the maturity of their enterprise risk management ("ERM") program and identify leading practices to enhance its maturity to the IESO's desired level. The former-IESO had previously conducted an ERM maturity assessment; however, comparing the results of the two maturity assessments will not adequately support the identification of any trends for the reasons identified below.

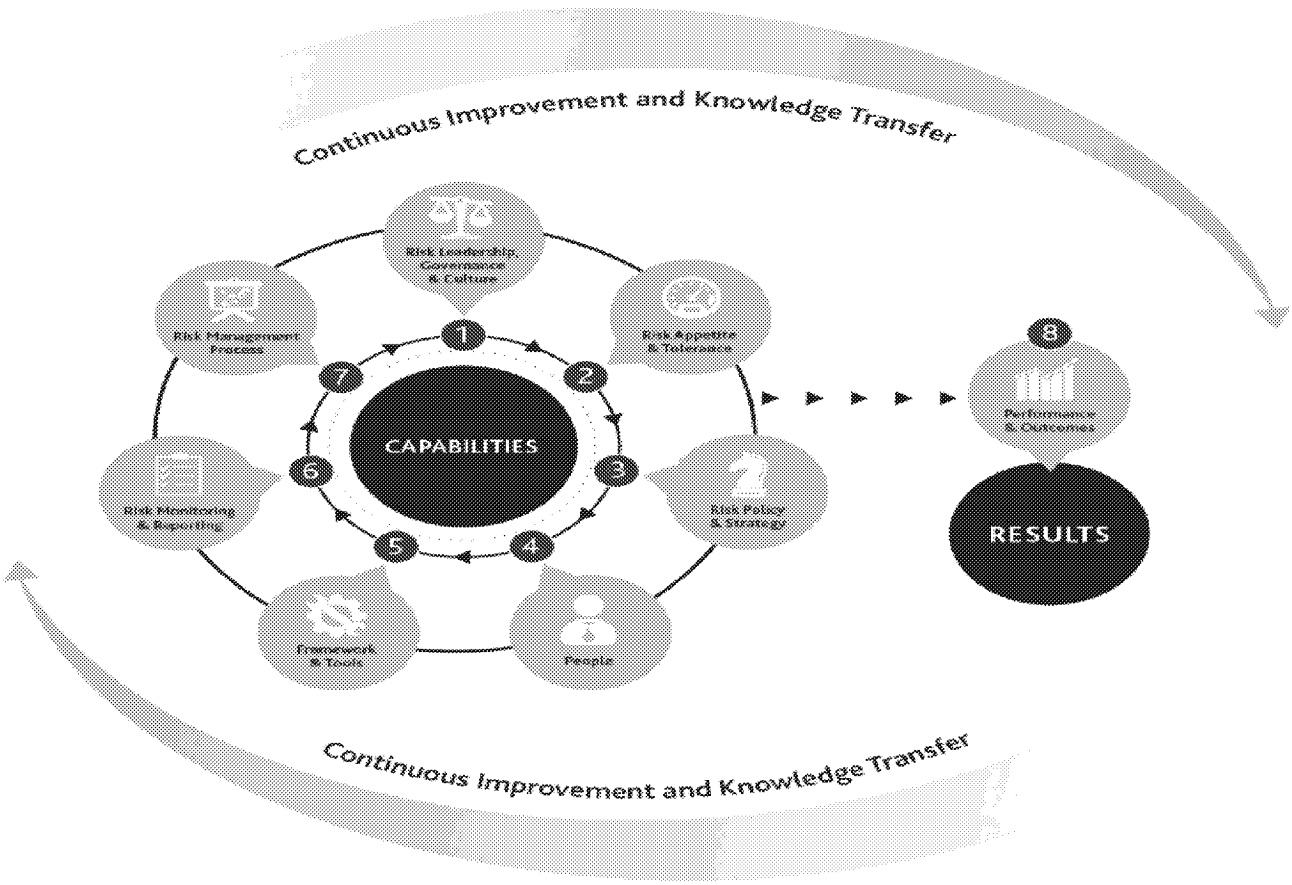
- Differences in methodologies, including maturity thresholds, between Ernst and Young who conducted the former-IESO's risk assessment and MNP's methodology. MNP has applied a proven methodology that we apply consistently to organizations in the energy and utilities sector and other industries. Comparison of any results are only relevant to other maturity assessments using the same methodology.
- The merger has brought a renewed and increased focus on the value of the ERM program.
- Recent organizational changes at the IESO including executive and board appointments, a strategic reset, and the pursuit of Market Renewal Program impact the ERM system's maturity. Most organizations in the Canadian energy and utilities industry are currently at a one or two on the five-point maturity scale. Maturity ratings of three or higher require substantial commitment from the Board of Directors and executive leadership. Changes in board and executive roles can cause maturity to decline immediately and will take time to re-build to a higher maturity rating.

This report outlines expected benefits of ERM programs, the role of the Board of Directors in enabling the ERM program to achieve these benefits, the methodology MNP applied to the maturity assessment, the results of the maturity assessment, and leading practices that will enable the IESO to enhance the maturity of their ERM System.

2. METHODOLOGY

MNP's Risk Management Capability and Maturity Assessment Methodology is an effective tool for assisting organizations in evaluating their progress on the path to excellence, helping them identify gaps and inspire solutions. This assessment tool can be used to review and report on performance and progress in improving risk management capability and for assessing the impact of these improvements on risk handling and performance outcomes.

The Risk Management Capability and Maturity Assessment Model assists with identifying areas of performance where leading practices can facilitate a practical approach to improvement, focusing on eight key competencies of Enterprise Risk Management, listed below and explained in more detail in the following sections.



Each competency is assessed in terms of five levels, with certain criteria being applied to the rating scale for each competency. Some general context for each level is provided below. More detailed descriptions of what each level means for each key competency is described in the following section.

Note: Most utilities in Canada are currently operating at a maturity level of two or lower based on recent surveys completed by the Canadian Electrical Association. MNP advises that the suggested maturity target level should be 4 in the utility industry to be agile, deal with change in market

models/new regulation, renewable energy investment, and to develop a continuous improvement mindset.

- **No level identified.** If an organization is not able to demonstrate basic awareness and understanding of ERM, then it may not be possible to identify any level of maturity.
- **Level 1** requires awareness and understanding. Being ranked a Level 1 should not be considered a failure or set off alarms – it simply means that a basic level of awareness and understanding has been established and the organization understands the need to enhance the maturity of their ERM program.
- **Level 2** requires planned implementation of components of the key competencies and a continued effort to further enhance the maturity of the ERM Program. The median rating for organizations assessed according to MNP's Risk Management Capability and Maturity Assessment Methodology reside here.
- **Level 3** equates to full implementation in all areas across the organization and is often a challenge for organizations to meet without full support from senior leadership. At this point, the Executive Leadership Team ("ELT") is fully engaged in ERM, risk owners have taken control of their risks, and senior management are held accountable for risk management.
- **Level 4** requires ERM to be fully embedded consistently across all business units in the organisation with substantial commitment to continual improvement by the ELT and Board of Directors.
- **Level 5** represents exceptional capacity and capabilities being demonstrated. This level of enhanced maturity requires tremendous resource allocation to the ERM program and a commitment from ELT and Board of Directors to treat ERM as a key organisational priority.

The level assigned to a key competency does not necessarily reflect the level of ERM expertise in the organization or capabilities of any individual employee. ERM is an organization-wide effort that requires continued support and adequate resources, a mandate from the ELT and Board of Directors, and integration and consistency across all business units of the organization.

As part of the assessment, MNP conducted interviews or had collaborative discussions with staff across the organization including:

- Peter Gregg, Chief Executive Officer
- Kim Marshall, Vice President Corporate Services & Chief Financial Officer
- Lia Kosic, Director, Financial Planning & Analysis
- Alexander DeAngelis, Manager, Enterprise Risk & Corporate Performance
- Julia McNally, Director, Internal Audit
- Chris Earp, Senior Auditor
- Michael Killeavy, Director, Contract Management
- Nicholas Ingman, Director, Market Operations
- Jeanette Briggs, Director, Settlements

Additionally, we were fortunate enough to attend and present at an October 2016 meeting of the Board of Directors, and engage on one-on-one discussions with three members of the Board of Directors: Carol Workman, Tim O'Neill, and Margaret Kelch.

Key documents provided as evidence to support the maturity ratings are listed below.

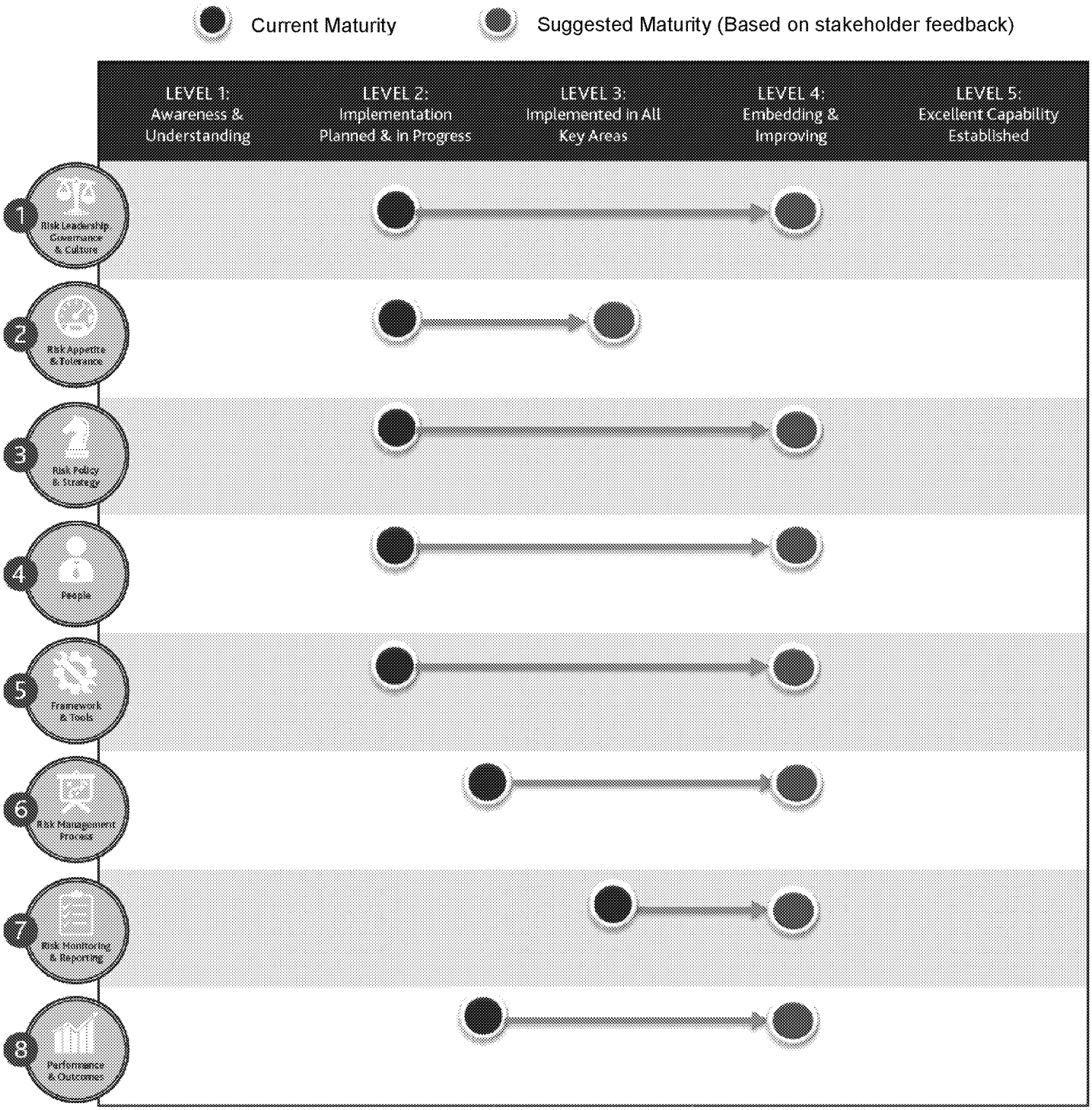
- 2017 Risk Tolerance
- August 2016 Corporate Risk Profile
- IESO Strategic Plan 2016 – 2020

- Risk Assessment Template
- ERM Training Deck
- Risk Register with Assessment Result

MNP would like to extend our gratitude to staff and Board Members that took the time for honest and productive discussions about the IESO's ERM Program

3. IESO MATURITY ASSESSMENT SNAPSHOT

The brown circles below indicate the IESO's current maturity level for the eight key components of ERM, while the green circles represent the suggested end state. Suggested end states are based on MNP's interpretation of discussions with key stakeholders including members of the Board. Descriptions of each category and leading practices to assist the IESO in achieving the suggested maturity level for each key competency are summarized in the following section.



4. ERM MATURITY ASSESSMENT & RELATED LEADING PRACTICES

The following leading practices have been identified to assist the IESO in meeting their suggested target ERM maturity level. Further details are provided in Appendix C: Leading Practice Details. Suggested maturity levels are provided based on MNP's assessment of interviews conducted with members of the Board of Directors and the need for agility within the IESO. Short-Term (less than one year) and long-term (greater than one year, ongoing) action items are provided to guide the implementation of leading practices to achieve suggested maturity levels.

Risk Leadership

***Current Maturity Level: 2** - Senior Managers & Executive take the lead to ensure that approaches for addressing risk are being developed and implemented.*

	Level 1 Awareness & Understanding	Level 2 Implementation Planned & In Progress	Level 3 Implemented in all Key Areas	Level 4 Embedded & Improving	Level 5 Excellent Capability Established
Risk Leadership	*Senior management is aware of the need to manage uncertainty and risk and has made resources available to improve.*	*Senior Managers & Executive take the lead to ensure that approaches for addressing risk are being developed and implemented*	*Senior Managers act as role models and apply risk management consistently and thoroughly across the organization*	*Senior management are proactive in driving and maintaining the embedding and integration of risk management; in setting criteria and arrangements for risk management and in providing top down commitment to well managed risk taking to support and encourage innovation and the seizing of opportunities.*	*Senior Managers reinforce and sustain risk capability, organizational and business resilience and commitment to excellence. Leaders regarded as exemplars.*

Risk leadership and supporting "tone at the top" are crucial for the effective implementation of ERM across any organization. Establishing a culture that views ERM as an enabler and motivating a risk dialogue at all levels will result in maximising performance and managing risks within tolerances.

Current State

The IESO has demonstrated many attributes of the criteria for Level 2 Risk Leadership, including:

- Senior management involvement in updates relating to cyber-security, Ontario Fair Hydro Plan, and Market Renewal Program at request of the Board of Directors and Audit Committee; and,

- ELT review of risk assessments, mitigation plans for key risks, annual Corporate Risk Profile, and definition of risk tolerance.

Each business unit has an appointed staff member who completes the risk assessment, manages mitigation plans, and reports information relating to mitigation plan status to Audit Committee on a quarterly basis. Some business units demonstrated advanced capabilities and incorporation of risk management into their day-to-day activities.

This current approach, facilitated through a Corporate Risk Team has been effective for the IESO to achieve their current level of maturity. As the IESO strives to improve their ERM maturity, the approach will need to become more top-down, with the retirement of the Corporate Risk Team and senior management taking the lead.

Suggested Maturity Level: 4.0 *- Senior management are proactive in driving and maintaining the embedding and integration of risk management; in setting criteria and arrangements for risk management and in providing top down commitment to well managed risk taking to support and encourage innovation and the seizing of opportunities.*

At this level, organizations start to build core competency in risk management and this often leads to achievement of strategic and financial goals. Often organizations see a significant improvement in operational efficiency.

Applicable leading practices for the IESO (Opportunities for continuous improvement):

- Leadership and management should reinforce and sustain risk capability, organizational and business resilience and commitment to excellence. (I.e. Assign formal responsibility for risk mitigation strategies).
- Senior management are proactive in driving and maintaining the embedding and integration of risk management; in setting criteria and arrangements for risk management and in providing top down commitment to well managed risk taking to support and encourage innovation and the seizing of opportunities.
- Allocation of accountability for key risks should be agreed upon by the Board and senior management.

