

# Enterprise Risk Management

## Framework and Guidance

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### In This Framework:

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**What** is Enterprise Risk Management (Page 2)

**Why** is it important to actively manage risks (Page 2)

**Where** is the process of risk management being used at MnDOT (Page 5)

**How** are key risk management tools informing our decision making (Page 8)

**Who** is responsible for Enterprise Risk Management (Page 9)

# What is Enterprise Risk Management

This Enterprise Risk Management (ERM) framework establishes the standards, processes and accountability structure used to identify, assess, prioritize, and manage key risk exposures across the agency. The framework enables leaders and managers at all levels to systematically evaluate implications of decisions and actions to the agency's highest priority goals and objectives and effectively manage or control a broad array of risks in an informed and strategic manner. Enterprise Risk Management is defined as:

*The formal and systematic effort to control uncertainty and variability on an organization's strategic objectives by managing risks at all levels of the organization.*

## Why is it important to actively manage risks

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Every day we are managing uncertainty and variability associated with our objectives. May that be developing a bridge project over a river or how we respond to changes in travel behavior associated with autonomous vehicles. The reality is that we are always thinking about these potential events. Enterprise Risk Management offers a structure in which to identify, assess, and manage uncertainty and variability. By organizing how we think about risk, we are able to more effectively allocate scarce resources, enhance decision making processes, and manage risks to our performance objectives.

### Enhanced Decision Making

Each of us are managing risks every day. We do this when we decide the tasks that are most important to focus on and the reasoning we use to make our resource decisions. We are greatly assisted in our decision making process when we have a clear understanding of the opportunities and threats we face. At MnDOT, we use risk management to inform our decision making such as in the Transportation Programming and Investment Committee (TPIC) through the use of the Investment Opportunity Plan (IOP). The IOP risk register allows leadership decision makers to see and actively manage critical priority risks as well as provide necessary risk context for investment decision making.

### Scarce Resource Allocation

We are not able to resource all of the legitimate needs associated with delivering a multimodal transportation system in the state of Minnesota. However, by clearly articulating our strategic objectives alongside our performance and asset targets, we can structure the way we manage inevitable risks. This allows more transparency and structure in resource allocation decision making. We can then explain our deliberative process more effectively to the public.

### Complements Performance & Asset Management

Risk management is seen as a direct complement to the objectives we articulate in performance and asset management. If performance management articulates where we want to be and asset management describes condition information, then risk management can be seen as a tool for understanding events that cause variability against performance and asset targets. For example, if getting to work on time represents your performance objective, then risk management becomes a study in the events that might prevent that (e.g traffic jam) or potentially lead you to arrive early (e.g. only green lights during your commute). Remember, risks are not always negative. As we said, risk management complements performance as well as asset management and becomes a key resource for thinking through what risks exist around your desired objectives.

## What is Enterprise Risk Management (continued)

The uncertainty and variability associated with risks operates at multiple levels in an organization. Strategic objectives often cannot be achieved without coordination and understanding of risks at all levels. There are two key benefits to thinking of risks through the lens found in Figure 1. It allows you to identify the impacts of risks within their context or scope and provides a structure for understanding who needs to act.

