

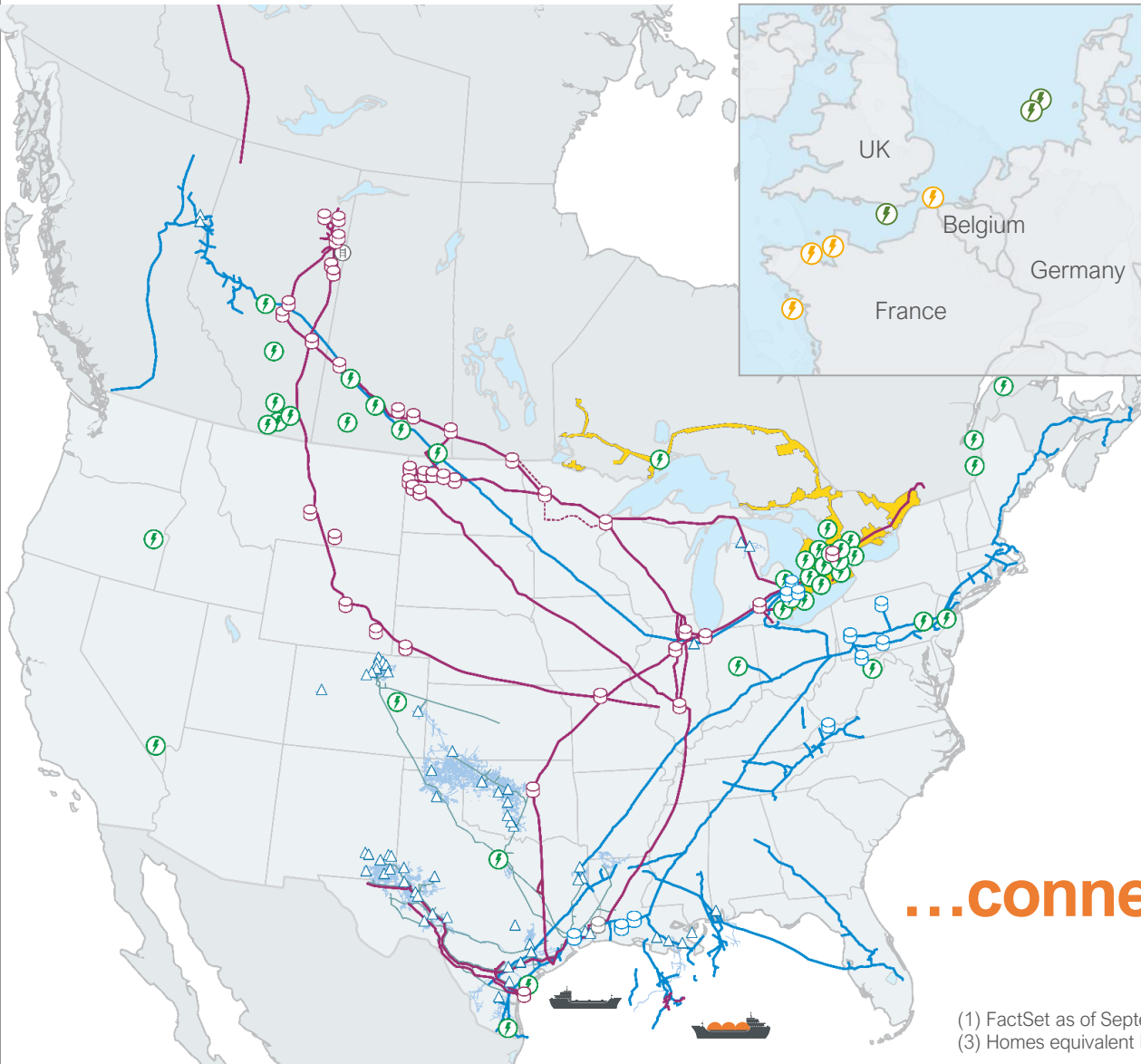
Bridge to Our Energy Future



Enbridge Update
October 2023



Enbridge Assets are Critical Conduits...



