Annual Report

2018-2019 Crop Year

Monitoring the Canadian Grain Handling and Transportation System

Government of Canada / Gouvernement du Canada

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This report is available on the Quorum Corporation website.
www.grainmonitor.ca

Cover Image: A dockside view from Vancouver, British Columbia's Alliance Grain Terminal (AGT) as it begins loading grain aboard the newly built Liberian bulk carrier, Indigo Heritage, in September 2019. The ship, which has a capacity of 60,000 deadweight tonnes, represents one of the larger vessels that the terminal can accommodate as a result of recent modernizations. State-of-the-art upgrades to AGT's dock conveyor and ship-loader, which were completed in the fall of 2018, now enable the facility to service two marine berths, and load up to 2,000 tonnes of grain per hour even in inclement weather. The upgrades denoted but one of several significant terminal investments that have been made to enhance the efficiency of Canada's Grain Handling and Transportation System.

Foreword

The following report details the performance of Canada's Grain Handling and Transportation System (GHTS) for the crop year that ended 31 July 2019, and focuses on the various events, issues and trends manifest in the movement of Western Canadian grain during the past year. This is the nineteenth annual report submitted by Quorum Corporation in its capacity as the Monitor appointed under the Government of Canada's Grain Monitoring Program (GMP).

As with the Monitor's previous annual reports, it is structured around various measurement indicators, grouped into six series, namely:

Series 1 – Production and Supply
Series 2 – Traffic and Movement
Series 3 – Infrastructure
Series 4 – Commercial Relations
Series 5 – System Efficiency and Performance
Series 6 – Producer Impact

As in the past, each series builds on data collected by the Monitor from the industry's various stakeholders, and frames the discussion using year-over-year comparisons. To that end, activity in the 2018-19 crop year is largely gauged against that of the 2017-18 crop year. But the Grain Monitoring Program (GMP) was also intended to frame recent activity against the backdrop of a longer time series. Beginning with the 1999-2000 crop year – referred to as the GMP's "base" year – the Monitor has now assembled relatable data in a time series that extends through 20 crop years. This data constitutes the backbone of the GMP and is used widely to identify significant trends and changes in GHTS performance. Although the Data Tables presented in Appendix 4 of this report can only depict a portion of this data, the full time series can be obtained as MS Excel spreadsheets from the Monitor's website (www.grainmonitor.ca). Similarly, select data elements can also be downloaded through the website's newest online feature, Grain Monitor Open Data System (GMODS).

Analogous space constraints have also made it necessary to limit the graphical presentation of data in this report to the last ten crop years. Additional PDF copies of this report, as well as all past reports, can also be downloaded from the Monitor's website (www.grainmonitor.ca).

QUORUM CORPORATION

Edmonton, Alberta
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Executive Summary

Western Canadian grain required an average of 43.8 days to move through the Grain Handling and Transportation System (GHTS) in the 2018-19 crop year. This proved to be 4.4% less than the 45.8-day average reported a year earlier. This 2.0-day improvement was the product of reductions in two key areas of GHTS activity, with the average amount of time grain spent in inventory at a country elevator decreasing by 2.9 days being coupled with a 0.6-day decline in its storage time at terminal elevators. But this combined 3.5-day time reduction was partially offset by a 1.5-day increase in the railways' loaded transit time. Despite the net improvement, each of these time variances proved symptomatic of broader logistical issues. Foremost among these was the fact that the GHTS was required to handle the output of yet another banner year, where the total grain supply (carry forward stocks plus new production) reached a record 82.1 million tonnes. Furthermore, non-grain shipments were also at historic levels. This heightened demand for railway carrying capacity perpetuated the concerns of many stakeholders regarding the sufficiency of railway resources, and its potential impact on railway service.

The railway service problems experienced in the winter of 2017-18 led both CN and CP to acknowledge the need for more capacity, particularly in the Vancouver and Prince Rupert corridors, and to commit themselves to investing in additional plant, equipment and personnel. By all accounts, both railways had made notable strides on all three fronts in the ensuing year. But the problems manifest in the 2017-18 crop year largely resurfaced in the 2018-19 crop year, beginning yet again with an elongation of the average loaded-transit and car-cycle times. Moreover, these averages proved worse than those reported a year earlier. And although the average loaded-transit time settled down to 7.5 days for the crop year at large, it still proved 24.0% greater than the previous year's 6.0-day average, and the highest value reported under the GMP in 16 years.

With the elongation of the railways' car cycle initially slowing the flow of railcars, it soon led to a backlog of unfilled car orders and burgeoning country elevator stocks. The downstream effects presented corollary issues for terminals awaiting inbound grain – especially along the west coast – which soon found themselves short of the grain they needed to load ships in a timely manner. This in turn led to greater port congestion and vessel delays than in previous years.

And while injurious to the efficient movement of grain, the length and scope of the problems suffered during the 2018-19 crop year proved less disruptive than that experienced a year earlier. To a large extent this was because the railways had taken steps to add capacity and provide greater resiliency to their operations, not the least of which involved the addition of some 2,000 new, high-capacity hopper cars. The gradual injection of these cars into their general fleets helped provide enough carrying capacity to offset that lost by way of reduced velocity and asset turnover, thereby improving the flow of grain throughout the GHTS.

HIGHLIGHTS FOR THE 2018-2019 CROP YEAR

(Comparisons to previous crop year)

Production and Supply

- Grain production decreased 0.9% to just over 71.7 million tonnes, the fourth largest crop recorded under the GMP.
    - Cereals comprised 57.1% of the crop; oilseeds 31.7%; and other commodities 11.2%.
    - Oilseed and special-crop production fell 8.1% to 29.3 million tonnes, the first decline in four years.
- Carry-forward stocks increased 21.4% to 10.4 million tonnes.
- Carry-out stocks decreased 19.3% to 8.4 million tonnes.
- Total grain supply (production and carry-forward) increased 1.5% to 82.1 million tonnes, the largest on record.

Traffic and Movement

- Primary-elevator throughput increased by 7.3%, to 48.9 million tonnes, the largest on record.
    - Represented 83.4% of all producer deliveries (primary and process elevators, as well as producer cars).
- Railway shipments increased 4.8% to 54.3 million tonnes, a GMP record.
    - Traffic to Western Canada totaled 43.4 million tonnes, up 8.2%.
    - Traffic to Eastern Canada totaled 3.7 million tonnes, up 20.3%.
    - Traffic to the United States and Mexico totaled 7.2 million tonnes, down 16.8%.
- Terminal-elevator throughput increased 6.3% to 37.1 million tonnes, a GMP record.
    - Terminal unloads totaled 397,212 cars, up 6.6%.
    - CN / CP traffic share remained closely divided at 51.1% and 48.9% respectively.
- Truck traffic to the United States decreased 9.8% to 2.2 million tonnes.

Infrastructure

- The number of country elevators decreased 0.3% to 399.
    - Reflected the licensing of 24 facilities along with the closure of 25 others.
    - Increase included nine newly commissioned, loop-track equipped elevators.
        - Loop-track equipped elevators totaled 21 at the end of the crop year.
    - Storage capacity increased 4.9% to 8.7 million tonnes, a GMP record.
- Railway network remained unchanged at 17,279.9 route-miles.
    - CN and CP operated 84.6% of the network.
    - Regional and shortline carriers operated 15.4% of the network.
- Hopper cars in service rose by 7.4% to an annualized average of 25,745 cars, the largest deployment on record.
    - Reflects impact of new equipment purchases by CN and CP.
    - Proportion of cars in active service reached 93.8% in November 2018.
- Terminal elevators increased by one, to 17, with the licensing of the new Fibreco Export facility at Vancouver.
    - Storage capacity increased by 2.3% to 2.5 million tonnes.

HIGHLIGHTS FOR THE 2018-2019 CROP YEAR (continued)

(Comparisons to previous crop year)

Commercial Relations

- Country elevator handling charges increased modestly.
  - Elevation rates increased 0.1%; dockage rates remained unchanged; and storage rates increased 3.7%.
- Railway freight rates showed continuing cyclicality, with net changes as at 31 July 2019:
  - CN rates to Vancouver had increased 13.9%; Prince Rupert rates increased 11.8%; and Thunder Bay rates increased 18.8%.
  - CP rates to Vancouver had increased 7.2%; and Thunder Bay rates increased 14.9%.
  - Multiple-car block discounts were significantly restructured for the first time in over a decade.
    - CP withdrew $4.00-per-tonne discount on movements in blocks of 56-111 cars.
    - CN increases discount for 100-car-block movements by as much as $2.00 per tonne if “heavy loading” criteria met.
  - CN and CP fall below Maximum Revenue Entitlements by $0.4 million and $0.8 million respectively.
- Terminal Country elevator handling charges moved marginally higher.
  - Elevation rates increased 0.1%; and storage rates increased 0.2%.
- Commercial Developments
  - Hopper-car acquisitions enhance GHTS carrying capacity
  - Investigation into Vancouver rail service conducted
  - China bars Canadian canola imports
  - Ilta Grain seeks bankruptcy protection
  - Ceres Global Ag Corp. acquires Delmar Commodities
  - Great Western Railway expands commercial activity
  - Port of Churchill reopens

System Efficiency and Performance

- Country elevator operations only modestly impacted by periodic railway service problems.
  - Capacity turnover ratio increased 3.2% to 6.4 turns.
  - Average weekly stocks decreased 3.3% to 3.5 million tonnes; reached record high of 4.5 million tonnes in March 2019.
  - Average days-in-store decreased 10.2% to 25.4 days; reflected increased pace of grain shipments.
  - Stock-to-shipment ratio decreased 11.9% to 3.7; reflected maintenance of tighter grain stocks.
- Railway operations adversely impacted by increased workload but tempered by capacity improvements.
  - Average car-cycle to Western Canada increased 2.1% to 16.0 days; average loaded transit time increased 24.0% to 7.5 days.
  - Average car-cycle to Eastern Canada decreased 11.7% to 21.3 days; average loaded transit time decreased 6.7% to 10.2 days.
  - Average car-cycle to United States decreased 6.3% to 26.1 days; average loaded transit time decreased 9.7% to 10.8 days.
  - Multiple-car block movement share in Western Canada increased to a record 87.2% from 84.1%.
    - Annual freight savings increased 11.3% to an estimated $269.3 million.
- Terminal Elevator operations only modestly impacted by uneven railway grain deliveries.
  - Capacity turnover ratio increased 8.5% to 20.5 turns.
  - Average weekly stocks decreased 1.1% to 1.2 million tonnes.
  - Average days-in-store decreased 5.2% to 10.9 days; reflected effects of record volume and uneven railway deliveries.
  - Out-of-car time increased marginally, to 11.5% from 11.2%, but showed continued high variability.

HIGHLIGHTS FOR THE 2018-2019 CROP YEAR (continued)

(Comparisons to previous crop year)

System Efficiency and Performance (continued)

- Port operations
  - Vessels calls increased 6.8% to 943 ships.
  - Average vessel time in port increased 2.9% to 10.3 days.
  - Net outlay for delayed vessels increased 8.2% to $27.2 million.
    - Demurrage costs increased 10.5% to $35.4 million; dispatch earnings increased 19.0% to $8.1 million.
- System performance
  - Average time spent in the system decreased 4.4% to 43.8 days.
    - Impacted by railway service problems in the second and third quarters.

Producer Impact

- Producer Netback
  - 1CWRS wheat: Average price increased 1.1%; export basis increased 1.1%; netback increased 1.1% to $236.16 per tonne.
  - 1CWA durum: Average price decreased 9.6%; export basis decreased 2.6%; netback decreased 12.8% to $223.10 per tonne.
  - 1 Canada canola: Average price decreased 7.8%; export basis decreased 2.8%; netback decreased 8.4% to $435.91 per tonne.
  - Large yellow peas: Average price decreased 4.8%; export basis decreased 4.9%; netback decreased 4.8% to $239.10 per tonne.
- Producer cars
  - Producer-car loading sites remained unchanged at 272.
  - Scheduled producer-car shipments decreased 27.8% to 2,726 carloads.
    - Lowest volume recorded under the GMP.