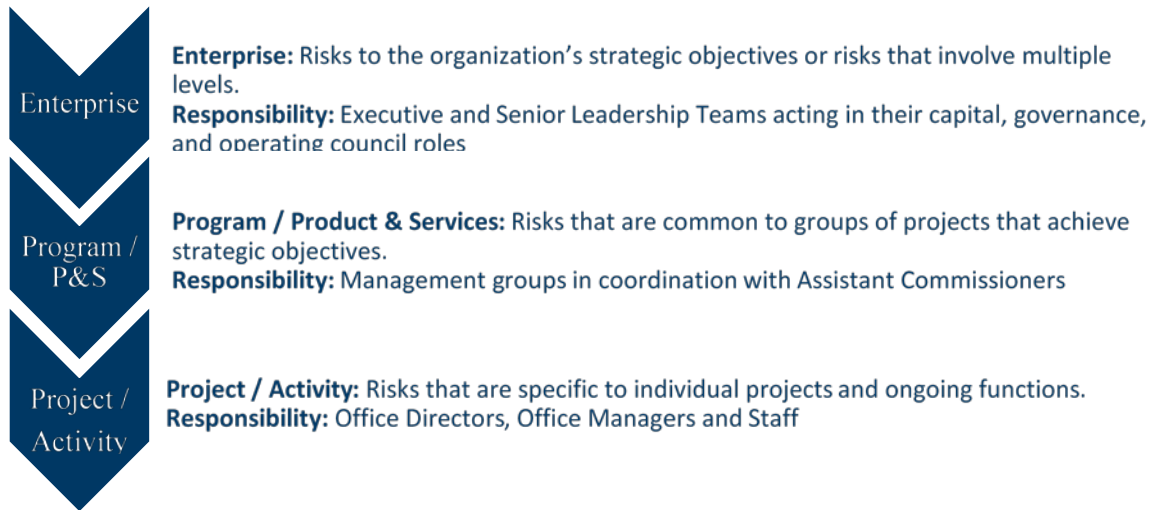


Figure 1: The levels of Enterprise Risk Management

### The Process of Risk Management

As described earlier, risk management at any level is an ongoing process that follows an intuitive step-by-step (Fig. 2) approach to thinking about uncertainty or variability and developing responses to it. It begins by establishing the context that you are working within and reviewing the associated guiding policies and plans that describe your objectives. You then assess the risks to your objectives by identifying risks and analyzing consequences as well as likelihood of risks happening. Then describe how you plan to manage or respond to the risks you have identified. Finally, conduct ongoing monitoring and communication. The rigor and complexity within each step can vary greatly, but underlying process is simple. Each of these steps is described in greater detail below.



Figure 2: Risk management as a process

#### *Establish Context*

The first critical step in developing a risk management process is to identify the context. That means articulating what the mission, vision, and strategic objectives are of the organization. Once the organization has charted a course, it is critical to understand key challenges and opportunities, along with the risk appetite for different outcomes. For example, MnDOT's risk appetite is relatively low for snow and ice control, a high profile, key service the department provides. We have well-developed snow removal performance measures and targets and we put

significant resources toward snowplowing activities. Though risk appetite can vary it is important to articulate where the organization is risk adverse and where it wants to empower staff to explore new approaches that may carry high levels of uncertainty and variability.

### *Assess Risks*

Once key context questions are articulated we can assess the uncertainty or variability of achieving our objectives. This involves identifying, analyzing, and evaluating the risks facing the organization. Assessments are scalable depending on the risk management level being assessed. Common tools used to initiate assessments include having a risk workshop, surveying members, or conducting a formal meeting.

Risk identification is conducted differently at various levels (e.g. how you identify enterprise risks is different than how you identify project risks) using different questions. At all levels, it involves the thoughtful identification of where there is uncertainty associated with an agency objective, program, project, or activity.

After identifying the risks, we can look to analyze the root cause of these risks, possible negative or positive outcomes, and likelihood of the risks occurring. Root cause strives to determine the underlying reason or source for a given risk for later use in determining the appropriate treatments. Determining possible outcomes, both negative and positive, focuses the discussion on the consequences of risks. Finally, when analyzing risks we look to determine the likelihood of a risk happening. This can be roughly estimated by professionals when dealing with imperfect data, but whenever possible it is beneficial to examine likelihood through a probability method.