Supply natural gas to markets with
>170 MM people

Deliver natural gas utility service to markets with
~15 MM people

Transport crude oil sufficient to meet
~25% of N.A.'s demand

Produce enough renewable energy to power
~900,000 homes³

...connecting people to the energy they need

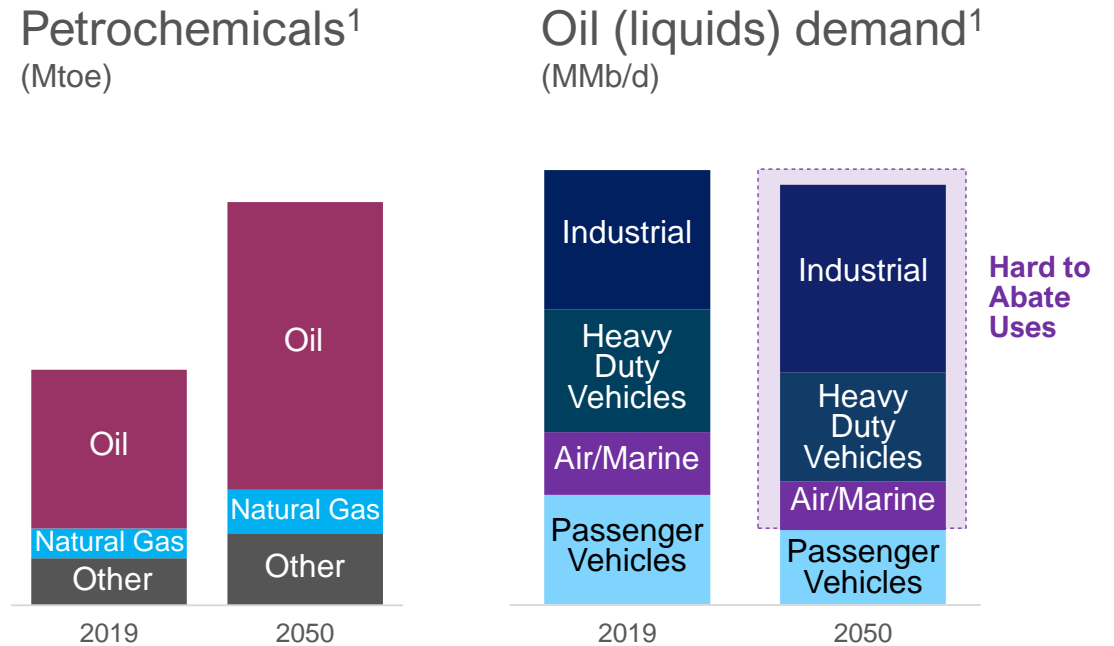
(1) FactSet as of September 17th, 2021 (2) Adjusted EBITDA is a non-GAAP measure. See legal notice
(3) Homes equivalent based on [net operating capacity](#)

Conventional Energy Is Essential

Everyday Products Depend on Conventional Energy



Critical to Meeting Petrochemical, Industrial and Transportation Energy Requirements



Society will continue to depend on conventional energy

(1) IHS Markit Inflections Scenario (base case). Oil (liquids) demand excluding biofuels.

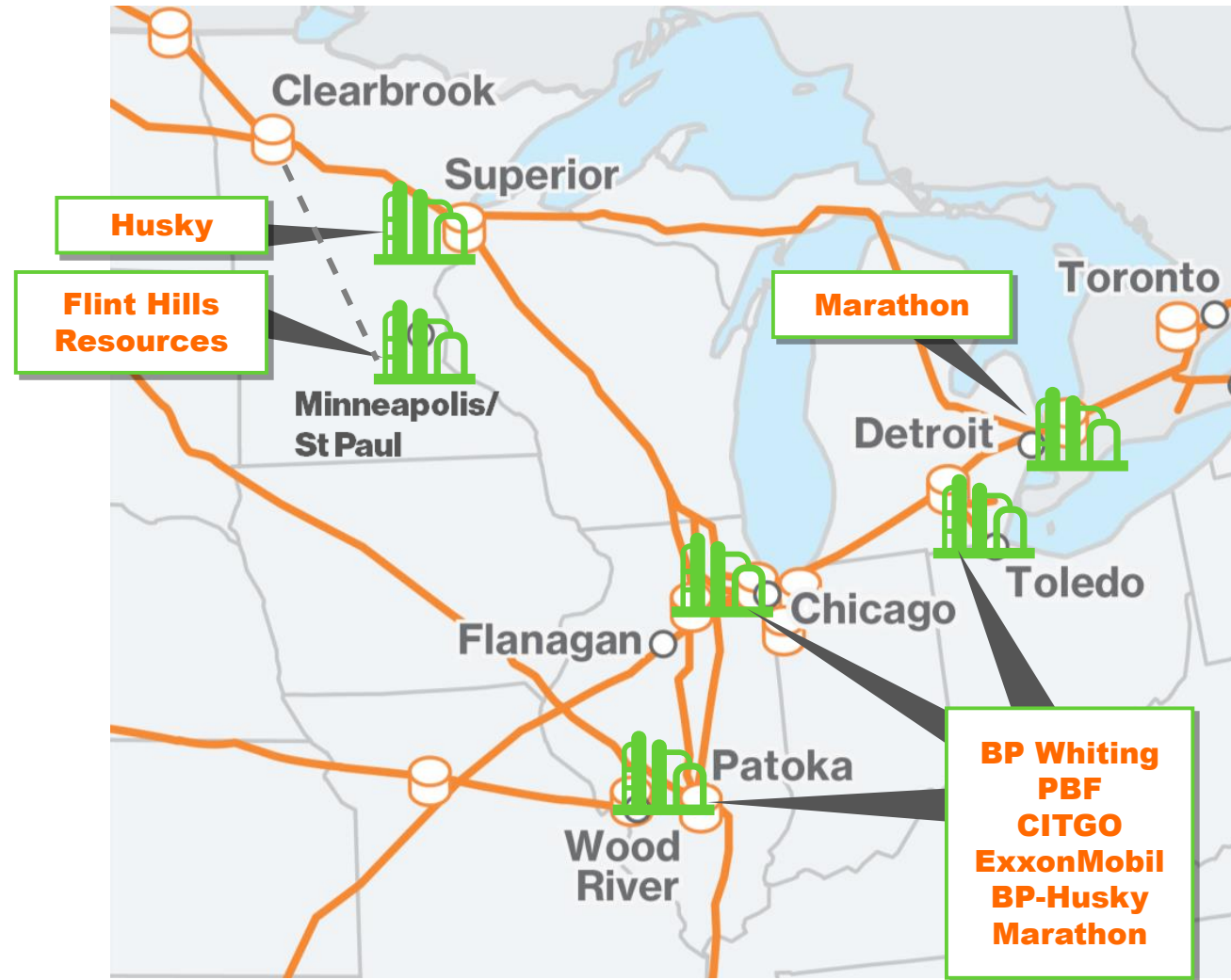
A Vital Link to Energy Supply

Enbridge system delivers crude to the Midwest market and beyond

Enbridge meets:

~70%

**Refining demand
in broader Midwest**



Enbridge in Michigan

Since 1953, 96 employees, over \$60 million annual taxes



Current Operations Liquids	Line 5	Line 78	Line 17	Line 79
CAPACITY: (Thousands of barrels per day)	540	500	101	80
Pipe size:	30 inch	30/36 inch	16 inch	16/20 inch
Constructed:	1953	2014	1954/1998	1959/2011
Current Operations Natural Gas	NEXUS	Vector		
CAPACITY: (Billions of cubic feet per day)	1.5	1.3		
Pipe size:	36 inch	42 inch		
Constructed:	2018	2000		

Line 5 - Essential to Michigan and the Great Lakes Region

- Supplies **55%** of Michigan propane demand (300+ million gallons/year)
 - *Michigan has highest residential propane consumption in the U.S. with more than 320,000 homes heated using propane*
- Supplies **65%** of UP's propane demand (35+ million gallons/year)
- Ships **80%** of Michigan-produced oil
 - *Up to 14,000 barrels per day*
- Feeds **10** Regional refineries
 - MI, OH, PA (in US)

Line 5 Alternatives

To do the same job as Line 5, and move those 540,000 barrels of light oil and NGLs each day, it would take:

- About **2,100 tanker trucks a day**—that's **90 trucks an hour** – or about **800 rail cars a day** .

Current infrastructure does not exist

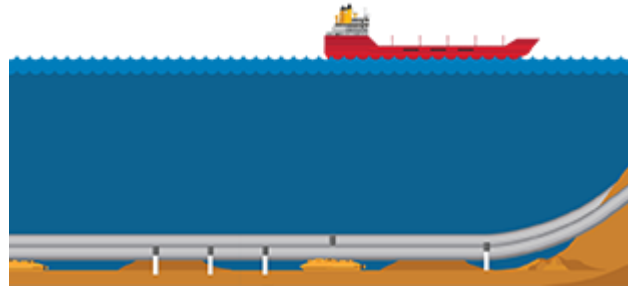
to support the necessary truck, rail or barge traffic to fill the job currently done by Line 5.

Proactively Managing Risk – Enbridge’s Commitments

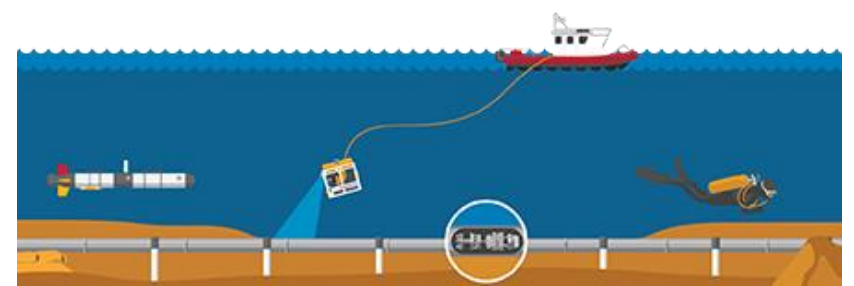
Voluntary shut-down of Line 5 when waves in the Straits exceed 8 feet



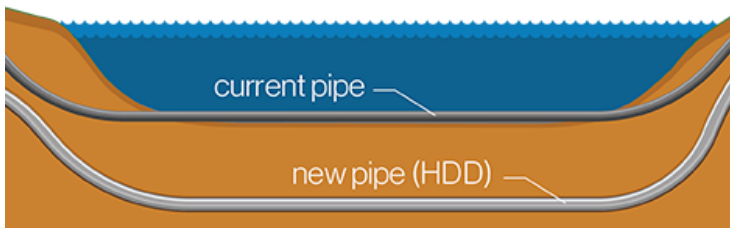
Additional safety measures to protect against anchor strikes



Evaluation of additional tools and underwater technologies



Replacement of the Line 5 St. Clair River crossing (\$20 MM)



Enhanced safety measures for other Line 5 water crossings



Regular ongoing reporting & stewardship to state agencies



Construction of Straits multi-utility tunnel



Enbridge has committed to funding multiple safety enhancements on Line 5

Line 5 Litigation & Great Lakes Tunnel Permitting Status Overview

Existing Dual Pipeline Litigation Status

- 2020 Gov Whitmer and DNR Director Eichinger's case was voluntarily dropped following ruling that the case would be heard in Federal Court. Enbridge's counter claims are awaiting ruling.
- 2019 AG Nessel's case currently in Federal Appellate court to determine Federal or State jurisdiction. Briefs due this Fall. Decision on venue possible in mid 2024.

Tunnel Permitting Status

All three major permits applied for by Enbridge in April 2020.

- ❑ Permits from Michigan Dept. of EGLE were issued for the Great Lakes Tunnel.
- ❑ Review of application to Michigan Public Service Commission (certificate) for Line 5 pipeline relocation into the Great Lakes Tunnel is ongoing. Decision expected Q4 2023
- ❑ US Army Corps of Engineers has notified all parties that they will complete an Environmental Impact Statement (EIS) for the project. Public scoping period held Fall 2022. Current estimate of permits in early 2026.

Transit Pipeline Treaty

- Formally invoked October 4, 2021
- Canadian government's action followed State of Michigan petition to end mediation process; while Enbridge remains publicly committed to mediation, the State effectively walked away from the process
- U.S. State Dept. has acknowledged Canada's action; no indication of timeline for resolution.
- Three meetings to date. Uncertain as to progress of resolution.