Section 1: Production and Supply

Indicator Description	Table	1999-00	2016-17	2017-18	2018-19 Q1	Q2	Q3	Q4	YTD	% VAR
Western Canada Production and Supply										
Crop Production (000 tonnes)	1A-1	55,141.7	72,878.1	72,370.2	71,723.6				71,723.6	-0.9%
Carry Forward Stock (000 tonnes)	1A-2	7,418.2	7,543.9	8,574.0	10,404.6				10,404.6	21.4%
Grain Supply (000 tonnes)		62,559.9	80,422.0	80,944.2	82,128.2				82,128.2	1.5%
Crop Production (000 tonnes) – Special Crops	1A-3	3,936.7	8,727.3	7,382.2	6,625.8				6,625.8	-10.2%

DISCUSSION AND ANALYSIS

PRODUCTION AND SUPPLY
[See TABLES 1A-1 through 1A-3]

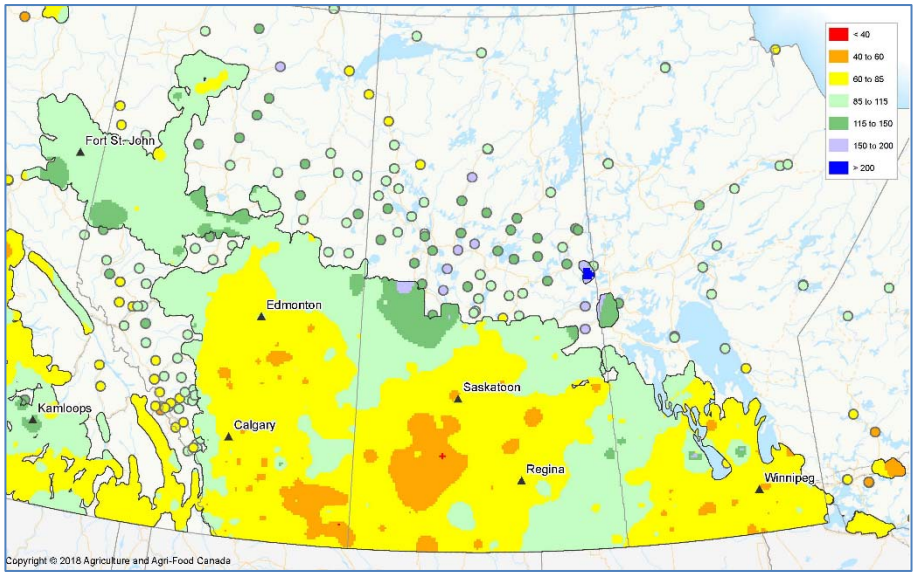
Western Canadian grain production fell to 71.7 million tonnes in the 2018-19 crop year, a 0.9% decrease from the previous crop year's 72.4 million-tonne crop. This marked the sixth consecutive growing season in which total production exceeded 60 million tonnes, and the fourth to have surpassed 70 million tonnes.

The 2018 growing season began with a promising start across much of the prairies. Favourable weather in Manitoba permitted timely seeding, which was followed by the rain and warmer temperatures needed for rapid germination, emergence and plant growth. Saskatchewan experienced a similarly good start, with seeding largely completed by the end of May 2018. Initially dry conditions were alleviated by the arrival of irregular rains, which increased topsoil moisture and allowed seeds to germinate. The situation was somewhat different in Alberta, where a late spring delayed seeding well into May. But warm and dry conditions allowed seeding to progress rapidly, with the timely arrival of June rains relieving parched soil conditions.

An otherwise advantageous growing season led to the expectation of another bountiful harvest. But the mid-September arrival of an extended period of damp, cool weather soon began to adversely impact harvesting activity and contain these hopes. Early snowfalls only aggravated the situation, pushing more of the harvesting into October. Better weather in the latter half of the month allowed combining to near completion, but the toll on grain quality was already apparent: grain collected early in the season earned top grades while that taken off after the rain and snow rated no better than feed.

Although lower in general quality, the 2018 crop proved only moderately smaller than the previous year's harvest. Saskatchewan fared better than most, with a 1.8% increase in grain production against declines of 1.7% in Manitoba and 5.0% in Alberta. These variances did little to change their relative standings, with Saskatchewan accounting for half of the total tonnage harvested, or 35.8 million tonnes; followed by Alberta with 31.8%, or 22.8 million tonnes; Manitoba with 17.6%, and 12.6 million tonnes; and British Columbia with 0.6%, and 449,100 tonnes.

Percent of Average Precipitation (1 April to 31 August 2018)



Changing Face of the Harvest

The most striking changes in production are to be found in both the quantity and mix of grains now harvested. While growing conditions have always resulted in significant swings in the size of the overall crop, until 2013 prairie grain production seldom reached beyond an average of 55.0 million tonnes annually. Moreover, it was not until 2013 that production sharply surpassed this benchmark level, to reach a record 77.0 million tonnes. In the wake of that historic harvest, the amount of grain drawn from prairie fields has repeatedly surpassed the earlier standard, to around an average of 68.9 million tonnes annually. Such enlarged outputs, now

deemed typical, reflect the higher yields being achieved through advancements in plant genetics and agronomic practices.

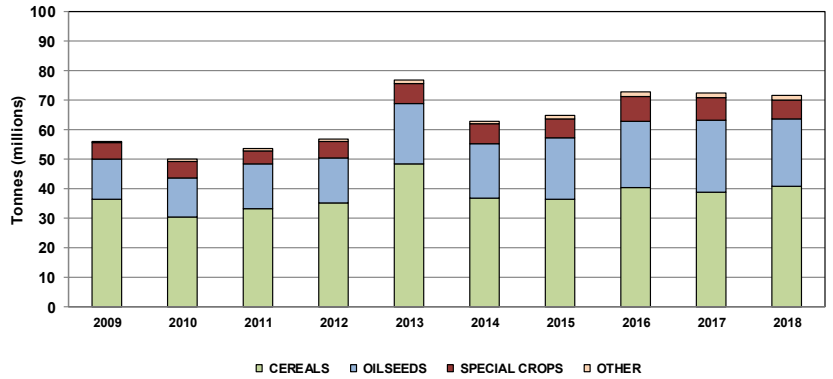
At the outset of the GMP, cereals constituted about three-quarters of all grains grown in Western Canada. By the 2018-19 crop year, however, these same commodities consistently accounted for under 60% of the total tonnes harvested. To be clear, the actual output of cereals, which totaled 40.9 million tonnes in the latest crop year, has not declined materially in the last two decades. In fact, production has deviated little from the 41.1 million tonnes reported in the GMP's base year. Rather, its significance has simply diminished against the heightened output of other commodities.

There are two aspects to this expansion: increased oilseed production; and increased pulse production. On a combined basis, these commodities now account for just over 40% of the grains grown in Western Canada. By far, the most significant contributor to the overall gain has been the former, with combined canola, soybean and flaxseed harvests reaching 22.7 million tonnes in the 2018-19 crop year; more than double the base year's 9.7 million tonnes. This was bolstered by an analogous increase in the output of special crops, especially dry peas and lentils, which rose to 6.6 million tonnes from 3.9 million tonnes during the same period.

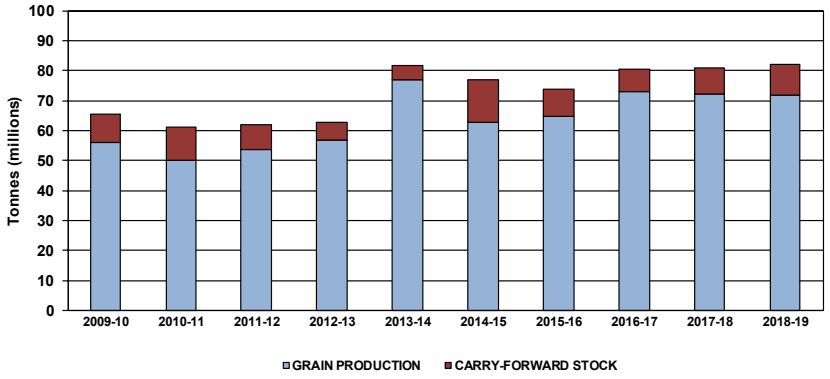
Increased Grain Supply and GHTS Workload

The amount of grain that the GHTS handles in any given crop year is not defined by production alone; it is also affected by the amount of grain held over in inventory from the previous crop year. These carry-forward stocks typically inflate current-year production values by another 15%.[1] With carry-forward stocks of 10.4 million tonnes the total grain supply reached just over 82.1 million tonnes in the 2018-19 crop year, an increase of 1.5% over the previous year's 80.9 million tonnes, and marginally surpassing the 81.9-million-tonne record set just five years earlier. At the close of the 2018-19 crop year, an outstanding 8.4 million tonnes remained as carry-out stocks.

Grain Production - Principal Commodities
(Western Canada)



Grain Supply
(Western Canada)



1 Carry-forward stocks are defined as inventories on hand at farms or primary elevators at the close of a crop year (i.e., 31 July) and the beginning of a new crop year (i.e., 1 August).

Changes in both the size and composition of recent crops has spurred the GHTS into adding new capacity. The most immediate manifestation of this has been in the establishment of extra storage, be it on individual farms or at country elevators. Moreover, it has also spurred investment in evermore efficient high-throughput elevators, all featuring loop tracks that allow for the continuous loading of unit trains reaching up to 150 hopper cars in length. By the close of the 2018-19 crop year, 21 such facilities had already been commissioned, with seven more under construction.

There has also been significant investment in additional port storage and handling capacity, much of it centred in Vancouver, British Columbia. Richardson International, which operates several terminal elevators, almost doubled the capacity of its Vancouver Terminal following the completion of a three-year expansion program in 2016. Alliance Grain Terminal recently completed a major upgrading of its ship-loading gallery, which allowed for a substantial increase in handling capacity. More noteworthy still is G3's construction of the first all-new terminal facility in Vancouver in several decades, with start-up slated for the first half of 2020. Parrish and Heimbecker is also spearheading development of the Fraser Grain Terminal, which is expected to become operational in late 2020. Analogous modernization initiatives have also been undertaken at other Vancouver area terminals, including those operated by Fibreco and Columbia Containers.

Likewise, there has been substantial new investment at the port of Prince Rupert, British Columbia. Not only did this include an upgrade to the grain-handling equipment at Prince Rupert Grain, it also encompassed the creation of a new, state-of-the-art container transloading operation by Ray-Mont Logistics to support growth through the port's still expanding Fairview Container Terminal.

And while financial resources have clearly been directed into addressing the immediate physical needs of handling a larger crop, the growth in non-traditional crop production has spurred other investments. Although this was initially focused on the development of domestic canola crushing facilities, the spotlight has now shifted. Much of the newer investment has been centered on special crop handling, as exemplified by the growth of AGT Foods and Ingredients, and value-added operations such as Roquette's building of a new pea protein manufacturing facility in Portage la Prairie, Manitoba.

But new investment has not been the purview of producers and grain companies alone. These same market forces have also been exerting pressure on the railways to invest in additional grain-handling capacity, the most visible facet being their purchases of new covered hopper cars. In addition, CN and CP have also moved on a variety of initiatives aimed at adding capacity, including double-tracking and siding extensions, locomotive purchases, and the hiring of new employees. Much the same can be said of marine carriers, which have been commissioning larger ships in a parallel effort to improve the efficiency of their own operations.