### *Manage Risks (Response)*

After assessing the risks at the appropriate levels, it is important to describe how you plan to respond. This is the managing component of risk management, describing what you are going to do about a risk. Below are the five typical options to managing risks:

- **Tolerate (Accept):** The agency could decide to take no action because the risk is low, the chance of occurrence is unlikely, or the risk is outside of agency control. For example, federal funding being stopped due to a federal government shutdown could cause serious delays on our programs and projects. This risk is outside of our control to affect so we must tolerate that risk.
- **Treat (Mitigate):** If treatment is possible and its benefits outweigh its costs, the agency could decide to act on and mitigate the risk. Many of the most significant risks we actively manage fall into this category. For example, when we increase staffing for public engagement we are treating the risks we have identified around effective public participation.
- **Transfer:** Transferring risk is common in the private sector, but less so in the public sector. The most common way to transfer risk is to buy insurance, which has limited applications in state government organization such as MnDOT.
- **Terminate (Avoid):** Terminate the risk by stopping a practice or eliminating the source of the risk. We work with contractors in many areas of transportation system delivery. In this role they are an emissary of the organization and if they are not following the agreed upon contract, we can choose to end that contract and terminate the risk they are exposing us to through their actions.
- **Take Advantage (Accept):** After the agency has carefully evaluated a risk and decided that its potential upside exceeds the likelihood of its negative consequences, the agency could decide to take advantage of the risk. For example, we may feel that the safety advantages provided by autonomous vehicles, outweighs the potentially negative outcomes associated with their use. In this instance we are choosing to take advantage of a new technology despite the uncertainties associated with that technology.

### *Monitoring & Communication*

At times it is critical to explain organizational risks to both internal and external audiences so that areas of uncertainty, opportunity, and concern are well understood by all parties. This framework outlines MnDOT's risk management approach at all levels of the organization. Monitoring exists in multiple areas, but most explicitly through the agency risk register as well as agency SMTP Performance Reporting. We are also looking to monitor our operational performance through a Strategic Operating Plan Scorecard.

# Where is the process of risk management being used at MnDOT

Enterprise Risk Management processes are used to assess risks to the strategic objectives of the organization across capital, governance, and operating areas of MnDOT. Agency leadership establishes the context by drawing from MnDOT’s Vision, Mission, Core Values, Statewide Multimodal Transportation Plan & Family of Plans, and the Strategic Operating Plan. These agency documents serve to establish necessary context for risk management at all levels. Risk management tools are identified below along with the decision making bodies that interact with these tools across each level of the organization (Figure 3).

Enterprise Risk Management Practice at MnDOT			
Enterprise	<b>Who Acts:</b> Executive & Senior Leadership Teams <b>Risk Management Tool(s):</b> *Agency Risk Register (composite of Capital, Governance, Operating and FHWA identified agency risks)		
	<b>Capital</b> <b>Who Acts:</b> Transportation Program Investment Committee (TPIC) <b>Risk Management Tool(s):</b> <ul style="list-style-type: none"> <li>Risk assessments in capital investment plans</li> <li>Investment Opportunity Plan (IOP)</li> </ul>	<b>Governance</b> <b>Who Acts:</b> Governance Council <b>Risk Management Tool(s):</b> <ul style="list-style-type: none"> <li>Safeguarding MnDOT Risk Assessment Plan</li> <li>MnDOT Policies</li> </ul>	<b>Operating</b> <b>Who Acts:</b> Resource Investment Council (RIC) <b>Risk Management Tool(s):</b> <ul style="list-style-type: none"> <li>SOP Risk Register</li> </ul>
	<b>Program / Products &amp; Services</b> <b>Who Acts:</b> Management Groups (PMG, PCMG, District Engineers, etc.) <b>Risk Management Tool(s):</b> <ul style="list-style-type: none"> <li>MnSHIP risk assessment and other risk-based capital investment plans</li> <li>Asset Management Risk Register</li> <li>District Risk Management Plans (DRMP)</li> </ul>	<b>Who Acts:</b> Control Environment Leads, Data Domain Stewards, Policy Owners <b>Risk Management Tool(s):</b> <ul style="list-style-type: none"> <li>Control Environment Assessments</li> <li>MnDOT Policies</li> </ul>	<b>Who Acts:</b> Management Groups (PCMG, District Engineers, Office Directors, etc.) <b>Risk Management Tool(s):</b> <ul style="list-style-type: none"> <li>P &amp; S Investment Impact Analysis</li> <li>Asset Management Risk Register</li> <li>Office &amp; District Business Plans</li> </ul>
<b>Project / Activity</b> <b>Who Acts:</b> Office Directors, District Engineers, Project Managers, and MnDOT Staff <b>Risk Management Tool(s):</b> <ul style="list-style-type: none"> <li>Project Risk Registers</li> </ul>	<b>Who Acts:</b> Office Directors, District Engineers, Office Managers, and MnDOT Staff <b>Risk Management Tool(s):</b> <ul style="list-style-type: none"> <li>MnDOT Policies</li> <li>Office &amp; District Business Plans</li> </ul>	<b>Who Acts:</b> Office Directors, District Engineers, Office Managers, and MnDOT Staff <b>Risk Management Tool(s):</b> <ul style="list-style-type: none"> <li>Office &amp; District Business Plans</li> </ul>	