Statement by Minister Garneau on Line 5 transit pipeline

October 4, 2021

..."Line 5 is governed by the provisions of the 1977 Agreement between the Government of Canada and the Government of the United States of America Concerning Transit Pipelines, which guarantees the uninterrupted transit of light crude oil and natural gas liquids between the two countries. Today, Canada is formally invoking the dispute settlement provision of the 1977 Agreement to ensure its full application.

Furthermore, Canada supports Enbridge's plan to replace the existing pipeline with the proposed Great Lakes Tunnel Project, which will run far below the lakebed of the Straits of Mackinac, to further protect the Great Lakes.

Efforts to ensure the continued safe operation of Line 5 will be made in close collaboration with the provinces of Alberta, Saskatchewan, Ontario and Quebec, as well as with Canadian industry and labour sectors."

Enbridge Maritime Pipeline Protection Program



Enbridge Straits Maritime Operations Center





1 **Wireless communication**

Enbridge has invested in a 24/7 marine monitoring and alert system, which identifies vessels entering the Straits and sends a safety message, notifying the crew of the "no anchor" zone.




2 **Radio communication**

ESMOC contacts larger shipping vessels by radio, to confirm their anchor is stowed, when visual or infrared inspection is not possible.



3 **Radar**

High-resolution radar scanners for target detection and tracking, providing the ESMOC with enhanced situational awareness under all maritime conditions. Added ice detection and wave monitoring systems provide real-time data for the local operational area.



4 **High-definition video feeds**

The ESMOC team monitors video feeds from a series of multiple high-definition cameras being installed at strategic locations throughout the Straits.



5 **Weather monitoring tools**

Weather monitoring tools continually transmit wind speed and wave height data to the ESMOC. When waves reach 8 ft or greater for a sustained period, Enbridge voluntarily idles the Line 5 Straits crossing.

Enbridge Straits Maritime Operation Center



Enbridge Line 5 Anchor Strike Mitigation Plan



Enbridge Line 5 Anchor Strike Mitigation Plan



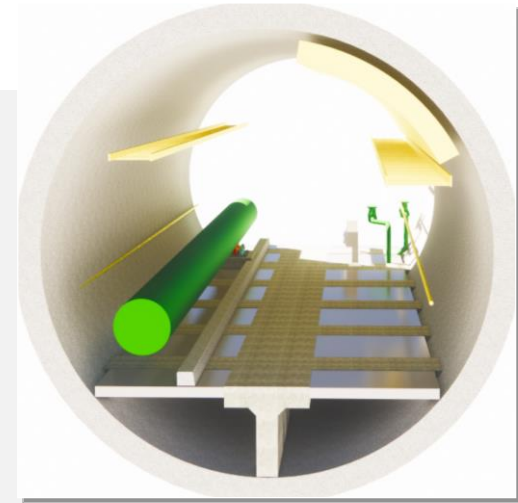
Enbridge Line 5 Anchor Strike Mitigation Plan



Line 5 Great Lakes Tunnel Project Overview

- Chance of a release into the Straits to **virtually zero**
- Constructed in accordance with the December 2018 Tunnel Agreement entered between Enbridge and the Mackinac Straits Corridor Authority
- Significant private investment in Michigan—with no cost to taxpayers, and the creation of temporary construction jobs for skilled tradespeople (\$500M+)
- Once complete, existing dual pipelines at the Straits would be permanently deactivated

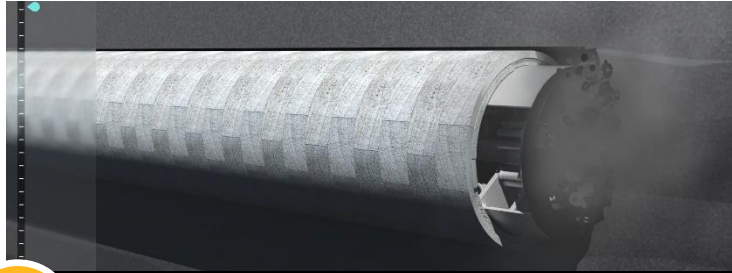
We've worked closely with engineering, construction and environmental consultants, as well as subject-matter experts engaged by the State. Whether the tunnel is sized for a single pipeline or designed for multiple utilities within this publicly owned infrastructure, these experts have determined that tunneling would be a safe and viable path forward.



The Great Lakes Tunnel Project

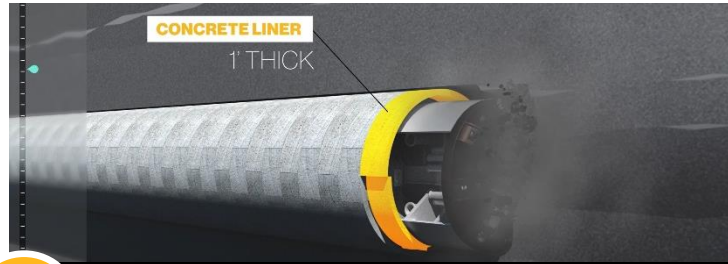
- Four miles long; 21-foot internal diameter
- Concrete lined
- Shaft/portal structures constructed on north and south sides
- Provides access for third-party utilities

Line 5 Great Lakes Tunnel Project



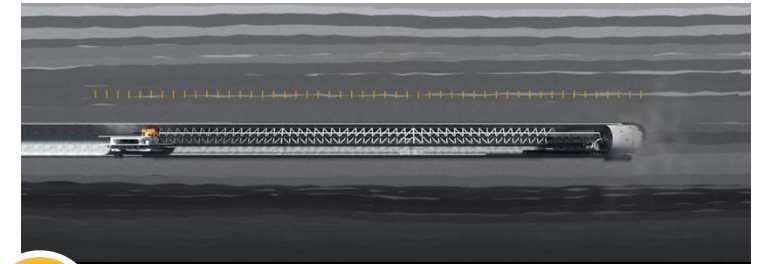
1 Tunnel Boring Machine

The tunnel would be bored through rock as much as 100 feet below the lake bed, using an apparatus called a Tunnel Boring Machine.



