

Our commitment to **operating safely**

Ensuring our pipelines are safe

At TransCanada, ensuring our pipelines and other facilities operate safely is the most important aspect of our business.



In 2015, we invested \$1.5 billion in asset integrity and preventative maintenance programs.

Pipelines are the safest, most efficient and environmentally responsible way to transport natural gas and petroleum products, and TransCanada has an industry-leading safety record with a goal of achieving zero incidents.

We take safety seriously

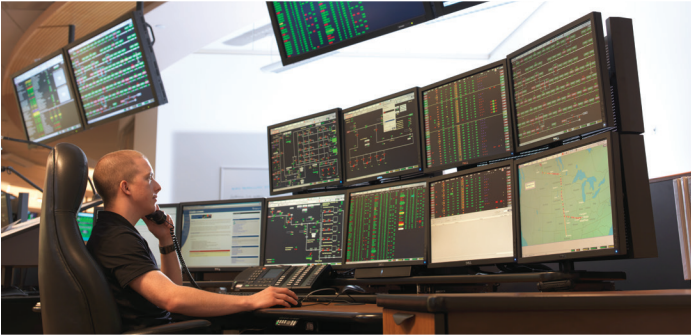
Our safety program starts before construction. TransCanada uses only high-quality materials, the latest proven technology and industry-leading practices to ensure the integrity of our pipelines begins before they go in the ground. During construction, we require every weld to be inspected by qualified independent inspectors and we are the only company in North America that regularly uses automated ultrasonic testing to check for irregularities before our pipelines go into service.

TransCanada takes significant steps to prevent and minimize the chances of a pipeline leak and detect irregularities both before beginning transportation service and during operations.

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We use state-of-the-art leak-detection systems, safety features such as shut-off valves and highly specialized training for people working on our assets from the construction process to operations and ongoing monitoring. This dedication to safety is practiced at every level of the organization, making us confident our infrastructure will continue to operate safely and any possible defects will be identified immediately and responded to accordingly.

Along with these safety practices, TransCanada invested \$1.5 billion in integrity and preventive maintenance programs in 2015 to ensure safe and reliable operations of our pipeline systems.



TransCanada's Operations Control Centres in Calgary, Houston and Mexico, monitor all of the company's pipelines 24 hours a day, seven days a week.

Detecting irregularities in the pipeline when operating

TransCanada has Operations Control Centres (OCCs) that are staffed 24 hours a day, seven days a week. Trained operators at the OCCs manage the most sophisticated pipeline monitoring equipment and technology available, giving them the ability to ensure TransCanada's pipelines are continuing to operate safely and effectively.

From the first sign of a potential issue anywhere on our pipeline system, operators can stop the flow of product inside the pipeline within minutes. If an abnormal condition is detected (e.g., an abnormal or unexpected drop in pressure), a Supervisory Control and Data Acquisition (SCADA) system located in the OCC will immediately alert operators to shut down operations along the pipeline. With the flow stopped, the OCC will close shut-off valves on the system, isolating the product in the pipe and limiting potential impacts.

In addition to shutting down the pipeline section, the OCC will immediately dispatch pipeline emergency response personnel to the scene to investigate. The pipe cannot be restarted until it has been confirmed on site that it is safe to do so using a detailed verification checklist to ensure all risks have been addressed.

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In addition to the SCADA system, our pipelines feature leak detection methods and systems that include:

1. Remote monitoring

Operators at the OCCs monitor all pressure and flow data received from meter stations, pump stations and valve sites. Remote monitoring can detect incidents immediately so the line can be shut down in minutes and valves surrounding the incident area can be closed, limiting the impact of a potential incident.

2. Software-based volume balance system

This system compares the injection and delivery volume and initiates an alarm for the pipeline controller if ever there is a discrepancy between what is put into the pipe and what is delivered.

3. Acoustic leak detection

TransCanada uses in-line inspection tools that employ sound waves to detect anomalies in the pipe by analyzing sounds (acoustic) and frequencies that might indicate a small leak.

4. Direct observation

TransCanada also uses aerial patrols to monitor the pipeline and right of way.

5. Public and landowner awareness programs

We support numerous programs designed to encourage and facilitate the reporting of suspected leaks and events that may suggest a threat to the integrity of the pipeline. We also work closely with industry associations to educate the public on using clickbeforeyoudig.com and other one-call systems in the many jurisdictions where we operate.

Leak prevention and protection

TransCanada takes significant steps to prevent and minimize the chances of a pipeline leak and detect irregularities both before beginning transportation service and during our assets' operations. These include:

- Cathodic protection systems that prevent corrosion are routinely tested to ensure their effectiveness.
- Each weld made during pipeline construction is examined using X-ray or ultrasonic technology to ensure integrity.
- Internal cleaning and inspection tools examine the interior of the pipeline to prevent internal corrosion.
- High-resolution in-line inspection tools called smart pigs are used to detect internal and external defects during operations. If any irregularities are found, investigations and the necessary repairs are proactively performed to ensure the continued safe operation of the pipeline.
- Before beginning operations, federal regulators require TransCanada to have Emergency Response Plans (ERPs) in place to protect the public, environment and wildlife. But for every project we have underway, we go above and beyond to supply project-specific ERPs that exceed regulatory requirements.

Contact us at:

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www.transcanada.com