



Year End Recap – Western Canadian 2016-17 Grain Crop

HIGHLIGHTS

- CN expanded its suite of commercial products available to shippers
 - Nearly 70% of 2016-17 railcar supply was covered by contractual car-supply agreements with reciprocal penalties
- CN set a new record for grain shipments in 2016-17, besting the previous record set in 2014-15 by 2%
 - 21.8 MMT, 7% more tonnage than the prior-three-year average
 - Shipper demand outstripped available car supply in 8 of 52 weeks
 - Set new monthly shipping records in six months, notably through the fall and winter allowing shippers to deliver more grain to world markets when prices are higher

SUMMARY

CN successfully moved nearly 22 MMT of Western Canadian Grain in a crop year marked by innovation and collaboration throughout the supply chain.

Pre-Crop Preparation

CN took a number of proactive steps prior to the August 1st start of the 2016-17 crop year:

1. Network investments: the grain supply chain is a key beneficiary of CN's \$3B investment in Western Canadian track infrastructure over the past 5 years which improves network capacity and resilience;
2. Resources at the ready: CN called back crews, launched an inspection program for hopper cars that were in storage through the summer of 2016, instituted a repair program for more than 700 hoppers to maintain their safe operation and extend their service life, deployed additional locomotives, and prepared all the elements of the Winter Operating Plan to mitigate the impact of harsh winter operating conditions;
3. Expanded the commercial product offering for shippers: to allow shippers an opportunity for better planning, the market-driven system provided an equal opportunity for all grain companies large and small to secure capacity prior to the crop year. This innovation in the grain supply chain includes reciprocal penalties which drive accountability to both shippers and rail carrier, and allows shippers to make market-based decisions whether to draw on their car-supply guarantees;
4. Established a fair and predictable car allocation methodology: when customer demand exceeds the available fleet capacity in any given week, CN uses a pre-established and published methodology to allocate the available railcars: first to orders covered by commercial terms, then an allotment for both producer cars and cars originating on shortlines, and finally an even allocation of remaining cars across the remaining orders (spot orders) for each customer;
5. Communicated the supply chain maximum sustainable capacity: to help shippers plan their sales, CN communicated a maximum weekly supply chain capacity of 5,500 carloads during the fall and spring, and 4,000 carloads during the winter.

Car Ordering

There was initially an expectation of an early and large harvest; however unusually wet weather in the Prairies in August through October delayed harvesting activities and resulted in a significant amount of grain being left in the field. Ordering picked up rapidly by Week 7 and continued at a strong level through the winter.

Demand exceeded available railcar supply in only eight weeks this crop year (Weeks 9-13 in October, and again Weeks 16-18 in November); CN's pre-established car allocation methodology ensured that all contracted orders were fully allocated and a total of 4,300 excess spot orders (or less than 2% of all orders) were cancelled while allowing shippers to re-order in following weeks. The fact that demand did not exceed supply from Week 19 onwards suggests there was no order backlog or pent up demand, and that shippers were able to move the grain they wanted to, when they wanted to.

Ordering continued at a robust pace through the end of April, at which point seeding activities in the Prairies took precedence and producers reduced deliveries to country elevators. The final three months of the crop year saw fluctuating demand, but at a level consistent with historical averages.

Weather impact on the supply chain

Fall: The weather across the Prairies from August through October was unusually wet, which had a variety of impacts through the entire supply chain: harvesting activities were delayed which pushed railcar demand to later in the season; there was a high variability in the quality of the crop which subsequently required more product blending to achieve the necessary delivery specifications. Collaboration across the supply chain ensured that the additional logistical complexity did not slow the flow of product.

