A GREEN FUTURE FOR FREIGHT


Photos courtesy Wallenius, Warsila Energy, Audi and Daimler- AG
Where can we safely raise our children?

“Business as Usual” = Sea Levels up 20-40 meters?

Freight transport = 10.3% of Canada’s GHG emissions

Source: Pembina Institute (2020), based on data from Climate Change Canada and Natural Resources Canada
Emissions reductions NOW via avoid – shift – improve

Grams of CO₂ emitted by transporting 1 tonne of goods 1km

- **Triple-E**: 3g
- **Train**: 18g
- **Truck**: 45g
- **Plane**: 560g

*Sources: Maersk, 2016*
Emission reduction in action at Freightera—SmartWay carriers and rail preferred on 90% of bookings

Freightera Bookings via SmartWay Certified Carriers or Rail

Source: Freightera
Why lower emission carriers win

Long Beach CA, to Dunwoody, GA: Rail emits 60% less CO2 (Grams CO² / tonne / km)

Long Beach, CA to Dunwoody, GA: Rail costs 44% less

Sources: Maersk and Freightera
Renewable energy costs continue to decline, with 2019 levelized cost of wind and solar now 27-36% less than any conventional sources (oil, gas, coal or nuclear)
Cost savings can drive the transition to zero emission freight

North American road freight costs may decline up to 80% by 2050 as transport is electrified and renewable energy and storage costs continue to decline.

Global Energy System based on 100% Renewable Energy
Regional and Sectoral Outlook: North America

The final transport passenger costs decline from around 0.11 €/p-km in 2015 to 0.05 €/p-km by 2050, as shown in Figure 3.9-21. Final transport passenger costs decline for road transport through the transition, whereas for marine and aviation there is a marginal decrease. Similarly, final transport freight costs decline from around 0.065 €/t-km in 2015 to 0.02 €/t-km by 2050, as shown in Figure 3.9-21. The final freight costs in the case of road declines through the transition, whereas it remains stable for rail, aviation and marine.

Figure 3.9-21: North America – Final transport passenger cost (left) and final transport freight cost (right) during the energy transition from 2015 to 2050.

Source: LUT University and Energy Watch Group 2019
Systems like Freightera’s Link2Rail can automatically route freight via rail, or via the optimal micro-hub in your city

Source: Link2Rail by Freightera (patent pending)
The physical internet can automatically consolidate freight across carriers and route it through the lowest cost or lowest emission network as freight “packets”

What are the targets of the Physical Internet?

7. Enabling an efficient and sustainable Mobility Web

From point-to-point hub-and-spoke transport to distributed multimodal transport

Multi-segment travel from Quebec to Los Angeles

On the ocean and inland waterways: wind, solar and hydrogen hybrid electric cargo ships are coming fast

Sources: Vindskip™ by company Lade AS, E/C Orcell, Port Liner of The Netherlands and the SanSkip Autonomous, Hydrogen Powered Containership.
Zero emission sustainable electric rail can be the optimal mode for most long-haul freight

Source: Getty Images
Zero emission electric and hydrogen hybrid trucks are already available, and long-haul tractors coming faster than predicted.

Sources: California Cleaner Freight Coalition, Smith Electric Vehicles, Nikola One by Nikola Motors, and Fuso by Daimler AG
Thank You

Please contact me for more information and collaboration. We can only do this together.

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