**\*Proposed Tools to Address Gaps**

Figure 3: Summary of ERM across MnDOT

## Enterprise

These are agency-level risks that impede the achievement of MnDOT’s vision, mission and strategic objectives. These broad strategic risk areas include financial, stakeholder, reputation, legal and compliance, safety and health, and business performance and continuity risks. Enterprise risks are monitored and assessed at both the enterprise and program levels. The leadership councils provide direction on critical priority risks and management groups in turn work to advise and inform leadership of the risks that need to be managed by the enterprise.

Agency leadership councils use the strategic objectives outlined in capital investment plans, Safeguarding MnDOT, and the Strategic Operating Plan to develop their risk management process. They also respond to critical risks identified by program managers and management groups. In this way, leadership is both providing direction and simultaneously responding to input from their management groups. On the capital side, month-to-month management of risks takes place through the Investment Opportunity Plan (IOP). Active management of enterprise governance risk is done through Safeguarding MnDOT to ensure compliance with an effective internal control system. For operational decision making, a formal process is not yet in place, but an IOP for operating enterprise risk management has been proposed for development.

Table 1: Where Enterprise Risk Management processes are practiced.

Enterprise Processes			
Establishing Context	Assessing Risks	Managing Risks	Monitoring & Communication
<p><b>Source Material</b></p> <ul style="list-style-type: none"> <li>• Vision/Mission/Values</li> <li>• Statewide Multimodal Transportation Plan</li> <li>• Capital Investment Plans</li> <li>• Strategic Operating Plan</li> <li>• FHWA DOT Risk Assessment</li> <li>• Safeguarding MnDOT</li> </ul>	<p><b>*Agency Risk Register</b>            assess enterprise risks by identifying, analyzing, and evaluating uncertainty associated with capital, governance, and operational objectives</p>	<p><b>*Agency Risk Register, IOP's and Safeguarding MnDOT Risk Registers</b>            each describe priorities based on risks to the agency.</p>	<ul style="list-style-type: none"> <li>• <b>Performance Reporting</b> provides monitoring and communication of the transportation system capital needs.</li> <li>• <b>*SOP Scorecard</b> provides agency operational monitoring of strategic objectives.</li> </ul>

\*In development

**Program or Products & Services**

Program level risks are identified by program managers and program management groups (broadly defined) in collaboration with Assistant Commissioners. These risks impede the agency’s ability to deliver products and services, meet performance targets, and accomplish business objectives across our programs. The risk management processes across these management groups have various levels of formalization. Risks management of our capital budget within the highway program is relatively formalized through the District Risk Management Program (DRMP). Risk management is maturing in other areas of our capital budget, including the [State Aviation System Plan](#) and [Greater Minnesota Transit Investment Plan](#). For governance, through voting on key business processes and completion of MMB’s Control Environment Assessment, these tools provide a platform for active management of risks. On the operating side, program risk management is maturing through our use of Products & Services Investment Impact Analysis and Office/District Business Planning.