Section 2: Traffic and Movement

Indicator Description	Table	1999-00	2016-17	2017-18	2018-19 Q1	Q2	Q3	Q4	YTD	% VAR
Country Elevator Throughput										
Grain Throughput (000 tonnes) – Primary Elevators	2A-1	32,493.9	45,642.8	45,549.4	13,369.4	12,656.4	10,745.9	12,114.1	48,885.8	7.3%
Railway Traffic										
Traffic to Western Canada										
Railway Shipments (000 tonnes) – Ports Only	2B-1	26,439.2	39,651.2	39,263.1	11,221.9	11,464.3	9,595.0	10,395.1	42,676.4	8.7%
Railway Shipments (000 tonnes) – Western Domestic	2B-1	n/a	615.6	842.5	224.0	148.4	153.4	190.2	716.0	-15.0%
Traffic to Western Canada (Ports Only)										
Railway Shipments (000 tonnes) – All Grains	2B-1	26,439.2	39,651.2	39,263.1	11,221.9	11,464.3	9,595.0	10,395.1	42,676.4	8.7%
Railway Shipments (000 tonnes) – Hopper Cars	2B-1	25,664.6	38,084.3	37,351.9	10,723.7	10,946.0	9,083.7	9,991.7	40,745.1	9.1%
Railway Shipments (000 tonnes) – Non-Hopper Cars	2B-1	774.7	1,567.0	1,911.2	498.3	518.3	511.3	403.3	1,931.3	1.0%
Special Crop Shipments (000 tonnes) – All Grains	2B-2	2,102.9	5,805.7	3,669.5	1,208.8	1,313.6	1,011.1	1,171.2	4,704.7	28.2%
Special Crop Shipments (000 tonnes) – Hopper Cars	2B-2	1,844.1	5,491.0	3,284.2	1,091.8	1,192.9	906.2	1,092.1	4,283.0	30.4%
Special Crop Shipments (000 tonnes) – Non-Hopper Cars	2B-2	258.7	314.7	385.3	117.0	120.8	104.9	79.0	421.7	9.5%
Hopper Car Shipments (000 tonnes) – Origin Province	2B-3									
Hopper Car Shipments (000 tonnes) – Primary Commodities	2B-4	25,664.6	38,084.3	37,351.9	10,723.7	10,946.0	9,083.7	9,991.7	40,745.1	9.1%
Hopper Car Shipments (000 tonnes) – Detailed Breakdown	2B-5									
Hopper Car Shipments (000 tonnes) – Grain-Dependent Network	2B-6	8,685.9	10,385.9	10,970.0	3,280.2	3,256.8	2,660.5	3,146.3	12,343.8	12.5%
Hopper Car Shipments (000 tonnes) – Non-Grain-Dependent Network	2B-6	16,978.7	27,698.3	26,381.9	7,443.4	7,689.3	6,423.2	6,845.4	28,401.4	7.7%
Hopper Car Shipments (000 tonnes) – Class 1 Carriers	2B-7	23,573.5	37,365.3	36,710.8	10,511.1	10,715.6	8,919.2	9,774.8	39,920.6	8.7%
Hopper Car Shipments (000 tonnes) – Non-Class-1 Carriers	2B-7	2,091.0	718.9	641.1	212.6	230.4	164.5	217.0	824.5	28.6%
Traffic to Eastern Canada										
Railway Shipments (000 tonnes) – All Grains	2B-8	n/a	3,294.3	3,095.4	817.0	904.7	1,246.7	756.2	3,724.5	20.3%
Railway Shipments (000 tonnes) – Hopper Cars	2B-8	n/a	2,455.1	2,275.2	626.9	721.6	1,083.7	576.4	3,008.5	32.2%
Railway Shipments (000 tonnes) – Non-Hopper Cars	2B-8	n/a	839.2	820.2	190.1	183.1	163.1	179.8	716.0	-12.7%
Special Crop Shipments (000 tonnes) – All Grains	2B-9	n/a	582.9	501.9	113.2	117.1	114.9	76.9	422.1	-15.9%
Western Canadian Originated Traffic										
Railway Shipments (000 tonnes) – All Grains	2B-15	n/a	50,733.3	51,844.1	14,078.8	14,448.2	12,778.5	13,001.6	54,307.0	4.8%
Railway Shipments (000 tonnes) - Canada	2B-15	n/a	43,561.1	43,201.0	12,262.9	12,517.4	10,995.1	11,341.4	47,116.9	9.1%
Railway Shipments (000 tonnes) – United States	2B-15	n/a	6,881.6	8,271.9	1,719.6	1,851.6	1,709.0	1,592.1	6,872.4	-16.9%
Railway Shipments (000 tonnes) – Mexico	2B-15	n/a	290.6	371.2	96.3	79.1	74.3	68.0	317.7	-14.4%
Terminal Elevator Throughput										
Grain Throughput (000 tonnes) – All Commodities	2C-1	23,555.5	36,835.7	34,875.7	9,153.5	10,033.8	8,109.1	9,788.4	37,084.8	6.3%
Hopper Cars Unloaded (number) – All Carriers	2C-2	278,255	399,540	372,685	108,596	105,341	78,475	104,800	397,212	6.6%
Hopper Cars Unloaded (number) – CN	2C-2	144,800	201,313	191,690	53,609	55,662	41,533	52,005	202,809	5.8%
Hopper Cars Unloaded (number) – CP	2C-2	133,455	198,227	180,995	54,987	49,679	36,942	52,795	194,403	7.4%
Truck Volumes to US Destinations										
Truck Shipments to US (000 tonnes) – Destination Region / Origin Province	2D-1									
Truck Shipments to US (000 tonnes) – Origin Province / Commodity	2D-2	n/a	2,269.7	2,405.3	563.1	484.6	587.0	534.2	2,168.9	-9.8%
Truck Shipments to US (000 tonnes) – Destination Region / Commodity	2D-3									

DISCUSSION AND ANALYSIS

COUNTRY ELEVATOR THROUGHPUT
[See TABLE 2A-1]

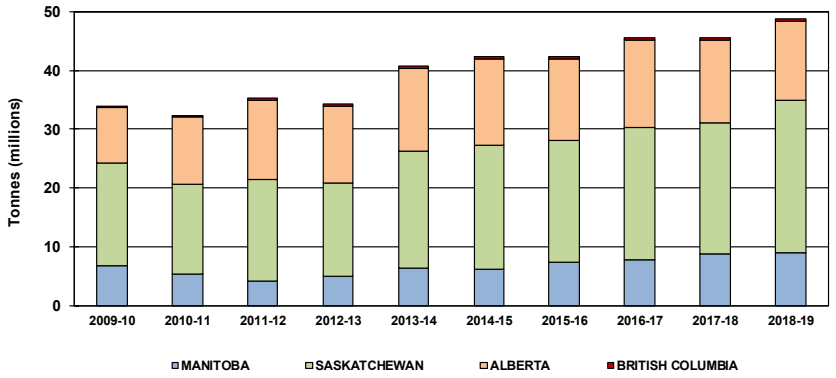
Country elevator throughput, as gauged by all road and rail shipments from the primary elevators situated across Western Canada, increased by 7.3% in the 2018-19 crop year, to 48.9 million tonnes. This constituted the most grain ever accepted into the GHTS under the GMP.

Primary-elevator shipments from Saskatchewan increased by 3.5 million tonnes, or 15.6%, to 25.9 million tonnes. This was complemented by increases in the throughput for Manitoba, which rose by 0.3 million tonnes, or 3.8%, to 9.0 million tonnes; and British Columbia, which climbed 86,600 tonnes, or 29.3%, to 382,600 tonnes. Offsetting these gains was a 0.6-million tonne, or 4.1%, reduction in volume for Alberta, which posted shipments of 13.6 million tonnes. Despite these shifts, the proportion accorded to shipments from each province has remained largely consistent with those benchmarked in the GMP's base year. Manitoba held an 18.5% share; Saskatchewan, 52.9%; Alberta, 27.8%; and British Columbia, 0.8%.

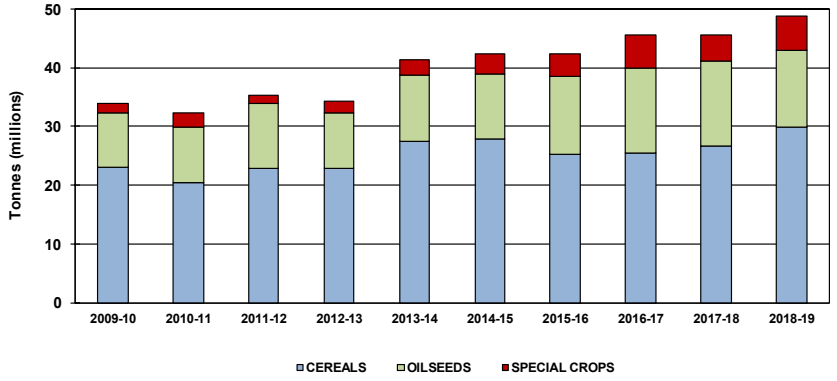
Cereals accounted for most of the grain shipped through the primary elevator network, with total cereal shipments increasing by 11.5%, to 29.9 million tonnes from 26.8 million tonnes a year earlier. Moreover, their share of the total handle rose to 61.1% from 58.8%. This share gain was also abetted by a decline in the demand for oilseeds, which were adversely impacted by recently imposed Chinese import bans on Canadian canola. On a combined basis, oilseeds and special crops shipments rose by 1.3%, to an aggregated 19.0 million tonnes from 18.8 million tonnes the previous year.

Notwithstanding this compositional change, primary-elevator throughput provides the first physical signal to industry stakeholders of the attendant workload to be borne by the GHTS's railways and terminal elevators. Given an increase of 7.3%, the projected workload appeared noticably greater than the record-setting volume handled in the 2017-18 crop year.

Primary Elevator Throughput - Originating Province



Primary Elevator Throughput - Principal Commodities



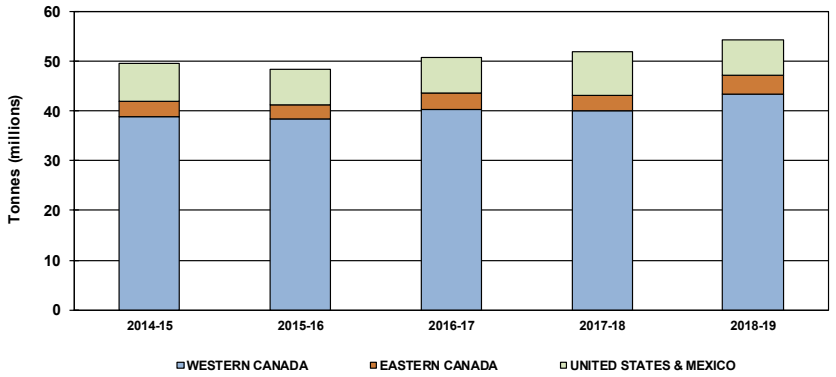
RAILWAY TRAFFIC
[See TABLES 2B-1 through 2B-20]

Although primary elevators serve as the principal gateway in moving grain through the GHTS, grain also enters the system by way of process elevators and producer-car loading sites. Producer deliveries to all of these facilities totaled a record 58.6 million tonnes in the 2018-19 crop year, 4.6% more than the 56.0 million tonnes tendered a year earlier.[2] Ultimately, all of this grain is loaded into railcars or trucks for movement to destinations located throughout the system.[3]

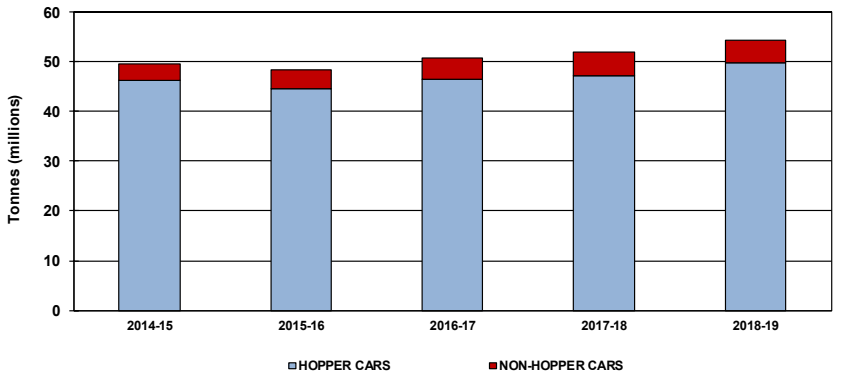
Railway grain shipments from Western Canada totaled 54.3 million tonnes in the 2018-19 crop year, up 4.8% from the previous crop year's 51.8 million tonnes. Just over 47.1 million tonnes of this traffic, or 86.8%, was directed to destinations within Canada itself, be it for export or domestic use. Traffic to destinations in Western Canada – represented heavily by the ports of Vancouver, Prince Rupert and Thunder Bay – accounted for much of this volume, 43.4 million tonnes. These same shipments also significantly overshadowed the 3.7 million tonnes directed to Eastern Canada, and the remaining 7.2 million tonnes, or 13.3%, destined to the United States and Mexico.

Just under 49.9 million tonnes of the traffic originated in Western Canada, or 91.9%, moved to its destination in covered hopper cars. The remaining 4.4 million tonnes moved in some other form of railway equipment, including boxcars and containers for bulk and bagged grain products, and tankcars for liquids such as canola oil. It is worth noting that while these latter movements represented only 8.1% of total railway shipments in the 2018-19 crop year, its share has gradually risen from the 6.9% benchmarked just four years earlier. Much of this gain is traceable to increased canola oil shipments.

Railway Grain Shipments - Principal Destinations



Railway Grain Shipments - Hopper and Non-Hopper Cars



2 Statistics drawn from Canadian Grain Commission, *Grain Deliveries at Prairie Points.*

3 Until passage of Bill C-49, which revised the list of grains specified in Schedule II of the *Canada Transportation Act*, not all railway grain traffic – but especially soybeans – was captured in the traffic statistics provided to the Monitor. With this structural deficiency in the reporting of railway grain volumes having been addressed, greater confidence can now be ascribed to the completeness of the traffic statistics presented throughout this report.

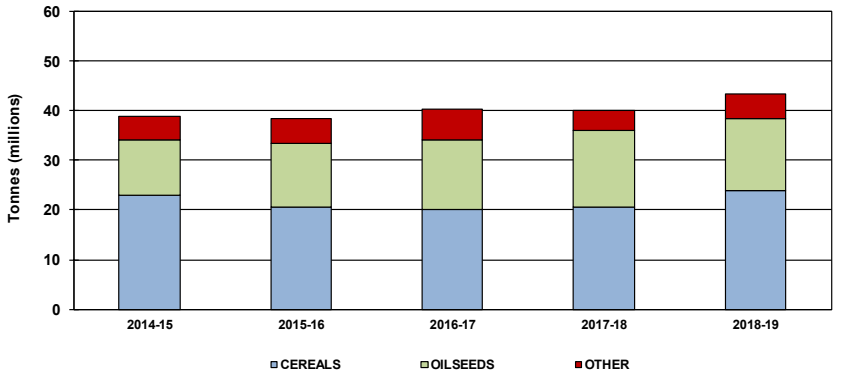
Traffic to Western Canada
[See Tables 2B-1 through 2B-7]

Much of the 43.4 million tonnes of grain moved by rail to points in Western Canada during the 2018-19 crop year were directed to one of its four ports: Vancouver; Prince Rupert; Thunder Bay; and Churchill.[4] These shipments amounted to just under 42.7 million tonnes, an increase of 8.7% over the 39.3 million tonnes handled a year earlier. Another 715,900 tonnes were directed to points outside of the ports themselves, denoted as Western Domestic destinations. These shipments fell markedly in the preceding twelve months, down 15.0% from 842,500 tonnes the previous year.

