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Gridlock on the Great Lakes: ‘Line 5’ Oil Spill Threatens a \$45 Billion Blow to Shipping, Steel Production, and Jobs

Report by MSU economists finds closure of Mackinac Straits and Soo Locks to shipping could trigger a domino effect of damage to the regional economy as mines, steel mills, and refineries slacken production

TRAVERSE CITY, MI – A Line 5 oil spill in the Straits of Mackinac could trigger a domino effect of damage disrupting Great Lakes commercial shipping and steel production, slashing jobs, and shrinking the nation’s Gross Domestic Product by \$45 billion after just 15 days, according to a [report](#) FLOW commissioned and released today.

“Oil Spill Economics: Estimates of the Economic Damages of an Oil Spill in the Straits of Mackinac in Michigan, Addendum A | Multibillion-dollar Economic Impact to Great Lakes Shipping, Steel Production, and Jobs,” was conducted by Michigan State University’s nationally respected ecological economist Dr. Robert Richardson, in collaboration with MSU PhD student Nathan Brugnone. The report is an addendum to a [study released last May](#) that found more than \$6 billion in direct economic impacts to tourism, property values, and more under a realistic – not worst-case – spill scenario.

“The findings of this updated report are chilling and cry out for action by the Snyder administration to shut down Line 5 now before an oil spill disaster strikes the heart of the Great Lakes and our shipping-dependent regional economy,” said **Kelly Thayer, Deputy Director of FLOW**. “Instead, departing Gov. Snyder and the lame-duck state legislature are rushing to lock in an [agreement](#) with Enbridge and [pass Senate Bill 1197](#) that would keep Line 5 operating in the Straits for at least 10 more years and [bind](#) the operation of the Mackinac Bridge to a risky replacement oil tunnel proposed by the governor.”

The new shipping impacts report is rooted in analyses conducted by the U.S. Army Corps of Engineers and Department of Homeland Security to justify federal expenditures on a new lock at Sault Ste. Marie, Michigan, by quantifying the impact of a shutdown of the only existing lock that provides passage to the largest commercial cargo vessels.

According to the Department of Homeland Security, closure of one of the two operational locks, the Poe, could send North America into prolonged recession and precipitate the loss of more than 10 million U.S. jobs. Estimates suggest a two-week closure of the Soo Locks during the early shipping season would halt U.S. steel production and curtail production along steel-dependent value chains, including the automotive industry. About 70 - 80% of all iron ore mined in the United States traverses the Great Lakes. Iron ore is the primary input in steel manufacturing.

“The shipping economy of the Great Lakes has been mostly overlooked or ignored in policy discussions regarding the potential impact of an oil spill from Line 5,” said **[Dr. Robert Richardson](#), an associate professor**

in the Department of Community Sustainability at MSU. “A rupture of the pipeline would likely lead to a closure of the Straits of Mackinac and the Soo Locks, resulting in costly delays, bottlenecks, and revenue losses affecting ports, steel mills, automobile manufacturing facilities, and related sectors.”

“Enbridge likes to claim that Michigan depends on Line 5,” said **Thayer**, “but the truth is that the *Pure Michigan* and regional economies depend on the Great Lakes, which is threatened by Line 5.”

The new analysis conducted for FLOW is based on the development of a system dynamics model. System dynamics modeling is a mathematical modeling technique to frame, understand, and discuss complex issues and problems.

The analysis is also based on assumptions related to (i) the vulnerability of the Line 5 pipelines in the Mackinac Straits to damage from events such as an anchor strike, (ii) a failure of the automatic response valves, and (iii) a delay in human response of up to two hours. The spill scenario is 2,500,000 gallons and assumes that oil spreads far enough to necessitate the temporary closure of routes through the St. Marys River and, hence, by proxy, the Soo Locks. Were an oil spill to occur in the Straits, closure of these shipping routes would be necessary to avoid vessel collision during booming and related oil cleanup operations, and to prevent the transport of oil to unaffected areas.

Iron ore, in the form of taconite, is shipped from ports along western Lake Superior to refineries throughout the Great Lakes. Along with taconite, bulk commodities like coal, limestone, and grain (10% of U.S. exports of the latter) make their way through the Soo Locks. The composition of total Great Lakes Navigation System (GLNS) traffic attributed to bulk commodities like steel, combined with the interdependent port structure of the GLNS indicates that cascades and feedback loops generate most of the economic impacts in a malfunctioning GLNS.

Shipping impacts are not recoverable. The findings of Homeland Security support this analysis and show that even a 2-week delay due solely to Poe Lock closure would drive business shutdowns and increased unemployment following a shutdown of 75% or more of the steel industry.

Dr. Richardson is confident in the applicability of the model as a conservative estimate of total scenario-relevant economic impacts, given (i) the scenario assumption that the spill radius is large enough to result in the closure of the Soo Locks for most of time the Straits are closed; (ii) given that closure of the Soo prevents Lake Superior-bound traffic; and (iii) given delays in restarting (a) vessel traffic, (b) mining, (c) refinement, (d) and manufacture.

The September 2018 Independent [Risk Analysis](#) commissioned by the State of Michigan estimated economic impacts of a worst-case oil spill to the shipping sector based on a closure of the Straits of Mackinac for five days, and its estimate was only \$42 million. However, this estimate was based on daily operational costs for the ships only, rather than the impacts to the broader value chain linked to the steel and other commodities being shipped. The report acknowledges that a stoppage of five days “will likely result in bottleneck delays in vessels along the Straits as well as at the Soo Locks, but these costs are not considered.”

The estimates provided in the new analysis prepared by the MSU team for FLOW are significantly greater primarily due to the consideration of the costs of bottleneck delays, lost business revenue, and the associated effects on steel mills, automobile manufacturing facilities, and related sectors. These estimates are likely conservative in that they extended estimates based only on closure of the Poe Lock and not the open waters of the Great Lakes and the Straits of Mackinac.

For more information:

- FLOW website: www.FLOWforWater.org
- FLOW program on Line 5, including a fact sheet and short film: <http://flowforwater.org/line5/>

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