The DRMP provides a specific example of how we assess and manage risks to our capital program and how critical risks are elevated to the enterprise level, between updates to the formal capital plan known as MnSHIP. Through the DRMP process, the District Engineer management group identifies risks to the capital program and prioritizes risks under critical and high priority (Figure 4). Critical priorities that are high cost require re-balancing of the DRMP across the state. Critical Priority risks that are lower in cost are included in the IOP, which is actively managed by MnDOT’s leadership team through TPIC.



Figure 4: Example of the District Risk Management Program (DRMP) process for elevating Critical Priority risks to enterprise decision makers and how program managers respond to High Priority risks that they actively manage. The example demonstrates the pivotal transition from assessing risks to management of risks as well as explaining the process for elevating Critical Priority risks to enterprise decision makers.

Program risk management on the operating side is not as formal, but the development of Office/District



Business Plans is enhancing our approach. As this platform develops, it will help us identify program risks and create a pathway for addressing critical priority risks at the enterprise level and managing other priority risks within the programs we manage.

Table 2: Where Program/Product & Service Risk Management processes are practiced.

Program / Product & Services Processes			
Establishing Context	Assessing Risks	Managing Risks	Monitoring & Communication
<p><b>Source Material</b></p> <ul style="list-style-type: none"> <li>• SMTP &amp; SOP</li> <li>• Investment Plans (e.g. MnSHIP)</li> <li>• Annual performance and asset reporting</li> <li>• Office/District Business Plans</li> <li>• Safeguarding MnDOT</li> </ul>	<ul style="list-style-type: none"> <li>• <b>P &amp; S Investment Impact Analysis</b> assesses the risks to each P &amp; S MnDOT delivers based on differing scenarios.</li> <li>• <b>Asset management risk register</b> assesses the key risks to our capital assets</li> <li>• <b>Business Plans</b> are developed by offices and districts. Used by management groups for assessing risks found across programs.</li> <li>• <b>CET</b> assessments identify areas of uncertainty in our control environment. By voting on key business processes for risk identification</li> </ul>	<ul style="list-style-type: none"> <li>• <b>DRMP</b> assesses risks to district capital needs.</li> <li>• <b>P &amp; S Investment Impact Analysis</b> describes how risk investment scenarios across P&amp;S are managed</li> <li>• <b>Internal Controls</b> manage financial risks and annually submit the Safeguarding MnDOT Plan to MMB, which includes MnDOT’s Risk Assessment Plan</li> <li>• <b>Business Plans</b> by office and district describe how they are responding to their risks.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Performance Reporting</b> monitors and communicates progress on performance and assets.</li> <li>• <b>*Division Business Plan Scorecards</b> evaluate the performance measures in each division.</li> <li>• <b>Business Plans</b> offer timely monitoring and evaluation of operational performance and risks.</li> </ul>

\*Proposed

### Project or Activity

Project and activity risks are identified by all MnDOT staff that threaten the scope, schedule, cost or quality of agency projects and ongoing activities. Project managers are expected to routinely identify and manage project risk using a process that scales with the depth of risk management to the complexity of the project. For example, a typical mill and overlay may involve a comparatively simple risk assessment, while a major bridge construction project will likely require a more thorough quantitative analysis (link to project risk registers). All staff participate in activities that involve uncertainty and variability in the ability to successfully deliver core functions of their job. Office/District Business Plans are designed to identify key processes that an office is involved in and identify how directors, managers, and staff are managing those risks.

Table 3: Where Project / Activity Risk Management processes are practiced.