Winter: While not as harsh as the winter of 2013-14, the winter of 2016-17 did present challenges to the supply chain, demonstrated by several key metrics for winter months (November through March):

Winter Impacts on Supply Chain	Current Yr	Last Yr	3-yr avg	Variance to	
	2016/17	2015/16	2013/14- 2015/16	Last Year	3-yr avg
Edmonton – # of days colder than -25°C	23	5	18	+ 360%	+ 25%
Vancouver – Snow (cm)	69.6	1.0	12.8	+ 6,860%	+ 444%
Vancouver – Total Precipitation (mm)	1,179	1,365	1,066	- 14%	+ 11%

CN implements train length restrictions when temperatures drop below the tipping point of -25°C: shorter trains ensure sufficient air pressure throughout the train to safely and effectively operate railcar air brakes; CN Engineering crews devote additional attention to switches to clear snow and ice; and customers also ensure local switches and loading tracks are clear of snow and ice and are safe to operate. CN met these anticipated challenges by operating more trains with distributed power (placing locomotives within the train to improve air flow for air brake system), deploying 'Air Repeater Cars' (cars equipped with air compressors located mid-train to enhance safety by increasing air flow during winter), conducting additional track inspections during times of extreme cold temperatures, and positioning locomotives in "ready to go" strategic locations.

Winter conditions also impacted other players in the supply chain, in particular at railcar loading and off-loading points. Significant snow in the prairies hampered country loading activities on a number of occasions this past winter. Wetter than average weather in Vancouver combined with an exceptional amount of snow on the West Coast greatly hindered terminal activities (many terminals cannot load vessels in rain and snow, which slows railcar unloading as storage silos fill up): the slower car unloading resulted in a slower return of empty cars to the Prairies for the next load, exerting downward pressure on supply chain capacity.

Innovation and Collaboration driving improvements

There were many examples of innovation and collaboration throughout the supply chain during the crop year, notably:

- CN responded to the supply chain's desire for greater transparency and accountability by publishing a detailed weekly grain supply chain report;
- 200-car grain trains: In an effort to maximize capacity, CN Operations innovated the operating plan by combining two 100-car grain trains near origin and running as a single 200-car train toward port destinations. When practicable, this improved network fluidity by doubling the volume of grain flowing through each train slot, and improved asset utilization which put empty hopper cars back in the country faster for the next grain load;
- Shippers' use of guaranteed car supply contracts: shippers responded positively to CN's expanded commercial products offering, and approximately 70% of CN's car supply was secured in advance of the start of the crop year in commercial agreements that included car commitment guarantees. Having access to guaranteed car supply allowed shippers to respond to their market and call on car supply when it made the most economic sense for them to do so.

Opportunities for Further Improvement

CN shipped more grain tonnage this crop year than ever in its history. Against the backdrop of this record performance, CN will continue to work with supply chain partners and pursue opportunities to bring even more efficiency to the grain transportation network.

Both Day-of-Week spotting accuracy (spotting ordered railcars on the day it has been scheduled) and On-Time spotting accuracy (spotting ordered railcars by 0700 on the scheduled day) improved this crop year. These gains demonstrate the importance of collaboration, communication, and the strength of CN's operating plan. Deepening relationships with customers and a sustained focus on operating execution will drive further improvements in these metrics.

Developments in the Supply Chain, and Remaining Structural Challenges

Grain companies have continued to invest in the supply chain: construction of nine new country elevators was completed in 2015 and 2016, and a further seven new elevators have been announced with completion dates in the coming 18 months. In addition, several projects are also being developed to unlock additional West Coast terminal capacity in the coming years: Ray-Mont Logistics grain stuffing facility planned for Prince Rupert, a grain export facility at Fraser Surrey Docks on the Fraser River in Greater Vancouver, and G3's proposed loop-track facility on Vancouver's North Shore.

With these investments comes the increasing challenge of Vancouver's capacity-constrained rail infrastructure. The current regulatory environment is such that CN is unable to earn an adequate return on capital invested in this corridor, a critical link in Canada's Asia-Pacific gateway. CN is encouraged by the Federal Government's recent announcement of the National Trade Corridor Fund, which may provide funding for much needed rail capacity to align with the economically justified investments by other supply chain participants.