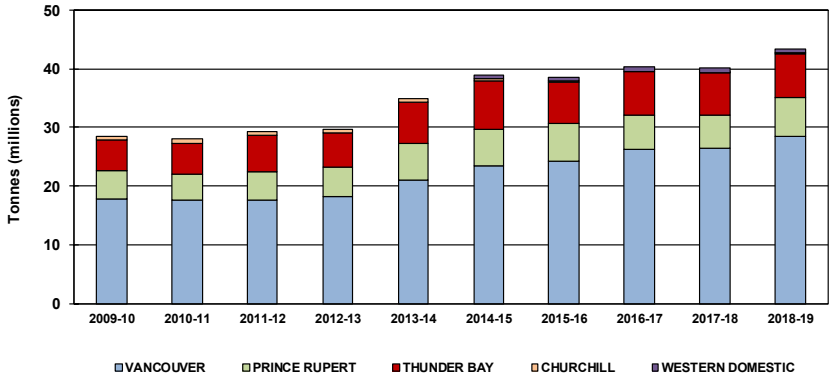
As the largest element in the movement of grain to points in Western Canada, cereals represented slightly more than half of all railway traffic, totalling 23.9 million tonnes in the 2018-19 crop year. This was followed by oilseeds at 14.5 million tonnes, and other commodities at 5.0 million tonnes. Cereals and other commodities posted year-over-year volume increases, amounting to 16.5% and 20.1% respectively. Running counter to these increases were oilseeds, which posted a 6.0% decline in volume owing in large measure to Chinese import bans. This also resulted in a 5.1-percentage-point loss in movement share, which fell to 33.4% from 38.5% a year earlier.

Of all the ports in Western Canada, Vancouver continues to be the preferred destination for railway grain shipments. This is due not only to the ready access it provides to Asia-Pacific markets, but because of its favourable economics and year-round operations. During the 2018-19 crop year, Vancouver received 28.5 million tonnes of inbound grain, an increase of 7.9% over the previous year's 26.4-million-tonne handle. This denoted 65.6% of all railway shipments destined to points in Western Canada. Prince Rupert, which represents an additional west-coast outlet for this traffic, received 6.7 million tonnes of grain, up 18.9% from the 5.6 million tonnes handled a year earlier. This resulted in the port's share climbing to 15.4% from 14.0%. Together, these two ports accounted for 81.1% of the

Railway Grain Shipments - Main Commodities
(Western Canada)



Railway Grain Shipments - Main Destinations
(Western Canada)



4 Railway grain shipments to Churchill were discontinued at the end of the 2015-16 crop year when the port's terminal elevator owner decided to suspended operations in the face of declining volumes. No grain moved through Churchill until late in the 2018-19 crop year, following the terminal's reopening under new ownership.

grain directed into Western Canada; up noticeably from the 79.8% share seen just a year earlier.

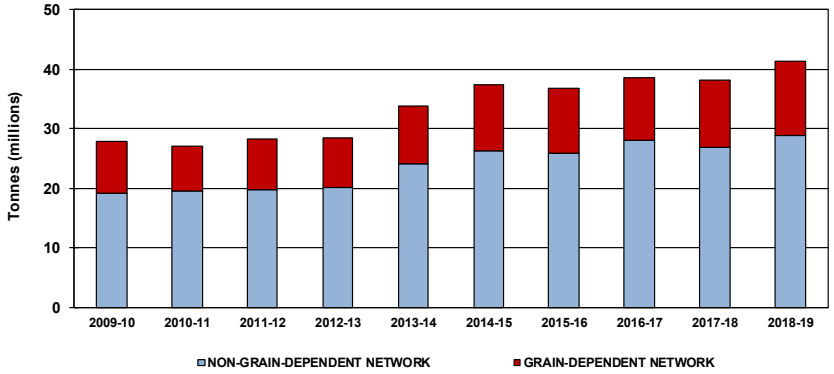
The increase in West Coast traffic adversely impacted the share given over to Thunder Bay, which declined to 17.3% from 18.1%, despite a 3.3% increase in rail deliveries, which totalled 7.5 million tonnes against 7.2 million tonnes a year earlier. A further 15,300 tonnes were directed to the port of Churchill in the wake of its reopening at the tail-end of the 2018-19 crop year. Railway grain shipments to non-port destinations – designated as Western Domestic – accounted for just 1.6% of all traffic. However, this proved noticeably less than the 2.1% share garnered a year earlier, owing in large measure to a 15.0% decrease in tonnage, which fell to 715,900 tonnes from 842,500 tonnes.

Covered Hopper Car Shipments

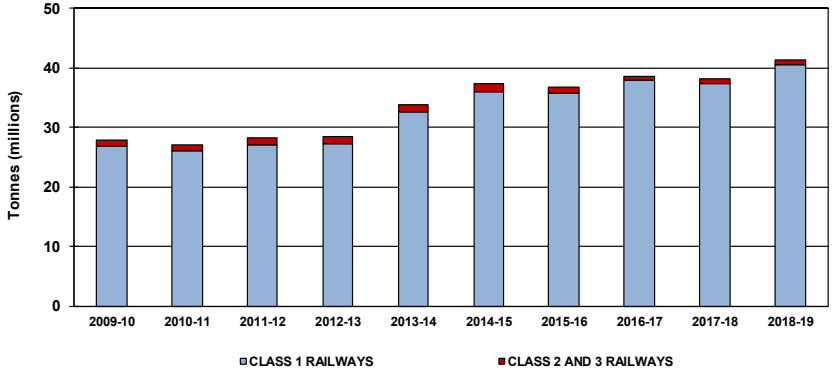
Covered hopper cars remain the primary means by which grain is conveyed to destinations within Western Canada. Of the 43.4 million tonnes shipped during the 2018-19 crop year, 41.4 million tonnes – or 95.3% – moved in covered hopper cars; just over 2.0 million tonnes of grain and grain-related products moved in other forms of railway equipment, including boxcars, tankcars and containers.

Covered-hopper-car shipments continue to originate primarily on the non-grain-dependent railway network of the Class 1 carriers, CN and CP. Of the 41.4 million tonnes that were directed to destinations in Western Canada, only 12.5 million tonnes, or 30.3%, was sourced from points on grain-dependent branchlines. This proportion remains consistent with the 33.8% share recorded almost two decades earlier. However, just 865,200 tonnes, or 2.1%, originated with the smaller Class 2 and 3 carriers (commonly referred to as regional and shortline railways). In effect, the share garnered by these smaller carriers has contracted to a quarter of what it represented at the beginning of the GMP.

Hopper-Car Shipments - Branchline Originations
(Western Canada)



Hopper-Car Shipments - Carrier Originations
(Western Canada)



Traffic to Eastern Canada
[See Tables 2B-8 through 2B-14]

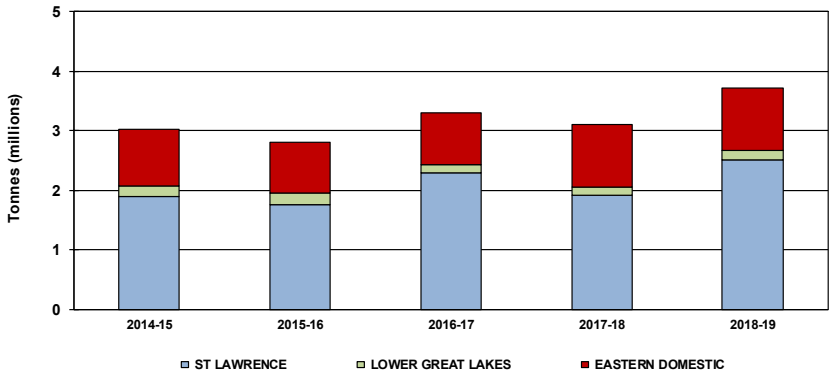
The movement of grain into Eastern Canada represents a fraction of what is directed into Western Canada. During the 2018-19 crop year, these railway shipments amounted to slightly more than 3.7 million tonnes, a gain of 20.3% over the 3.1 million tonnes shipped a year earlier. Comparatively, this amounted to less than one-twelfth of the tonnage directed into Western Canada. Over two-thirds of this traffic, almost 2.7 million tonnes, were shipped to the ports that extend from the Lower Great Lakes through the Gulf of St. Lawrence, and on to Halifax. Another 1.1 million tonnes were directed to inland points, designated as Eastern Domestic destinations.

Consistent with traffic routed to destinations in Western Canada, much of the traffic headed to points in Eastern Canada, just over 3.0 million tonnes, moved in covered hopper cars. The remaining 716,000 tonnes moved in other types of railway equipment. These latter movements represented a more substantive 19.2% of the regional total than the 4.7% they constituted in Western Canada.

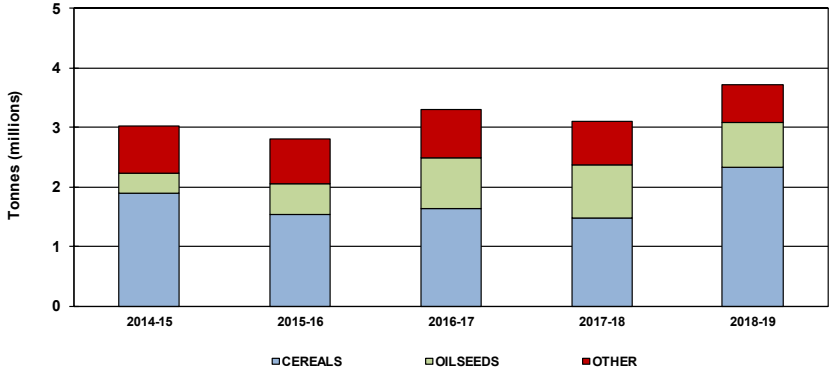
Similarly, cereals also embodied the largest traffic segment on eastbound movements, with volume up a dramatic 58.3%, to 2.3 million tonnes from 1.5 million tonnes a year earlier. This was followed by oilseeds, which accounted for 755,200 tonnes, but declined by 16.6% from the previous crop year's 905,700 tonnes. A further 640,400 tonnes were tied to other commodities, which fell 10.9% from 718,600 tonnes.

Special-crop shipments to Eastern Canada, which encompassed most other commodities, totalled 422,100 tonnes, down 15.9% from the 501,900 tonnes directed there the previous year. Like those headed to Western Canadian destinations, these shipments denoted only a modest share of the overall volume, 11.3%. Only 131,300 tonnes of this moved in covered hopper cars. Most special crops, representing 68.9% of the total volume, moved as non-hopper-car shipments (in either boxcars, tankcars or containers).

Railway Grain Shipments - Main Destinations
(Eastern Canada)



Railway Grain Shipments - Main Commodities
(Eastern Canada)



Covered Hopper Car Shipments

Most of the grain moving to Eastern Canada in covered hopper cars was sourced from points on the non-grain-dependent railway network in Western Canada. During the 2018-19 crop year this amounted to 2.4 million tonnes, up 34.2% from that originated a year earlier. Traffic originating at points on the grain-dependent network grew by a lesser 24.4%, to 578,700 tonnes from 465,300 tonnes. With 80.8% of the tonnage attributable to non-grain-dependent originations, this division is only moderately greater than the 69.7% accorded to traffic destined to points in Western Canada.

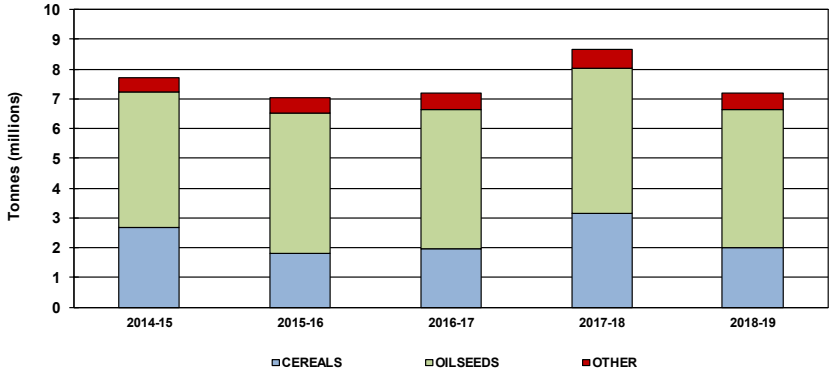
Similarly, a little over 2.8 million tonnes, or 94.7% of the grain shipped to Eastern Canada in covered hopper cars, originated on the lines of the major Class-1 railways. The tonnage originated by non-Class-1 carriers, which amounted to 160,800 tonnes, accounted for just 5.3%. These proportions are also consistent with the shares observed for traffic destined to points within Western Canada.

