ENBRIDGE
Life Takes Energy™

How we build and maintain a safe pipeline

Safety: Our number one priority

Design and construction

Inspection, monitoring and maintenance

Research, development and innovation

Emergency response

Safety:
Our number one priority

Safety is a core value at Enbridge. It's the very foundation of our business.

The protection of the public and environment are paramount for Enbridge. The people who live near our pipelines and others expect us to operate them safely.

We believe pipeline safety is both an investment, and an obligation. And we use the latest tools, technologies and strategies—while closely monitoring the products we transport—to keep our pipelines operating safely, reliably, and in an environmentally responsible manner.

Our multi-faceted approach to safety includes:

- Rigorous design and construction standards
- 24/7/365, system-wide monitoring
- Harnessing innovation and technology
- An inspection program that regularly examines our pipes, inside and out
- Robust pipeline maintenance
- Leak detection
- Valve placement
- Strong emergency preparedness and response

We believe all pipeline incidents can be prevented, and we back up that belief with vigilance by applying state-of-the-art technology and a sophisticated live monitoring system.

Safety and reliability are built in to Enbridge's energy infrastructure—long before the construction process begins.

We plan our projects with care, and look for ways to reduce our environmental footprint—including the use of pre-existing rights-of-way, such as utility corridors, where possible. We also work closely and continuously with regulatory agencies and the public, and include environmental evaluations, during the planning process.

Building with superior materials

The heart of Enbridge's business is the pipe in the ground. We select, inspect and test our pipe to standards that meet or exceed regulatory requirements. Our specifications for pipeline steel exceed industry and regulatory standards, and we look for higher-quality pipe that undergoes more rigorous and frequent testing.

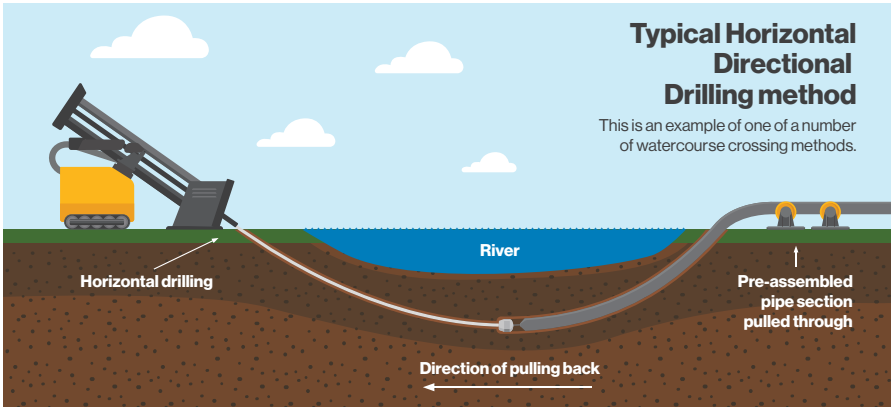
High standards of construction

Once construction begins, we take care to limit our footprint, and actively manage a project's potential effects on communities and the environment. Examples include:

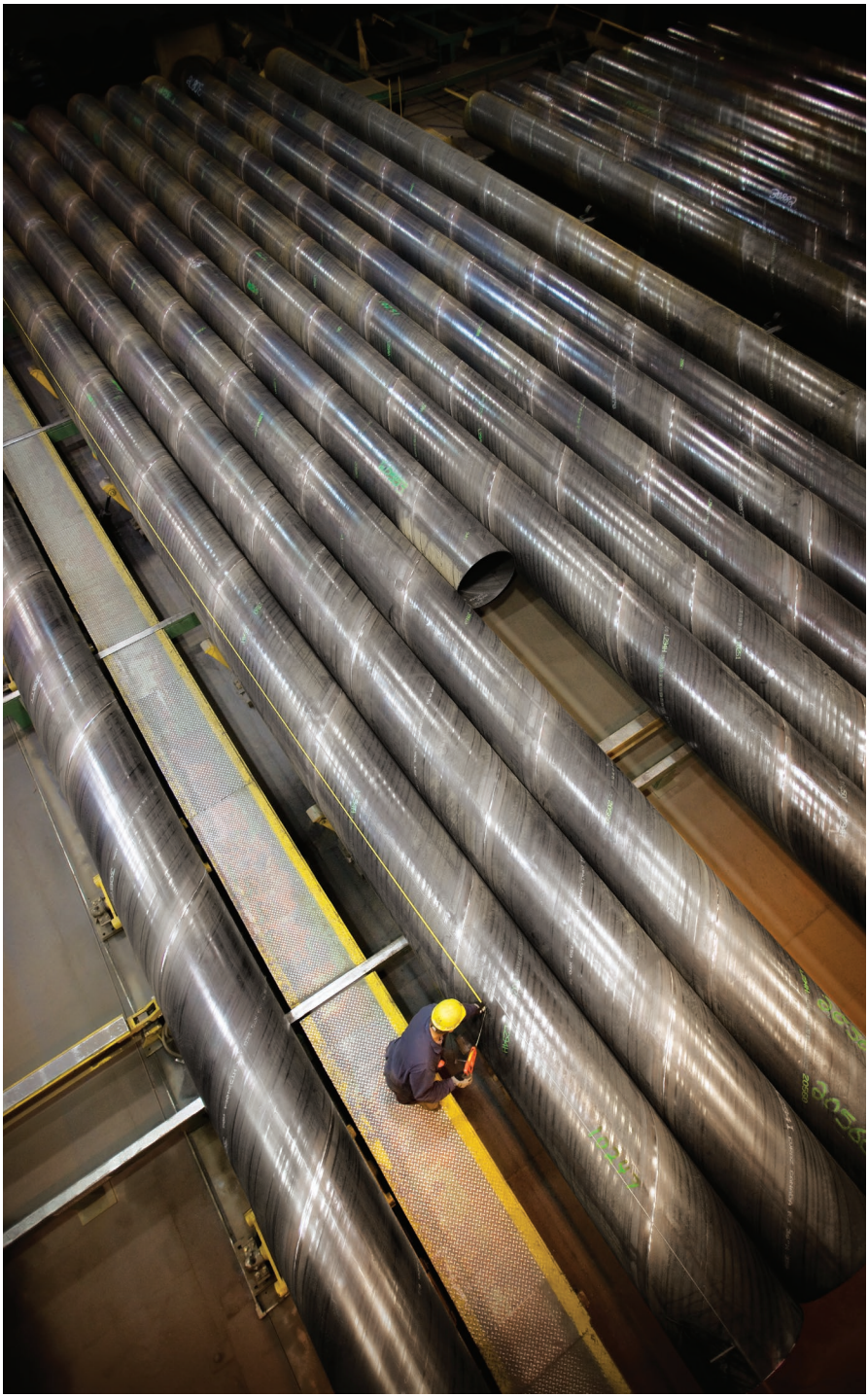
- Horizontal directional drilling (HDD) technology, which involves drilling an underground arched tunnel when building pipelines across large rivers or sensitive crossings, to minimize impact to people and the environment.
- Applying safe construction practices, while reducing ground disturbance.
- Complying at all times with all environmental requirements.

Our pipes are coated with fusion-bonded epoxy, and weld joints are subjected to ultrasonic and X-ray testing before they, too, are coated.

Before a new pipeline is put into service, it undergoes rigorous hydrostatic testing. Each pipe section is filled with water and subjected to 1.25 to 1.5 times the pipe's maximum operating pressure to ensure the strength of the pipe and welds.



› Horizontal Directional Drilling involves drilling an underground arched tunnel when building pipelines across large rivers or sensitive crossings.



› Pipe steel is thoroughly inspected in the mill by the manufacturer using automated ultrasonic devices, and Enbridge inspectors audit those results for enhanced quality assurance.

Prevention is a critical component of pipeline safety at Enbridge, and we focus on prevention—with vigorous monitoring, maintenance, and inspection programs—before issues arise.

By staying vigilant, and using the latest technology, we ensure our pipelines are healthy, both inside and out.

Scanning our pipes, inch by inch

We regularly schedule inspections using in-line inspection tools—which use advanced imaging technology, like Magnetic Resonance Imaging (MRI) or an ultrasound in the medical industry—to scan our pipelines inch by inch, alerting us to small features that may require further attention before they become an issue.