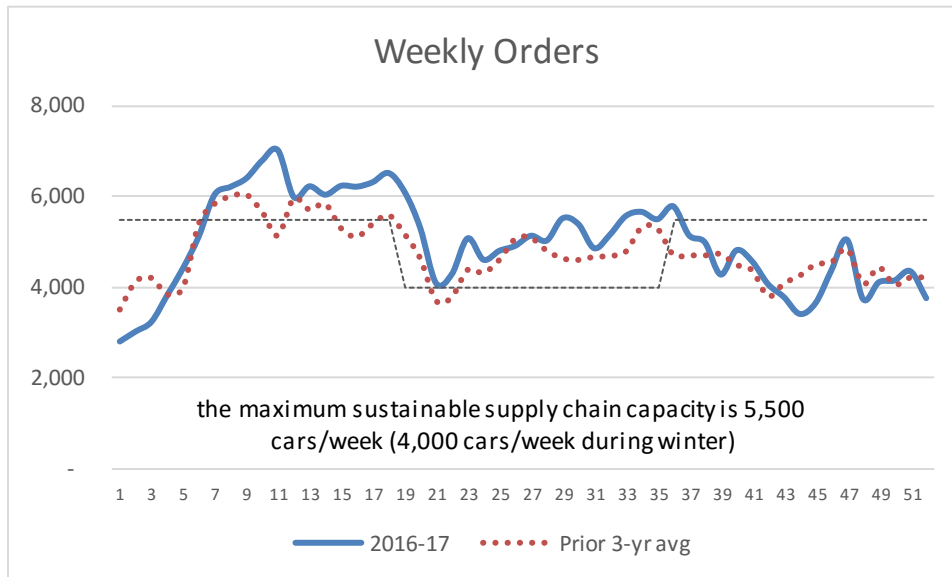
Looking to Crop Year 2017-18

Planning is already well under way for the shipping of the upcoming crop:

- Once again, CN is implementing its pre-crop year readiness program. Surge capacity railcars in storage at the end of Crop Year 2016-17 are being inspected and repaired, and other surplus railcars are being positioned in strategic locations across Western Canada in preparation for the post-harvest surge in railcar demand;
- Continuing work begun in Crop Year 2016-17, CN will work closely with shippers and port terminals to enhance communication regarding key supply chain information: grain in store at country elevators and planned deliveries; planned elevator/terminal maintenance; port shipping and unloading plans. Sharing this information will improve fluidity and railcar capacity by reducing the need to stop and hold trains at origin or between origin and destination to meet port terminal delivery requirements.

DETAILED SUPPLY CHAIN METRICS

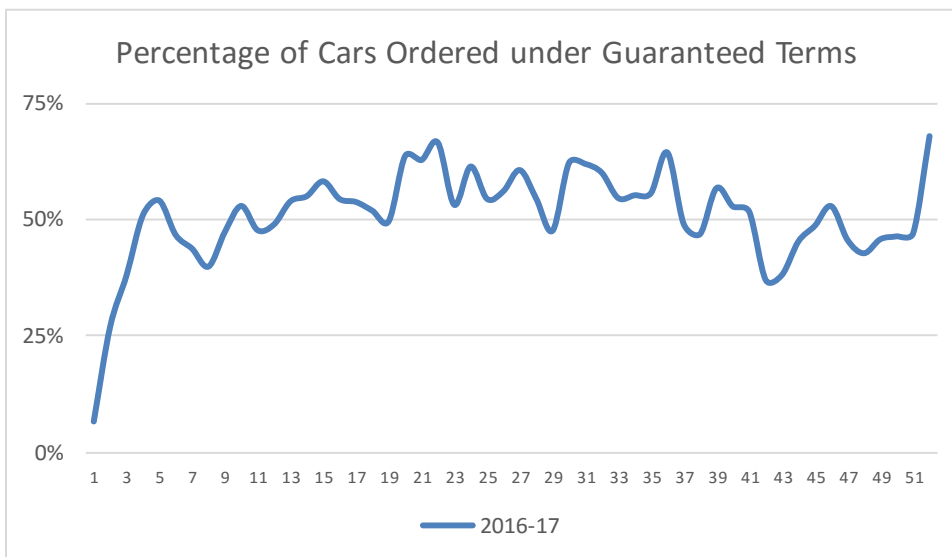
Orders for empty hopper cars in the country



- 5% increase in orders over prior 3-year average; remained above the 3-year average through Weeks 7-36
- The later harvest resulted in a slower than average start through the first six weeks of the year
- This year, CN introduced a systematic car allocation process for when demand exceeded available empty car supply; shipper demand outstripped available car supply in only 8 of 52 weeks