Traffic to the United States and Mexico
[See Tables 2B-15 through 2B-18]

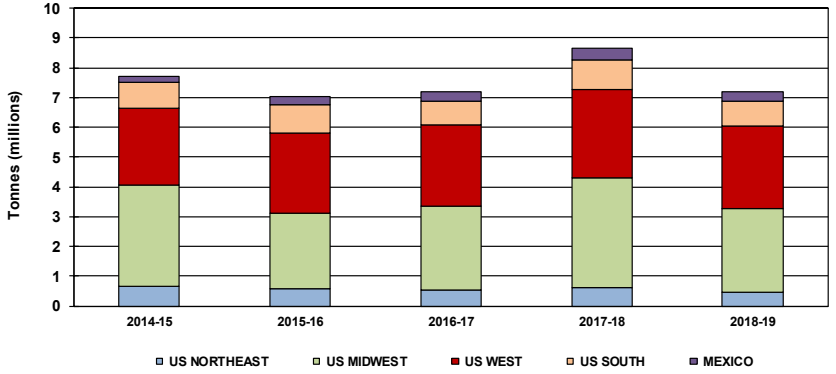
The amount of grain moved by rail to the United States and Mexico during the 2018-19 crop year totaled almost 7.2 million tonnes. This marked a 16.8% decrease from the 8.6 million tonnes directed into these markets a year earlier. Slightly less than 6.9 million tonnes of this was destined to the United States, down 16.9% from the 8.3 million tonnes handled the previous year. Although just 317,700 tonnes were earmarked for Mexico, shipments to that country fell by a slightly lesser 14.4%. Much of the overall tonnage decline was attributable to a smaller movement of cereal grains, especially wheat and durum.

Some 5.3 million tonnes of US-bound traffic moved in covered hopper cars in the 2018-19 crop year. This represented a 20.2% reduction from the 6.7 million tonnes handled a year earlier. Another 1.6 million tonnes moved in other types of railway equipment, which amounted to a marginal loss of 3.5% from what had been shipped the previous year.

Railway Grain Shipments - Main Commodities
(United States and Mexico)



Railway Grain Shipments - Main Destinations
(United States and Mexico)



Almost two-thirds of US-bound shipments, amounting to just under 4.5 million tonnes, were tied to the movement of canola and canola-related products, be it in the form of seed, meal or oil. Approximately half of this volume, 2.4 million tonnes, was directed to states in the US West, chiefly California. This was followed by another 1.1 million tonnes that moved into the Midwest, 639,100 tonnes into the South, and 308,400 tonnes into the Northeast. Cereals and other commodities accounted for a lesser 34.8% of the total tonnage.

On a broader basis, the US Midwest proved to be the largest market for Western Canadian grain, drawing in 2.8 million tonnes. This was closely followed by destinations in the US West, with just under 2.8 million tonnes; the US South, with 817,800 tonnes; and the US northeast, with 477,000 tonnes. Special crops figured marginally within this framework, with a total of only 60,700 tonnes being shipped to US destinations.

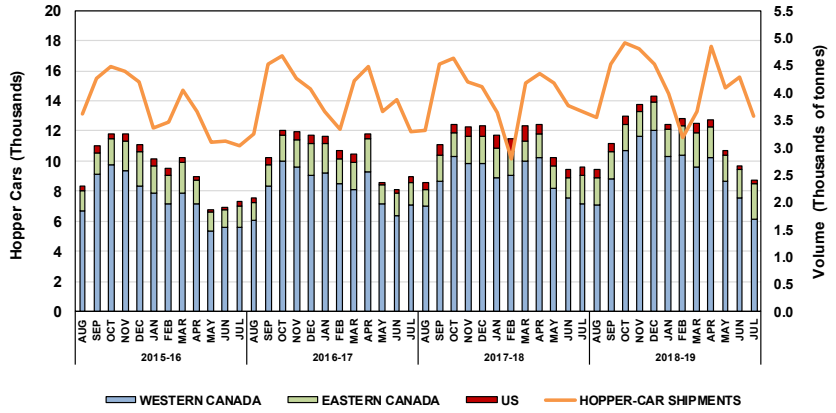
Grain imported into Canada by rail from the United States during the 2018-19 crop year totaled only 156,900 tonnes. However, this marked a 64.4% reduction from the 440,400 tonnes shipped a year earlier. The largest portion, amounting to 154,000 tonnes, was destined to points in Western Canada, with Eastern Canadian destinations drawing in just 2,900 tonnes. The bulk of this traffic, 45,600 tonnes, was comprised of soybean related products.

Loads on Wheels
[See Table 2B-20]

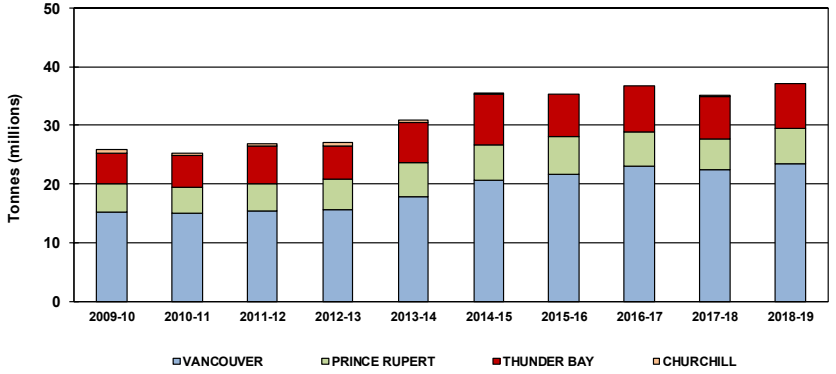
The pace at which grain traffic moves through the GHTS can be gauged by examining the number of loaded hopper cars in transit at specified moments in time; normally the Friday of any given week.[5] The 2018-19 crop year began with a weekly in-transit average of 9,407 cars for the month of August 2018. This increased gradually through the first five months of the crop year, ultimately reaching a weekly average of 14,305 cars in December 2018. The average hovered around the 12,500-car mark through April 2019, before then declining sharply, and ultimately falling

5 The measure cited here relates only to railway-supplied equipment. It specifically excludes the private equipment also employed by shippers in moving grain, mostly to destinations in the United States.

Loads on Wheels

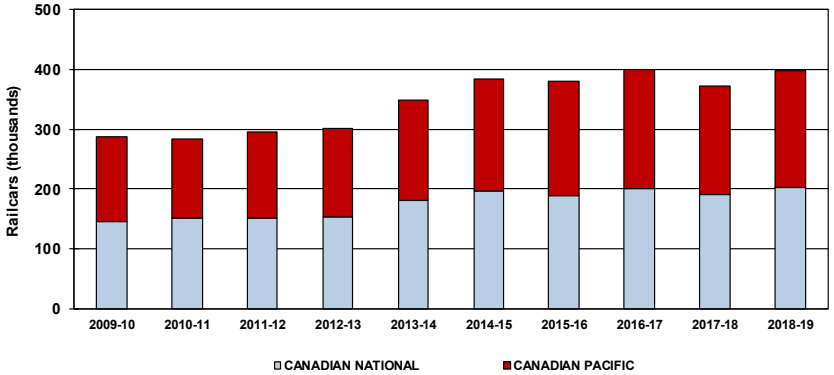


Terminal Elevator Throughput - Port
(Western Canada)



to 8,758 cars in July 2019. This meant that during any given week of the 2018-19 crop year, an average of 11,710 loaded cars were in transit to their destinations. This was 5.3% greater than the 11,119-car average recorded a year earlier. The broader characteristics proved consistent with other traffic measures: markedly larger year-over-year volumes with the heaviest movement periods being in the late fall and early spring. Similarly, 80.2% of the equipment was directed to destinations in Western Canada, 16.1% to markets in Eastern Canada, and 3.7% to those in the United States.

Terminal Elevator Unloads - Carrier
(Western Canada)



TERMINAL ELEVATOR THROUGHPUT
[See TABLES 2C-1 through 2C-2]

Ultimately, a large portion of the traffic handled by the railway system was directed to the various terminal elevators and bulk loading facilities located at the four ports in Western Canada. Port throughput, as gauged by the amount of grain shipped through these facilities, increased by 6.3% in the 2018-19 crop year, rising to a GMP record of 37.1 million tonnes from 34.9 million tonnes a year earlier.

The most significant grain volumes continued to move through the west-coast ports of Vancouver and Prince Rupert, which account for about four-fifths of the total handle. For Vancouver, total terminal elevator throughput increased by 4.5%, to reach a GMP record of 23.5 million tonnes, from 22.5 million tonnes a year earlier. Prince Rupert posted a gain of 17.1%, with terminal shipments rising to almost 6.0 million tonnes from 5.1 million tonnes. Combined, the tonnage passing through these two west-coast ports represented 79.5% of the overall total; up slightly from the 79.1% share seen a year earlier. Given a weaker 4.1% increase in tonnage for Thunder Bay, which rose to almost 7.6 million tonnes from the previous crop year's 7.3 million tonnes, the port's share slipped to 20.4% from 20.9%. Churchill garnered a 0.1% share following the clearance of some 26,900 tonnes of stored wheat.

Terminal Elevator Unloads

Carrier activity is reflected in the number of covered hopper cars unloaded at Western Canadian bulk grain terminals. The total number of railcars unloaded during the 2018-19 crop year increased by 6.6%, rising to 397,212 cars from 372,685 cars a year earlier. The division between handling carriers was, again, almost evenly divided. The Canadian National Railway (CN) unloaded 202,809 hopper cars, an increase of 5.8% over the 191,690 cars delivered a year earlier. In comparison, the Canadian Pacific Railway's (CP) handlings increased by a greater 7.4%, to 194,403 cars from 180,995 cars. This made CN the largest serving railway to bulk grain terminals in Western Canada, with a share of 51.1% against 48.9% for CP.

EXPORT CONTAINER TRAFFIC
[See TABLE 2C-3]

For well over a century, grain exiting Canada through its major ports has been reliant on bulk carriers to reach offshore markets. However, with the advent of modern shipping containers, an increasingly larger share of Canada's export grain is moving by container. Moreover, this growth is being facilitated by new transloading facilities, which allows grain carried to port by railway hopper cars to be efficiently reloaded into a series of containers for individual shipment overseas.

Having secured data centred on overall port-loading activity in Montreal, Vancouver and Prince Rupert, the GMP can now gauge the volume of grain leaving the country in containers. For the 2018-19 crop year, this amounted to 4.9 million tonnes, which denoted a 25.8% surge over the 3.9 million tonnes shipped a year earlier. Much of this gain could be traced to the sharply greater volumes that moved through west-coast ports. A new transload facility in Prince Rupert contributed greatly to this increase. The facility, which was opened by Ray-Mont Logistics in 2017, is state-of-the-art, and designed to leverage the economic efficiencies offered by unit-train operations.

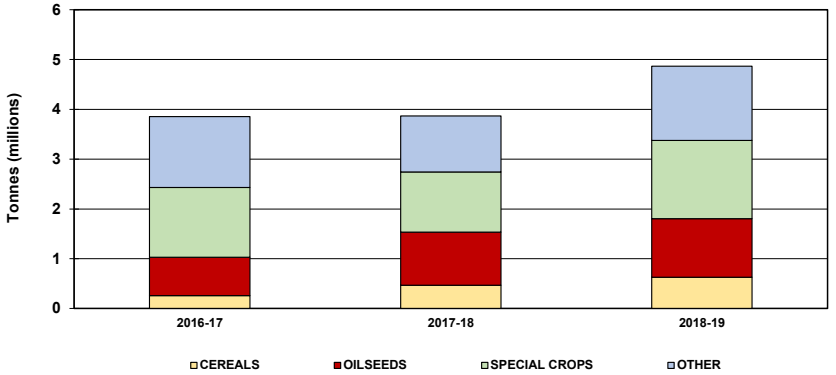
Much of the growth witnessed over the last three crop years has been tied to the containerized shipment of cereals and oilseeds, which reached a combined 1.8 million tonnes in the 2018-19 crop year, against 1.0 million tonnes just three years earlier. Wheat and canola shipments figured prominently in these gains and helped drive their combined share of the total volume up by more than ten points, to 37.1% from 26.7%. Conversely, a significantly lesser 237,800-tonne net gain for a variety of special crops and other commodities saw their share of the total fall to 62.9% from 73.3%.

TRUCK TRAFFIC TO THE UNITED STATES
[See TABLES 2D-1 through 2D-3]

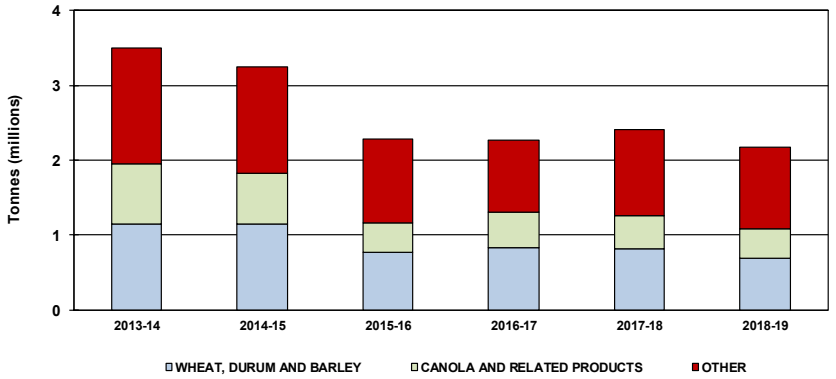
Shipments of Western Canadian grain into the United States by truck totaled just under 2.2 million tonnes in the 2018-19 crop year. This proved 9.8% less than the 2.4 million tonnes shipped a year earlier. Reductions were noted for most commodities, with a 14.8%, or 121,200-tonne, decline in wheat, durum and barley shipments accounting for just over half of the total loss. This was enlarged by other losses, including an 8.8% drop in canola and related products, and a 6.7% decrease in various other commodities (the most prominent decliners being peas and soybeans).