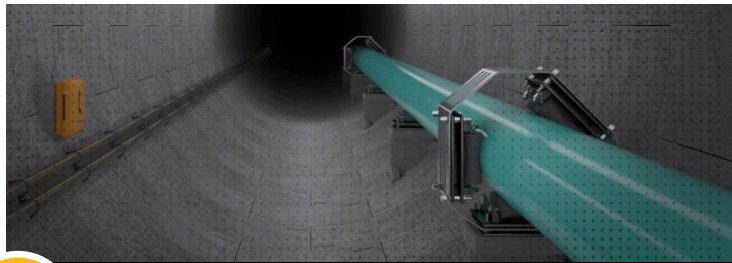
2 Tunnel Boring Machine

While the boring machine moves forward, it lifts segments of a 1-foot-thick reinforced concrete liner into place. Grout completes the seal.



3 40 feet/day (on average)

Like a giant mechanical earthworm, the tunnel boring machine would move an average of 40 feet a day, five days a week. At that rate, it's expected to take about two years to make its way across the full 4.1 miles under the Straits.



4 Pipe Supports

Pipe segments would be coated and welded in an onshore staging area. Supports with rollers will be bolted along the tunnel wall, and the pipe pushed along that roller system – one long segment at a time.



5 Ventilation System

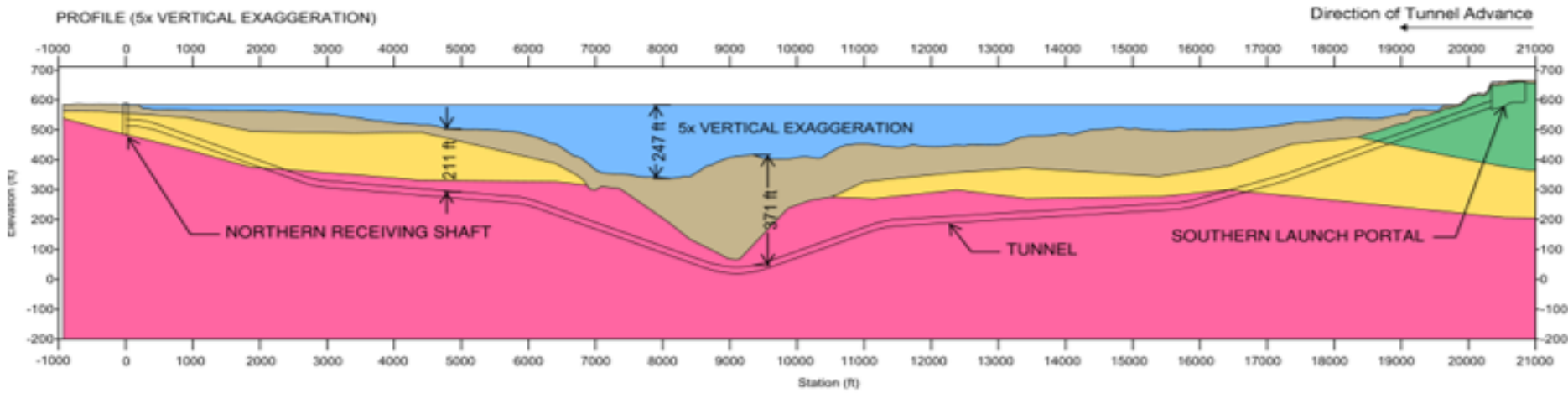
Equipped with a ventilation system, the tunnel may provide access for maintenance crews.

Line 5 Great Lakes Tunnel Project

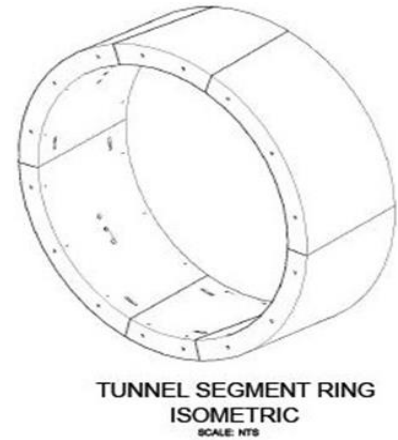
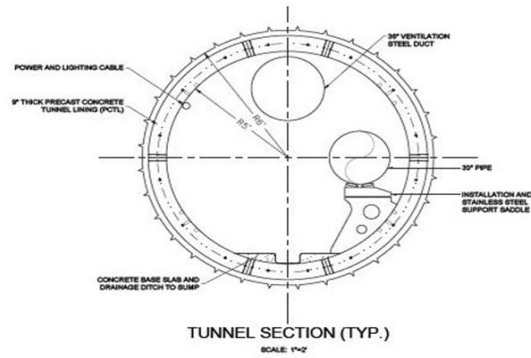
PROFILE (TRUE SCALE)



PROFILE (5x VERTICAL EXAGGERATION)



