

# Your safety, our integrity.

## Oil & Natural Gas

TC Energy is committed to building and operating our natural gas and oil transportation systems safely. From design and construction to operation and maintenance, safety is an integral part of everything we do.

Our operations extend across North America and we have established offices in many communities. Each region is fully staffed with qualified employees who ensure the safe and efficient operation of our facilities in the area.

## Safety

If work is required on your land, a TC Energy representative will make all reasonable efforts to contact you prior to any work being conducted. At that time, we will arrange for land access and discuss any environmental and safety considerations with you.

In order to ensure your safety, there are a couple of things you should know: when work is being done, a portion of the pipeline right-of-way may need to be excavated and large equipment mobilized on site. You will be restricted from using the area for the duration of the activities. Temporary fences will be set up along the perimeter of the excavation site if required.

In the event of a pipeline emergency call TC Energy's toll-free emergency number at 1-888-982-7222.



## Maintenance

Regular maintenance is performed on all portions of the pipeline system. All compressor and meter stations also undergo routine maintenance in accordance with industry and government standards.

TC Energy has an extensive Pipeline Maintenance Program (PMP) to monitor, inspect and repair our pipeline facilities. Regular maintenance activities include:

- **Aerial patrol** – We regularly inspect the pipeline route from low-flying helicopters and airplanes. The pilots look for hazards to the pipeline from outside sources (e.g. unauthorized activity, soil disturbances) that could affect the integrity of our pipeline system.
- **Leak detection** – We regularly use sensitive leak detection equipment on aerial patrols of our natural gas pipelines to detect leaks. Sophisticated computational leak detection systems are used in addition to visual aerial patrols to identify leaks on our assets.
- **Cover surveys** – We investigate areas where we suspect wind or water erosion may have reduced the depth of ground cover over our pipelines so we can maintain the integrity of the pipe.
- **Geotechnical monitoring** – Our pipelines cross thousands of bodies of water and significant slopes. All of these are monitored for erosion and movement during aerial patrol. More active slopes and streams are monitored more thoroughly through a variety of survey techniques.
- **Hydrostatic testing** – We can verify the integrity of our pipeline by removing natural gas from the pipeline, replacing the gas with water and then pressurizing the pipeline to a level far greater than it experiences during normal operation. If a leak occurs during testing, TC Energy will repair or replace the affected section of pipe.
- **In-line inspection** – In-line inspection, also referred to as ‘pigging,’ looks for any locations where corrosion may have occurred. Specialized internal inspection devices called ‘smart pigs’ travel through the pipeline collecting data. The data is then analyzed to determine if there are areas of concern requiring further investigation.
- **Investigative digs** – We conduct investigative digs based on the data analysis from pigging and other information. Sections of pipeline are excavated to investigate their condition and to ensure integrity. Detailed engineering assessments are used to determine if and when repairs are required.

### Valve maintenance

- **Natural gas** – Pipeline mainline valves are located approximately every 30 kilometres along the pipeline. If pipeline pressure drops due to a leak, the valves automatically stop the flow of gas. Each of these valves requires specific routine maintenance depending on function and valve condition.
- **Oil** – Pipeline valves are located at pump stations and at regular intervals along the pipeline between pump stations to limit spill volumes. The placement of these valves is influenced by local needs. For instance, valves are placed on either side of major water crossings or where necessary to protect other sensitive resources. Additionally, elevation changes will influence the location of these valves.

We continuously improve our pipeline integrity programs using new technology, innovations and applications.

## Design

TC Energy uses top quality steel and welding techniques throughout our natural gas and oil pipeline systems. We take additional safety precautions where pipelines cross roads, railway tracks, waterways and in areas of higher population.

## Construction

During construction, all welds are checked by an x-ray or ultrasonic process to ensure the welds are sound. To protect against corrosion, the external surface of the pipeline is coated.

## Operation

During operations, a very low-voltage electrical current – called cathodic protection – is applied to the pipe. The applied current protects the pipe from corrosion in areas where coatings may have been compromised. The cathodic protection system is monitored on a monthly basis to ensure proper operation.

The entire transmission system is monitored 24 hours a day by highly trained TC Energy employees from a computerized control center. From here, we are able to detect changes in pressure along our pipelines and ensure that all facilities are operating properly.

## Environmental practices

Prior to any ground disturbance, TC Energy ensures that site-specific environmental protection measures are incorporated to ensure equivalent land capability is maintained. At TC Energy, this includes minimizing and mitigating effects on soil, water, wildlife and vegetation.