As with railway shipments, the preponderance of the grain trucked into the United States, amounting to just under 1.4 million tonnes, was directed into the US Midwest. This was followed by destinations in the US West, with 438,000 tonnes; the US Northeast, with 262,800 tonnes; and the US South, with 87,900 tonnes.

Export Container Shipments - Canadian Ports



Truck Shipments - United States Destinations



Section 3: Infrastructure

Indicator Description	Table	1999-00	2016-17	2017-18	2018-19 Q1	Q2	Q3	Q4	YTD	% VAR
Country Elevator Infrastructure										
Delivery Points (number)	3A-1	626	277	281	278	282	281	277	277	-1.4%
Elevator Capacity (000 tonnes)	3A-1	7,443.9	8,163.2	8,311.7	8,430.8	8,596.0	8,618.1	8,717.9	8,717.9	4.9%
Elevators (number) – Province	3A-1									
Elevators (number) – Railway Class	3A-2	917	391	400	392	402	401	399	399	-0.3%
Elevators (number) – Grain Company	3A-3									
Elevators Capable of MCB Loading (number) – Province	3A-4									
Elevators Capable of MCB Loading (number) – Railway Class	3A-5	317	254	257	255	258	258	256	256	-0.4%
Elevators Capable of MCB Loading (number) – Railway Line Class	3A-6									
Elevator Closures (number)	3A-7	130	16	3	13	2	3	7	25	733.3%
Elevator Openings (number)	3A-8	43	24	12	5	12	2	5	24	100.0%
Delivery Points (number) – Accounting for 80% of Deliveries	3A-9	217	99	101	n/a	n/a	n/a	n/a	101	0.0%
Railway Infrastructure										
Railway Infrastructure (route-miles) – Total Network	3B-1	19,390.1	17,276.1	17,279.9	17,279.9	17,279.9	17,279.9	17,279.9	17,279.9	0.0%
Railway Infrastructure (route-miles) – Class-1 Network	3B-1	14,503.0	14,606.5	14,610.3	14,610.3	14,610.3	14,610.3	14,610.3	14,610.3	0.0%
Railway Infrastructure (route-miles) – Non-Class-1 Network	3B-1	4,887.1	2,669.6	2,669.6	2,669.6	2,669.6	2,669.6	2,669.6	2,669.6	0.0%
Railway Infrastructure (route-miles) – Non-Grain-Dependent Network	3B-1	14,513.5	14,009.8	14,028.7	14,028.7	14,028.7	14,028.7	14,028.7	14,028.7	0.0%
Railway Infrastructure (route-miles) – Grain-Dependent Network	3B-1	4,876.6	3,266.3	3,251.2	3,251.2	3,251.2	3,251.2	3,251.2	3,251.2	0.0%
Railway Fleet Size (railcars) – Average Weekly	3B-2	n/a	23,976	23,967	24,513	26,292	25,893	26,351	25,742	7.4%
Served Elevators (number)	3B-3	884	353	361	353	357	356	352	352	-2.5%
Served Elevators (number) – Class 1 Carriers	3B-3	797	318	327	319	322	321	321	321	-1.8%
Served Elevators (number) – Non-Class-1 Carriers	3B-3	87	35	34	34	35	35	31	31	-8.8%
Served Elevators (number) – Grain-Dependent Network	3B-3	371	116	117	109	111	111	106	106	-9.4%
Served Elevators (number) – Non-Grain-Dependent Network	3B-3	513	237	244	244	246	245	246	246	0.8%
Served Elevator Capacity (000 tonnes)	3B-3	7,323.0	7,961.3	8,109.0	8,231.1	8,379.2	8,400.1	8,487.1	8,487.1	4.7%
Served Elevator Capacity (000 tonnes) – Class 1 Carriers	3B-3	6,823.2	7,732.5	7,885.5	8,007.6	8,128.5	8,149.5	8,256.6	8,256.6	4.7%
Served Elevator Capacity (000 tonnes) – Non-Class-1 Carriers	3B-3	499.7	228.8	223.5	223.5	250.7	250.7	230.4	230.4	3.1%
Served Elevator Capacity (000 tonnes) – Grain-Dependent Network	3B-3	2,475.4	2,017.5	2,004.8	1,982.3	2,025.5	2,020.7	1,995.7	1,995.7	-0.5%
Served Elevator Capacity (000 tonnes) – Non-Grain-Dependent Network	3B-3	4,847.6	5,943.8	6,104.2	6,248.8	6,353.7	6,379.4	6,491.3	6,491.3	6.3%
Terminal Elevator Infrastructure										
Terminal Elevators (number)	3C-1	15	16	16	16	16	16	17	17	6.3%
Terminal Elevator Storage Capacity (000 tonnes)	3C-1	2,678.6	2,485.0	2,485.0	2,485.0	2,485.0	2,485.0	2,542.5	2,542.5	2.3%

DISCUSSION AND ANALYSIS

COUNTRY ELEVATOR INFRASTRUCTURE
[See TABLES 3A-1 through 3A-9]

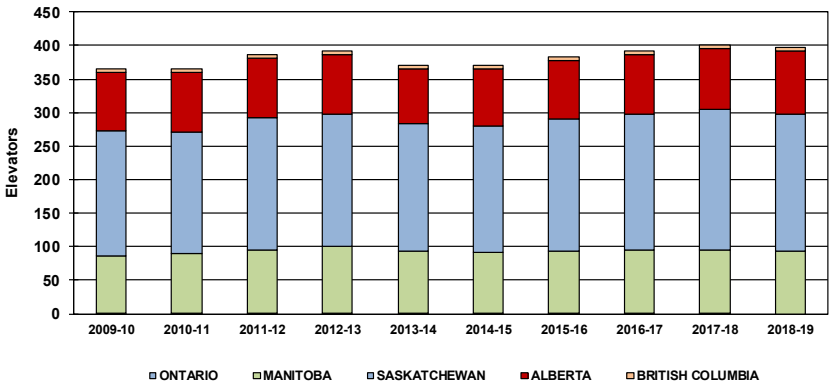
At the outset of the 1999-2000 crop year, there were 1,004 licensed primary and process elevators situated across the prairies. By the close of the 2018-19 crop year, what remained encompassed a total of 399 facilities, representing a reduction of 60.3% from the base year. This decline marks one of the most visible changes that have taken place in the GHTS since the beginning of the GMP. However, much of this rationalization was concentrated in the GMP's first seven years, with only modest changes having occurred after the 2006-07 crop year.

The 2018-19 crop year produced a one-elevator reduction in the network. This came about through the closure of 25 elevators, chiefly the smaller Class A and B facilities, along with the licensing of 24 others.[6] Among the newly licensed elevators were nine recently constructed loop-track facilities: Three by G3 Canada; two apiece by GrainsConnect Canada and Viterra; and one each by Paterson Grain and Parrish and Heimbecker.

At the close of the 2018-19 crop year, 204, or 51.1% of Western Canada's licensed elevators, were situated in Saskatchewan. This was followed by Alberta and Manitoba, with 95 and 93 elevators, and shares of 23.8% and 23.3% respectively. The GHTS's remaining seven facilities were divided between British Columbia, with five, and Ontario, with two. None of these proportions are far removed from those observed in the GMP's base year.

Much of the observed decline in elevators came from the closure of hundreds of the iconic wood-crib facilities that used to be found in virtually every small prairie town. Although some would be repurposed by new owners, 564 licensed Class A elevators, along with 133 Class B elevators, ultimately closed their doors during the last 20 years. These

Country Elevators - Provincial Distribution



closures effectively drove a 408-community constriction in the grain-delivery network itself, which by the end of the 2018-19 crop year encompassed 277 locations as compared to the 685 locations benchmarked at the beginning of the GMP's base year.

However, the smaller, wood-crib facilities were not the only elevators to be closed. Another 28 of the smaller Class C high-throughput elevators have also been shuttered. Only the largest high-throughput facilities, the licensed Class D elevators, have increased during this period, expanding more than threefold, to 158 from 38 in the base year. By the close of the

6 The facility classes employed here mirror the thresholds delineated by Canada's major railways at the beginning of the GMP for the receipt of discounts on grain shipped in multiple-car blocks. At that time, these thresholds involved shipments of 25, 50 or 100 railcars. For comparative purposes, the GMP groups elevators into four classes, which are based on the loading capability of each facility as defined by the number of railcar spots each possesses. Those with less than 25 car spots are deemed to be Class A facilities; those with 25-49, Class B; those with 50-99, Class C; and those with 100 or more, Class D.

2018-19 crop year, high-throughput facilities accounted for 52.9% of total system elevators and 82.5% of its storage capacity. Both shares stand significantly above their respective base-year values of 11.9% and 39.4%.

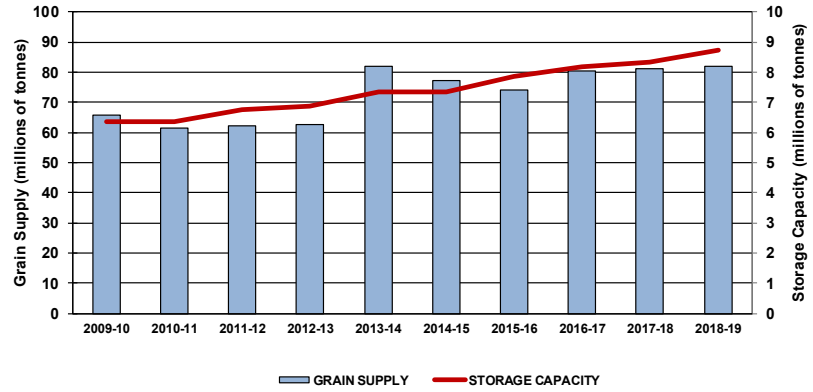
Of still greater importance is the fact that an even more efficient generation of Class-D facilities has been emerging. Not only do these facilities have more storage capacity than their forerunners, they also feature loop tracks with standing capacity for up to 150 railcars, which permits faster loading and more efficient unit-train operations.

Owing to its initially smaller footprint, G3 has made the greatest strides in developing loop-track operations, with seven such facilities now forming the backbone of its ten-elevator network. However, the concept has been embraced by most major grain handlers in Western Canada, with several having built loop-track facilities of their own. In fact, virtually all new elevator construction undertaken in the last four crop years – including those of new entrants such as Ceres Global Ag Corp., GrainsConnect Canada and Ilta Grain – have incorporated loop-track designs. At the close of 2018-19 crop year, some 21 loop-track facilities were in operation, with nine having opened in the previous twelve months.

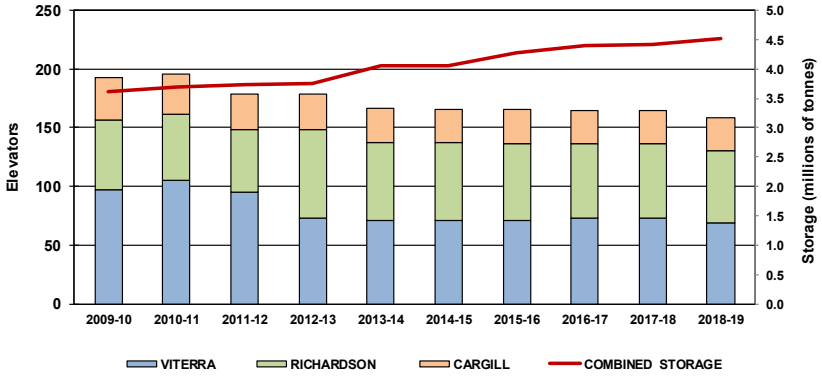
While the advent of these next-generation facilities strongly hints at potential future improvements in GHTS efficiency, it does not imply that the non-major grain handlers are being displaced as a result. In fact, the specialization of many has only served to fortify their positions in the marketplace, with firms like AGT Foods and Ingredients, Canpulse Foods, Ceres Global Ag, Providence Grain Group and Scoular Canada all having expanded their presence in a highly competitive environment.

While the overall number of elevators has changed little over the last decade, the network's storage capacity has risen steadily. By the close of the 2018-19 crop year it stood at just over 8.7 million tonnes, a new GMP

Grain Supply and Country Elevator Storage Capacity



Largest Grain Companies - Elevators and Storage Capacity
(Western Canada)



record. Moreover, this embodies a 53.3% increase over the 5.7-million-tonne low reached under the GMP 15 years earlier. This expansion has effectively paralleled the rise in the grain supply, with roughly one tonne of storage being added for every ten-tonne increase in the grain supply.

