

NORTH AMERICAN FREIGHT RAIL: EVOLUTION REQUIRED

NORTH AMERICAN FREIGHT RAILROADS are currently caught up in an unstable environment that is shifting on many different fronts. Their baseline energy traffic is eroding – some of it for good. They face structural industry changes that will impact their businesses for the foreseeable future. And innovations in the trucking industry may challenge the railroads in new ways. What will it take for the railroads to acclimate and prosper?

THE DROP-OFF IN COAL AND OIL

One of the biggest issues for North American freight railroads is the rapid decline in coal traffic, which accounts for a third of rail tonnage, and which fell by 12 percent from 2014 to 2015 alone. Coal is being replaced by cheap and abundant natural gas as well as renewable energy for electricity generation. In 2015, natural gas surpassed coal as the top fuel source for electricity, while renewables accounted for 68 percent of new US electric generation capacity installed.

Crude oil poses similar concerns. A boom in domestic production over the past ten years added many thousands of rail carloads, as North American pipelines were unable to keep up with the rapid increase in this trade. But crude now looks unlikely to grow beyond its current 3 percent of rail tonnage. Pipeline infrastructure is being added and low oil prices have led to a drop in drilling. Pipeline was already half to one-third cheaper than rail for crude oil movements;

in the future, it will likely be an even better value as crude-by-rail costs increase due to new regulations.

MEXICO AND E-COMMERCE MOVES

The automotive industry is picking up its tools and moving large portions of production to Mexico, which bodes well for US-Mexico cross-border rail, but is reducing US-Canada cross-border and US domestic rail movements. A number of other manufacturing industries also are increasingly near-shoring in Mexico, thanks to its more than 40 free-trade agreements.

Another large slice of the rail business, intermodal traffic (containerized freight) is being impacted not only by increased Mexican manufacturing but also by the continued movement of both wholesale and retail buyers from brick-and-mortar stores to the Internet. These customers will increasingly expect same-day or even two-hour delivery windows. In response, e-commerce giants are developing larger, faster networks that can support shorter hauls between ports/warehouses and distribution/fulfillment centers.

CONTINUING COMPETITIVE PRESSURES

Existing and potential developments in trucking are adding to railroads' competitive challenges. Right now, low fuel prices are proving to be a great boon for trucking, which is less fuel efficient than rail. Trucking companies have been able to raise driver wages without increasing



rates, thereby reducing turnover and slowing the pace of what is expected to be a long-term driver shortage.

In the medium term, there's the threat that size and weight limits could change, meaning that trucks could get longer and heavier. Those in favor cite economic and environmental benefits from loading more freight on each truck; those against are concerned about safety and yet more damage to tired infrastructure. Congress is currently studying the issue, but we expect that larger trucks are indeed on the horizon.

BECOMING THE BEST OF BREED

For the North American freight railroads, ensuring their survival under the weight of these changes will mean evolving to offer greater speed and flexibility, so as to better serve just-in-time manufacturing and exports, as well as e-commerce driven containerized goods. The result is that North American freight rail may need to become a bit more like European freight rail, in the sense of running higher-frequency trains.

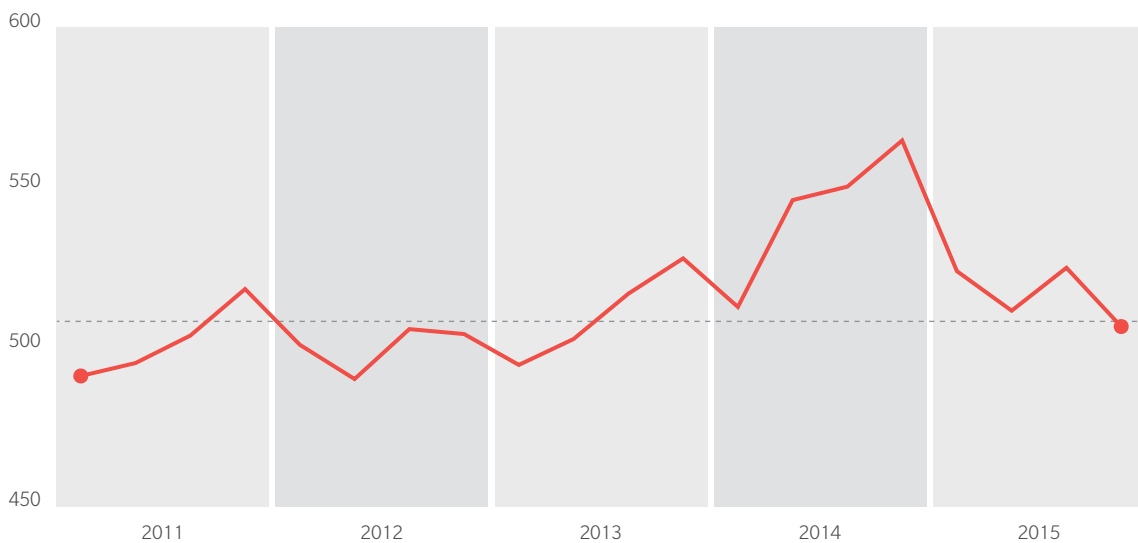
Running more frequent trains can serve two goals: improving shipping reliability and improving asset cycle times and overall costs, by reducing the time trains sit idle between departures (dwell time). Generally, running more frequent trains requires breaking up traditional

single-commodity trains, such as those that carry intermodal, coal, or grain, and mixing traffic on trains instead (as smaller "blocks" of railcars). As one railroad in North America is already doing, mixing blocks of different commodities keeps train sizes stable, but enables more frequent departures, as the cars do not sit waiting until there are enough of one type to make up a train.