Eyes in the sky, boots on the ground

We use many other prevention tactics to ensure the fitness of our pipelines:

- Curbing corrosion through robust pipe coatings, cathodic protection (a low-level electrical current), interior cleaning of pipes,and anti-corrosion additives in the oil we transport.
- Strictly enforcing quality specifications for the products we move, including viscosity, density, temperature, sediment-and-water content, by testing every batch of product entering our Mainline system.
- Regular flyovers on our rights-of-way, and the use of imaging technology and GPS on ground patrols to check pipeline depth and position, as well as possible ground movement.
- An active North America-wide public awareness program.

› Motor operated ball valves allow our control staff to remotely close sections of our pipelines immediately upon detection of a potential issue.

24/7/365 monitoring

We also monitor our entire pipeline network, around the clock, using both people and highly computerized analysis.

Specially trained staff at our operations center keep an eye on our pipelines 24/7, and undergo a comprehensive six- to nine-month training program before they are qualified to operate consoles independently.

Upon detection of a problem, our staff can close remotely controlled isolation valves immediately, with full closure occurring within three minutes of activation to isolate the affected section of the pipeline.

Our various computerized monitoring systems, meanwhile, analyze pressure, temperature, and other important information from thousands of points all the way along our pipelines.

Preventative maintenance dig

When our ongoing monitoring and inspection program alerts us to pipeline features that may require a closer look. we undertake a preventative maintenance dig, or visual inspection. We expose the pipe, examine it and make any necessary repairs to prevent a potential leak.

Safety
24/7/365

Eyes in the sky

We regularly survey all 27,500 km of our pipeline rights-of-way. We also use satellite imagery to help identify, monitor and address any instances of incremental slope movement.

Talking to our neighbours

We regularly communicate with neighbours and customers about how to stay safe around our pipelines and facilities.

Eyes on the ground

We monitor and respond to any potential problems along our rights-of-way.

Preventative maintenance dig

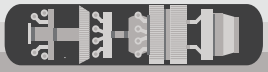
If our in-line inspections reveal a pipeline anomaly, we expose the pipe, examine it and make any necessary repairs. In 2019, we conducted 1,948 preventative maintenance digs across our liquids and natural gas pipeline networks.

Ensuring pipeline integrity

Each pipeline is precisely manufactured and rigorously inspected and tested.

Routes are carefully selected to meet stringent engineering, design and environmental standards and regulations.

We carefully manage pipeline pressures and monitor temperature, pipe movement and vibration.



Inline inspection

Ultra-high-tech tools allow us to monitor the fitness of our pipelines from the inside out. Using imaging technologies, such as ultrasound and MRI, we scan our mainline systems, major natural gas mains and transmission lines. In 2019, we conducted 456 inline inspections across our liquids and natural gas pipeline networks.

Enbridge continuously looks for opportunities to enhance existing technologies, and advance new ones, in the areas of design, prevention, monitoring and leak detection to keep our pipelines and distribution systems safe.

In 2019, Enbridge invested about $15.7 million in technology development and innovation projects, and our Innovation, Research and Development (IRD) team is involved in dozens of projects focusing largely on innovation to improve pipeline safety and fitness, leak detection and damage prevention.

Some examples of our technology in motion include:

- SmartBall technology, consisting of bowling-ball-sized sensors inside our pipes that detect tiny leaks and mark their location.
- A multi-year project, announced in April 2017, that will see Enbridge and pipeline inspection firm NDT Global develop a next-generation inspection tool to advance crack assessment capabilities.
- The ELDER test apparatus, a pipeline leak simulator created to test external leak-detection technologies, such as vapor-sensing tubes and fiber-optic cables.
- Our partnership with Hifi Engineering to test and enhance its High Fidelity Dynamic Sensing (HDS) technology.
- Our ongoing use of satellite data to identify pipeline displacement, down to the millimeter, caused by incremental slope movement over time.
- A joint industry partnership agreement to conduct research into aerial-based leak-detection technologies, such as infrared and laser-based spectroscopy systems.

$1.7B

The amount we spent in 2019 on programs that help us to maintain the fitness of our systems across our operations in the U.S. and Canada.

While prevention is Enbridge's primary focus, we also maintain strong emergency preparedness and response systems that we regularly test and continuously improve—sharing with first responders and community members near our pipelines and facilities.

In the event of an incident, Enbridge personnel and contractors have robust and tested emergency response expertise, training and equipment to ensure a quick and effective response.