Commercial products guaranteeing car supply

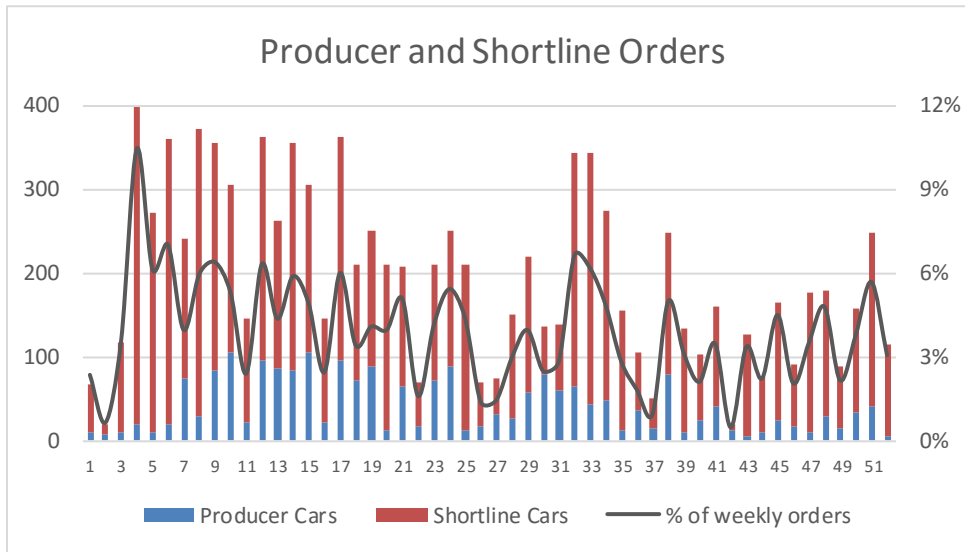
CN’s expanded commercial products resulted in approximately 70% of railcar supply being subject to a car-supply / car usage commitment with reciprocal penalties.



- 100% of cars ordered under contract were planned for service, even during weeks where demand outstripped empty car supply
- Shippers with car supply contracts effectively had guaranteed rail capacity in advance, and were able to plan and make market-based decision accordingly

Producer and Shortline orders

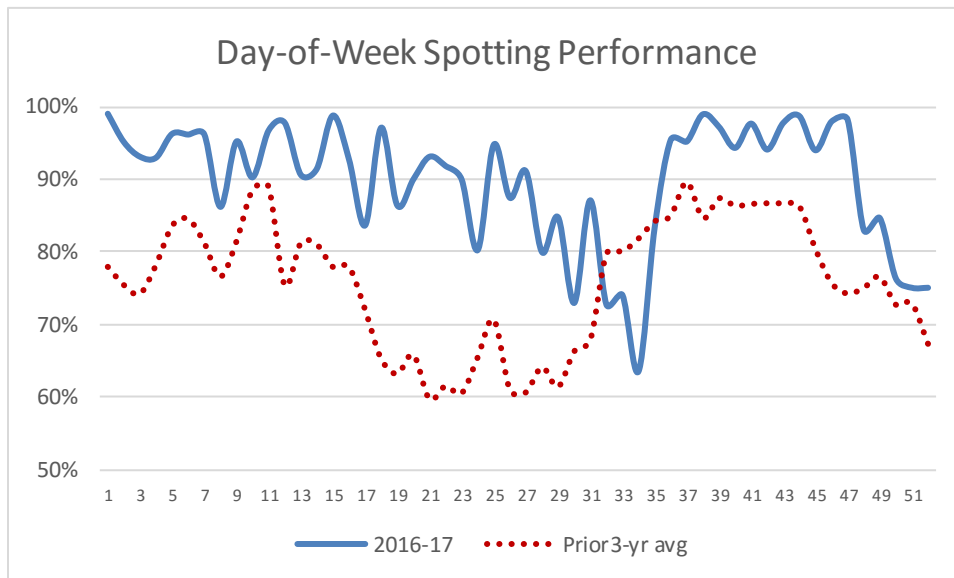
CN is committed to ensuring grain shipping solutions for smaller customers, and provides service to a number of producer loader sites and shortlines across Western Canada.