Short-Term Action Items:

- Shift responsibility of risk assessment to senior leadership as appropriate.
- The Board and ELT should approve an ERM Mandate.

The Board and ELT should reallocate accountability for newly defined key risks and formally allocate responsibility for risk mitigation strategies.

Role of the Board of Directors:

- Establish and encourage an organizational culture that views ERM as an enabler. Motivate risk dialogue at all levels.

Long-Term Action Items:

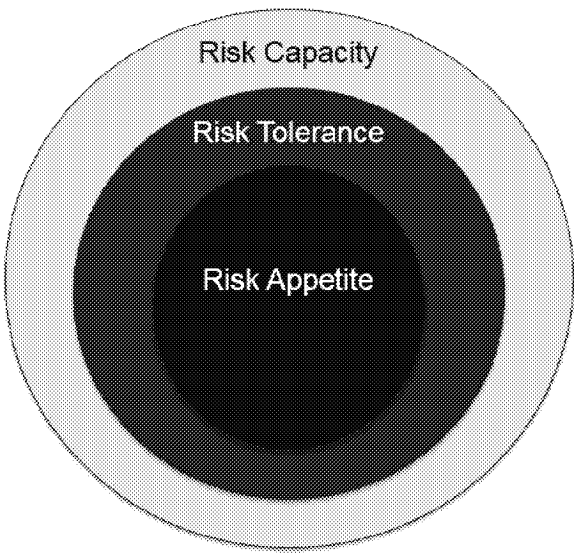
- Risk management should be a standing agenda item in all regular ELT and Board meetings, to facilitate a proactive top-down approach to risk management.

- Establish an annual continuous improvement training course for the Board and ELT

Risk Appetite & Tolerance

***Current Maturity Level: 2** - Risk appetite and tolerance statements are being developed.*

Risk Appetite & Tolerance	Level 1 Awareness & Understanding	Level 2 Implementation Planned & In Progress	Level 3 Implemented in all Key Areas	Level 4 Embedded & Improving	Level 5 Excellent Capability Established
	The need for risk appetite and tolerance statements has been identified and accepted	*Risk appetite and tolerance statements are being developed*	*Risk appetite and tolerance statements are in place and approved by the Board / Audit Committee*	*Risk appetite and tolerance statements are an integral part of the risk management process.*	*Risk appetite and tolerance statements are an integral part of the risk management process. Best practice approaches are used and developed. Selected as a benchmark site by other organizations.*



Risk Appetite is defined as the amount and type of risk that an organization is willing to pursue or retain on an ongoing basis. Risk Tolerance is defined as an organization's maximum acceptance of risk after risk treatment, to achieve strategic objectives.

Leading practice suggests that once risks are identified they should be assessed against the risk appetite of the organization and that risk mitigation strategies be developed for risks that exceed the organization's risk appetite. This is to ensure the exposure to IESO is well balanced (risk versus reward) and consistent with established criteria (e.g. risk appetite, likelihood and consequence rating tables, etc.).

To achieve this, it is imperative for the leadership team to discuss and establish the risk appetite for the Institution and have this formally approved by the Board.

While the IESO has implemented risk tolerance definitions, there is still confusion over the definition of risk appetite, and no documentation exists to support this definition.

Current State

The IESO has developed risk tolerance statements, which are reviewed annually by the ELT and presented to Audit Committee and the Board of Directors. The tolerance statements are linked to strategic directives – a key leading practice.

The IESO does not historically had a Risk Appetite Statement or Framework in place. The IESO has stated that ELT has agreed that the IESO has no appetite for risk and thus a Risk Appetite statement is not needed. Some level of risk appetite is required for the IESO to pursue new initiative such as Market Renewal Program. Considering the relationship between appetite and tolerance, the inadequacy of the current approach to risk appetite resulted in the Level 2 rating.

Applicable leading practices for the IESO (Opportunities for continuous improvement):

- Facilitate discussions with the executive leadership team and the Board to discuss and debate risk appetite for the IESO as it pertains to specific strategic objectives. The starting point should be to document the risk that the IESO must take on an ongoing basis just to operate.
- Develop risk appetite statement to accurately reflect the IESO's risk appetite.
- Refine risk tolerance to provide practical and meaningful application. Risk Tolerance should be defined both by strategic objectives and by key risk.

***Suggested Maturity Level: 3.0** - Risk appetite and tolerance statements are in place and approved by the Board / Audit Committee*

As an organization's risk management programs mature they should also see their confidence in controls and risk mitigation strategies improve, and this should allow for acceptance of a higher risk appetite and tolerances in time.

Short-Term Action Items:

- The ELT and Board must document the level of risk that IESO must take on an ongoing basis and develop and approve a Risk Appetite Statements.
- The IESO's Risk Tolerance should be refined to clearly communicate the maximum level of risk that is acceptable to achieve strategic objectives.

Role of the Board of Directors:

- Understand the organization's risk philosophy and agree on risk appetite and tolerance.

Long-Term Action Items

- Risk Tolerance and Risk Appetite should continue to be reviewed, updated, and approved by the Board and ELT on an annual basis.

Risk Policy & Strategy

Current Maturity Level: **2** *- A risk management strategy and policies have been drawn up and communicated and are being acted upon.*

Risk Policy & Strategy	Level 1 Awareness & Understanding	Level 2 Implementation Planned & In Progress	Level 3 Implemented in all Key Areas	Level 4 Embedded & Improving	Level 5 Excellent Capability Established
	The need for a risk strategy and related policies has been identified and accepted.	*A risk management strategy and policies have been drawn up and communicated and are being acted upon.*	*Risk strategy and policies are communicated effectively and made to work through a framework of processes.*	*An effective risk strategy and policies are an inherent feature of business unit policies and processes.*	*Risk management aspects of strategy and policy making help to drive the risk agenda and are reviewed and improved. Role model status.*

It is important for any organization when implementing risk management, that a risk management strategy is developed that is endorsed by the Board and / or the Audit Committee. The risk policy which sets out IESO's attitudes to risk, defines the structures for the management and ownership of risk and specifies the way in which risks are to be considered across the organization. In addition, a strategy needs to define maturity targets over the next three years and incorporate clear roles and responsibilities for the monitoring, reviewing and reporting on key risks once identified.

Current State

The IESO has an Enterprise Risk Management Policy that drives their approach to risk management. The policy promotes a consistent approach to risk management across business units, providing reasonable assurance over the control of key enterprise risks. The IESO does not maintain a formal risk strategy.

Applicable leading practices for the IESO (Opportunities for continuous improvement):

- Review the Risk Management Policy on a three-year cycle and include the mandated review date in the heading of the Policy.
- An effective risk strategy and policies are an inherent feature of business unit policies and processes.
- Risk management intelligence (maturity, capabilities, and effectiveness) should be factored in as a potential competitive advantage when completing the strategic plan.

Suggested Maturity Level: ***4.0*** *- An effective risk strategy and policies are an inherent feature of business unit policies and processes.*

ERM at this level is a material input for strategic planning and it is heavily relied upon to ensure strategic goals are met.

Short-Term Action Items:

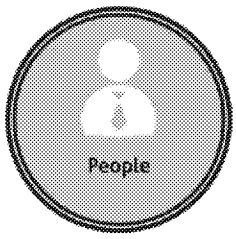
- Current Risk Policy should be reviewed by the ELT and the Board to accommodate for recent organizational changes.
- The IESO should develop an Enterprise Risk Strategy.

Role of the Board of Directors:

- Endorse the organization's risk management policy and strategy including the organization's attitude to risk and structure of ownership and management of risk.

Long-Term Action Items:

- Business Units should develop risk policies and job descriptions identifying risk management responsibilities to align with the enterprise risk policy and incorporate the risk strategy into business processes.
- Risk Policy should be reviewed by ELT and the Board on a three-year cycle.



People

Current Maturity Level: 2 *- Suitable guidance is available and a training program has been implemented to develop risk capability*

	Level 1 Awareness & Understanding	Level 2 Implementation Planned & In Progress	Level 3 Implemented in all Key Areas	Level 4 Embedded & Improving	Level 5 Excellent Capability Established
People	*Key people are aware of the need to assess and manage risks and they understand risk concepts and principles*	*Suitable guidance is available and a training program has been implemented to develop risk capability*	*A core group of people have the skills and knowledge to manage risk effectively*	*People are encouraged and supported to be innovative and are generally empowered to take well-managed risks. Most people have relevant skills and knowledge to manage risks effectively and regular training, etc. is available for people to enhance their risk skills and fill any 'gaps'*	*All staff are empowered to be responsible for risk management and see it as an inherent part of the business unit's operations. They have a good record of innovation and well managed risk taking*

To ensure risk management is embedded within the organization, the general culture of the organization should encourage employees to raise risk related issues. Clear reporting lines need to be established and employees need to be empowered to identify and take opportunities that will better deliver the outcomes as outlined in the IESO's Strategic Plan. Ideally, risk management should be the responsibility of every IESO employee and identified as such in their individual job descriptions and performance reviews.

In addition, adequate training content, methods of delivery and frequency should prepare the organization for successful risk management.

Current State

The IESO currently offers bi-annual training on risks and controls that provides an overview of ERM, the COSO framework, the IESO's risk tolerance, key risks, and control activities. Each department is represented on the IESO's Corporate Risk Team. Risk capability exists in pockets across the organization, but varies from one group to another. There is no mandatory requirement for risk training.

No ERM champions were identified at the ELT level. Implementation of ERM is reliant on the manager responsible for ERM and supported by Corporate Risk Team composed of staff members from each business unit. The Corporate Risk Team members then integrate ERM into their business units. Discussions with directors revealed varying levels of ERM integration into business units.

Applicable leading practices for the IESO (Opportunities for continuous improvement):

- Identify ERM Champions at the executive and board levels to lead and guide the integration of ERM into the organization.
- ERM leader should have direct access to the Board and have ability to influence the Board and Executive.
- Ensure clear lines of communication from the bottom-up and from the top-down, between the Board and the executive leadership and between the executive leadership and staff.
- Staff should be encouraged and supported to be innovative and are generally empowered to take well-managed risks.
- ERM training forms a part of the IESO's onboarding process.
- Risk management forms part of each business unit's operations.
- Consider including Key Performance Indicators ("KPI") or other descriptive responsibilities in the job descriptions for senior management tasked with risk management to ensure the responsibilities are explicit, agreed upon, and form part of the performance evaluation process of the IESO.

Suggested Maturity Level: 4.0 *- People are encouraged and supported to be innovative and are generally empowered to take well-managed risks. Most people have relevant skills and knowledge to manage risks effectively and regular training, etc. is available for people to enhance their risk skills and fill any 'gaps'*

Moving from level 2 to 4 in this area requires a significant amount of training, on the job risk mitigation discipline and change management. When people reach level 4 the entire ERM program becomes just part of what people do on a regular basis (training becomes less of a reliance).

Short-Term Action Items:

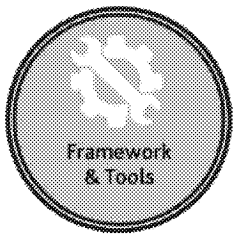
- A member of the ELT should be identified as an ERM champion to lead and guide the integration of ERM in the organization.
- Clear lines of communication should be established between the Board, ELT, and manager of ERM.
- ERM Training should be provided to staff, executive leadership, and board. Existing materials should be updated to provide practical approaches to integrating risk management into operations.

Role of the Board of Directors:

- Ensure clear reporting lines are established. Empower management to effectively manage and be responsible for risk.

Long-Term Action Items:

- ERM training should be provided as part of the IESO's onboarding process for new staff and board members
- KPIs relating to risk management should be built into annual incentive targets and performance evaluations of employees across the IESO.



Framework & Tools

***Current Maturity Level: 2** - Key elements of a risk management framework and tools have been developed and communicated and are being implemented.*

	Level 1 Awareness & Understanding	Level 2 Implementation Planned & In Progress	Level 3 Implemented in all Key Areas	Level 4 Embedded & Improving	Level 5 Excellent Capability Established
Framework & Tools	*The need for risk management framework and related tools has been identified and accepted.*	*Key elements of a risk management framework and tools have been developed and communicated and are being implemented.*	*Risk management framework and tools are communicated effectively and implemented in key areas.*	*Risk management framework and tools are integrated within organization's core processes and across all business units.*	*Risk management framework and tools are integrated within all processes and business units. Best practice approaches are used and developed. Selected as a benchmark site by others.*

To guide the implementation of an ERM Program, a customized risk management framework, tools, and a common risk language should be applied in doing so. This typically includes an ERM framework, key definitions, risk rating tables (likelihood and consequence), a risk matrix, a risk register, a heat map, a detailed risk plan template and, potentially, a software tool for the monitoring and reporting of risks. As an organization's ERM Program matures, these procedures and tools may be further customized to reflect changes in the way the organization manages and communicates its risks.

Current State

The IESO has implemented key elements of a risk management framework including a risk assessment template, risk register and associated heat map, risk rating tables, risk matrix, risk tolerance, and risk mitigation plans for key risks. Substantial enhancements are required to improve the effectiveness of these tools. While the tools are developed and implemented, ELT and the Board do not feel they provide timely, concise, and relevant information. Tools should be reviewed for their effectiveness to provide concise, timely, and relevant information. Substantial re-development effort is encouraged to improve the maturity and effectiveness of these tools.

Applicable leading practices for the IESO (Opportunities for continuous improvement):

- Risk register should be refined to include a manageable number of risks, contain existing controls mitigating the risk, and link the risks to strategic objectives. Optimal risk registers are designed to simplify the Board of Directors' ability to memorize and to reference for effective governance.
- Tools should be simple, concise, and provide meaningful information and analysis.
- Impact and likelihood scores should correspond to well-defined criteria.
- Tools should monitor risks in real-time and provide concise and meaningful updates to the Board and ELT on a regular basis. There should be an alert mechanism to provide pertinent updates to the Board.

***Suggested Maturity Level: 4.0** - Risk management framework and tools are integrated within organization's core processes and across all business units.*

The success of ERM starts with the quality of the risk framework. It should be developed by starting with an intimate understanding of the strategy an identifying the key strategic risks using the same business language and content. At level 4 a board of directors and executive are very familiar with the entire framework and may no longer need to reference it to remember all the key strategic risks.

Short-Term Action Items:

- The current risk register needs to be simplified so Board members can easily recite the top risk areas and their linkage to strategy. All risk areas should be defined in a consistent manner and should not exceed a reasonable limit. For example, organisations with higher levels of maturity seldom have more than 20 risks in the risk register.
- Clear criteria should be developed to inform what constitutes a risk to prevent constraints or failed controls from being listed as risks.
- Criteria should be refined for risk likelihood and impact to enhance clarity.
- A new risk register should be developed considering the inherent level of risk, mitigating controls, and the residual risk level. Risks should be linked to strategic objectives.

Role of the Board of Directors:

- Lead and guide the application of a customized risk management framework, tools, and a common risk language across the organization.

Long-Term Action Items:

- Investigate the capability of data analytics platforms for providing dashboard capabilities.
- Tools should be developed to provide a dashboard for ELT and the Board of Directors that provides KPI monitoring and concise, pertinent, and relevant information relating to management of key risks.
- KPIs should be identified for dashboard reporting.

Risk Management Process

***Current Maturity Level: 2.5** - Risk management processes implemented in key areas. Risk capability self-assessment tools used in some areas*

Risk Management Process	Level 1 Awareness & Understanding	Level 2 Implementation Planned & In Progress	Level 3 Implemented in all Key Areas	Level 4 Embedded & Improving	Level 5 Excellent Capability Established
	Some stand-alone risk processes have been identified	*Recommended risk management processes are being developed*	*Risk management processes implemented in key areas. Risk capability self-assessment tools used in some areas*	*Risk management is an integral part of the organization's core processes (policy, planning, delivery, etc.) and data is collected to monitor and improve risk management performance*	*Management of risk and uncertainty is an integrated part of all business processes. Best practice approaches are used and developed. Selected as a benchmark site by other organizations*

Leading practice describes that risk management is built into all business units, processes and key decision-making points across the organization. Risk management should also be clearly linked to the strategic planning process such that risks that may impede the organization from achieving its strategic objectives are identified and monitored.