Project / Activity Processes			
Establishing Context	Assessing Risks	Managing Risks	Monitoring & Communication
<p><b>Source Material</b></p> <ul style="list-style-type: none"> <li>• SMTP &amp; SOP</li> <li>• Investment Plans (e.g. MnSHIP)</li> <li>• Annual performance and asset reporting</li> <li>• Office/District Business Plans</li> </ul>	<ul style="list-style-type: none"> <li>• <b>SRC project risk registers</b> assess the project risks across all projects.</li> <li>• <b>Office/District Business Plans</b> developed in consultation with all staff, identify priority activity risks and document the likelihood as well as impacts of those risks.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>SRC project risk registers</b> describe how priority risks will be managed.</li> <li>• <b>Office and District Business Plans</b> explain how priority risks to activities will be managed.</li> </ul>	<ul style="list-style-type: none"> <li>• <b>SRC project risk registers</b> are monitored by district offices with coordinated evaluation through OPMTS.</li> <li>• <b>Office and District Business Plans</b> are monitored and evaluated by Assistant Commissioners and Management Groups.</li> </ul>

## How are key risk management tools informing our decision making

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MnDOT uses its risk management tools to inform decision making up and down the organization. Enterprise level decision making is managed by our three leadership bodies overseeing capital, governance and operating agency decisions. These three distinct bodies provide and receive risk management guidance through their respective hierarchies described earlier in Figure 3. There are still significant opportunities to reinforce the process for managing risks between each level (e.g. strengthening how and when we elevate critical project risks up to program as well as enterprise decision makers) but risk management is actively used at all levels of the organization to foster informed decisions.

### Agency Risk Register (In Development)

The Executive and Senior Leadership Teams will assess, manage, and monitor agency risks across the enterprise. Leadership will identify strategic risks, drawing from the Strategic Operating Plan, augmented by capital risks described in the Investment Opportunity Plan (IOP), and governance risks identified through Safeguarding MnDOT. Risk owners will be assigned to each risk and will be responsible for management of that risk. Executive and Senior Leadership Teams may provide risk management direction to the appropriate program manager and/or management groups.

### Investment Opportunity Plans

The IOP and the proposed Operational Investment Opportunity Plan (OIOP) are the key platforms for proactive management of risks in our two investment bodies TPIC and RIC. The IOP used by TPIC and the OIOP proposed for RIC will evaluate the extent to which potential uses of available resources advance the agency's stated priorities for capital and operational investment. The plans will function as tools to assess risks associated with MnDOT's enacted FY18-19 budget, establish priorities for additional funding, and aid in the development of FY 20-21 budget requests.

### Business Planning

As of 2017, offices and districts throughout the organization have been developing Business Plans for their areas. Business Plans serve as a key platform for risk management at the Program/P&S as well as Project/Activity levels within the organization. They do this by identifying how each office is going to manage its resources in response to performance targets and the associated risks. The office/district business plan also map connections to agency goals as well as the products & services that the office delivers.

### Capital Risk Management

MnDOT uses an extensive risk management process to arrive at the MnSHIP investment priorities, which guide programming and project selection for the next 20 years on the Trunk Highway System. This process integrates policy goals and objectives, technical information on system conditions, performance management, revenue projections, and consideration of key risks. It also responds to stakeholder input gathered through an innovative public outreach process. The process of developing 20-year investment priorities helps MnDOT to articulate future outcomes for the state highway system, gauge the degree to which different investment scenarios align with stakeholder and agency expectations, and adjust its current investment approach to guide future capital investment programs based on those risks. Similar, though not as robust, risk-based scenario processes are discussed across MnDOT's other capital programs.

