

Rail's bright green future

How innovation is keeping rail relevant

FEW THINGS are more Canadian than the sight and sound of a freight train, rumbling alongside a lonesome prairie highway as it heads into the hinterland. More than a century since the last spike, trains are still essential for Canada's economy and connecting distant industrial centres. But as indelibly as rail is linked to our past, it's tied to our future. Today, that future seems predicated on reducing greenhouse gas emissions and our reliance on carbon.

—Eliza Barlow

Trains are getting longer and heavier to save fuel and increase efficiency. Right: Port of Vancouver rail yards.

How can rail reduce greenhouse gas emissions?

Canada's transport industry produces 23 per cent of the country's greenhouse gas emissions. When it comes to moving freight, trucks produced more than three times the carbon dioxide equivalents of aviation, rail and marine transport methods combined in 2014. In fact, rail produced less than four per cent of Canada's total transportation-related emissions.

To be sure, part of that is because trucks are simply hauling more stuff, but when comparing apples to apples, rail is simply more efficient. An often-cited 2009 study by the U.S. Federal Railroad Administration found that rail fuel efficiency was about five times higher than truck fuel efficiency.

"Rail can be more part of the climate change solution than the climate change problem," says Michael Gullo, director of policy, economic and environmental affairs for the Railway Association of Canada. "You can move one tonne of freight more than 200 kilometres on one litre of fuel by rail."

Gullo acknowledges the market relies on both rail and trucking to supply goods, but he thinks rail can — and should — be doing more, especially considering the current pressures to decrease the use of fossil fuels. In a submission last year to federal Environment and Climate Change Minister Catherine McKenna, his association made the case to shift more truck traffic to rail.

Gullo said his association crunched the numbers and found that a 10 per cent shift of truck traffic to trains would result in emissions reductions of 3.7 megatonnes of CO_2 equivalent, the same as taking about 780,000 cars a year off the road. "That's really significant," he says, adding trains make especially good sense for long hauls. In 2015, the average length-of-haul for CN and CP was 1,517 kilometres, a record high.

How is rail innovating?

As fuel costs rise and carbon levies become more popular, fuel efficiency has become paramount for many industries but is especially important in rail, an industry for which fuel is a significant cost. CN, for example, has been acquiring new locomotives that are up to 20 per cent more fuel-efficient than the locomotives they replace. While, in Ontario, Greater Toronto's Metrolinx is exploring electricity to propel the GO Transit passenger rail network.

Chantale Després, CN's sustainability director, says sustainability must be embedded into the corporate culture for it to work. CN launched EcoConnexions, an employee engagement program, to do just that. "This is really our from-the-ground-up way of engaging all CN employees," Després says. "The mission from the start has been to foster innovation and drive results."

Other carbon reduction initiatives include anti-idling policies, distributed power — placing extra locomotives on long freight trains — and using longer, heavier trains. As another example, CN's trip optimizer system calculates an engine's ideal speed to get the best fuel efficiency and to minimize braking.

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What is intermodal transport and how does it work?

Intermodal traffic — the movement of goods in containers by a combination of freighter ship, rail and truck — represents about one-quarter of Canadian railways' carloads and continues to grow. CN says leveraging intermodal can lower transportation costs by using the more efficient mode for each leg of the trip. Not only does it reduce emissions, it can reduce traffic congestion, accidents and wear-and-tear on transportation infrastructure. To leverage the benefits of intermodal transport, CNTL, a subsidiary of CN, works with more than 1,000 owner-operator truck drivers to move more than 1,300 loads a day from its intermodal terminals spread throughout North America.

How does rail fare when it comes to safety?

Incidents such as the tragic explosive derailment at Lac-Mégantic, Que., in 2013 have put safety top of mind for Canadians when it comes to rail. But Gullo says that concern is misplaced. Canadian Class 1 railways, the largest freight railways measured by operating revenues, are considered the safest in North America. Gullo says that "99.997 per cent of all dangerous goods that are carried by rail arrive at their destination without incident." Crude oil makes up less than five per cent of what railways move.

Any meaningful safety comparison of trucking, rail and pipelines is extremely complicated. A statement from the Transportation Safety Board says there is no easy way to compare the number of accidents across the rail, highway and pipeline modes of transportation because of the different ways each industry measures incidents. "To do a meaningful comparison, one would have to aggregate information from multiple sources and apply a common denominator. The TSB does not do this kind of comparison," the statement says.

Jennifer Winter from the University of Calgary's School of Public Policy has researched available data on rail safety in Canada. She suggests there is room for improvement, specifically with better reporting and access to data on rail led by the federal government: "It is not only vital that our railroads are safe; it is just as vital for the public to have information showing exactly how safe they are."

Is high-speed rail coming to Canada?

Canada is the only G7 country without high-speed rail service, a less GHG-intensive way to move people long distances than planes or cars. Common reasoning is lack of population density and high infrastructure costs. Multi-billion-dollar investment often requires government subsidies and public-private partnerships. Still, Gullo says there are signs of "baby steps."

The bustling 1,100-kilometre Quebec City-Windsor corridor serves close to 20 million people and is one of two areas in Canada where high-speed rail may be feasible. The other is the Edmonton-Calgary corridor in Alberta, which would serve more than two million people.

Via Rail is currently touting a $5.25-billion "dedicated track" proposal to move people along the Quebec City-Windsor corridor. The proposal is for high-frequency rail as opposed to high speed, as existing Via trains top out at 160 km/h. With dedicated passenger tracks, Via says, trains could leave more frequently — up to 15 departures a day from major urban centres, compared with six now. It also says the project would allow its trains to be on time 95 per cent of the time, compared with around 60 per cent now. Via estimates that if people currently flying and driving the route switched to a new electrified high-frequency rail service, the resulting decrease in GHG emissions from 2030 to 2050 would be equivalent to taking 3.1 million cars off the road for a full year. ■