Current State

Corporate Risk Team members assist their business units in completing risk assessments to identify risks for inclusion in the risk assessment. Business units and the ELT assess the likelihood and impact of each risk, which is mapped on a heat map. Key risks are identified and mitigation strategies are developed for them.

The IESO conducts an annual Corporate Risk Profile that provides an overview of the risk assessment profile including the resulting heat map. The Corporate Risk Profile provides trend analysis regarding key risks on a year over year basis and informs the business plan update.

Information relating to mitigation plans is provided to Audit Committee on a quarterly basis and in-depth updates on key risks are provided at the request of the Board of Directors.

Applicable leading practices for the IESO (Opportunities for continuous improvement):

- Articulate key risks and strategies such that it's clearly understandable which key risks the Board should focus on.

- Risk management is an integral part of the organization's core processes (policy, planning, delivery, etc.) and data is collected to monitor and improve risk management performance
- Management of risk and uncertainty is an integrated part of all business processes.
- Incorporate risk identification as part of the strategic planning process as this approach will provide the most value to the IESO in terms of identifying "what events exist that could prevent the IESO from achieving its strategic objectives."

***Suggested Maturity Level: 4.0** - Risk management is an integral part of the organization's core processes (policy, planning, delivery, etc.) and data is collected to monitor and improve risk management performance.*

Often risk management programs at this level are using data analytics to optimize insight for improving strategy, controls, and risk mitigation strategies.

Short-Term Action Items:

- Identify data that could be collected to monitor and improve risk management performance.
- Integrate risk management with the strategic planning process.

Role of the Board of Directors:

- Apply risk management framework to strategic planning processes, ensuring risks that may impede meeting strategic objectives are identified and mitigation plans are adequately implemented and monitored for continuous change.

Long-Term Action Items:

- Collect data to monitor and improve risk management performance.

Risk Monitoring and Reporting

***Current Maturity Level: 3** - Risk monitoring and reporting processes are communicated effectively and implemented in all key areas*

Risk Monitoring and Reporting	Level 1 Awareness & Understanding	Level 2 Implementation Planned & In Progress	Level 3 Implemented in all Key Areas	Level 4 Embedded & Improving	Level 5 Excellent Capability Established
	Some monitoring and reporting requirements have been identified	*Monitoring and reporting processes and tools are being developed*	*Risk monitoring and reporting processes are communicated effectively and implemented in all key areas*	*Risk monitoring and reporting processes are integrated within the organization's core processes across all business units.*	*Risk monitoring and reporting processes are integrated within all processes and business units. Best practice approaches are used and developed. Selected as a benchmark by others*

The existing risks and the organization's changing environment are continuously monitored for shifting and emerging risks and a process exists for employees to escalate risks upwards through the organization as they arise. The results of formal risk identification and analysis are reported to management and the Board on a timely basis.

Current State

Risk mitigation plans and risk status updates are provided to Audit Committee and the ELT on a quarterly basis. Risk mitigation strategies exist for key risks.

Applicable leading practices for the IESO (Opportunities for continuous improvement):

- Integration of risk monitoring and reporting into core business processes across all business units.
- Including timelines and measurable indicators of progress with mitigation plans for key risks.
- Key details relating to key risks are provided to Board and executive in a clear and concise manner to facilitate dialogue and discussion about mitigation strategies and the evolution of the key risks.

***Suggested Maturity Level: 4.0** - Risk monitoring and reporting processes are integrated within the organization's core processes across all business units.*

This is a very high value area of ERM for the IESO since it involves developing the capability to identify emerging risks very early to provide the board of directors and leadership the time to discuss and proactively

adjust the risk register and risk mitigation strategies to allocate sufficient resources to address these new emerging risks.

Short-Term Action Items:

- Catalogue existing risk monitoring and reporting functions in business units.

Role of the Board of Directors:

- Active oversight of key risks and mitigation strategies as the IESO's organizational environment evolves. Review and respond to reports on formal risk identification and analysis.

Long-Term Action Items:

- Integrate ERM program with existing risk monitoring and reporting functions in business units to provide an enterprise-wide solution to risk monitoring and reporting.
- Measure and report on KPIs from mitigation plans for key risks.
- Develop key risk indicators to support mitigation strategies for key risks.

Performance and Outcomes

***Current Maturity Level: 2.5** - Evidence of improved outcome performance consistent with improved risk management*

Performance and Outcomes	Level 1 No Evidence	Level 2 Satisfactory	Level 3 Good	Level 4 Very Good	Level 5 Excellent
	No clear evidence of improved outcomes	*Limited evidence of improved outcome performance consistent with improved risk management*	*Clear evidence of significant improvements in outcome performance demonstrated by measures including, where relevant, stakeholders' perceptions*	*Clear evidence of very significantly improved delivery of outcomes and showing positive and sustained improvement*	*Excellent evidence of markedly improved delivery of outcomes which compares favourably with other organizations employing best practice*

For risk management to become effective and to have an impact on outcomes, key indicators that would indicate the effectiveness are:

- Has risk management contributed to the successful delivery of the strategic plan?
- Are there sustained improvements in fulfilling our mandate?
- Has risk management contributed to meeting planned organizational outcomes?
- Is there more effective control of key risks?

Current State

As part of the Corporate Risk Profile, an assessment of the residual likelihood and impact of key risks is performed, including a comparison of the inherent risk level from the previous year. This exercise allows for identifying if mitigation plans succeed in increasing the effectiveness of controls for key risks. As the IESO enhances the maturity of their ERM program, outcomes should be more linked to sustained improvements in fulfilling their mandate and to meeting strategic objectives.

Applicable leading practices for the IESO (Opportunities for continuous improvement):

- Example framework to measure performance and outcomes of ERM Program.

Suggested Maturity Level: 4.0 - Clear evidence of very significantly improved delivery of outcomes and showing positive and sustained improvement.

When organizations achieve level 4 maturity in performance and outcomes they can showcase annually a portfolio of risk management success stories across multiple functions. Also, it will be obvious that the ERM program is continuously improving.

Short-Term Action Items:

- Plan a framework for measuring performance and outcomes of the ERM Program, including improvements in fulfilling mandate or meeting planned organizational outcomes.

Role of the Board of Directors:

- Understand the effectiveness of risk management for meeting strategic objectives and organizational outcomes. Identify areas where sustained improvements are required to fulfill the organization's mandate.

Long-Term Action Items:

- Implement a framework for measuring performance and outcomes of the ERM Program, including improvements in fulfilling mandate or meeting planned organizational outcomes.

5. CONCLUSION

The maturity of the IESO's ERM Program is aligned with other similar organisations in the energy and utilities industry; however, further enhancing the maturity of the ERM program will enable the IESO to realise the full benefits of effective ERM programs while positioning the IESO for success in an evolving industry.

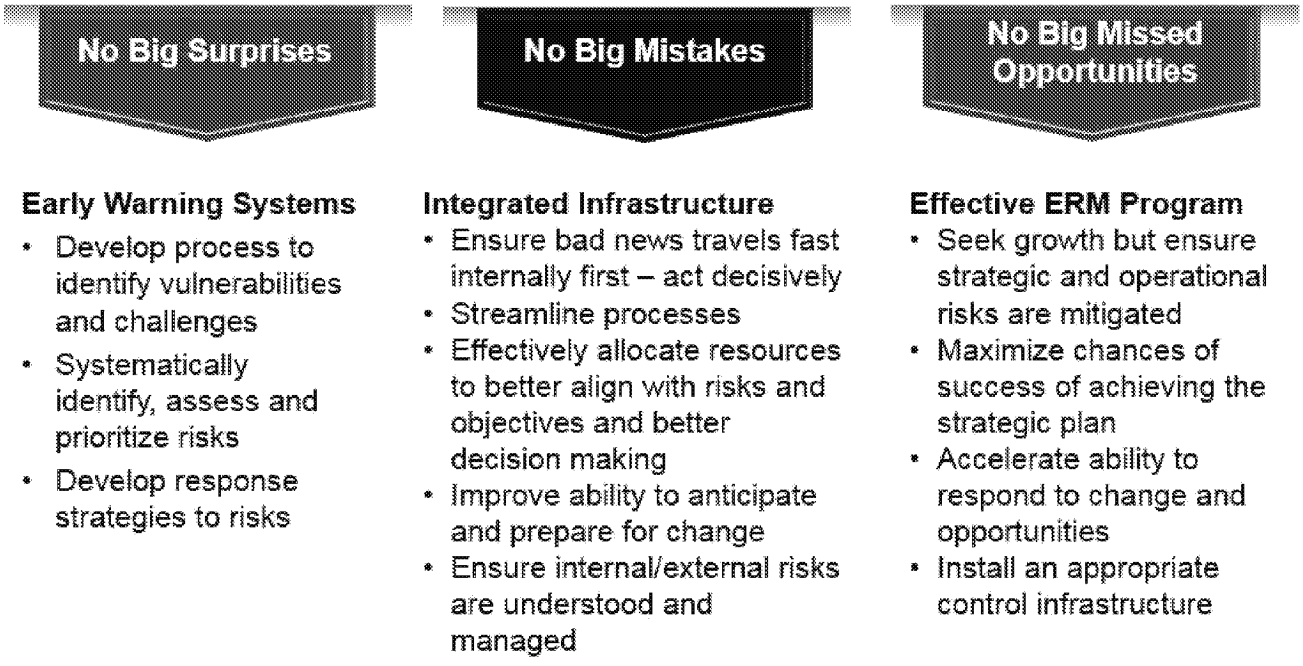
The IESO is in an excellent position to build on the foundation of their ERM program by enhancing its effectiveness and maturity to align with evolution of their strategy. MNP has seen positive engagement from the Board of Directors and capable staff committed to ERM – key success factors required to enable the IESO to reach the next level. This will require tremendous support and leadership from the ELT and Board of Directors, also the ERM leaders will need to redevelop tools, update and streamline processes, develop an ERM strategy, integrate ERM fully into all business units, ensure the Board of Director's receives timely and concise information, and align risk assessments with strategic objectives. Key leading practices are provided in the Appendix to enable the IESO to achieve their desired ERM program end-state. A recommended roadmap is provided in the Executive Summary.

APPENDIX A: ENTERPRISE RISK MANAGEMENT VALUE PROPOSITION

Implementing, embedding, and continually improving ERM programs provide organizations with immense value. A commitment to continually enhancing the maturity of the ERM program enables the organization to extract the realize the benefits described below.

- **Achieving strategic objectives.** ERM increase certainty of achieving strategic objectives.
- **Reducing unexpected events and outcomes.** By reducing the probability of unexpected events or outcomes, an effective ERM program saves the organization from expending resources, time, money, and human capital required to resolve the event.
- **Efficient allocation of time and resources.** Understanding risks allows for better alignment of resources, facilitating more efficient and effective resource allocation.
- **Better visibility of risks at management and board level.** Effective ERM results in the board of directors and executives better understanding and responding to key risks facing the organization.
- **Improved regulatory and compliance function.** Monitoring controls and mitigation efforts and applying a risk-based framework to regulatory compliance reduces resources required for regulatory and compliance audits and reviews.
- **Consistent approach to risk management.** A reliable framework for risk management employed across each functional area of the organization facilitates a unified approach to meeting strategic objectives.

Effective ERM systems act as early warning systems to reduce surprises, mistakes, and missed opportunities.



APPENDIX B: RISK MANAGEMENT GOVERNANCE

A Board of Directors' role in ERM varies from organization to organization, but is essential for realising the benefits described in the previous section and for enhancing the maturity of the ERM Program. Support of both the Executive Leadership Team and Board of Directors is crucial for the IESO to further enhance the maturity of their ERM program. Leading practices pertaining to the board's role in risk management governance are explained below for the eight key components of enterprise risk management.

Risk Leadership	Establish and encourage an organizational culture that views ERM as an enabler. Motivate risk dialogue at all levels.
Risk Appetite & Tolerance	Understand the organization's risk philosophy and agree on risk appetite and tolerance.
Risk Policy & Strategy	Endorse the organization's risk management policy and strategy including the organization's attitude to risk and structure of ownership and management of risk.
People	Ensure clear reporting lines are established. Empower management to effectively manage and be responsible for risk.
Framework & Tools	Lead and guide the application of a customized risk management framework, tools, and a common risk language across the organization.
Risk Management Process	Apply risk management framework to strategic planning processes, ensuring risks that may impede meeting strategic objectives are identified and mitigation plans are adequately implemented and monitored for continuous change.
Risk Monitoring &Reporting	Active oversight of key risks and mitigation strategies as the IESO's organizational environment evolves. Review and respond to reports on formal risk identification and analysis.
Performance & Outcomes	Understand the effectiveness of risk management for meeting strategic objectives and organizational outcomes. Identify areas where sustained improvements are required to fulfill the organization's mandate.

APPENDIX C: LEADING PRACTICE DETAILS

ENTERPRISE RISK MANAGEMENT POLICY

Doc. No.:
Version 1.1
Approval: Board of Directors
Interpretation: CFO
Effective Date: May 2012
Review Date: May 2013

OBJECTIVE & SCOPE

and its affiliates use an enterprise-wide portfolio approach to manage key business risks. These risks stem from the uncertainty that permeates our business environment. Managing these risks successfully requires a systematic, structured, and timely approach. A primary goal of enterprise risk management ("ERM") is to provide uniform processes to identify measure, treat and report our key risks for the benefit of our customers and shareholders. By strengthening our risk management practices, ERM supports the corporate governance needs of our Board of Directors (the "Board") and the due diligence responsibilities of senior management.

We will review this policy annually with our Senior Management Team and the Audit Committee of our Board.

ERM GOALS/PRINCIPLES

In our ERM program and capabilities, we will strive:

1. For a comprehensive, disciplined and continuous process in which risks are identified, analyzed and consciously accepted or mitigated within defined risk tolerances.
2. To understand the risks for which we are accountable and manage these risks within defined risk tolerances.
3. To manage risks using the best available information. We expect decision makers to consider the limitations of data, models and possibly divergent opinions amongst experts, when making risk management decisions.
4. To manage risk through a portfolio approach that optimizes the trade-offs between the risk and return across all business functions. Optimization ensures that we accept the appropriate level of risk to meet our business objectives.
5. To undertake risk assessments annually or more frequently if appropriate.
6. For transparency and relevance.
7. To ensure that we properly consider risks in our decision making and integrate ERM into our business processes, including strategic planning.
8. To evolve our ERM capabilities to reflect industry best practices and our business needs.
9. To implement and maintain ERM policies and processes consistent with this Policy and facilitate consolidation and review of all significant business risks.

ACCOUNTABILITIES AND RESPONSIBILITIES (GOVERNANCE STRUCTURE)

The Audit Committee of the Board and the Senior Management Team perform annual reviews of our ERM policies, processes and accountabilities and our risk profile, risk retention philosophy, and risk tolerances.

The President & CEO is accountable for ensuring that business processes are established to manage our risks.

The Executive Vice President and CFO is accountable for ensuring that the entire ERM program including ERM processes, is established, properly documented and maintained.

The Senior Management Team provides management oversight of our risk portfolio and ERM processes, provides direction on the evolution of these processes, and identifies priorities for risk assessment and mitigation planning. Each member of the Senior Management Team is accountable for identifying and managing significant risks under their direction.

DEFINITIONS

Risk is the effect of uncertainty on business objectives. Events, actions or inactions that may threaten our ability to achieve our business objectives including strategic, regulatory, financial and operational are considered risks. We describe risk in terms of its likelihood of occurrence and potential consequences or impacts, which may be negative or positive (missed opportunity).

Risk Assessment is the systematic identification and analysis of business risks. Risk assessments must include the strength of existing mitigation and controls. The results of the risk analysis must be compared with risk criteria to determine whether the nature and magnitude of the risk is within risk tolerances.

Risk Tolerances are guidelines that establish levels of acceptable and unacceptable exposure from any risk. Tolerances define the range of possible impacts (from minor to worst case) that risks might have on business objectives.