This approach is going to be increasingly desirable, as it caters to a consumer-based economy that requires smaller, more frequent, and highly reliable shipments to meet the needs of fast-turn supply chains (e.g., retail stores, Amazon fulfillment centers). Large volume, 100-plus car shipments, on the other hand, are a declining share of the railroad business. In 2015, average train speeds increased by more than 10 percent, but average dwell time and railcars on-line remained high, suggesting no change or even longer wait times for train departures – this is a situation that will have to change if railroads are to correct their current slowing growth trajectory.

We also may be seeing the beginnings of a more regionalized North American economy, with origins being clustered closer to destinations. As an example, auto parts plants are being built close to car assembly plants, creating a cheaper, faster, and more dependable supply chain. Another example is container board

CLASS I NORTH AMERICAN RAILROAD TON-MILES
2011-2015 (QUARTERLY DATA)



Note Includes BNSF, CN, CP, CSX, FXE, KCS, NS, and UP
Source Oliver Wyman analysis

production: Historically, producers sent products out to customers across the country from a single plant. Now, large producers maintain a plant in each major production area, so that they can deliver product from the plant closest to each customer.

Logistics terminals that facilitate the transfer of goods between modes (such as rail-truck) also are now being increasingly co-located in high-density business districts with facilities that can process a range of commodities (plastics, lumber, steel, building materials) and distribution centers for finished, containerized goods. Compressing distances in these ways could drive the development of new regional services, including blended trains (with a mix of bulk commodity, automotive, and containerized traffic) and more direct point-to-point services.

This is not the first time the North American rail industry has been forced to adapt. Thirty years ago, new emissions regulations led to long trains moving low-sulfur coal, rescuing an industry in the throes of bankruptcy. Now another energy revolution, coupled with logistics innovations, will likely require the industry to make another breakthrough transformation, adapting to shorter distances and smaller shipment sizes, while delivering the speed and reliability that are the hallmarks of a precision supply chain.

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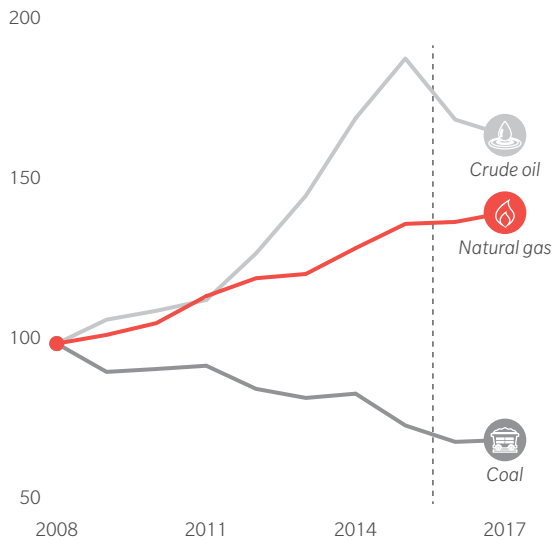
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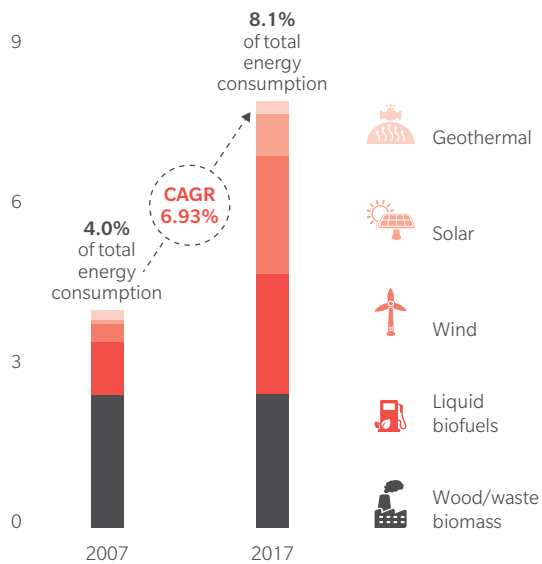
David Hunt, an Engagement Manager in the Transportation Practice, also contributed to this article.

INDEXED US ENERGY PRODUCTION 2008-2017



Note Index basis: coal production: millions of short tons; crude oil: million barrels per day; dry natural gas: billion cubic feet per day
Source US Energy Information Administration

US RENEWABLES (NON-HYDRO) ENERGY CONSUMPTION QUADRILLION BTUS



Note Does not include hydroelectricity. Wood biomass is wood and wood-derived fuels. Waste biomass is municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Liquid biofuels are ethanol, biomass-based diesel, and co-products
Source US Energy Information Administration