



Line 5 Segment Replacement Project: St. Clair River Crossing

In November 2017, Enbridge entered into an agreement with the State of Michigan to address the future of Line 5, a 645 mile, 30-inch-diameter pipeline that originates in Superior, Wisconsin, travels through Michigan's Upper and Lower Peninsulas, and terminates in Sarnia, Ontario.

The agreement features seven key actions Enbridge is undertaking to enhance the overall safety of Line 5 and protect the waters of the Great Lakes, including replacement of the pipeline segment that crosses the U.S.-Canada border at the St. Clair River from Marysville, MI to Froomfield, ON. The segment replacement was installed underneath the river bed using Horizontal Directional Drilling (HDD), a proven construction method that is preferred for larger rivers or certain sensitive crossings because it minimizes impacts on the surface area.

Why replace the segment crossing?

The replacement of Line 5 at the St. Clair River is one of seven proactive measures resulting from our agreement with the State of Michigan, and was not maintenance driven. We believe the agreement demonstrates our commitment to doing the right thing to serve the public interest in the Great Lakes Region and enhance the overall safety of Line 5.

How will this project enhance the safety of Line 5 and the St. Clair River crossing?

In addition to ongoing improvements to our inspection and monitoring of Line 5, our agreement with Michigan includes a plan to replace the pipeline crossing at the Straits of Mackinac. Regarding the St. Clair crossing, we installed pipe with a heavier wall thickness and higher

tensile strength steel. The coating is a fusion bonded epoxy with an abrasion-resistant overlay. New remote-operated valves with continuous pressure monitoring were also installed on both sides of the river.

Did this project benefit the local economy?

Pipelines projects like this bring economic benefits to communities through which they pass in the form of potential job opportunities, municipal and property tax revenues. Pipeline projects typically provide opportunities for the following disciplines: laborers, welders, equipment operators, teamsters and drivers. This project also stimulated the local economy through the purchase of goods and services and items such as food and accommodation for workers.

Line 5—A key economic driver

Line 5 is an integral part of the Great Lakes region's critical energy infrastructure, providing a safe and efficient supply of crude oil to numerous regional refineries in both the U.S. and Canada, which in turn produce essential petroleum products such as propane, gasoline, diesel and asphalt.

Line 5 transports up to 540,000 barrels per day (bpd) of light crude oil, light synthetic crude oil, and natural gas liquids (NGLs), which are refined into propane.

Line 5 delivers crude oil to refineries located in Lambton County, Ontario where it is refined into a broad range of fuel and lubricant products to meet Ontario's energy needs.

The products moved on Line 5 heat homes and businesses, fuel vehicles, and power industry in Ontario, Michigan and Ohio. Liquid Natural Gas (LNG) delivered to Michigan on Line 5 is processed into 380 million gallons of propane per year, accounting for about 65% of the propane that heats Upper Peninsula homes, and provides 55% of Michigan's total propane needs.

Line 5 also supplies the vast majority of crude oil feedstock to Marathon's Detroit refinery and also carries up to 14,000 bpd of Michigan-produced light crude. Since 1953, Line 5 has carried about 80 million barrels of Michigan-based crude to market.

Replacing the Line 5 St. Clair River crossing

We replaced the pipeline segment within the same corridor as the existing crossing between Marysville, Michigan and Froomfield, Ontario.

Land around the drill entry and exit locations was restored to its pre-construction state upon project completion.



Enbridge worked with landowners and all stakeholders to identify possible impacts and develop strategies to mitigate project-related impacts where possible. We also conducted outreach to nearby Indigenous communities, municipalities, businesses and industrial/environmental associations and these engagements continued through the life of the project.

Horizontal Directional Drilling—minimizing impact

HDD is a proven construction technique whereby advanced technology is used to drill an underground arc that travels down, under and back up to the surface on the far side of a water body or other crossing. For large rivers or certain sensitive crossings, directional drilling is an appropriate and preferred construction method because it minimizes impacts on the surface area above the drill.

Deactivation—the safest option

Once the new pipe was installed, we deactivated the replaced pipeline segment by draining, cleaning and disconnecting it from service, and sealing the ends with permanent physical barriers to prevent it from acting as a water conduit. Although the decommissioning line is inactive, we continue to monitor it by maintaining cathodic protection.

Leaving the decommissioned pipeline in place is the safest and least disruptive option – it means minimal disturbance to the environment, existing infrastructure and the community.