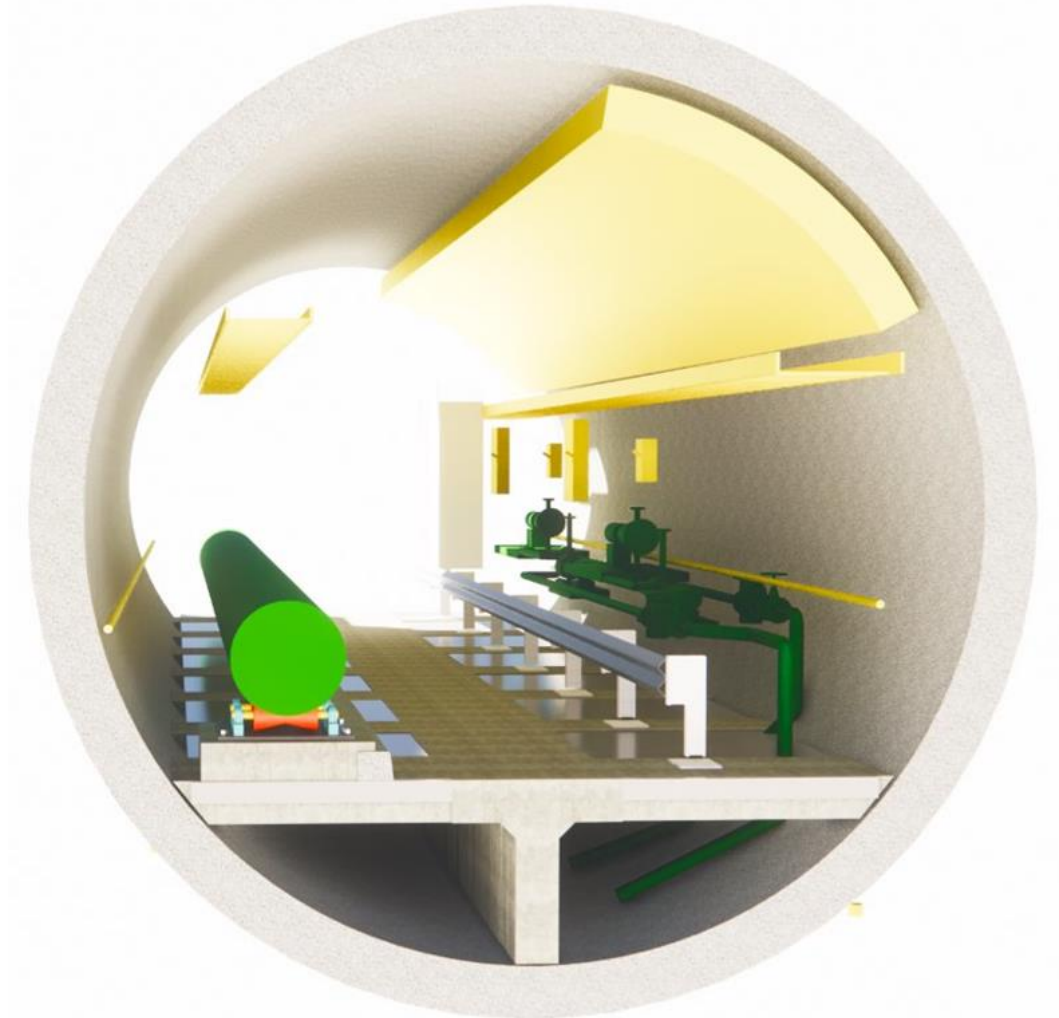
- Borehole
- Water
- Overburden
- Bois Blanc Rock Formation
- St. Ignace Rock Formation
- Pointe Aux Chenes Rock Formation



Tunnel Systems

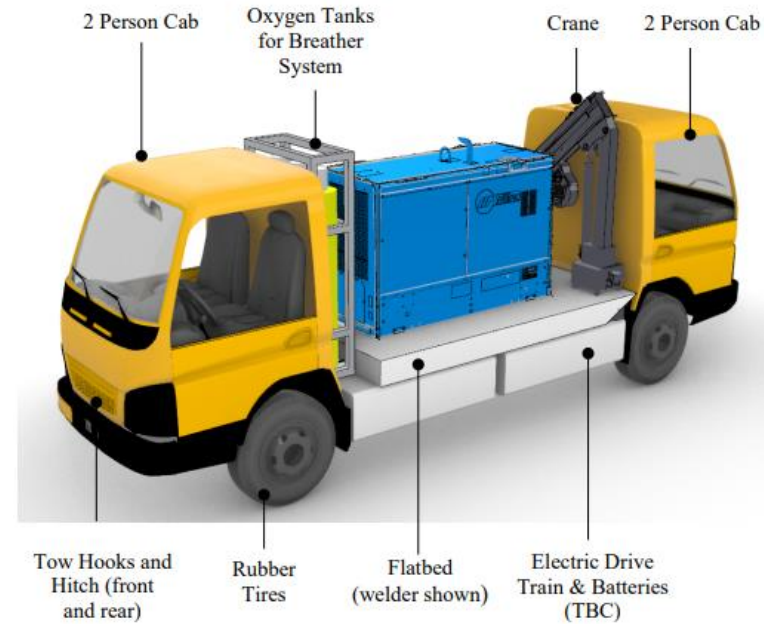
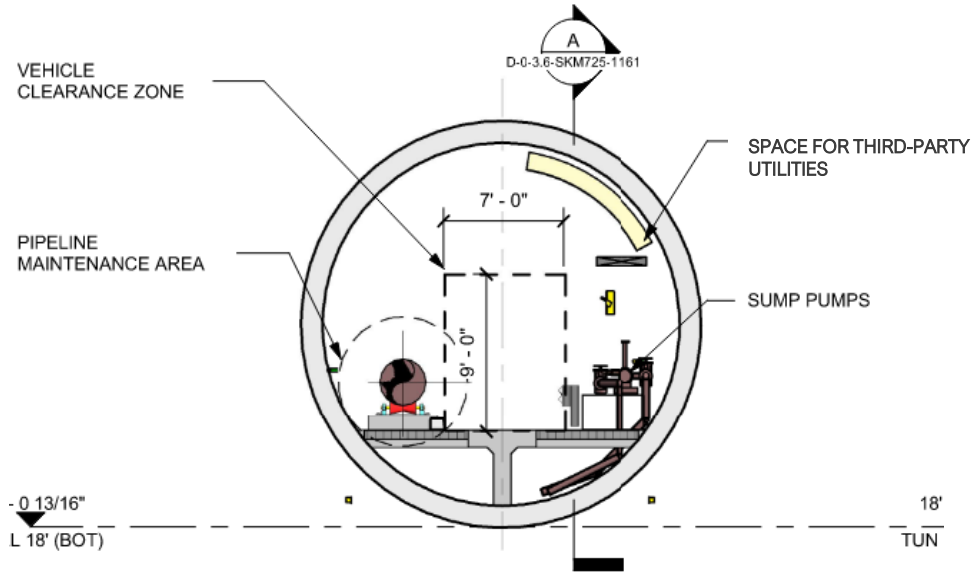
Tunnel sump, instrumentation and communications