- A total of 10,200 producer and shortline cars were ordered in 2016-17, representing 4% of all orders

Day-of-week Empty Hopper Car Spotting Performance

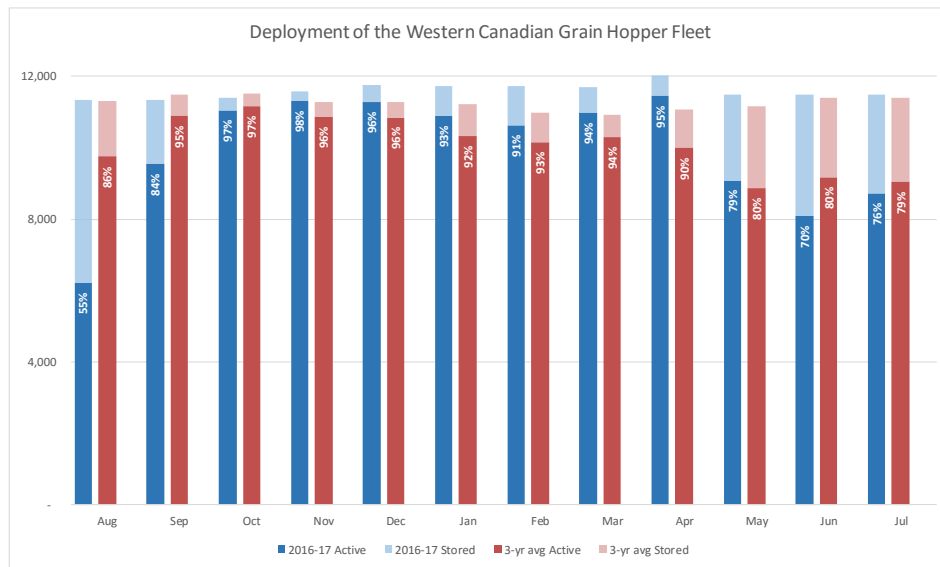
CN’s weekly empty hopper spot plan advises shippers which day they can anticipate service.



- CN improved day-of-week spotting performance from mid-70% to 90% accuracy
- Notable deterioration in Weeks 30-33; largely on account of adverse West Coast weather leading to a significant tightening on terminal storage space which, in turn, hampered terminals’ ability to offload and release empty cars back to the country

Hopper fleet to meet car orders

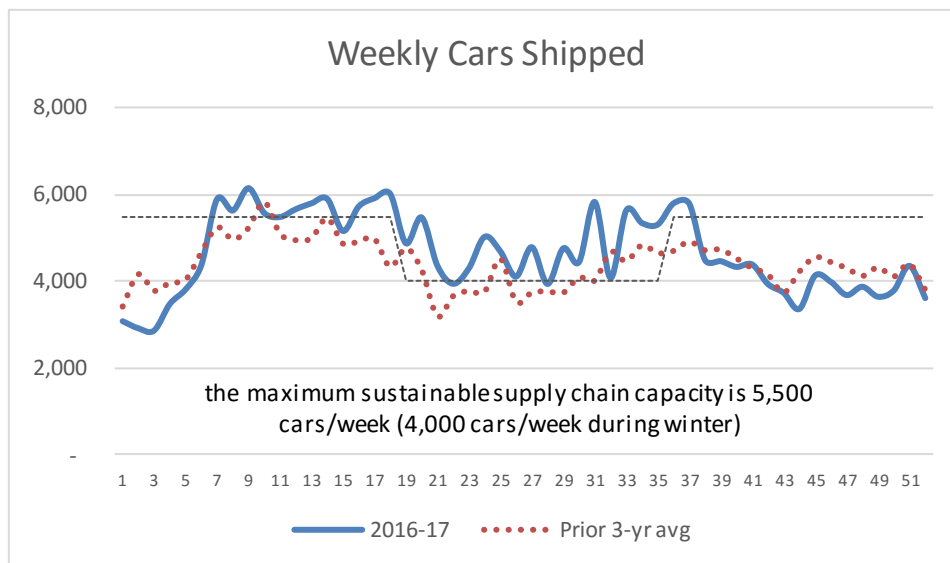
CN deploys its Western Canadian Grain Hopper Fleet in line with demand from shippers.