Risk Treatments are actions taken or decisions made to change the status of a risk, including:

- Retaining the risk (either completely or partially),
- Avoiding the risk (by withdrawing from or ceasing the activity),
- Removing the risk source,
- Reducing the likelihood (by increasing preventative controls),
- Reducing the consequences (by emergency or crisis response),
- Sharing the risk (by contracts, insurance, etc.), and
- Increasing the risk (in order to pursue an opportunity).

REFERENCES

ISO 31000: 2009
ISO 31000 2009 TRANSLATED INTO PLAIN ENGLISH

Enterprise Risk Management Framework

April 9, 2013

Table of Contents

Document Verification

RACIE Record

R esponsible:

Signed:

Dated:

A ccountable:

Signed:

Dated:

C onsulted: Senior Management Team
Director, Internal Audit

I nformed: See distribution list

Endorsed:

Signed:

Dated:

RACIE Terms			**Revision Record**		
R	Responsible The person who does the work and pulls the document together		**Rev. No.**	**Date**	**Reason for Issue**
A	Accountable Accountable to the CEO for quality (i.e. fit for purpose)				
C	Consulted Those who must be consulted before the document is published				
I	Informed Those who must be informed in order to do their jobs properly				
E	Endorsed Those who must endorse the document before publication				
Distribution Record					
Date	**Copies No/Format**				

I. Introduction

Enterprise Risk Management Framework ("ERM Framework") outlines our approach to Enterprise Risk Management ("ERM"). We undertake ERM to help achieve business objectives by consistently and proactively managing risks and opportunities.

Italicized sections within this ERM Framework are quoted directly from the Enterprise Risk Management Policy (``ERM Policy``) approved by s Board of Directors and the approved mandates of s Board of Directors and Audit Committee. Therefore, italicized sections within this ERM Framework may not be amended until our Board of Directors approves conforming amendments to the ERM Policy and mandates.

II. Policy Statement

, and its affiliates use an enterprise-wide portfolio approach to manage key business risks. These risks stem from the uncertainty that permeates our business environment. Managing these risks successfully requires a systematic, structured, and timely approach. A primary goal of enterprise risk management ("ERM") is to provide uniform processes to identify, measure, treat and report our key risks for the benefit of our customers and shareholders. By strengthening our risk management practices, ERM supports the corporate governance needs of our Board of Directors (the "Board") and the due diligence responsibilities of senior management.

III. Principles

In our ERM program and capabilities, we will strive:

1. *For a comprehensive, disciplined and continuous process in which risks are identified, analyzed and consciously accepted or mitigated within defined risk tolerances.*
2. *To understand the risks for which we are accountable and manage these risks within defined risk tolerances.*
3. *To manage risks using the best available information* and require *decision makers to consider the limitations of data, models and possibly divergent opinions amongst experts, when making risk management decisions.*
4. *To ensure that we properly consider risks in our decision making and integrate ERM into our business processes, including strategic planning.*

IV. Overview of Enterprise Risk Management

ERM provides uniform processes to identify, measure, treat and report on key risks.

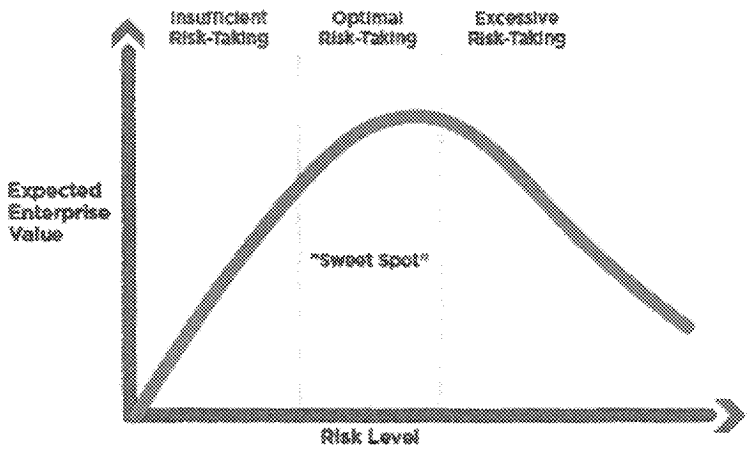
Risk is uncertainty related to the probability and potential impacts of events, actions or inactions that may positively or negatively impact our business performance. We can improve our performance against business objectives by prudently managing risk and uncertainty. ERM requires us to reduce risk exposures that may adversely affect our business and place equal importance on accepting risk and uncertainty related to business opportunities available to us. We accept risks and opportunities in an informed and proactive manner, such that the level of risk we take is aligned with the rewards and benefits we expect to realize from the opportunity.

Our shareholder and other stakeholders expect us to implement processes to ensure that risks are prudently managed. Corporate governance guidelines (including National Policy 58-201) mandate that our Board accept responsibility for identifying our principal risks and ensuring that we have appropriate systems in place to manage those risks. In addition, credit rating agencies evaluate the strength of an entity's ERM program as a factor in their ratings assessments.

An effective ERM program improves our ability to identify opportunities and threats, and increases the likelihood that we will achieve our business objectives. ERM encourages proactive management and organizational learning, while strengthening organizational resilience.

Our ERM program encompasses risk assessment, risk treatment, monitoring and review. We clearly define key risks and opportunities which may positively or negatively impact our ability to achieve business objectives. Using predetermined risk rating criteria, we continually assess the potential consequences and likelihood that each key risk or opportunity will manifest within a three year time frame. In our assessment, we evaluate the effectiveness of control measures we take to manage each risk or opportunity. This enables us to assess residual risk levels and make decisions as to whether we should modify our control measures to optimize the balance between the expected return from an opportunity and the associated risks we are willing to tolerate and accept.

Exhibit 1: Optimal Risk-Taking



If we determine that the residual risks exceed our risk tolerance, we will establish and execute risk treatment plans to reduce the residual risk to levels that we can accept. Our risk treatment plans include strategies and tactics designed to appropriately modify the likelihood, velocity and consequences of risk. Our risk treatment plans may be designed to:

- Reduce the probability or potential impact of risks that exceed our tolerance;
- Avoid risks that we consider to be unacceptable;
- Increase the likelihood or consequence of risk to pursue business opportunities;

- Share or transfer risk with/to third parties; and/or
- Accept risk within our tolerance.

Opportunities and risks occur within a set of internal and external facts we refer to as the "business context". Relevant external factors include, but are not limited to, the political, industry and regulatory environment, financial markets, technological developments, economic conditions, competition, and stakeholder interests. Relevant internal factors include our strategy, business objectives, values, culture, capabilities, policies and standards, and contractual relationships. We monitor and review our business context quarterly for new risks and changes to existing risks. We also review risk treatment plan status and the operation of control measures designed to manage our risks. We adjust course as necessary by developing or modifying risk treatment plans.

We have designed our ERM principles, framework and process in accordance with the ISO 31000 International Standard for Risk Management. This International Standard recommends that organizations develop, implement and continuously improve a framework whose purpose is to integrate the process for managing risk into the organization's overall governance, strategy and planning, management, reporting processes, policies, values and culture.

V. Accountability

To ensure there is accountability, authority and appropriate competence for managing risk, we have defined the following roles and responsibilities:

The Board of Directors *reviews the annual risk report that identifies principal risks and controls and monitors changes and developments through quarterly updates. The Board discusses exposures to major risks and opportunities; and steps Management has taken or intends to take to assess and treat such risks and opportunities.*

The Audit Committee *reviews the processes Management uses to identify risks and opportunities; to assess exposure to such risks; and to treat such risks where appropriate. The Audit Committee receives reports from management with respect to risk assessment, risk management and major financial risks and discusses major financial risks and steps Management has taken or intends to take to assess and treat such risks.*

President & Chief Executive Officer has ultimate accountability for *ensuring that business processes are established to manage our risks* and approving the ERM framework.

The Senior Management Team *provides management oversight of ERM processes and provides direction on the evolution of these processes.* The Senior Management Team reviews ERM performance and evaluates significant or emerging risks that require specific oversight from the Senior Management Team.

The Executive Vice President and CFO *is accountable for ensuring that the entire ERM program including ERM processes, is established, properly documented and maintained.*

The Director, Enterprise Risk Management, owns the ERM framework and processes and is responsible for their design and operation, including: (i) developing and maintaining the policy, framework, standards and processes; (ii) preparing quarterly corporate risk profiles; (iii) maintaining

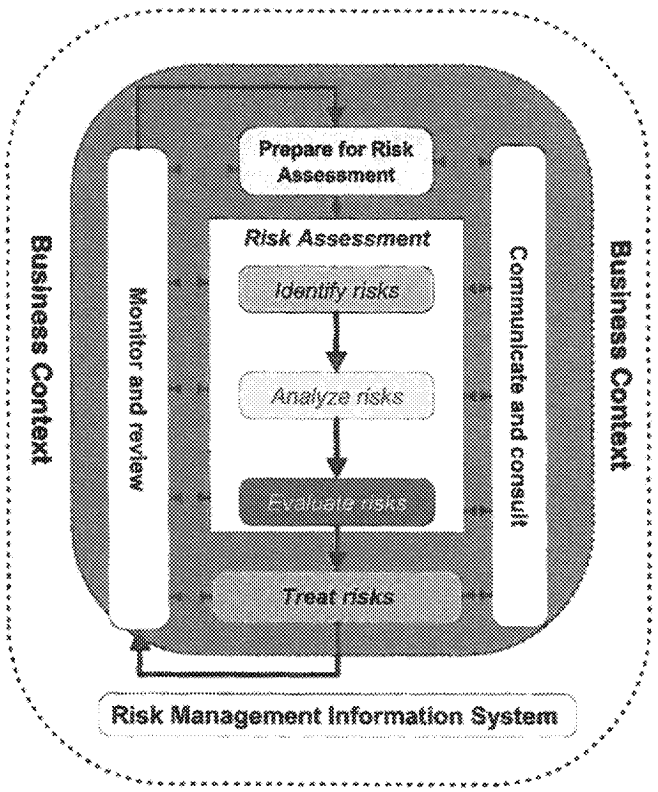
a registry of key business risks; (iv) delivering training; (v) providing ERM implementation support; and (vi) facilitating risk workshops.

The Director, Internal Audit, provides assurance on risk management processes and monitors the effectiveness of the risk management program.

Executive Risk Owners - *Each member of the Senior Management Team is accountable for identifying and managing significant risks under their direction.* As participants in our Strategic Risk Management process, executives are responsible for managing risks assigned to them, including developing and implementing risk treatment plans and monitoring and reviewing risks. In addition, in their role as process sponsors, the Senior Management Team is responsible for integrating ERM into business processes to ensure significant opportunities and risks are properly considered in our decision making.

VI. Risk Management Process

Risk Management Process Schematic



Context for Risk Management Process

Scope & Risk Evaluation Criteria

In order to maximize shareholder value, will undertake business opportunities together with the associated risks. We will accept risks and opportunities in an informed and proactive manner, such that the level of risk we take is aligned with the rewards and benefits we expect to

realize from the opportunity. We will structure our team and approach to be competitive in capturing opportunities while managing the risks. To achieve this alignment, we will make informed decisions to bear the risk fully, to reduce our exposure through partnering, or to transfer all or part of the risk to counterparties who can manage the risk more effectively or are willing to partner with us to diversify our risk exposures. While we are not averse to taking risk in the right circumstances, we must ensure that risks are within our tolerance for risk, as defined by our risk evaluation criteria.

Our risk management process is designed to facilitate management's regular review of current and emerging risk or opportunity against our approved risk criteria. Any opportunity/risk with the potential to have a material impact on shareholder value is within the scope of the risk management process.

The Audit Committee oversees the ERM Framework including our risk evaluation criteria and the events and risks we are averse to.

We are averse to events and risks, including non-compliance with laws and regulations, with the potential for material negative consequences for:

- The health and safety of our employees;
- Shareholder value;
- The reliability of the transmission system;
- Our credit rating;
- Our corporate reputation; and
- The future existence of our business.

We consider an event or risk to be material if its impact may result in:

- Serious injury, health exposure or death;
- Direct financial loss (impact on net income) greater than $10 million;
- A change greater than 10% in the enterprise value of our business;
- An outage affecting more than 40,000 customers or 400MW of load or supply for more than 4 days;
- A credit rating downgrade; or
- Non-compliance with applicable laws, regulations, standards or other conduct that could significantly impair our reputation, compromise our license to operate, and/or result in significant fines or imprisonment.

Risk Assessment Process

The overarching goal of risk assessment is to drive effective risk management.

Risk assessment involves identifying, analyzing and evaluating the risks we face. Some of the methods we use to identify risks are interviews, surveys, research and facilitated risk workshops (see Appendix A).

We use a structured risk statement to define and describe risk, such as "There is the potential that <description of risk/event/opportunity> because <possible cause(s)> may result in <benefit(s)/consequence(s)>. For example, "There is the potential that our net income will vary from budget because of unanticipated changes in capital market conditions".

To help define and analyze risk, we use analytical tools, such as Bowtie Diagrams (see Appendix B), to clearly and succinctly document:

1. the risk, event or opportunity;
2. potential causes for the risk, event or opportunity;
3. existing controls or planned risk treatment measures intended to achieve desired outcomes and reduce the likelihood of a negative risk event from occurring;
4. existing controls or planned risk treatment measures intended to recover from or capitalize upon the risk, event or opportunity after it has occurred; and
5. the consequences, risks and benefits that may be realized if the risk, event or opportunity occurs.

We combine quantitative and qualitative methods to evaluate the likelihood and potential consequences associated with risks and opportunities.

We use pre-defined risk criteria to evaluate risks. Our risk evaluation criteria must be (1) appropriate and relevant for the circumstances; (2) consistent with the Corporate Risk Criteria endorsed by our Board of Directors (see Appendix B); and (3) endorsed by the responsible senior executives. For example, our CEO and Senior Vice President, Projects, have endorsed Project Risk Criteria to be used to evaluate risks and opportunities for individual capital projects.

Risk Treatment

Risk treatment involves making recommendations and decisions as to the appropriate course of action to increase or decrease residual risk to optimal levels. Risk treatment approaches include:

- Avoiding risk by discontinuing activities that give rise to the risk or removing the source of the risk;
- Taking an appropriate amount of additional risk to pursue an opportunity that is expected to result in incremental benefits to the business;
- Taking actions to modify the likelihood and/or consequences of the risk;
- Sharing or outsourcing risk with counterparties through contracts, partnerships, insurance, etc.; or
- Making an informed choice to retain risks already at appropriate levels.

Guidelines for Preparation of Risk Treatment Plans

Risk treatment plans outline what actions we intend to take, what resources we will require, and the timetable for implementation of those actions. Risk treatment planning includes assessing the costs and benefits of modification measures. We should avoid risk treatment measures if the costs are disproportionate to the benefits.

After the risk assessment has been completed, we often use "heat maps" as a tool to document residual risk levels for a portfolio of risks and opportunities. These heat maps are also helpful in determining whether risk treatment plans should be prepared:

Low-level risks do not require further treatment but will be monitored within the ERM program. Low risks fall within the blue and green portions of the heat map.

Medium-level risks require further assessment by the Executive Risk Owner and the Senior Management team to determine whether a risk treatment plan is necessary or appropriate. Medium-level risks fall within the yellow portion of the heat map.

High-level risks require that we develop explicit risk treatment plan as soon as possible. High-level risks fall within the orange and red portions of the heat map.

In addition to the residual risk level, we must give appropriate consideration to risk velocity when deciding whether risk treatment plans are appropriate. The greater the speed or velocity at which we expect that risks, events or opportunities could materialise; the greater the likelihood that a risk treatment plan is necessary or appropriate. For example, a medium-level risk with high velocity would be more likely to require a risk treatment plan than a medium-level risk with low velocity. All high-level risks will require a risk treatment plan. Velocity may also influence the speed or urgency with which risk treatment plans must be implemented.

Communication and consultation

We are committed to:

- Ongoing dialogue with clients and other stakeholders regarding risk and risk management;
- Processes that enable providing, sharing and obtaining information about cross-functional risk and how to manage the uncertainty that affects our objectives;
- Supporting and encouraging accountability and ownership of risks and opportunities;
- Ensuring that this ERM Framework and our ERM Policy are communicated appropriately;
- Communicating and sharing relevant information and learnings regarding ERM across the organization on a timely basis; and
- Communicating and reporting on this framework, its effectiveness and the outcomes.

