Management approach: Asset integrity

Why it's important

We believe that pipelines are among the safest and most reliable ways to transport oil and natural gas. Although infrequent, spills or releases of oil or gas can occur and have the potential to affect people, communities and the environment. Our asset integrity practices are designed to maintain our pipeline systems in the condition for which they were designed – so that risks to the environment and to those living around pipelines are responsibly managed, and we can support the reliable and safe delivery of energy to our customers.

Steel pipelines may be subject to a variety of threats from degradation mechanisms (e.g., corrosion or bending) and outside interference (e.g., third-party digging, natural hazards or adjacent infrastructure). Asset integrity management is a disciplined, systematic approach designed to manage and reduce the likelihood of leaks and unplanned shutdowns. Threats on each pipeline are identified, assessed and the appropriate inspection is carried out to assess the condition of the pipe. We also monitor the environment around the pipeline to determine if unauthorized digging, slope movement, river erosion, wildfires or other external forces pose a risk to the safety and reliability of the pipeline. Based on the condition of the pipeline and risk assessments that consider a range of possibilities, a maintenance program is set up to inform appropriate integrity activities.

Climate-related physical risks, which arise as a result of changing or extreme weather patterns, may affect how natural forces interact with our pipelines and stations. Increased rainfall and flooding can activate slope movement or erode river crossings. Wildfires, extreme winter weather and hurricanes can result in temporary shutdown of operations or damage to above-ground facilities. In addition to monitoring weather-related forces, we examine abnormal events and apply lessons learned to enhance the resilience of our pipeline systems. A summary of climate-related physical risks, the parts of our business they impact or could potentially impact and our mitigation efforts are outlined in the "Enhancing our climate resilience" section of our 2025 Sustainability Report.

Governance

A robust governance framework identifies accountabilities and responsibilities at every level of the organization – from Enbridge's Board of Directors through to all workforce personnel (including employees and contractors). Every member of the team has the authority and duty to stop unsafe work and is expected to report hazards, potential hazards and incidents. Safety and reliability performance metrics are tied to Enbridge employees' short-term incentive pay.

The following list outlines how we maintain oversight of safety and reliability from the Board level to individual employees.

- **Board of Directors:** The Board and its five committees are responsible for identifying and understanding Enbridge's principal business risks, including safety risks, and overseeing the implementation of appropriate systems to monitor, manage and mitigate those risks. The Board also oversees the Company's strategic planning process, including reviewing and approving our Strategic Plan annually.
- **Safety and Reliability Committee:** This Board committee is responsible for: pipeline and facility integrity; incident response; environment, health and safety, including environmental management systems; safety culture; and safety and operational reliability, including climate-related physical risks.
- **Operations and Integrity Committee:** This senior management committee is chaired by the Chief Executive Officer and is accountable for safe and reliable operations with oversight of critical operational risks.
- **Vice President, Safety & Reliability**: The VP, Safety & Reliability, is accountable for enterprise-wide safety governance, including safety performance metrics, Board and executive leadership reporting, the Safety and Reliability Policy and the Management System Framework.
- **Management:** Management establishes and oversees adherence to corporate policies and programs and integrates safety strategies and risk management into day-to-day operations.
- **Employees:** All employees are responsible for conducting our business in a safe, socially responsible and ethical manner, consistent with our policies and values.

Policies

A strong safety culture and a disciplined approach to risk mitigation are foundational to our success and growth. As such, maintaining and improving upon our safety and reliability performance requires us to conduct our activities in a systematic, comprehensive and proactive manner that manages risks over the lifecycle of our assets. In order to achieve this level of discipline across a large and diverse business, we rely on our Management System Structure, which includes our Safety and Reliability Policy and our Management System Framework.

- Our Safety and Reliability Policy articulates our overarching commitment to meet our stakeholder obligations for safe and reliable operations across the asset lifecycle, and is an umbrella policy that applies to each business unit within Enbridge.
- Our Management System Framework (see diagram on the following page) defines requirements for each business unit's integrated management system and establishes consistent processes to manage risk. The Management System Framework lists the 11 elements of the management system which apply to all programs and defines the requirements for seven mandatory management programs for safety and operational reliability of our systems.

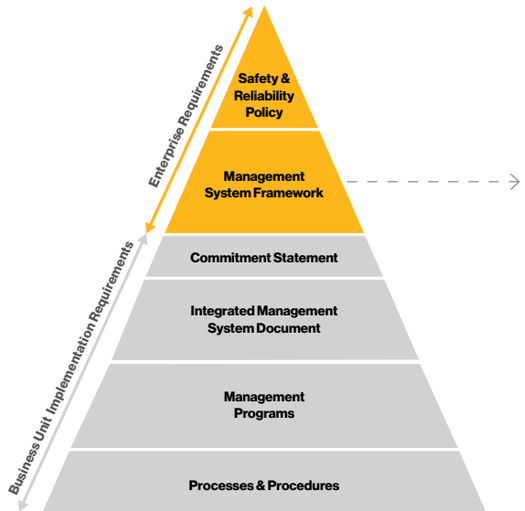
Goals and metrics

- **Continuous improvement toward a goal of zero incidents**

Our performance goals are tied to our internal scorecard and business targets. With regard to asset integrity and reliability, we assess the performance of our Company and our management system using a combination of lagging and leading indicators. Lagging indicators provide insight into the prevention of harm, while leading indicators serve to evaluate the strength and resilience of the layers of controls we apply to mitigate hazards and manage operational risk.