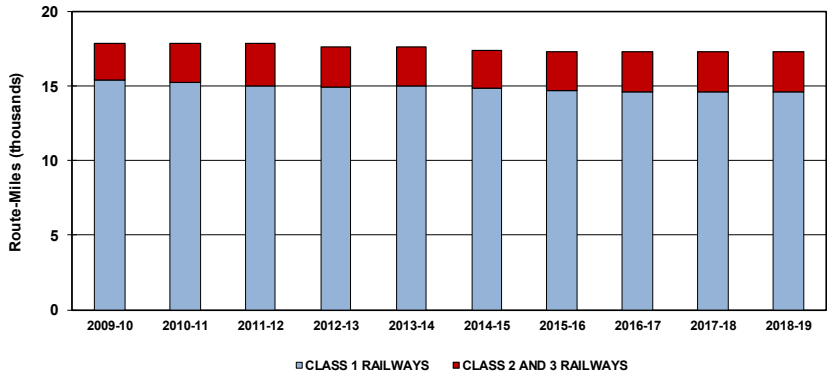
The 399 facilities making up the country-elevator network are licensed by dozens of separate companies. However, there are three principal grain handlers in western Canada, accounting for approximately three-quarters of the annual export movement: Viterra Inc., Richardson International, and Cargill Limited. Together, they have driven much of the industry's modernization efforts, and collectively oversee the operation of 39.8% of its facilities and 51.9% of its associated storage capacity.

RAILWAY INFRASTRUCTURE
[See TABLES 3B-1 through 3B-3]

Changes to the GHTS's railway infrastructure have been substantially less than that of the country-elevator network. This is chiefly because elevator closures precede any railway rationalization effort that would ensue. Moreover, given the breadth of the railway network and the diversity of the traffic it supports, any rationalization can never fully mimic that of grain elevators alone. In fact, over the last 20 years, the railway network contracted only one-sixth as much as the country elevator network, shedding 2,188.3 route-miles, or 11.2%, of the 19,468.2 route-miles originally benchmarked in the GMP's base year. With no additional transfers or discontinuances recorded in the 2018-19 crop year, the railway network remained unchanged at 17,279.9 route-miles.

To date, over three-quarters of the network reduction can be attributed to the discontinuance of some 1,703.5 route-miles of light-density, grain-dependent branch lines.[7] Other changes in the composition of the railway network came from the transfer of various branch lines to smaller shortline railways, although none were recorded in the last twelve months. At the close of the 2018-19 crop year Class-1 carriers operated 84.6%, or 14,610.3 route-miles, while the smaller Class-2 and 3 carriers operated the remaining 15.4%, or 2,669.6 route-miles.[8]

Railway Infrastructure - Route-Miles Operated
(Western Canada)



7 The term "grain-dependent branch line", while largely self-explanatory, denotes a legal designation under the *Canada Transportation Act*. Since the Act has application to federally regulated railways only, grain-dependent branch lines transferred to provincially regulated carriers lose their federal designation. This can lead to substantive differences between what might be considered the physical, and the legally-designated, grain-dependent branch line networks. For comparison purposes only, the term has been affixed to those railway lines so designated under Schedule I of the *Canada Transportation Act (1996)* regardless of any subsequent change in ownership or legal designation.

8 The classes used here to group railways are based on industry convention: Class 1 denotes major carriers such as the Canadian National Railway or the Canadian Pacific Railway; Class 2, regional railways such as the former BC Rail; and Class 3, shortline entities such as the Great Western Railway.

Covered Hopper Car Fleet

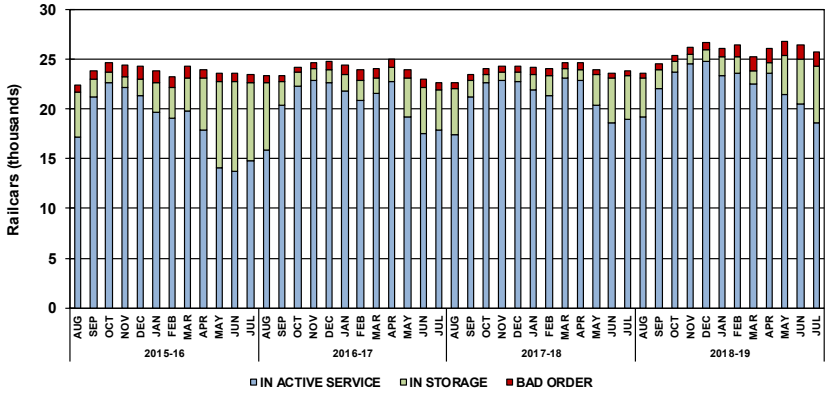
The GHTS's handling capacity is primarily shaped by the number of covered hopper cars employed by the railways in moving grain. The size of the fleet arrayed varies with prevailing market conditions, expanding and contracting with changes in traffic volume. During the 2018-19 crop year, an average of 25,745 hopper cars were deployed to move grain, a 7.4% increase over the 23,967-car average observed a year earlier. It is worth noting that this constituted the largest hopper-car fleet ever deployed under the GMP, with much of the 1,778-car increase derived from new equipment purchases by CN and CP. Ultimately aimed at replacing the government hoppers that are now reaching the end of their useful lives, these additions were instrumental in providing the carrying capacity needed to accommodate the largest grain movement on record.

At any given moment in time, the equipment used for this purpose can be categorized in one of three ways: as being in active service moving grain; in storage awaiting later use; or "bad order" (i.e., removed from active service for repair). Typically, the proportion assigned to active service rises to meet peak demand, usually reaching its zenith sometime in the fall. This pattern was again evident in the 2018-19 crop year, with the proportion in active service rising to a height of 93.8% in November 2018, slightly under the 94.2% reached in the same period a year earlier. Thereafter, the utilization rate began to slowly decline as more cars were placed in storage through the spring months, ultimately falling to a low of 72.2% in July 2019. Despite this marginal decline, more than 1,100 additional cars were deployed in active service throughout the crop year than was the case a year earlier.

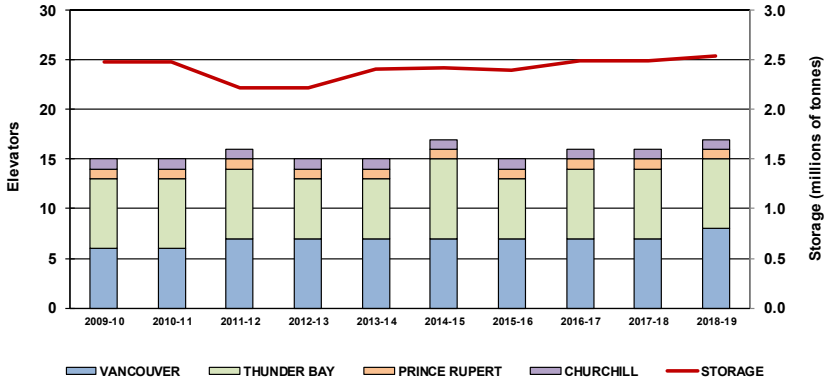
TERMINAL ELEVATOR INFRASTRUCTURE
[See TABLE 3C-1]

At the outset of the 1999-2000 crop year, there were 14 licensed terminal elevators operating in Western Canada. By the close of the 2018-19 crop year, that number had risen to 17, an increase of 21.4%. Conversely, the network's storage capacity declined by 0.6% during this same period, falling to 2.5 million tonnes from 2.6 million tonnes. However, these statistics tend to exaggerate the limited physical scope of the changes that

Covered Hopper Cars - Number and Status



Terminal Elevators - Location and Storage Capacity
(Western Canada)



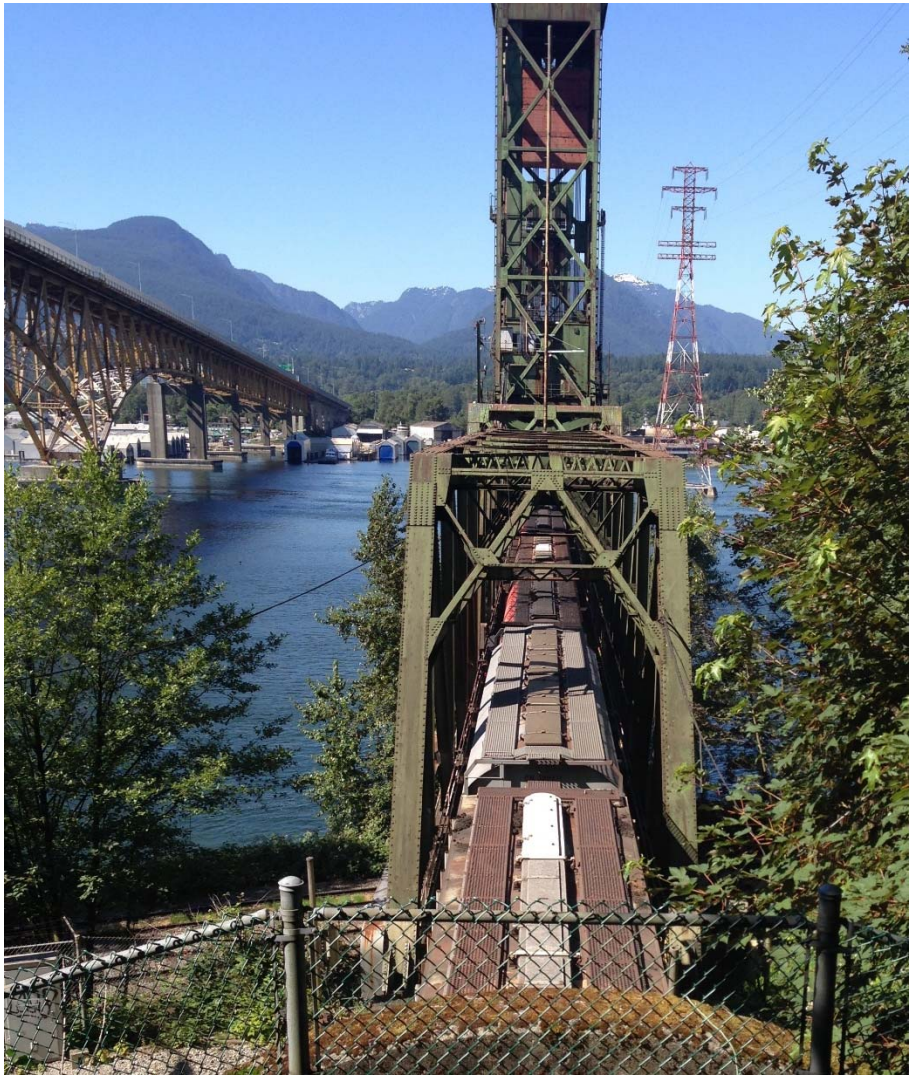
have occurred in the GHTS's terminal-elevator network since the beginning of the GMP. This is mainly due to the long-term nature of the terminals themselves, the oldest of which has been in continuous operation since the 1920s. In fact, up until 2016, changes to the network were derived from the licensing – or delicensing – of existing facilities, rather than any physical alteration. In light of this, the GHTS's terminal facilities continue to be concentrated at the ports of Thunder Bay and Vancouver, with complementary stand-alone terminals at Churchill and Prince Rupert.

However, the growing handling needs of the GHTS – particularly along the west coast – has spurred the need for new capacity. The first major enhancement came in the form of an 81,720-tonne expansion of the Richardson International terminal in North Vancouver, which was completed in 2016. This was followed by the announcement of several other expansionary projects on the north shore, the most notable being G3 Canada's construction of an all new 180,000-tonne loop-track terminal, which is slated to become operational in 2020.

The 2018-19 crop year saw the completion of two other projects at the port of Vancouver: a modernization of the ship-loading system at Alliance Grain Terminal; and a significant upgrading of the Fibreco Export facility that would allow its diversification into the handling of other commodities, including agricultural products. This latter project, which brought on 57,600 tonnes of new storage capacity, marked the establishment of the first new grain-handling facility in Vancouver under the GMP. It also denoted the only change in the composition of the terminal-elevator network during the previous twelve months, which rose to 17 facilities from 16.

Critical Observations

While these projects denote a commercial response to the growing handling needs of the GHTS, they also bring more pressure to bear on the railway system that supports them. Increased grain shipments, along with heightened movements of coal, minerals, fuels, chemicals, forest products, and other commodities, has drawn attention to the need for still more railway capacity. To this end, both CN and CP have moved decisively to



A loaded grain train exits the Thornton Tunnel on its way across the Second Narrows Bridge to North Vancouver in this view from the south shore of Burrard Inlet. The single-track tunnel and bridge, which were both constructed in the late 1960s, provide the only physical railway connection between the inlet's north and south shores. As a crucial artery for virtually all railway traffic moving to and from North Vancouver, the route presents a serious obstacle to the movement of volumes beyond that handled today.

secure the additional rolling stock needed to handle today's burgeoning grain volumes.