We hope we never have to respond to a pipeline leak. But if we do, we're ready.

225

drills, exercises and emergency equipment deployments in 2019.

$80 million

spent on equipment and training since 2012.

Testing and improving our plans

Enbridge employees in the U.S. and Canada participate in regular emergency response drills and full-scale simulations, many involving local first responder groups, to test and improve our procedures.

We also spent more than **$80 million** since 2012 on training and new response equipment, ranging from boom to boats, and deployed them across our systems.

Online training and engagement

We meet regularly with first responders—including police, fire, and EMS—to share Enbridge's emergency response procedures, and identify the roles and responsibilities of external responders who would support Enbridge in the event of an incident.

Enbridge's Emergency Responder Education Program (EREP) offers free, unlimited online training and pipeline emergency response tactics for first responders near our projects and operations. Through 2019, about 3,200 emergency responders and other interested parties in the U.S. and Canada have completed this training.

Through our Emergency Response Ambassador initiative, launched in 2013 as part of the EREP, our employee ambassadors have built meaningful relationships with emergency responders near our pipelines and facilities—arranging presentations, facility tours and tabletop exercises.

Enbridge helps to provide a secure, sustainable and reliable supply of energy across the U.S. and Canada.

Millions of North Americans count on the energy we deliver daily. Providing safe and reliable infrastructure is the very foundation of our business. That's why our top priority is the protection of people and the environment. Our strategic investments in infrastructure upgrades help ensure the reliability and safety standards that all communities expect.

Enbridge transports, distributes and generates energy. We play a central role in providing heat and light for homes, offices and factories; fuel for vehicles and airplanes; and many other essential products and services that support prosperity and quality of life for millions of people.

Energy transportation

We operate the world's longest crude oil and liquids transportation system, and safely deliver more than 3 million barrels of crude oil and liquids a day—or 25 percent of the crude produced in North America.

We're also a North American leader in natural gas gathering, transportation, processing and storage, moving about 20 percent of the natural gas consumed in the U.S.

Energy distribution

We are Canada's largest natural gas distribution provider, with about 3.8 million retail customers in Ontario and Quebec.

Energy generation

We've committed $7.8 billion in capital in wind, solar, geothermal, power transmission, waste heat recovery and a host of emerging technology projects. Collectively, these renewable energy and power transmission projects (in operation or under construction) have the capacity to generate about 1,750 megawatts (MW) net, of zero-emission energy. That's enough, based on net generation figures, to meet the electricity needs of nearly 700,000 homes.

We believe that working towards lower-impact energy solutions is in everyone's best interest. Our portfolio of renewable energy projects is diversified and growing.

A North American company

We have a workforce of about 13,000 people, primarily in the U.S. and Canada. Enbridge was named to the Thomson Reuters Top 100 Global Energy Leaders in 2018; we were selected to Bloomberg's 2019 and 2020 Gender Equality Index; and we have been ranked among the Best 50 Corporate Citizens in Canada for 18 years running, through 2020. Enbridge Inc. common shares trade on the New York and Toronto stock exchanges.

Enbridge is North America's premier energy infrastructure company, with assets stretching from well above the Arctic Circle to the Gulf of Mexico.

- Liquids Pipeline
- Liquids Pipeline (proposed)
- Natural Gas Transmission Pipeline
- Natural Gas Gathering Pipeline
- Natural Gas Liquids Pipeline
- Crude Storage or Terminal
- Gas Storage Facility
- NGL Storage Facility
- Gas Processing Plant
- Gas Distribution Service Territory
- Affiliated Gas Distribution Territory
- LNG Facility
- Rail Terminal
- Renewable Energy

(updated Dec. 2020)

We want to hear from you

You can get in touch with us at any time.

General contact information

Canada Liquids Head Office: **1-403-231-3900**

Public Awareness Program

Canada toll free: **1-877-640-8665** (non-emergency calls)

E-mail: **CdnPublicAwareness@enbridge.com**

For pipeline emergencies

Canada Liquids: **1-877-420-8800**

Canada Gas Transmission and Midstream (B.C.): **1-800-663-9931**

Canada Gas Transmission and Midstream (Maritimes): **1-888-444-6677**

Learn more:

enbridge.com/safety

012021