- CN fully deploys the fleet to meet the surge in demand through the fall and winter
- CN stores surge fleet capacity as demand tapers
- The 2016-17 crop year began and ended with nearly half of the fleet in storage

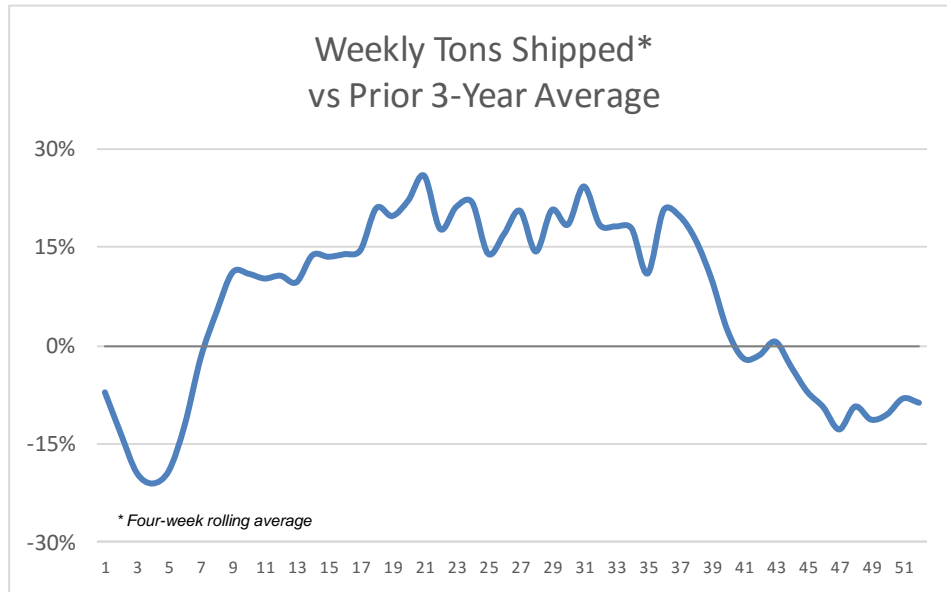
Cars Shipped

CN shipped 242,100 cars in 2016-17, a 6% increase compared to the prior three-year average.



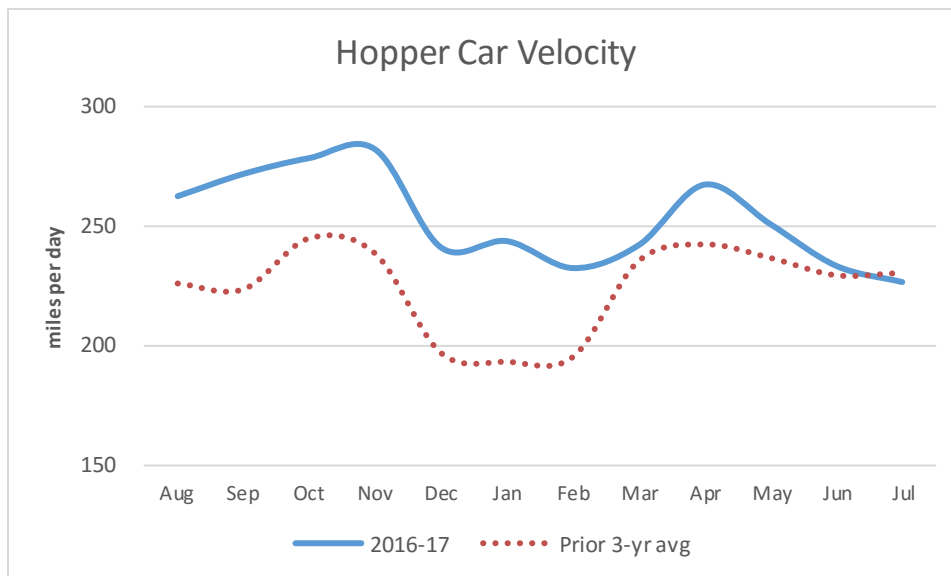
- Weekly cars shipped tapered in the spring in line with reduced shipper demand
- The higher volume shipped through the fall and winter allowed shippers to sell more grain into world markets when worldwide prices are higher

Weekly Tons Shipped vs Prior Three-Year Average



- Shipments began slowly this crop year because of wet conditions across the Prairies
- By Week 7, CN was weekly shipping more tons of grain than the prior three-year average, and continued at that pace until well into Spring 2017