A key component of our integrated management systems in each business unit is the management review process, which evaluates the ongoing effectiveness of the management system and programs, such as asset integrity. The management review process examines the internal safety and reliability goals, objectives and targets, adverse trends, audit results, incident analyses and lessons learned.

Management System Framework



Elements	Minimum requirements	Mandatory management programs	
1. Leadership and Governance	Leader commitment and accountability	Integrity Management Safety Management Emergency Management Security Management Environmental Protection Damage Prevention Control Room Management	*Business unit optional management programs*
2. Risk Management	Hazard and risk management processes		
3. Compliance Management	Legal and regulatory management processes		
4. Performance Management	Goals, objectives, targets and metrics		
5. Operational Controls	Effective controls over asset lifecycle		
6. Management of Change	Systematically manage changes		
7. Capability Management	Workforce competence and training		
8. Documents and Records	Effective document and records management		
9. Assurance	Audits, assessments, event analyses, learning and actions to prevent/correct		
10. Stakeholder Engagement	Internal and external communications		
11. Management Review	Management review and continual improvement		

Memberships, partnerships and external commitments

We actively support the development and implementation of Pipeline Safety Management Systems (PSMS) within Enbridge and across the pipeline industry through contributions to Canadian Standards Association and American Petroleum Institute standards, and participation in the PSMS Industry Team.

Our approach

We take a lifecycle view of safety and reliability, from design and construction to ongoing monitoring and leak detection. We have steadily advanced the use of predictive reliability modeling to support risk-informed decision-making. Instead of basing inspections solely on regulatory requirements or known degradation issues, our business units supplement fitness-for-service assessments with reliability models that address uncertainty and potential gaps in our pipeline condition monitoring. This combination of reliability assessments and fitness-for-service assessments has greatly improved the integrity management of our pipelines.

Our integrity management programs include established triggers for when precautionary actions must be taken. Lessons from near misses and incidents, including incidents experienced by other pipeline companies, are shared within the Company, reviewed on a recurring basis and used to inform improvement of our controls and procedures.

Asset integrity and reliability activities

Design and construction

- Carefully select pipeline routes and facility locations
- Follow strict standards for engineering and design
- Conduct extensive testing and validation before introducing new materials and technology
- Incorporate special design considerations for areas such as road, river and creek crossings
- Set standards for pipeline materials received from manufacturers and confirm those standards are met
- Employ professional inspectors to oversee construction; use X-ray or ultrasound technology to inspect welds for potential defects

Monitoring, prevention and operations

- Continuously monitor the pipelines once they are commissioned and operating
- Conduct in-line inspections to detect signs of internal and external corrosion, cracking, strain, fatigue, dents and legacy manufacturing defects; excavate in-line inspection features to directly examine the pipeline; repair any defects found
- Recognize conditions that previously caused failures and carefully analyze failures from our peers; take a structured, systematic and methodical approach to mitigate or eliminate the risks
- Provide adequate cathodic protection for steel pipelines
- Minimize pressure cycling to limit fatigue
- Conduct preventative maintenance according to standard operating procedures
- Monitor land use changes and ground disturbance work around pipelines
- Inform the public, public works and excavating companies about the presence of pipelines, and how to work safely around pipelines
- Locate pipelines for parties digging near, or on, our pipeline rights-of-way
- Investigate unauthorized activities on rights-of-way
- Devote resources – both people and automated systems – on a continuous basis to maintain control of pipelines and rapid response to abnormal situations
- Apply comprehensive, multi-layered liquids leak detection system using several independent methods
- Monitor pipelines for possible leaks and damage using multiple, redundant methods

Third-party damage prevention

To help prevent third-party damage, we have an extensive public awareness program for understanding of pipeline safety and to promote safe digging practices. Enbridge continues to foster a proactive approach to reducing damage by liaising with the excavating community, adopting best practices and identifying opportunities through the advancement of technologies. Enbridge also supports and is a member of one-call and locate services to support excavation safety.

Learn more

Explore our commitment to pipeline safety, on land and in water, through this **overview** of our pipeline integrity management programs.

Safety and Reliability Policy

2025 Sustainability Report for performance data and highlights

2025 Datasheet for asset integrity and reliability-related data