

Asset integrity and reliability



Why it's important

We believe that pipelines are the safest and most reliable way to transport the oil and natural gas that fuel our economy and enable modern society. While infrequent, spills or releases of oil or gas are possible and have the potential to affect people, communities and the environment. Our asset integrity practices are aimed at ensuring that our pipeline systems are maintained in the condition they were designed to be – so that the environment and those living around pipelines are protected, 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, bending) and outside interference (e.g., third-party digging, natural hazards, adjacent infrastructure). Asset integrity management is a disciplined, systematic approach to prevent leaks and unplanned shutdowns. Threats on each pipeline are identified, assessed and the appropriate inspection is carried out to assess the condition of the pipeline. 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 so we can be confident that the pipeline will maintain its integrity.

Climate-related physical risks, which arise as a result of changing or extreme weather patterns, may alter how natural forces affect our pipelines and stations. Increased rainfall and flooding can activate slope movement or erode river crossings. Wildfires, extreme winter weather and hurricanes can force the temporary shutdown of operations or damage aboveground

facilities. In addition to closely monitoring weather-related forces, we examine abnormal events and apply the lessons learned to improve 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 Climate-related Disclosures section of our [2024 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 employee's 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.
- **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 safety governance of the Enterprise, 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 and prevents safety and reliability incidents 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 defines enterprise requirements for each business unit's integrated management system and ensures that each business unit has systemic processes in place to manage risk and comply with these

requirements. 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.

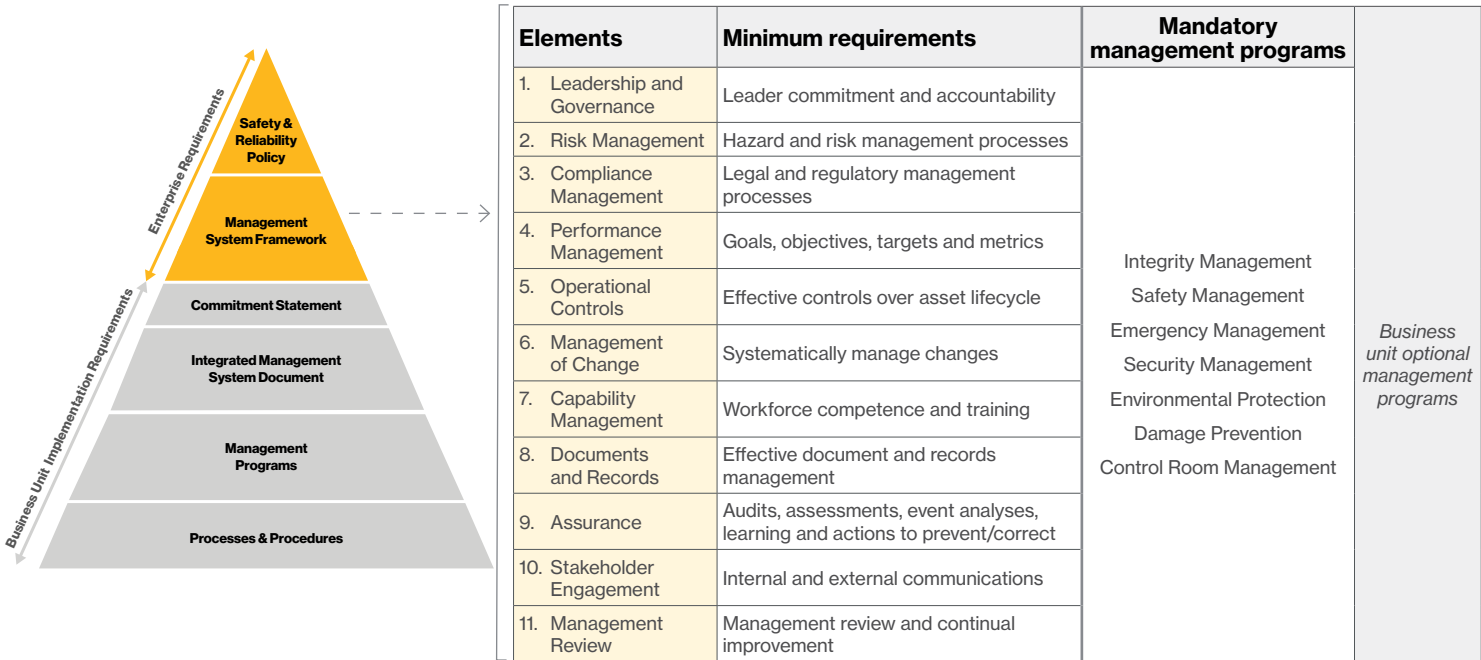
Our performance goals are tied to our internal scorecard and business targets. With regard to asset integrity and reliability, we believe the performance of our Company and our management system is demonstrated by the prevention of harm (as shown by lagging indicators). Leading indicators serve to evaluate the strength and resilience of the layers of controls we apply to mitigate hazards and manage operational risk.

A crucial aspect of our integrated management systems in each business unit is the management review process, which evaluates the 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, the results from audits and the analysis of incidents in addition to lessons learned.

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.

Safety and Reliability Management System Structure



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 legal requirements or known degradation problems, 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 enterprise-wide.

Our integrity management programs include specific 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 fed into the continual improvement of our controls and procedures.

Asset integrity and reliability activities	
Design and construction	Monitoring, prevention and operations
• 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	• 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 ensure 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 education program for pipeline safety awareness and to promote safe digging practices. Enbridge continues to foster a proactive approach to reducing damages 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.

More information

Explore our commitment to pipeline safety, on land and in water, through this [overview](#) of our pipeline integrity management programs.

See our [Safety and Reliability Policy](#) for more information.

See our [2024 Sustainability Report](#) for performance data and highlights.

See our [2024 Datasheet](#) for asset integrity and reliability-related data.