- Tunnel Sump
 - For handling tunnel leakage water and condensation during the summer
- Liquid Leak detection
 - Tunnel sump
 - Bottom of NS and MS shaft
- Gas Detection
 - Tunnel sump
 - Air locks
 - Fan Plants
- Communications
 - Mine phone for emergency communications
 - Fiber optic link between MS and NS



Space Proofing and Maintenance

Operations



- Pipeline
- Tunnel Systems & Third-Party Utilities
- Third Party Utilities

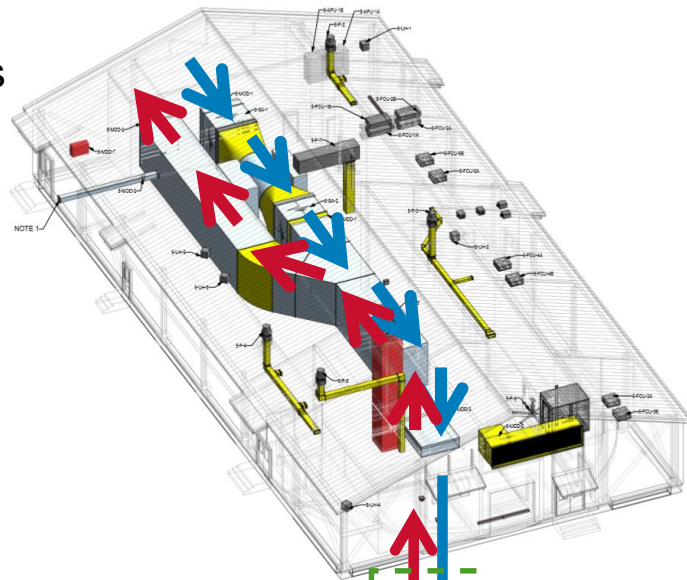
- Maintenance Area
 - accessed using Tunnel Service Vehicle (TSV)
- Tunnel Service Vehicle
 - For normal operations and maintenance
 - Emergency response

Philosophy to minimize entry

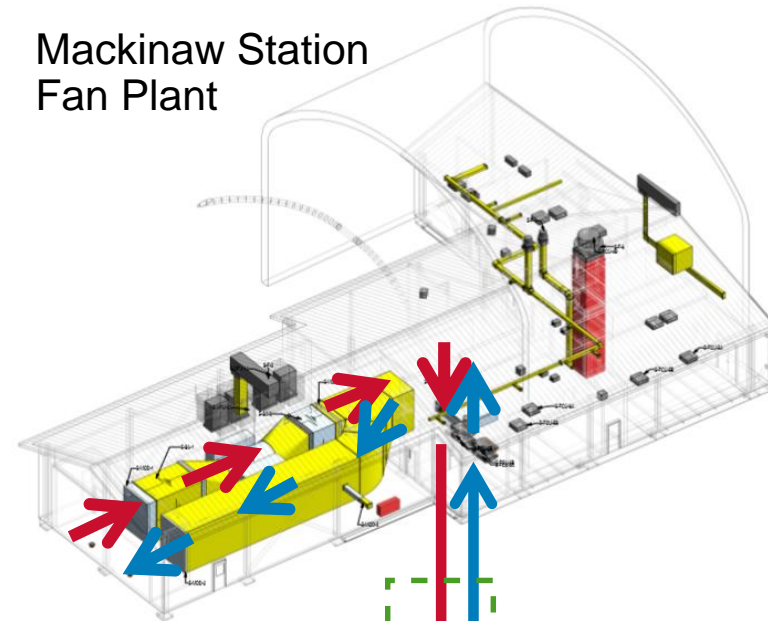
Tunnel Systems Design

Tunnel Ventilation

North Straits Fan Plant



Mackinaw Station Fan Plant



NS Shaft

Straits Tunnel

MS Shaft

KEY:



North Strait Shaft (Push-only Mode)

Mackinaw Station Portal (Push-only Mode)