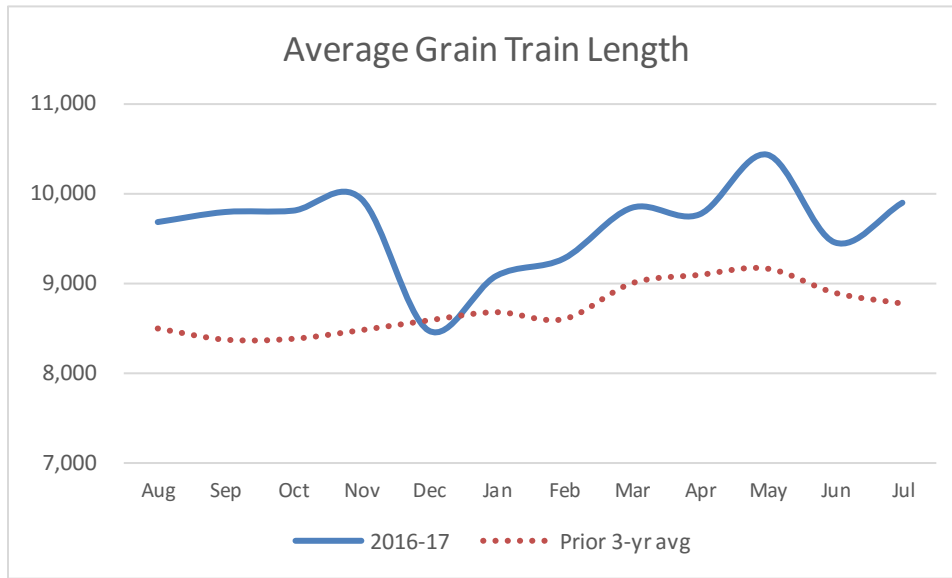
Hopper Car Fleet Velocity



- While car velocity improved overall, velocity was negatively impacted this crop year by a number of factors: shippers' request for on-line train staging to accommodate vessel line-ups, an increased need for grain blending due to a wider than normal variety in crop quality which also led to train staging, challenges with terminal unloading, and elongated car cycles for off-line origins and destinations

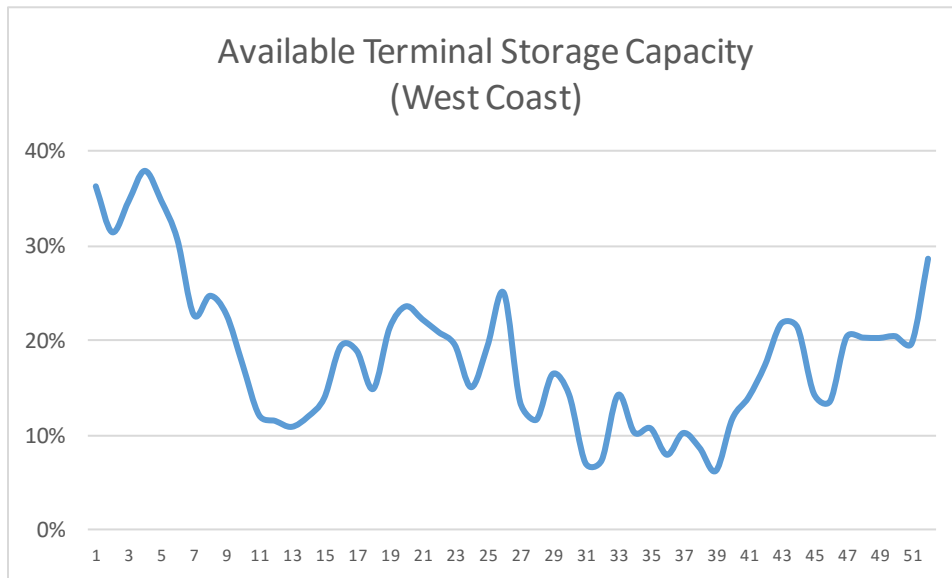
Average Train length

Longer trains improve network fluidity by shipping more grain in each train slot.



Vancouver Terminals' Available Storage space

As a terminal's storage nears capacity (i.e. as more of the silos are filled with grain), it becomes more difficult to efficiently receive, unload, and return railcars to the country for the next load of grain.



- The tight storage capacity of Weeks 31-39 was largely on account of wet conditions at West Coast terminals (many terminals cannot load vessels in wet weather)