VII. Strategic Planning & Risk Management

We integrate enterprise risk management with our strategic planning and business planning processes to promote and facilitate proactive management of risks and opportunities that may impact our strategic and business objectives.

Risk Management Cycle

Enterprise risk management is a continuous process that requires us to take appropriate action on a timely basis. To ensure that strategic risks are identified, assessed, and communicated at least annually, we conduct and prepare an annual strategic risk assessment as part of our strategic planning cycle.

In our annual strategic risk assessment, we identify and assess significant risks and opportunities that may have strategic implications for our business. The annual strategic risk assessment incorporates information derived from one-on-one interviews and facilitated workshops with Senior Management Team and other key leaders. The annual strategic risk assessment is provided to the Senior Management Team as an important input into our strategic planning process.

We assign each strategic risk or opportunity to an Executive Risk Owner, who is responsible for more comprehensive assessment and risk treatment planning that is integrated into the strategic planning process. Through discussion and analysis, the Senior Management Team and Board of Directors provide input and guidance to assist the Executive Risk Owner in developing and integrating risk treatment recommendations into the annual strategic plan. The Executive Risk Owner is responsible for developing and implementing risk treatment plans contemplated in the annual strategic plan.

The Senior Management Team monitors strategic risks and opportunities continuously. The Senior Management Team incorporates enterprise risk management into its monthly strategy meetings and quarterly business reviews. The Executive Risk Owner is responsible for keeping the Senior Management Team and Board of Directors informed as to:

- changes in business context, risks and opportunities; and
- status of approved risk treatment plans and revisions to such plans arising from changes in business context, risks and opportunities.

VIII. Monitoring and Review of ERM Program

To ensure that our enterprise risk management program remains effective and continues to support our business performance, we will:

- Measure risk management performance against performance indicators, which are periodically reviewed for appropriateness.
- Conduct internal audits of ERM and implement recommendations for improvement.
- Annually review whether the risk management policy, framework and plan are still appropriate, given the organization's external and internal context; risk management performance; and feedback from management and the Board of Directors.

Every two years, we will review the effectiveness of the ERM Program with the assistance of internal or external service providers. This could include, but is not limited to, risk management maturity assessments, peer reviews, audits or benchmarking.

Based on results of monitoring and reviews, decisions will be made on how the risk management program can be improved. These decisions will seek to improve the organization's management of risk and its risk management culture.

Appendix A- Risk Workshops

A risk workshop is a structured group conversation about future uncertainty (risks and opportunities).

Risk workshops can be structured to:

- Identify, analyze & evaluate risks and opportunities
- Develop and evaluate risk treatment alternatives
- Identify and assess control measures

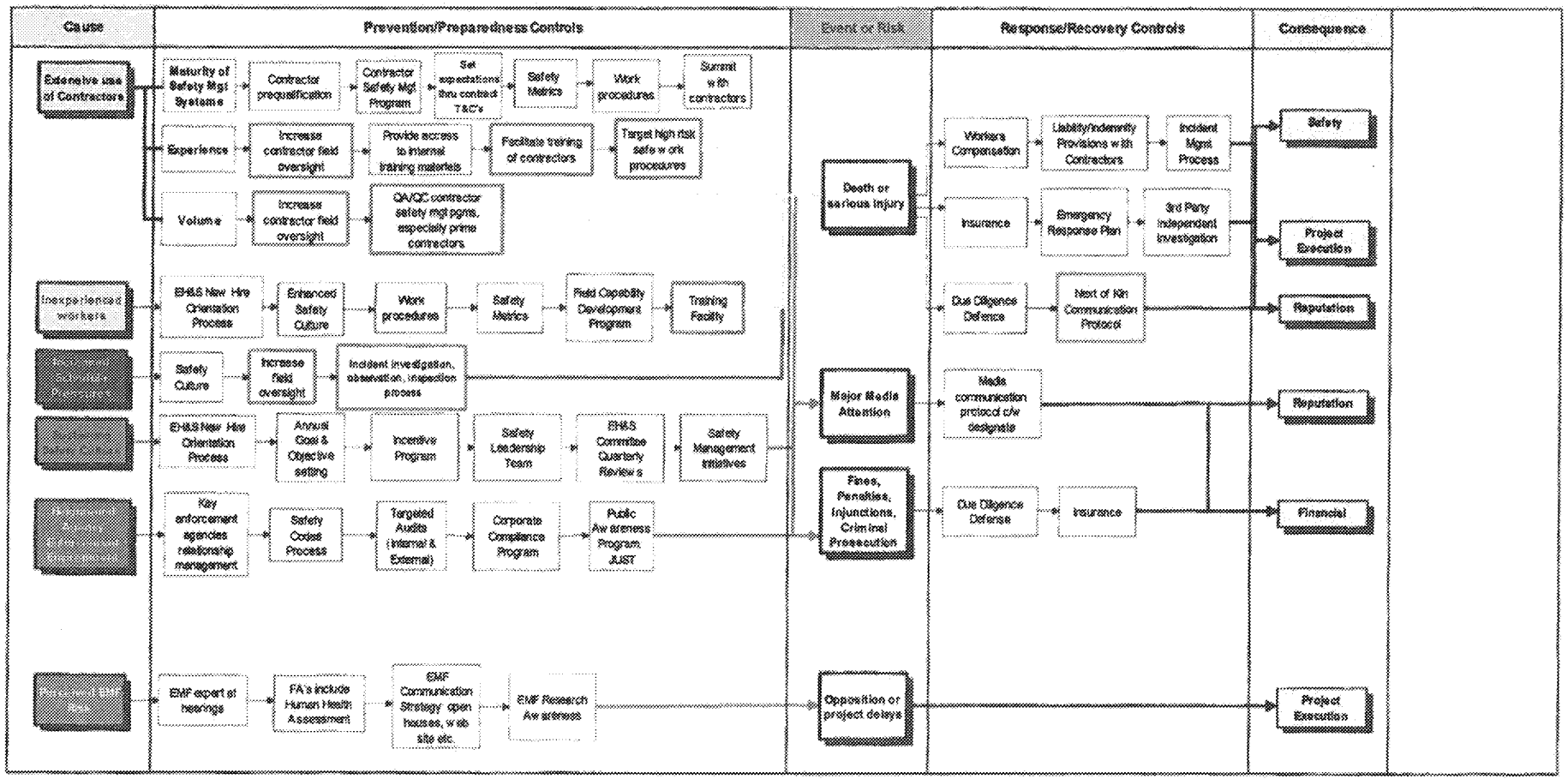
Benefits:

- Provides a better understanding of business objectives and significant risks.
- Helps identify new risks and opportunities and innovative treatment plans and solutions in a time efficient manner.
- Promotes focussed dialogue and team building with respect to risk management.
- Aligns risk treatment expectations and residual risk levels among management and staff.
- Offers a learning opportunity for all participants regarding risk management.

The Director, ERM will work with risk owners to define the workshop objectives and scope. The ERM team will provide the facilitation. Once the workshop is complete, the ERM facilitator will recap the results, decisions, and action items and provide a risk workshop report with any information or assessments collected from participants.

Contact the Director, ERM if you wish to explore or arrange for a Risk Workshop.

Appendix B – Bowtie Diagram
Health and Safety Risk



Controls: Choices are Existing: Development; Future

Appendix C – Corporate Risk Criteria

LIKELIHOOD OF OCCURRENCE								
Virtually Certain	95% probability that the event will occur in the next 3 years	5	Moderate	Moderate	High	Severe	Severe	Severe
Very Likely	75% probability that the event will occur in the next 3 years	4	Guarded	Moderate	High	Severe	Severe	Severe
Even Odds	50% probability that the event will occur in the next 3 years	3	Guarded	Moderate	Moderate	High	Severe	Severe
Unlikely	25% probability that the event will occur in the next 3 years	2	Low	Guarded	Moderate	Moderate	High	High
Remote	5% probability that the event will occur in the next 3 years	1	Low	Low	Guarded	Guarded	High	High
IMPACT CRITERIA			1	2	3	4	5	

Objective	Attribute	Event	Minor	Moderate	Major	Severe	Worst Case
FINANCIAL	Net Income	Financial Loss Event (after tax, in one year).	<$1 Million	$1 Million - $5 Million	$5 Million - $10 Million	$10 Million - $20 Million	> $20 Million
	Credit Worthiness	Change in financial ratios or risk.	Credit rating agencies and bondholders express concern.	AltaLink put on "credit watch".	Credit rating downgrade.	Credit rating downgrade to below investment grade; Unable to raise full amount of required capital.	Event of default; Unable to raise any capital due to credit rating.
	Value of the Enterprise	Adverse regulatory tariff decisions impacting several years; major capital projects delayed or cancelled; material change in business risks.	<1% reduction or missed opportunity to increase Net Present Value using owner valuation model.	1% - 5% reduction or missed opportunity to increase Net Present Value using owner valuation model.	5% - 10% reduction or missed opportunity to increase Net Present Value using owner valuation model.	10% – 15% reduction or missed opportunity to increase Net Present Value using owner valuation model.	>15% reduction or missed opportunity to increase Net Present Value using owner valuation model.
REPUTATION	Public Profile	Negative media attention and criticism from opinion leaders.	Letter(s) to Senior Management; Polling support < 80%.	Letter(s) to Minister of Energy; Polling support < 50%.	Industry attention; Several opinion leaders/customers publicly critical; Polling support < 40%.	Provincial media attention; Most opinion leaders/customers publicly critical; Polling support < 30%.	Provincial or National media attention; Opinion leaders/customers nearly unanimous in public criticism in areas of poor stewardship, unethical actions or prudency; Polling support < 20%.
	Customers	Increase in customer dissatisfaction	Status quo number of customer complaints.	One "large" costs: perioness outage or delays from actions/inaction; high level (CEO, COO, etc) calls to AltaLink's CEO office.	Customer associations step up lobbying efforts for stricter penalties	Increase in customer lawsuits for direct and/or collateral damage believed to be caused ; Complaints to provincial authorities and government escalate significantly.	Numerous Generator and Direct Customers actions force regulator or government to introduce changes to policy or legislation. declared ineligible for future projects.
REGULATORY RELATIONSHIP	Meet License Conditions	Loss of credibility with Regulators including the	Increased reporting, overall decisions supportive of ongoing business operations, some challenges	Decisions indicating shifts required, pressure on business operations.	Material decisions negatively impacting ability to operate business effectively.	Intrusive, recommending action, minor sanctions.	Highly intrusive, directing action, severe sanctions in place; denial of major project PBR.
COMPETITIVENESS	Cost Structure	High cost structure that we are unable to reduce.	Cost structure is a little high but not significant in our ability to be successful in a competitive bidding environment.	Reasonable success in bids but need to find some innovative ways to offset our lack of competitive cost structure.	Win some bids but not able to compete successfully on the big, more highly competitive projects.	Able to bid but have very little success due to high cost structure. Therefore, high costs of bidding with little success.	Unable to even qualify for competitive bids due to very high costs structure and reputation. Loss of service territory.
	Customers	Poor unit costs or benchmarks to assess competitiveness					
RELIABILITY	Customers / Delivery of Electricity	Outages on the AltaLink System.	Outage affects: Less than 10k Customers & one or more delivery points for <3hrs and/or MW-minutes lost < 1,000	Outage affects: Less than 40k Customers & one or more delivery points for 3-12hrs, ERP Level 1 issued, and/or MW-minutes lost 1,000 – 10,000	Outage affects: Less than 100k Customers & one or more delivery points for 12-48hrs, ERP Level 2 issued, and/or MW-minutes lost 10,000 – 100,000	Outage affects: More than 100k Customers & one or more delivery points for >48hrs, ERP Level 3 issued, and/or MW-minutes lost > 100,000	Outage affects: Widespread blackout or brownout over a significant portion of the system.
	Business Continuity	Significant business interruption	No change.	Key locations / IT systems unavailable <24 hours.	Key locations / IT systems unavailable 1-3 days.	Key locations / IT systems unavailable 4-6 days.	Key locations / IT systems unavailable > 1 week.
PROJECT EXECUTION	Customers / Schedules	Significant delays in delivery of CTI projects – or numerous projects within the Portfolio	Common risk resulting in Minor delays to < 5 projects - No impact to YE exn, adds or ISD - <1 year delay on one CTI project.	Common risks, Moderate delays, 5+ project - no impact ISD - 1 year delay on one CTI project or - <1 year delay on several projects.	Common risk, Major delays, 10+ projects - ISD delays (system project) - Multi-year delays on one CTI or - 1 year delays on several.	Common risk, Severe delays, 10+ Projects - ISD delays (system + key customers) - damage reputation key customers - Lose one CTI project or multi-year delays on several.	Common risk resulting in multi-year delays - Damaged reputation with Stakeholders - Schedule delays exceed Contingency - Lose more than one CTI project.
	Customers / Capital Costs	Project costs exceed estimate or benchmark					
SAFETY AND ENVIRONMENT	Safety	Change in one year injury rates or severity.	Increased number of first aid incidents per exposure hours compared to target.	Increased number of medical aid incidents per exposure hours compared to target.	Increased number of incidents resulting in restricted work per exposure hours compared to target.	Increased number of incidents resulting in lost time per exposure hours compared to target.	Increased number of fatalities or permanent disabilities or severe Provincial sanctions.
	Public Safety	Public injuries or AltaLink found non-compliant.	No change.	Small safety code compliance issues or Small increase in number of injuries.	Significant safety code compliance issues, Moderate increase in number of injuries.	Significant safety code compliance issues, risk of losing accreditation, significant increase in number of injuries.	Loss of safety codes accreditation, provincial safety oversight, fatality / permanent disability.
	Environmental Performance	Adverse environmental impact or found non-compliant.	Minor impact on property only and no sanctions and no attention	Minor local offsite contamination or local attention	Significant local offsite contamination or regional attention	Multiple local offsite contamination of local water supplies or provincial attention	Widespread offsite contamination of regional / municipal water supply & provincial attention
ATTRACTION AND RETENTION	Employee Confidence	Employee dissatisfaction; Loss of employees.	Less than planned improvements in employee survey results; Attrition rate < 5%.	Employee survey results between 77% - 70%; modest increase in grievances, long union negotiations leading to reduced productivity; Attrition rate 5% - 8%.	Employee survey results fall below 70%; sharp increase in grievances; Attrition rate 8% - 12%.	Employee survey results fall below Canadian norm (65%); key staff with scarce skills or knowledge leave; Attrition rate 12% - 15%.	Widespread departures of key staff with scarce skills or knowledge; several key executives leave; Prolonged strike or work stoppage by unionized employees; Attrition rate > 15%.
	Employee Attraction	Inability to attract quality employees.	Average time to hire < 4 months.	Average time to hire 4 – 6 months.	Average time to hire 6 – 8 months.	Average time to hire 8 – 12 months.	Average time to hire > 12 months.