### Product & Service Investment Impact Analysis

Investment Impact Analysis of MnDOT's operating budget is part of the effort to move toward resource investment decisions from a products and services lens, with a goal of investment levels based on principles, priority, risk and performance. Rather than "across the board" increases or decreases, the investment impact analysis evaluates the risks to MnDOT's products and services for budget scenarios that differ depending on the priority of the product or service and the risks to be managed. Work groups identify impacts or consequences to the product or services for each budget scenario, along with identifying an outcome (catastrophic, major, moderate or minor.) For the analysis conducted in Spring of 2015, two scenarios were evaluated with target budgets developed for each product/service and support function based on a prioritized list in three tiers. The Resource Investment Council used the summary results of this analysis to consider budget shifts between products and services.



**SRC Project Risk Analysis**

Project risks are considered at the commencement of every project. The project manager or Project Risk Management Team (PRMT) develops a risk register to document risks throughout the project and actively manage them. The risk management process itself uses a scalable approach to project risk management. The three tiered scale provides direction to project managers on the level of risk assessment appropriate for each project based on political sensitivity, project type, location, duration, and stakeholders. Rather than being dictated by dollar amounts, the level of effort scales based on risk and complexity. Some projects have a small budget, but because of other issues such as air quality or political sensitivity, are quite complex. These are minimum requirements. All project risk management processes ask the following questions (Question 4 is only conducted on major projects):

1. What risks might negatively (threats) or positively (opportunities) affect achieving the project objectives? (**Risk Identification** – The project manager or **Project Risk Management Team** (PRMT) uses the **risk register** to document risks throughout the project)
2. What are the **roles and responsibilities** of the PRMT?
3. Which of these are most important? (**Qualitative risk analysis**)
4. How could these affect the overall outcome of the project in probabilistic terms of cost and schedule? (**Quantitative risk analysis**)
5. What can be done about it? (**Risk response**)
6. How effective were the responses and where is the project now? (**Risk monitoring**)
7. Who needs to know about this? (**Communication**)

**Who is responsible for Enterprise Risk Management**

MnDOT’s ERM governance structure makes risk awareness and management an integral part of organizational decision-making at every level. The overall responsibility for risk management resides with the Commissioner and the Executive Leadership Team and Senior Leadership Team who set the agency’s strategic direction and are responsible for evaluating and managing strategic risks. Active enterprise risk management is exercised through the investment committees for capital (TPIC), governance (Governance Council), and operational (RIC) decision making. They have decision making authority and delegate responsibilities for risk management activities within their divisions.

<b>Executive &amp; Senior Leaders</b>	<ul style="list-style-type: none"> <li>• Coordinating the identification and evaluation of risks within their division</li> <li>• Acting on risk mitigations actions delegated to them from enterprise risks</li> <li>• Establishing and managing Enterprise Risk Registers</li> <li>• Reviewing and reassessing risk registers, strategies and results proactively</li> <li>• Reviewing and reassessing enterprise risks every year</li> <li>• Agency Business Planning</li> </ul>
<b>Management Groups</b>	<ul style="list-style-type: none"> <li>• Coordinating the identification and evaluation of risks within their Program / Products &amp; Services</li> <li>• Acting on risk mitigations actions delegated from leadership</li> <li>• Establishing and managing risk management tools for program(s)</li> <li>• Reviewing and reassessing risk registers, strategies and results proactively</li> <li>• Responding to the Program / Products &amp; Services risks that come out of Business Planning</li> </ul>
<b>Divisions, Districts and Offices</b>	<ul style="list-style-type: none"> <li>• Identifying risks with implications for Program / Products &amp; Services as well as strategic objectives</li> <li>• Identifying, analyzing and evaluating risks to Office/District objectives</li> <li>• Division, District and Office Business Planning</li> </ul>
<b>OTSM Risk Management Unit</b>	<ul style="list-style-type: none"> <li>• Developing and maintaining MnDOT’s risk management policies and expectations</li> <li>• Assuring compliance with MnDOT Risk Framework</li> <li>• Operating the ERM process</li> <li>• Providing training and increasing risk awareness</li> <li>• Guide risk management in Business Planning</li> </ul>