Line 5 Great Lakes Tunnel Project



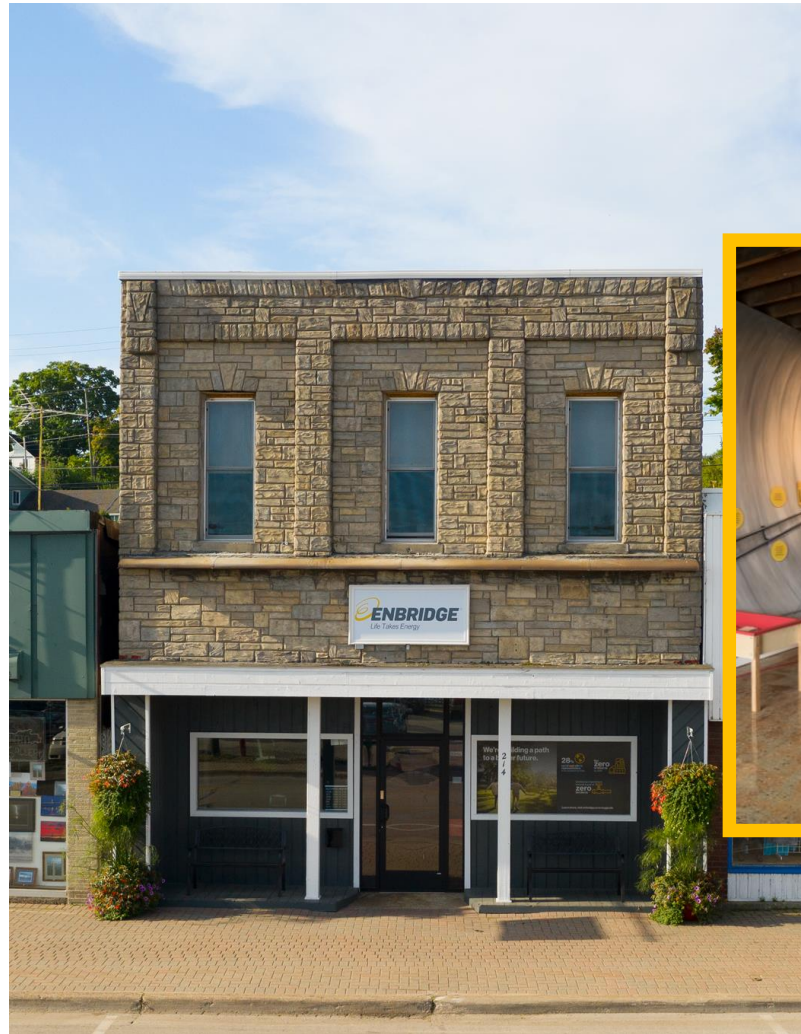
Sustained and growing community support

- Over 32 County resolutions of support
- Several Townships and Cities have also passed resolutions in support
- Wide support of the Tunnel Project in order to protect the Great Lakes and support to keep Line 5 operating until Tunnel is built
- Polling of Michiganders shows
 - 2:1 support operation of Line 5
 - 4:1 support for Great Lakes Tunnel project
- 79% believe the cost of energy is important, has impact on household budget

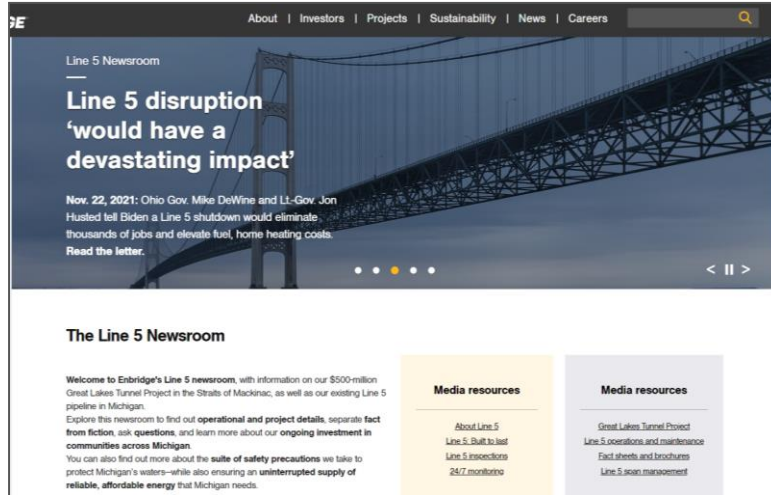


Public engagement and education

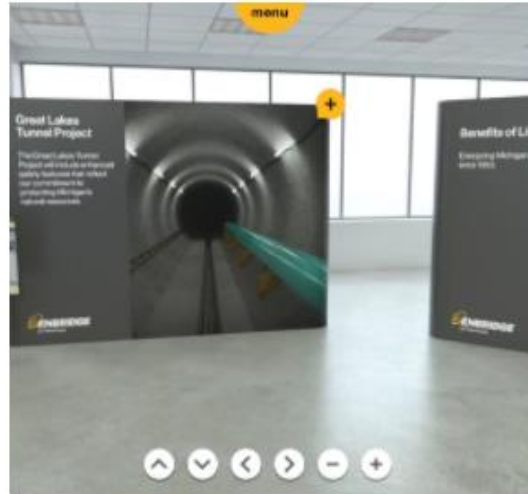
Information Center in St. Ignace, Michigan



Line 5 Information Resources



[Line 5 Newsroom](#)



[Line 5 Virtual Open House](#)



[ESMOC](#)

[Line 5 and the Great Lakes Tunnel: Fact vs. fiction](#)