Supplier Spend Audit - Data Analytics

RISK UNIVERSE DEFINITIONS

(Last updated June 2017)

Risk Dashboard Category	Risk	Risk Description	Business Impact	Oversight		Strat Obj
				Board	Mgmt	
Governance	**Brand Risk**	External parties or signficant changes internally could adversely impact the AESO's ***reputation and credibility***; Stakeholders may not see the organization as a ***trusted leader***. ***Information communicated*** to outside parties (website, presentations, discussions, interviews etc.) contain errors, inconsistencies or confidential information eroding the AESO's brand.	Reputation	BOARD	David Erickson	Value
Governance	**Business Conduct Risk**	People (internal staff and external vendors) engage in ***fraudulent, unethical, inappropriate behavior***, or behavior that results in real or perceived ***conflict of interest*** or ***lack of confidentiality. Performance*** could be lacking. Could have ***dependency on key suppliers.*** Management fails to take the necessary ***action to resolve*** such issues.	Reputation	AC	David Erickson	People
Operational Excellence	**Business Resumption Risk**	Failure to properly manage ***crises*** and ***resume normal operations*** in a timely manner from significant business interruptions.	Operations / Reliability Reputation	AC	Todd Fior	Value
Grid Reliability	**Compliance Risk**	Not ***complying*** with legislative or regulatory requirements (rules, standards, FOIP etc.) resulting in fines, penalties, and loss of reputation. Lack of compliance could also occur as a result of lack of clarity or conflicting information in authoritative documents such as rules, standards, tariff, and EUA.	Compliance Reputation Resources	AC	Todd Fior	Value

RISK UNIVERSE DEFINITIONS

(Last updated June 2017)

Risk Dashboard Category	Risk	Risk Description	Business Impact	Oversight		Strat Obj
				Board	Mgmt	
Grid Reliability	**Grid and Market Risk**	Appropriate people, processes and tools are not in place, or not well integrated for information gathering, ***real-time functioning***, and ***effective restoration*** of grid and market operations. Inability to procure ***operating reserves*** at sufficient volumes or at appropriate prices impacting reliability and reputation. Alberta's electricity framework does not deliver sufficient ***supply of electrical generation*** to meet demand in the short term.	Operations / Reliability Reputation Org Capability Financial	PSC	Greg Retzer	Frame work
Technology	**IT Infrastructure Risk**	***Systems, networks, servers and technology tools*** are outdated. Technology does not meet current requirements leading to ineffective or inefficient operations.	Org Capability Processes	AC	Bill Baker	Value
Technology	**IT & Cyber Security Risk**	Security measures and practices may not prevent, detect, or recover from significant ***security breaches or incidents.*** Failure to adequately ***restrict access*** to data, information, programs or systems resulting in unauthorized knowledge and use of confidential information.	Reputation Markets Operations / Reliability Fraud	AC	Bill Baker	Value
Operational Excellence	**Physical Security Risk**	People and assets are not adequately ***safeguarded***.	Reputation Safety	HRC	Todd Fior	People

RISK UNIVERSE DEFINITIONS

(Last updated June 2017)

Risk Dashboard Category	Risk	Risk Description	Business Impact	Oversight		Strat Obj
				Board	Mgmt	
Operational Excellence	**Process Execution Risk**	Processes/Projects (and associated controls) may have ***gaps, inconsistencies, lack clarity or are inefficient***; Documentation is outdated or non existent; People do not follow existing processes and controls. Projects are not properly ***prioritized*** or ***aligned*** to business objectives and effectively executed to control scope, cost, schedule, integration and quality. Project ***dependencies*** not well understood. ***Realization of benefits*** may not have occured. Relevant and reliable ***measures*** to monitor and improve processes/projects are not in place, or not effectively tracked, and threaten the organization's ability to achieve objectives.	Operations / Reliability Org Capability	BOARD	Todd Fior	Value
Governance	**Public Policy Risk**	Changes or ambiguity in ***government policy, regulations, direction, or government intervention*** could adversely impact the AESO's mandate, strategies and operations. The existing or changing ***electricity framework*** does not meet the objectives of FEOC, transmission development, safe and reliable operations.	Strategy Operations Reputation	BOARD	David Erickson	Frame work

RISK UNIVERSE DEFINITIONS

(Last updated June 2017)

Risk Dashboard Category	Risk	Risk Description	Business Impact	Oversight		Strat Obj
				Board	Mgmt	
Operational Excellence	**Reporting Risk**	Failure to accumulate relevant and reliable ***external and internal information*** to assess whether adjustments to or disclosures in ***financial and non-financial reports*** are required, resulting in the issuance of misleading reports to external stakeholders. Transactions are not in accordance with accounting standards; Issues exist with completeness, accuracy and validity of data, accruals, account reconciliations and other areas of accounting. Systems and processes do not generate ***accurate, complete, or valid data.*** Lack of strategy or processes to properly manage, organize and retain the organization's ***data, information, and records*** (hard copy and electronic).	Reputation Financial	AC	Todd Fior	Value
Market Facilitation	**Settlement & Credit Risk**	Inability to publish the System Marginal Price, ***settle the market, or generate billings.*** Failure of relevant systems such as CDMS, TSS and ETS impacting settlement activities. Counterparties may ***default*** on their financial obligations to the AESO.	Reputation Financial	AC	Todd Fior	Value
Governance	**Stakeholder Expectations Risk**	Lack of strategy, process, or understanding of ***changing stakeholder and customer expectations and behavior*** (drivers, needs, initiatives, technologies) could result in damaged relationships or loss of confidence in the AESO.	Strategy Reputation	GNC	Miranda Erickson	Value

RISK UNIVERSE DEFINITIONS

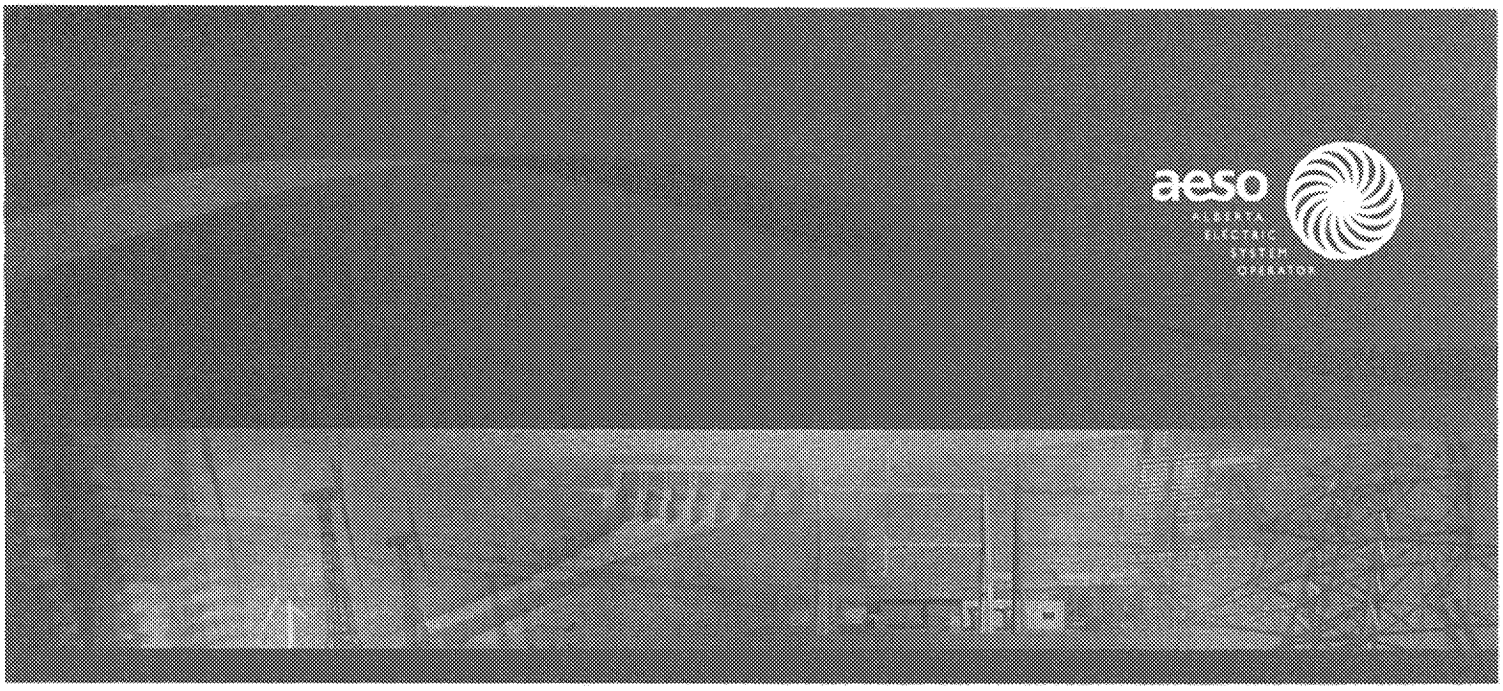
(Last updated June 2017)

Risk Dashboard Category	Risk	Risk Description	Business Impact	Oversight		Strat Obj
				Board	Mgmt	
Strategy	**Strategy & Mandate Risk**	Lack of proper ***strategic planning*** and goal setting processes. Inability to deliver appropriate ***outcomes***; Ineffective ***model or structure*** in place to achieve corporate objectives. Strategies are not well understood or may be mis-aligned with ***mandate.***	Decision Making Performance Reputation	BOARD	David Erickson	Frame work
Market Facilitation	**Supply Adequacy (Long Term) Risk**	Alberta's electricity framework does not deliver sufficient ***supply of electrical generation*** to meet demand in the long term.	Markets Reputation Operations / Reliability	PSC	Heidi Kirrmaier	Frame work
Operational Excellence	**Talent Risk**	Talent ***acquisition, development, organization, performance***, and ***retention***, may not be managed in an effective and efficient manner, resulting in lack of organizational capability and threatens its capacity to change or achieve its objectives and goals. Lack of competitive ***compensation*** structure (salary and benefits) inhibits the ability to retain and attract qualified staff. Compensation is not consistent with job responsibility and performance. Desired ***cultural behaviors*** are not clearly defined or actual behaviors are inconsistent with desired corporate values and principles. People are not being ***effectively led*** resulting in a lack of direction, customer focus, motivation to perform, management credibility, and trust. Retirements and attrition could leave the AESO vulnerable to key ***leadership and knowledge gaps.***	Org Capability Operations / Reliability	HRC	Lisa Nadeau	People

RISK UNIVERSE DEFINITIONS

(Last updated June 2017)

Risk Dashboard Category	Risk	Risk Description	Business Impact	Oversight		Strat Obj
				Board	Mgmt	
Grid Reliability	**Transmission Risk**	***Holistic planning*** to the transmission grid is not undertaken resulting in compromised reliability and/or market operations, and potential market design failure. ***Forecasting*** activities or methodology for supply, load and pricing is incomplete or ineffective. ***Customer connections and system projects*** are not planned, coordinated and executed in a cost effective, efficient, and timely manner.	Reputation Operations / Reliability Market Design Decision Making	PSC	Jerry Mossing	Frame work



CONTROLS & AUDIT SERVICES

Enterprise-Wide Risk Management Report
September 2017 Update

Information Classification: AESO Protected

Date: September 5, 2017
To: Audit Committee (AC) Members

It is management's responsibility to ensure that appropriate and timely actions are taken to manage risks to acceptable levels, to provide reasonable assurance regarding achievement of the AESO's strategy, objectives, and goals.

This report is provided to the AC to understand the organization's principal risks, how they have been assessed and the actions that are being taken to manage them. If applicable, this report will also include details on principal risks that are pertinent to AC oversight.

Table of Contents

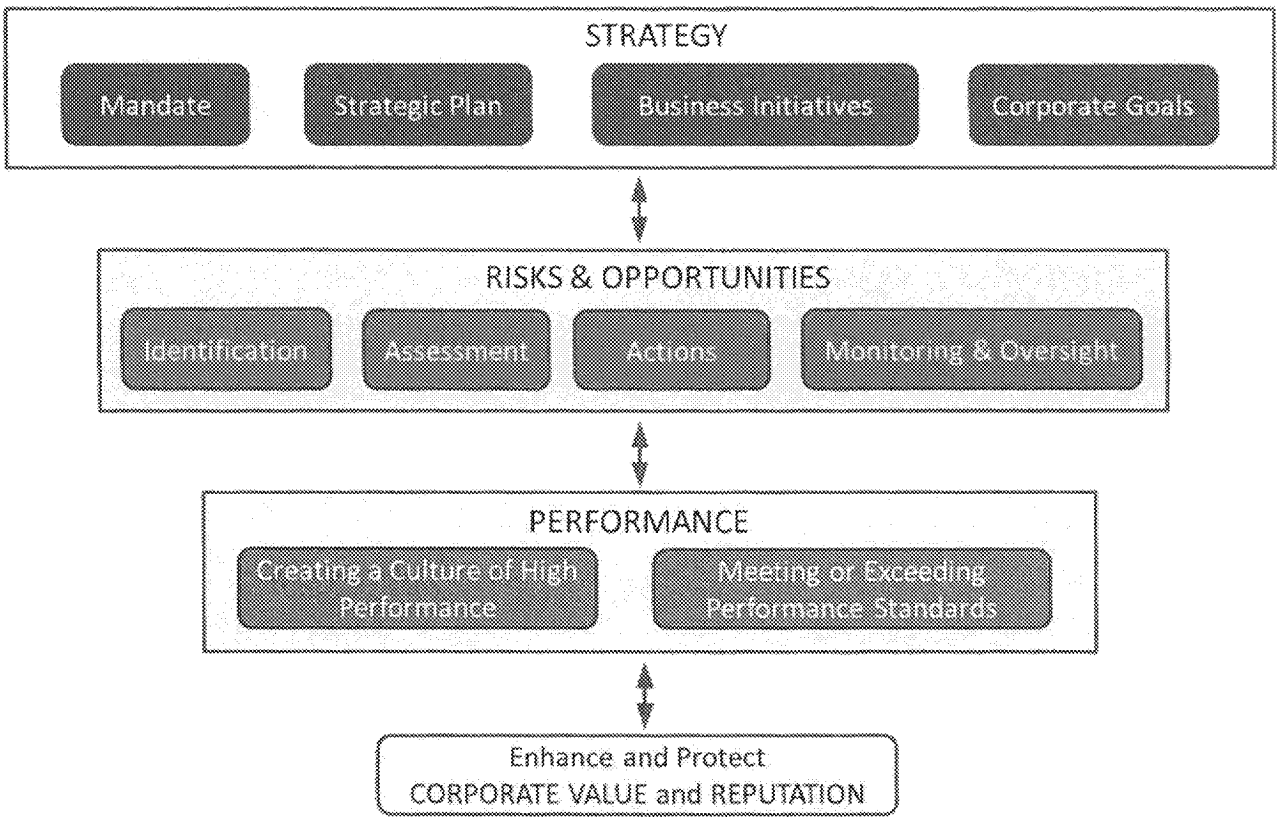
APPENDICES

A. Preamble

The AESO faces continuing uncertainties and challenges as it pursues its mandate and strategic direction such as:

- A weak recovery in the Alberta economy;
- Working with new government policies and developing new relationships;
- Implementing government policies such as transitioning to a capacity market and implementing a renewable electricity program;
- Ensuring adequate supply of electrical generation in the long term; and
- Having appropriate skill sets and talent to execute current and evolving processes and projects.

As these and other uncertainties (risks and opportunities) are managed to acceptable levels, corporate performance and value can be optimized – see chart below.



A. Risk Dashboard

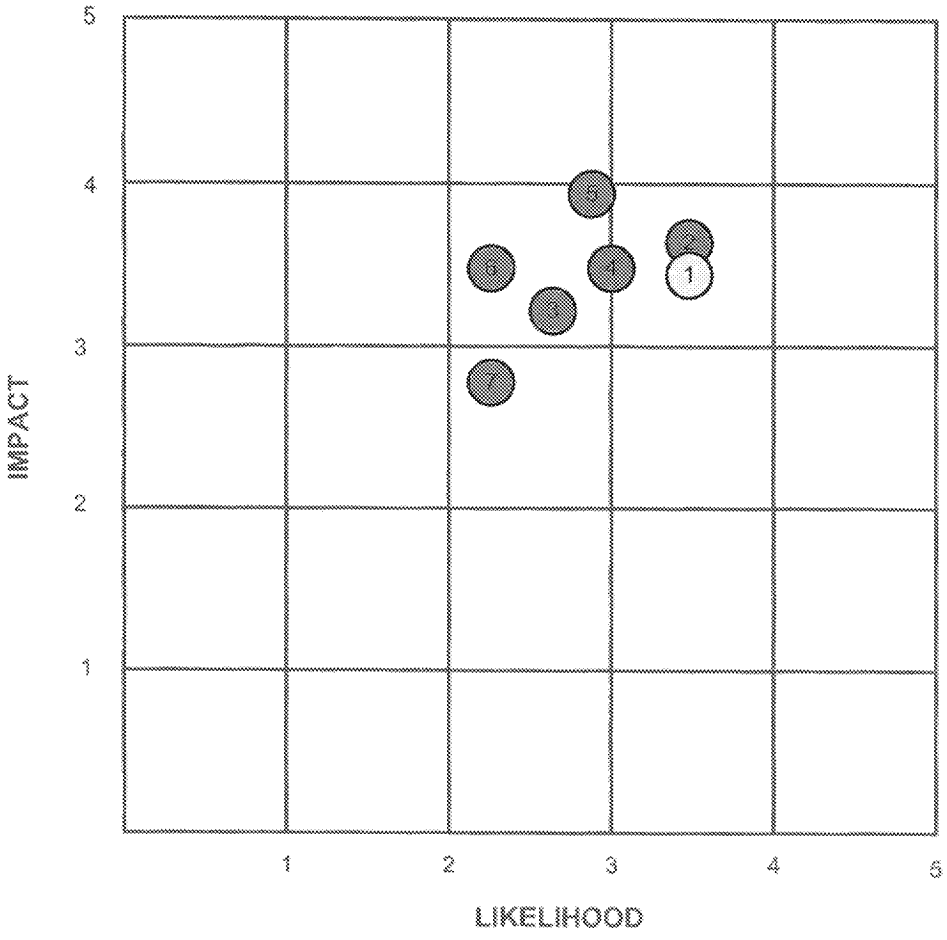
Current	STRATEGY	Target	Current	GOVERNANCE	Target	Current	GRID RELIABILITY	Target
Objective: Develop, communicate and monitor strategic and business plans to guide the AESO's direction. *Exhibited Risk Appetite: Flexible* *Target Risk Appetite: Cautious*			***Objective: Implement appropriate planning, enforcement, cultural, compliance and oversight mechanisms.*** *Exhibited Risk Appetite: Minimal* *Target Risk Appetite: Minimal*			***Objective: Lead the development and operation of a safe and reliable transmission system, including interties to other jurisdictions, which fully enables operation of the market.*** *Exhibited Risk Appetite: Minimal* *Target Risk Appetite: Minimal*		
Risk focus: Strategy & Mandate. Comments: ▪ Include comments 2017 audits: Include relevant audits.			Risk focus: Public Policy; Brand; Stakeholder Expectations. Comments: ▪ Include comments 2017 audits: Include relevant audits.			Risk focus: Transmission; Grid & Market Operations; Compliance. Comments: ▪ Include comments 2017 audits: Include relevant audits.		

Low [L] Residual Risk | Low/Med [LM] Residual Risk | Med [M] Residual Risk | Med/High [MH] Residual Risk | High [MH] Residual Risk

Current	MARKET	Target	Current	TECHNOLOGY	Target	Current	OPERATIONAL EXCELLENCE	Target
Objective: Design and operate a real-time energy and future capacity market. *Exhibited Risk Appetite: Cautious* *Target Risk Appetite: Minimal*			***Objective: Ensure critical systems, networks, information and technology are reliable, secure and meet business needs.*** *Exhibited Risk Appetite: Minimal* *Target Risk Appetite: Minimal*			***Objective: Operate the business effectively and efficiently, with focus on value and optimizing performance.*** *Exhibited Risk Appetite: Cautious* *Target Risk Appetite: Flexible*		
Risk focus: Supply Adequacy (long term). Comments: ▪ Include comments 2017 audits: Include relevant audits.			Risk focus: IT & Cyber Security. Comments: ▪ Include comments 2017 audits: Include relevant audits.			Risk focus: Process Execution; Talent; Reporting. Comments: ▪ Include comments 2017 audits: Include relevant audits.		

Low [L] Residual Risk | Low/Med [LM] Residual Risk | Med [M] Residual Risk | Med/High [MH] Residual Risk | High [MH] Residual Risk

B. Risk Map for Principal Risks



PRINCIPAL RISKS

1.
2.
3.
4.
5.
6.
7.

Impact Rating	Likelihood Rating
1 – Insignificant	1 – Rare
2 – Minor	2 – Unlikely
3 – Moderate	3 – Possible
4 – Major	4 – Likely
5 – Catastrophic	5 – Almost Certain

Risk Preparation Rating

- Very Prepared (1.0 to 1.5)
- Prepared (1.6 to 2.4)
- Somewhat Prepared (2.5 to 3.6)
- Minimum Preparation (3.7 to 4.5)
- Not Prepared (4.6 to 5.0)

C. Changes in Principal Risks – Comparing 2017 and 2016

Red font indicates principal risks for 2017 which are not included in the 2016 principal risks

2017 Principal Risks (not in any order)	Change Comments

Blue font indicates principal risks for 2016 which were not included in the 2017 principal risks

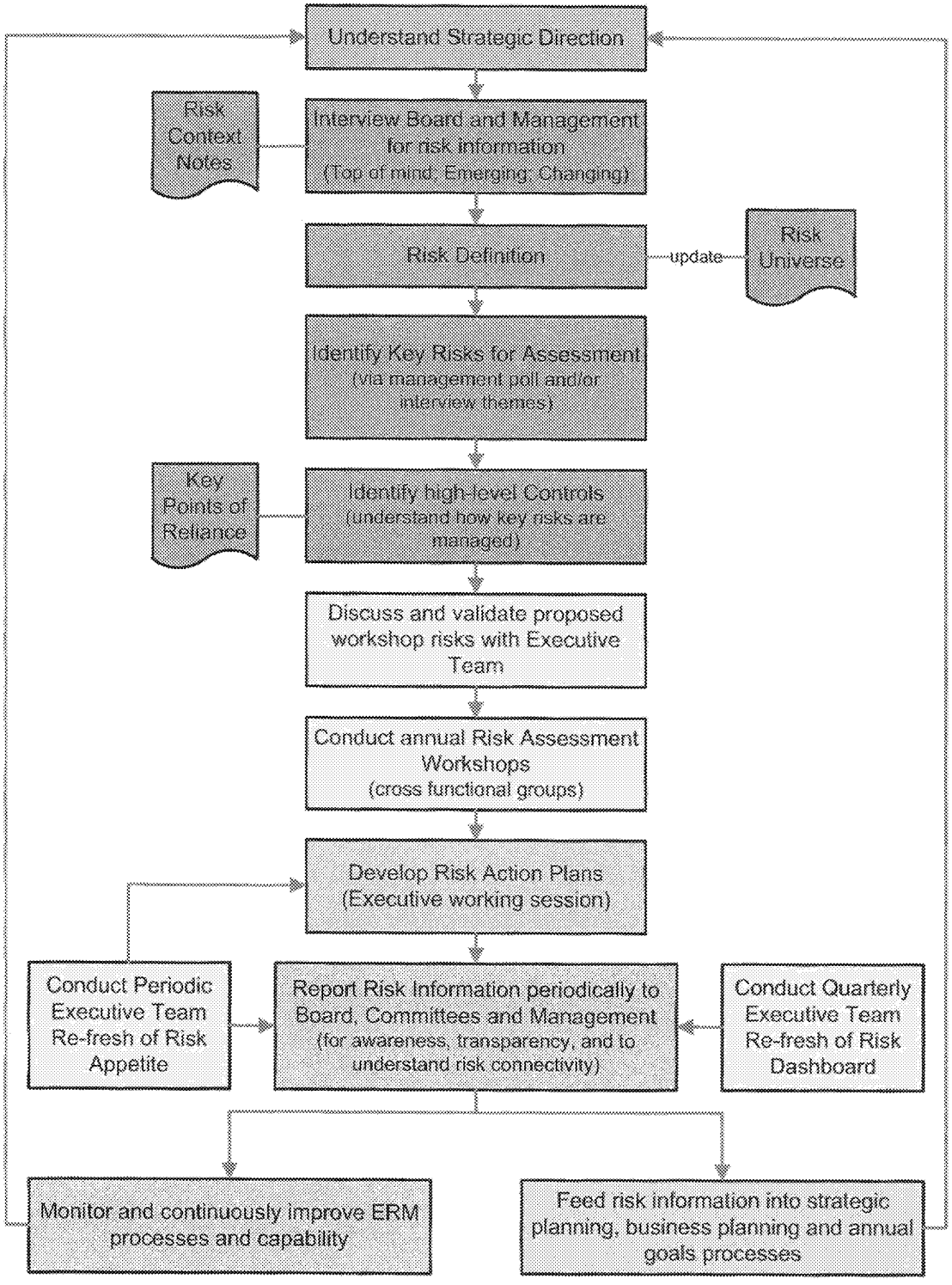
2016 Principal Risks (not in any order)	Change Comments

D. Audit Committee Oversight – Related Risks

This section consists of those principal risks that are pertinent to the Audit Committee's oversight role.

Risk Description & Context	Key Points of Reliance to Manage Risk	Opportunities
IT & Cyber Security Risk - Security measures and practices may not prevent, detect, or recover from significant ***security breaches or incidents.*** Failure to adequately ***restrict access*** to data, information, programs or systems resulting in unauthorized knowledge and use of confidential information. Risk Context: • Include details of why this is a risk. Information is typically obtained through risk interviews	• Include key controls, mitigation etc.	Include any identified opportunities

Appendix 1 - ERM Process Overview



Appendix 2 - Risk Assessment Criteria

During workshops, management used the following criteria to assess the Likelihood / Velocity, Impact and Control Effectiveness of pertinent risks.

IMPACT - What can happen?		
RATING	DEFINITION	GUIDANCE
1	Insignificant	Minimal impact on achievement of objectives. Operations and reporting processes are largely unaffected.
2	Minor	Minor impact on achievement of objectives. Operations and reporting processes continue with minor challenges.
3	Moderate	Moderate impact on achievement of objectives. Operations and reporting processes experience challenges but continue to operate. Some reputation damage occurs but can be managed.
4	Major	Major impact on achievement of objectives. Operations and reporting processes are significantly challenged but continue to operate. Some non-compliance issues occur. Reputation damage occurs.
5	Catastrophic	Significant impact on achievement of objectives. Organization is unable to conduct operations and reporting processes or comply with laws and regulations. Significant damage to reputation.
LIKELIHOOD – How likely is the risk to occur?		
1	Rare	Very low probability that the risk will occur (10% probability)
2	Unlikely	Low probability that the risk will occur (25% probability)
3	Possible	Moderate probability that the risk will occur (50% probability)
4	Likely	High probability that the risk will occur (75% probability)
5	Almost Certain	Very high probability that the risk will occur (90% probability)
PREPARATION – How prepared are we to respond (mitigation plans, people, process, technology)		
1	Very Prepared	Organization is very well prepared to respond
2	Prepared	Organization is prepared to respond
3	Somewhat Prepared	Organization is somewhat prepared to respond
4	Minimum Preparation	Organization has minimum preparation in place to respond
5	Not Prepared	Organization is not prepared to respond

Appendix 3 - Risk Appetite Scale

RISK APPETITE SCALE

What is the degree of risk, on a broad level,
that the AESO is willing to accept in pursuit of its objectives and strategies?

Rating	Philosophy	Tolerance for Uncertainty	Choice	Trade-Off
	Overall risk-taking philosophy	Willingness to accept uncertain outcomes or period-to-period variation	When faced with multiple options, willingness to select an option that puts objectives at risk	Willingness to trade off against achievement of other objectives
5 **Open**	Will take justified risks	Fully anticipated	Will choose option with highest return or benefit; accept possibility of failure	Willing
4 **Flexible**	Will take strongly justified risks	Expect some	Will choose to put at risk, but will manage impact	Willing under right conditions
3 **Cautious**	Preference for safe delivery	Limited	Will accept if limited, and heavily outweighed by benefits	Prefer to avoid
2 **Minimal**	Extremely Conservative	Low	Will accept only if essential, and limited possibility / extent of failure	With extreme reluctance
1 **Averse**	"Sacred" Avoidance of risk is core	Extemely low	Will select the lowest risk option, always	Never

SAMPLE RISK APPETITE STATEMENTS

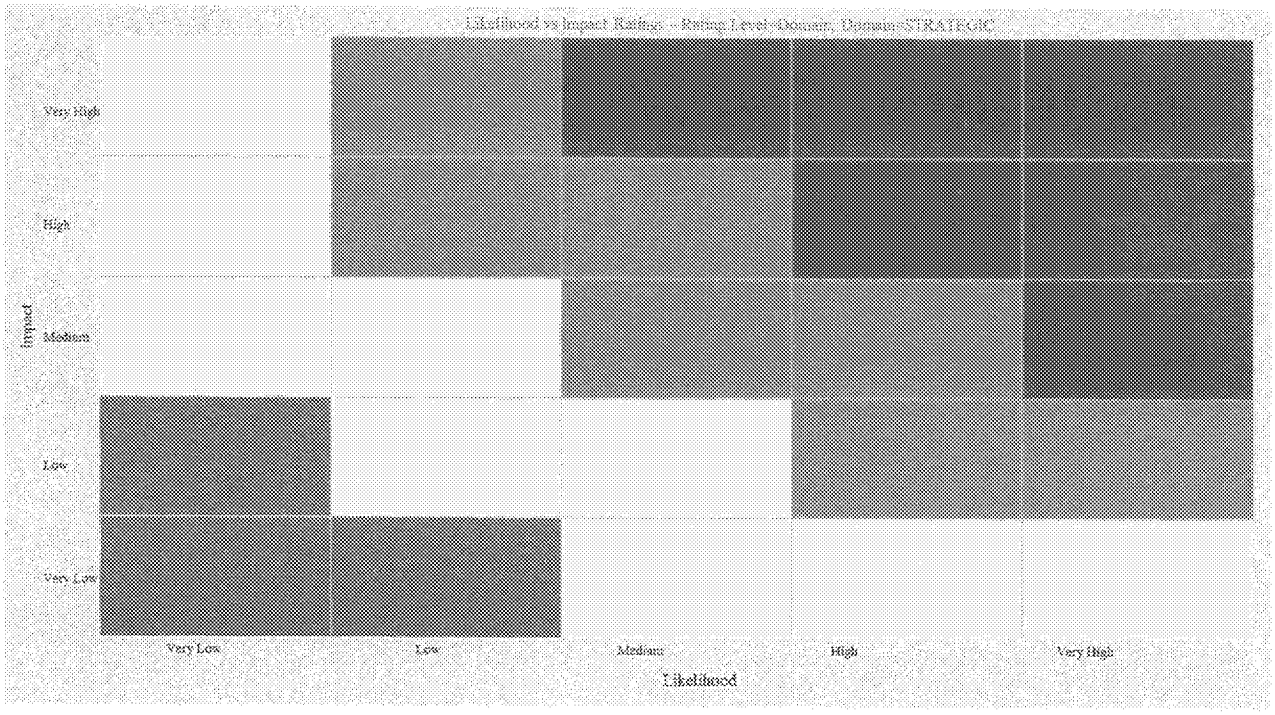
Risk appetite is the amount of risk, on a broad level, that [client] is willing to accept or retain in pursuit of value. It reflects the institution's risk management philosophy, and in turn has an influence on both the culture and operations of the organization. Risk appetite is an important, forward-looking perspective because it:

- Serves as a guide to the organization when determining how much risk is acceptable
- Is used as a benchmark during the strategy and goal setting process.

Various options for Risk Appetite Statements are available and are described in this document:

Option 1- Heat Map

[client] currently "describes" its risk appetite on a qualitative basis as anything that is rated either "High" or "Very High" as depicted by the orange and red squares in the Risk Heat map. This overall interprets as the institution having a low appetite for risk even to the point of being called risk averse. The limitation of this option is that the same risk appetite is applied as the lens through which all decisions within the institution are being made, whether they relate to finances, the health and well-being of students and staff or the opportunity presented by research funding bodies. It is a simple statement and understandable to most stakeholders.



Residual risk (With Mitigation)

Option 2 – Individual Risks

A fourth option would be to allocate risk appetite statements on an individual risk basis as follows:

#	Risk Category	Risk Definitions	Risk Rating	Risk Appetite	Residual Risk exceeds Appetite? (Yes/No)	Risk Response Strategy
1	Stakeholders – Government	Provincial Government Oversight and Regulation	Low	Moderate	No	Accept
2	Enrolment	Enrolment Management	Moderate	Low	Yes	Mitigate
3	Finance – Market Fluctuations	Finances and Investments Impacted by Market Fluctuations	High	Moderate	Yes	Mitigate
4	Finance – Funding	Reduction in Provincial Grant Funding	Low	Low	No	Accept
5	Finance - Funding	External Support for Indirect Costs from Tri-Agencies and Other Sources	Moderate	Low	Yes	Mitigate
6	Finance - Funding	Difficulty in Meeting Fundraising Goals	High	Moderate	Yes	Mitigate
7	Information Technology - Security	Systems Security Threat	Moderate	Low	Yes	Mitigate / Share
8	Information Security	Capacity to Initiate and Absorb Major System Changes	Moderate	Moderate	No	Accept
9	Legal – Compliance	A Breach of Privacy	High	Low	Yes	Mitigate
10	Information Security	Cloud Computing – Privacy and Security Issues	Moderate	Moderate	No	Accept

Option 3 – Risk Categories

Another option would be for [client] to develop risk appetite statements for the key drivers of the organization. An example is provided below.

Risk Appetite Statements
Academic: [client] is willing to accept risks and pursue opportunities that will assist in placing [client] in the upper 20 percent of a national set of comparable programs as judged by peer evaluation.
Students: [client] is willing to accept risks and pursue opportunities that will assist [client] in attracting and retaining high quality national and international students.
Research: [client] is willing to accept and pursue risks in support of operations so long as it does not jeopardize the achievement of the priorities stated in the Strategic Research Plan.
Health and Safety: [client] is not willing to accept risks that may lead to potential injury or death of faculty and staff, students, or visitors as a direct result of an action or inaction by [client].
Financial: [client] is not willing to accept risks that could result in financial loss (shortfall of revenue over expenses) or foregone opportunity of $xM per event or project per annum.
Employees: [client] is willing to accept risks and pursue opportunities in support of operations so long as doing so does not adversely impact the recruitment and retention of faculty and staff and results in annual employee turnover of greater than X% for senior leaders or critical faculty or staff resource competencies.

Option 4 – Strategic Objectives

As an alternative, [client] may define its risk appetite on a more defined scale selecting one of the descriptors below:

Risk Appetite Level	Risk Appetite Descriptor	Definition
1	Avoid	Not willing to accept risks in most circumstances
2	Modest	Willing to accept some risks in certain circumstances
3	Moderate	Willing to accept risks and pursue opportunities
4	Aggressive	Willing to accept opportunities having high inherent risk

Risk appetite statements could be stated as follows[1]:

[1] These examples are based on the four goals presented in UVic's 2012 Strategic Plan and are provided for illustrative purposes only. Our understanding is that UVic is working on its 2018-2023 Strategic Plan, which is expected to be drafted by the end of the 2017, and finalized by June 2018.

Strategic Objective	Key Stakeholder Expectations	Risk Appetite	Risk Appetite Statement
People	Competent Faculty and Staff / Talented Students	4 (Aggressive)	We are willing to accept risks and pursue opportunities in recruiting and retaining talented students, faculty and staff and to support them in ways that allow them to achieve their highest potential.
Quality	Education, Research Program, and Student Success	2 (Modest)	We are willing to accept some risks (in certain circumstances) towards placing [client] in the upper 20 percent of a national set of comparable programs as judged by peer evaluation.
Community	Community Recognition	3 (Moderate)	We are willing to accept some risks and pursue opportunities to establish [client] as a recognized cornerstone of the community, committed to the sustainable social, cultural and economic development of our region and our nation.
Resources	Resources Generated / Sustainable Stewardship of Resources	1 (Avoid)	We will not accept risks (in most circumstances) that could impact [client]'s ability to generate the resources necessary from both public and private sources to allow us to achieve our objectives and to steward those resources in a sustainable fashion.

Willis Towers Watson

The surprising inconsistency of risk appetite and risk tolerance statements

March 17, 2017

By Dave Ingram

Risk appetite and risk tolerance are perhaps the most important, but at the same time the most confusing, and even almost mystical, topics in enterprise risk management.

A European observer told me recently that he thought that everyone had one by now. A few years ago, rating agency AM Best, which actively collected them from all the insurers they rate, found that fewer than half of insurers (mostly U.S.) had adequate risk appetite statements. Most recently, AM Best has placed their request for a risk appetite statement as the very first question on their Supplemental Rating Questionnaire, and the question is followed by a quarter page of blank space. Obviously, not a simple yes or no answer is required.

But there are not even clearly accepted definitions of the two terms, "risk appetite" and "risk tolerance," so for this article, we will use the definitions provided by the National Association of Insurance Commissioners (NAIC) in their ORSA Guidance Manual:

Risk appetite: Documents the overall principles that a company follows with respect to risk taking, given its business strategy, financial soundness objectives and capital resources. Often stated in qualitative terms, a risk appetite defines how an organization weighs strategic decisions and communicates its strategy to key stakeholders with respect to risk taking. It is designed to enhance management's ability to make informed and effective business decisions while keeping risk exposures within acceptable boundaries.

Risk tolerance: The company's qualitative and quantitative boundaries around risk taking, consistent with its risk appetite. Qualitative risk tolerances are useful to describe the company's preference for, or aversion to, particular types of risk, particularly for those risks that are difficult to measure. Quantitative risk tolerances are useful to set numerical limits for the amount of risk that a company is willing to take.

So what are insurers actually doing? In 2016, Willis Re performed a study of 48 (mostly U.S. based) insurer risk appetite and tolerance statements, and the clear conclusion is that there is low consistency among those insurers regarding the concepts that they express with their statements.

We identified thirty different concepts that were included by two or more insurers. The most common concepts were included in less than 60% of the statements and only four concepts were found in more than half of the statements! So at this point, it can clearly be concluded that these 48 insurers did not all work off of the same template, and are actually expressing their own independent opinions about what principles they will follow in their risk management, and how they express their risk preferences and limits.

Risk Appetite

Here are the most common concepts found in the 48 statements:

Top 5 Concepts found in Risk Appetite Statements

#	Concept	Percent	Definition
1	Linkage between Strategies, Risk and Risk Management	55%	Usually a broad statement that Risk Appetite and Risk Management are consistent with business strategies or plans with few specifics
2	Overall Security Objective	43%	A simple verbal statement about their overall security (or surplus) objective
3	Diversified Investments	35%	Over a third of insurers felt that this was a vital part of their risk management strategy
4	Risk Trajectory or Targets	33%	Qualitative statement of where they are headed
5	Primary strategies for major risk categories	25%	Insurers point out that they have different strategies for different categories of risks

Concept 1 – Linkage between Strategies, Risk and Risk Management

The risk appetite statement can be the primary connection between the strategies and objectives of a firm and its risk taking/risk management. Just over half of insurers explicitly express this objective as part of their risk appetite statement. In some of the companies where this is not stated (and probably in some where it is) risk and risk management are treated as separate from company strategy. Sometimes, it is treated as a compliance exercise and in other cases risk management simply follows its own track independent of the business plans.

Concept 2 – Overall Security Objective

More than half of the 48 insurers did not include an overall security objective.

On reflection it seems difficult to document the overall principles that the company follows with respect to risk taking without at least mentioning that the company has an overall security objective. But more than half of the 48 insurers did not include any such statement. From our observation of the insurance sector over the years, we would say that insurers operate within one of four broad levels of security objectives:

- **Robust** – enough capital to maintain a secure level of capital after a major loss event.
- **Secure** – enough capital to satisfy sophisticated commercial buyers that you will pay claims in most situations by providing for the maintenance of a viable level of capital after a major loss event.
- **Viable** – enough capital to provide for a single major loss event and to avoid reaching the solvency level with "normal" volatility. These companies generally operate comfortably in a market where customers are not focused on assessing their insurer's financial strength – sectors such as personal auto and health insurance.
- **Solvency** – enough capital to survive under normal volatility. A major loss event would render these insurers insolvent. U.S. insurers in this group effectively use the regulator's risk based capital authorized control level as their risk capital standard.

Many companies can be seen to operate within one of these four bands for years, while others might drift around as a consequence of uneven earnings and business growth. With a risk appetite statement that includes their overall security objective, an insurer can communicate where they want to operate.

Concept 3 – Diversified Investments

By the time we get to just the third concept on the risk appetite list, we only have 35% of companies including this notion. Only a very few insurers are running hedge funds with the money that they hold for reserves and surplus. No harm in proclaiming that you are not one of those cowboys, but no great benefit for most.

Concept 4 – Risk Trajectory or Targets

This is an idea that we have stressed with insurers for a number of years now: that they ought to know and communicate whether they plan to grow risk faster than surplus, grow surplus faster than risk or to keep them in balance. When asked, only a few insurance company executives cannot say which is their intention, but only one in three insurers bother to mention it in their risk appetite statement.

Concept 5 – Primary Strategies for Major Risk Categories

This is actually what came to my mind when I first read the NAIC definition of risk appetite. For each major class of risk (e.g. underwriting, investment, operational and strategic), your primary strategy will to be exploit, manage, minimize or avoid the risk from that category. For some categories, underwriting for example, insurers will tend to have different strategies for different underwriting risks, territories or sources of business. Only one in four of the insurers in the study agreed that they should be communicating that selection of strategy in their risk appetite statement. I might argue that the process and criteria for choosing these individual risk strategies are indeed the real fundamentals of the risk strategy of the firm.

Risk Tolerance

Risk Tolerance Statements

#	Concept	Percent	Definition
1	Surplus – Risk Limit	57%	Often stated in terms of the overall Risk Metric. Sometimes used another metric
2	Rating	55%	Companies said that maintaining a rating was part of their risk tolerance
3	Regulatory	55%	Statement about maintaining compliance with regulatory capital requirements
4	Surplus Loss Limit	48%	Most often stated as a percentage reduction in surplus that was the maximum loss that could be tolerated
5	Risk Metric Used	48%	Most often Value at Risk. Several insurers using Total Exposure

Risk tolerance is much less mystical than risk appetite, and therefore, there was much less dispersion among the responses. But those responses were by no means consistent. While the top 5 answers averaged a much higher level of usage compared to the top risk appetite concepts, they only averaged a little over 50% of participating firms.

Concept 1 – Surplus – Risk Limit

This might be stated as the likelihood of exhausting surplus entirely, or, as the likelihood of maintaining a certain level of surplus. This is what is expected from a risk tolerance statement. Only about a third of companies in the study had an earnings risk tolerance. That is where you start to get the disconnect between risk management and company strategies since most company strategies are more tightly linked to earnings than surplus, while it appears from these risk tolerance statements that more ERM programs are more closely linked with surplus.

Only about a third of companies in the study had an earnings risk tolerance.

Concept 2 – Rating

That overall security objective mentioned in the risk appetite discussion above is most often tied to a rating level. While the rating process provides simple quantitative goals, it also is tied to a qualitative element inside the rating agency.

Concept 3 – Regulatory

Depending upon the company's overall security objective, this may be a "push" objective or it may have real bite for insurers with a "viable" or "solvency" security objective. Especially for closely held firms, it helps to state this element of their risk tolerance and get buy-in from the owners.

Concept 4 – Surplus Loss Limit

My first impression was to dismiss this concept out of hand since it is not actually a "risk" item; it is an after-the-fact limit. But upon further reflection, this concept can be an acknowledgement that our view of the future, which is needed to form a view of risk, is not always correct. The surplus loss limit provides the point at which the gambler walks away from the table, because he clearly does not really understand the rules of the game. Our models may be telling us that "risk" is not too high, just as bankers' risk models might have told them that their capital was sufficient at the height of the financial crisis. So I have come to admit that a surplus loss limit is a healthy part of a risk tolerance statement and 48% of the insurers in the study agree.

Concept 5 – Risk Metric Used

Maybe only the quants care about this one – this is another item that I did not immediately consider to be of any significance. But, as I was eventually confronted with 23 risk tolerance statements with a disclosure and 25 without, I found that I was just a little more comfortable with the disclosers. I was imagining that their management team might be more familiar with the terminology and therefore more able to interpret and use their model output.

Other top concepts found in the risk tolerance statement were limits to individual risks, operational risk limits, the importance of monitoring risk levels, and, the time frame over which risk is assessed.

Less than one in four insurers in the study included any mention of which risks they will write, even though that concept is suggested in the NAIC definition.

All in all, we found 30 different concepts that were used by more than one insurer in either the risk appetite or risk tolerance statements. The average insurer included only 8 of the 30 concepts. And one firm rang the bell, including all 30 concepts in their lengthy risk appetite and tolerance pamphlet. In the past, the insurer had experienced severe losses and survived. Its leadership felt that getting risk management right was not compliance, nor window dressing, but rather, that it was fundamental to their long-term survival.

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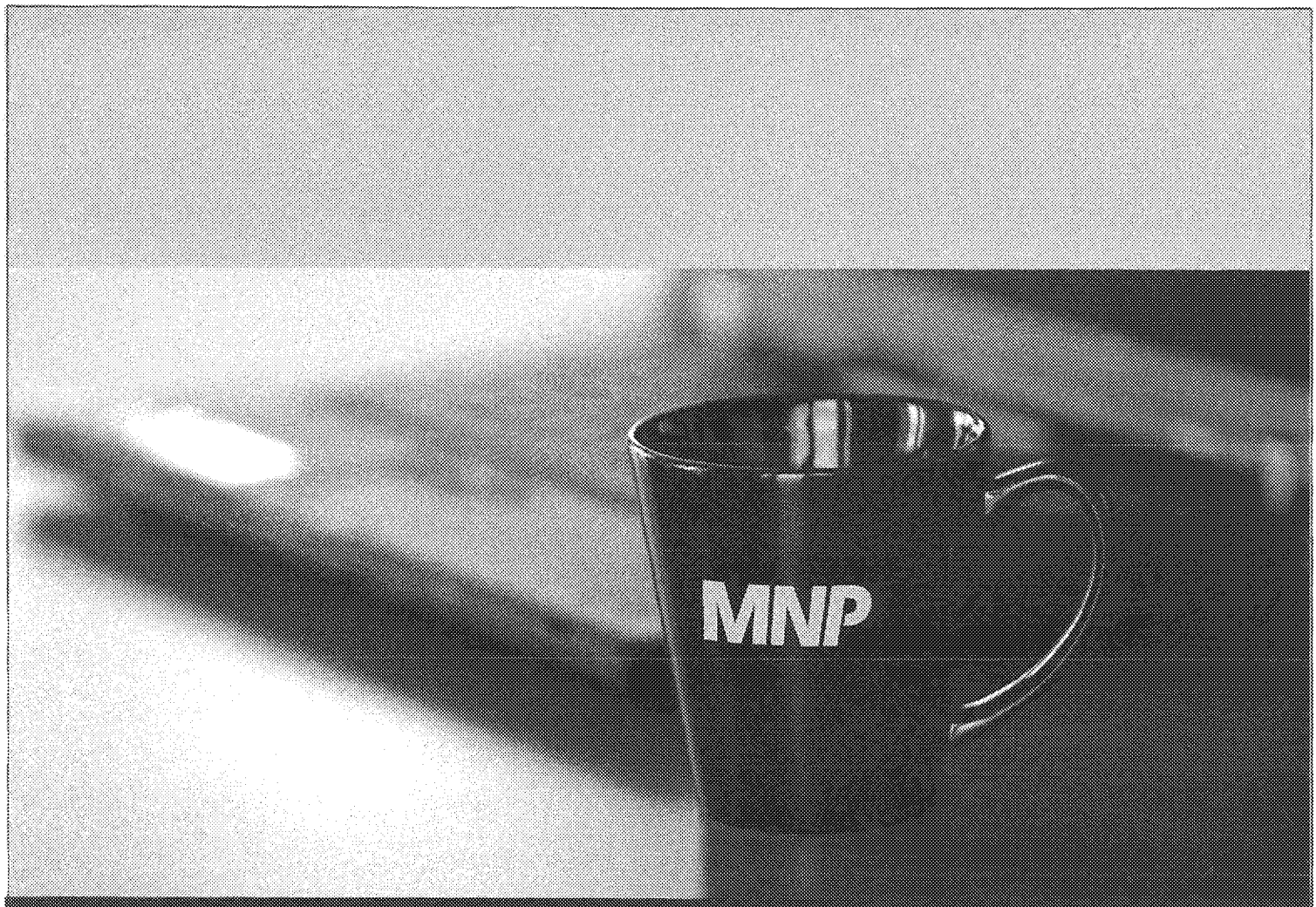

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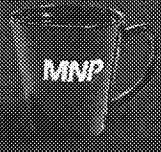

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