But in crowded urban settings like Vancouver, established pinch points, such as the Thornton Tunnel and the Second Narrows Bridge, have become increasingly problematic in conducting grain and non-grain traffic to and from terminals on the North Shore as they provide the only practical physical access to these facilities.[9] This is likely to become a much larger issue in the months ahead once G3 Terminal Vancouver is completed and begins operating in the spring of 2020. Moreover, when coupled with the capacity expansions at Fibreco and Neptune Terminals (to accommodate increased coal and potash movements) it is estimated that an additional 12 million tonnes of product will need to traverse this already congested route each year. While plans for increasing the capacity of the Thornton Tunnel and Second Narrows Bridge are in development, it will likely be two or more years before they are put in place.

Congestion also impedes rail service to the terminals situated on Burrard Inlet's south shore. This is complicated by the fact that access to the grain and container terminals located there is shared with scheduled commuter trains which, owing to their frequency, severely constrict the windows for both industrial switching and freight train movements. Adding capacity to alleviate these bottlenecks is neither easy, immediate nor inexpensive.

Recognizing that congested trade routes have hampered Canadian export activity, various public and private sector stakeholders have moved to address the need for new infrastructure investment. The federal government alone earmarked $10.1 billion for such projects through 2028 under its Trade and Transportation Corridors Initiative, with close to $230.0 million having already been allocated by the National Trade Corridors Fund to several capacity-enhancing projects in the Vancouver and Prince Rupert areas. These projects largely focus on the building of new roads, grade separations, bridges, and railway sidings to lessen congestion. Although these investments provide some modicum of relief, the longer-term investment needs of the GHTS have yet to be addressed fully.

9 The north shore of Burrard Inlet is also accessible from the west using the former BC Rail line (now operated by CN) that runs south from Prince George to North Vancouver. However, traffic along this route is restricted by the extreme grades and curvatures, which dictate the employment of shorter trains and correspondingly lighter train loads.

Section 4: Commercial Relations

Indicator Description	Table	1999-00	2016-17	2017-18	2018-19 Q1	Q2	Q3	Q4	YTD	% VAR
Trucking Rates										
Composite Freight Rate Index – Short-haul Trucking	4A-1	100.0	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Country Elevators Handling Charges										
Composite Rate Index – Receiving, Elevating and Loading Out	4B-1	100.0	134.7	135.1	135.6	135.6	135.3	135.3	135.3	0.1%
Composite Rate Index – Dockage	4B-1	100.0	153.8	153.8	153.8	153.8	153.8	153.8	153.8	0.0%
Composite Rate Index – Storage	4B-1	100.0	208.2	214.6	214.6	214.6	222.6	222.6	222.6	3.7%
Railway Freight Rates										
Composite Freight Rate Index – CN Vancouver	4C-1	100.0	136.6	133.7	152.9	152.9	145.2	152.4	152.4	13.9%
Composite Freight Rate Index – CP Vancouver	4C-1	100.0	130.0	143.7	152.1	154.8	154.8	154.0	154.0	7.2%
Composite Freight Rate Index – CN Thunder Bay	4C-1	100.0	157.3	140.5	172.4	172.4	163.7	166.9	166.9	18.8%
Composite Freight Rate Index – CP Thunder Bay	4C-1	100.0	134.4	141.1	161.9	165.1	165.1	162.2	162.2	14.9%
Effective Freight Rate ($ per tonne) – Maximum Revenue Entitlement	4C-3	n/a	$35.50	$36.87	n/a	n/a	n/a	n/a	$38.99	5.7%
Terminal Elevator Handling Charges										
Composite Rate Index – Receiving, Elevating and Loading Out	4D-1	100.0	157.3	157.5	157.7	157.7	157.7	157.7	157.7	0.1%
Composite Rate Index – Storage	4D-1	100.0	185.1	185.2	185.5	185.5	185.5	185.5	185.5	0.2%

DISCUSSION AND ANALYSIS

COUNTRY ELEVATOR HANDLING CHARGES
[See TABLE 4B-1]

Grain companies charge a variety of fees for elevator handling activities, predominantly for the receiving, elevating and loading out of grain. These are accompanied by additional charges for the removal of dockage (cleaning) and storage, all of which differ widely based on the activity, grain and province involved. Given the intricacy of these tariff rates, the GMP necessarily uses a composite price index to track changes in them over time.

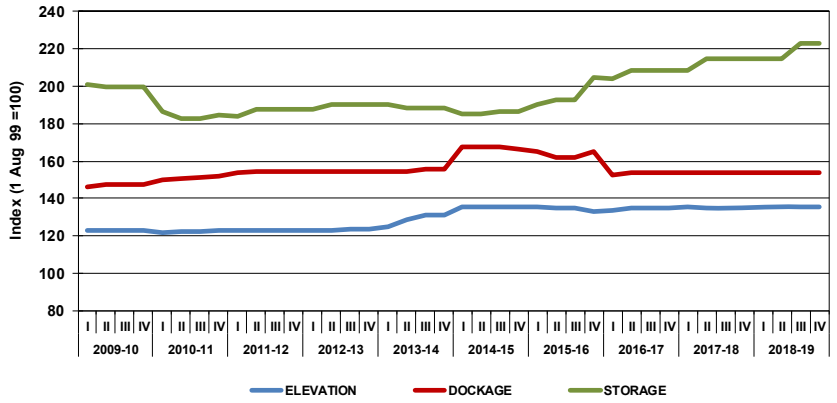
Throughout the last two decades these rates have moved continually higher, albeit by varying margins. Comparatively minor changes were observed in the 2018-19 crop year: elevation rates increased by 0.1%, with the index rising to 135.3 from 135.1; dockage fees remained unchanged, with the index holding at 153.8; while storage rates increased 3.7%, raising the index to 222.6 from 214.6.

RAILWAY FREIGHT RATES
[See TABLES 4C-1 through 4C-3]

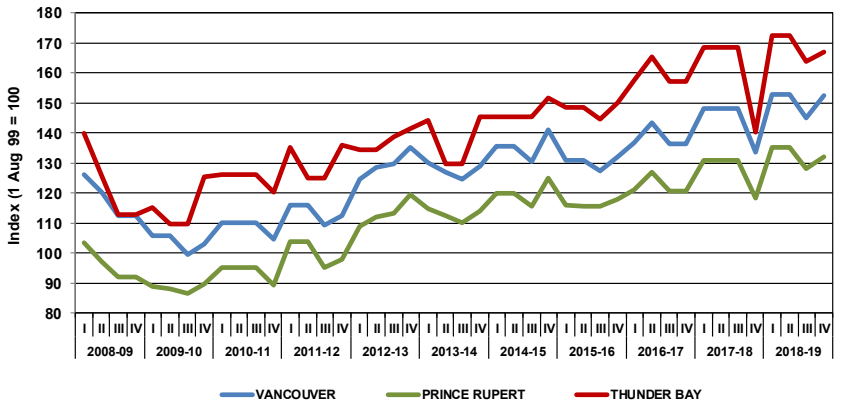
The single-car freight rates charged by CN and CP for the movement of regulated grain have changed substantially since the beginning of the GMP, evolving from what were largely mileage-based rates into a less rigidly structured set of more market-responsive rates. Likewise, these changes also employed differential pricing based on commodity, type of railcar, destination and period in which the traffic was to move.

CN advanced successive rate increases in August, September and October of 2018, which by the close of the first quarter had lifted the rates on movements to the west coast and Thunder Bay by 13.8%, and 23.4% respectively. CN maintained these rates until midway through the third quarter, when it then applied an across-the-board reduction of 5.0%. These reductions were partially reversed in May 2019 with increases of 2.8% on westbound rates, and 1.9% on Thunder Bay rates. The single-car rates into Vancouver were escalated by a further 1.5% in June 2019. With the close

Primary Elevator Handling Charges



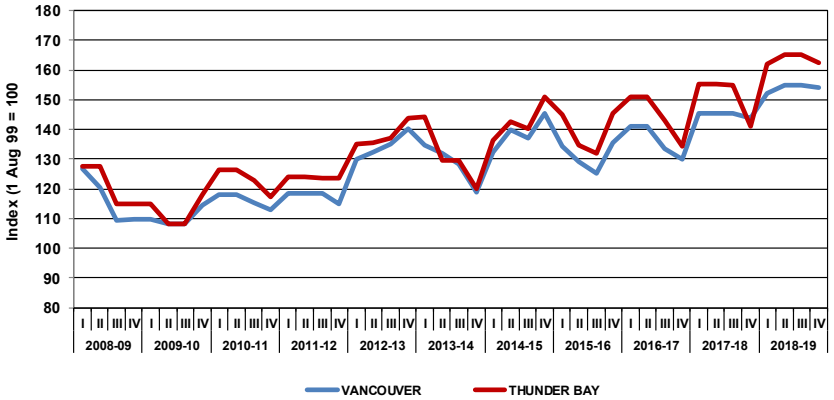
CN Single-Car Freight Rates - Primary Corridors
(Western Canada Destinations)



of the crop year, CN's rates into Vancouver, Prince Rupert and Thunder Bay had been elevated by 13.9%, 11.8% and 18.8% respectively.[10]

In comparison, CP limited its beginning-of-the-crop-year increases to the Thunder Bay corridor but followed up with broader increases in October. At the end of the first quarter these actions had effectively raised the rates on traffic destined to Vancouver and Thunder Bay by 5.8% and 14.7% respectively. These rates were maintained until the beginning of January 2019 when the carrier instituted escalations amounting to nearly 2.0%. In May 2019 the carrier applied reductions of 4.8% on its Vancouver rates along with a 3.9% cut on its Thunder Bay rates, both of which were largely reversed in July 2019 with corresponding increases of 4.5% and 2.2%. At the close of the crop year CP's single car rates into Vancouver and Thunder Bay had been elevated by 7.2% and 14.9% respectively.

CP Single-Car Freight Rates - Primary Corridors
(Western Canada Destinations)



Multiple-Car-Block Discounts

Discounting single-car freight rates has been the principle mechanism in the railways efforts to entice the movement of grain in ever longer blocks of hopper cars. Moreover, these multiple-car-block discounts have been evolving since the beginning of the GMP. The most noteworthy aspect of this evolution was the gradual elimination of the discounts applicable on movements in blocks of less than 50 cars, along with a progressive escalation in those tied to blocks of 50 or more cars. Together, these actions provided grain handlers with a powerful economic incentive to ship in trainload – or partial trainload – quantities.

The 2018-19 crop year saw the first significant change to the structure of these discounts in over a decade, when CP withdrew the $4.00-per-tonne incentive that it had long offered on movements in blocks of 56-111 cars. This left the carrier's $8.00-per-tonne discount for movements in blocks of 112 or more cars the only published incentive still being offered to grain shippers.

In contrast, CN left its existing incentives unaltered, and continued to offer a $4.00-per-tonne discount on movements of 50-99 cars, and an $8.00-per-tonne discount on movements of 100 or more cars. However, the carrier also broadened its latter incentive to allow for as much as $2.00 per tonne more if shippers met certain additional "heavy-loading" criteria.[11]

Taken altogether, these changes marked another evolutionary milestone in the development of the railways' incentive programs, and one clearly aimed at realizing the fullest economic potential of unit train operations. And while these incentives work to the financial benefit of the largest and most modern grain-handling facilities, those incapable of moving grain in trainload lots have been put at a commercial disadvantage. Whether such a handicap can be overcome or precipitate a further rationalization of the grain-gathering network, has yet to be determined.

10 Although the port of Churchill remained closed throughout much of the 2018-19 crop year, CN continued to publish rates for potential grain shipments. CN's pricing actions during this period tended to mimic those put forward on movements to Thunder Bay, with a year-over-year escalation amounting to 18.2%.

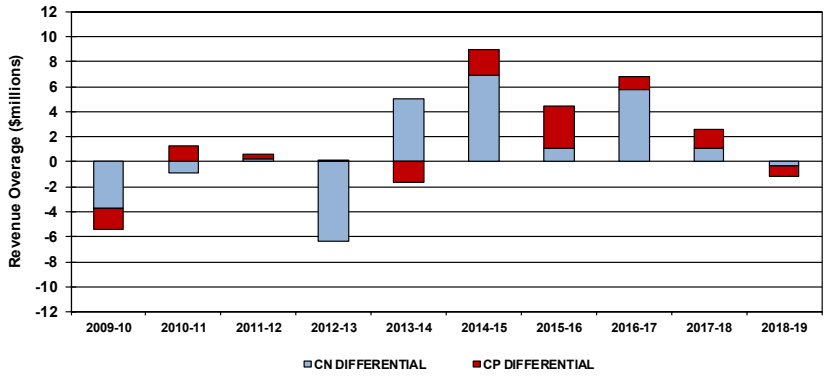
11 In addition to meeting all basic tariff requirements, a shipper of 100 or more cars could also receive an additional $0.50 per tonne (approximate) under CN's new "Ready Train Incentive" as well as another $1.50 per tonne under it's new "Loop/Tangent Track Incentive."

Maximum Revenue Entitlement

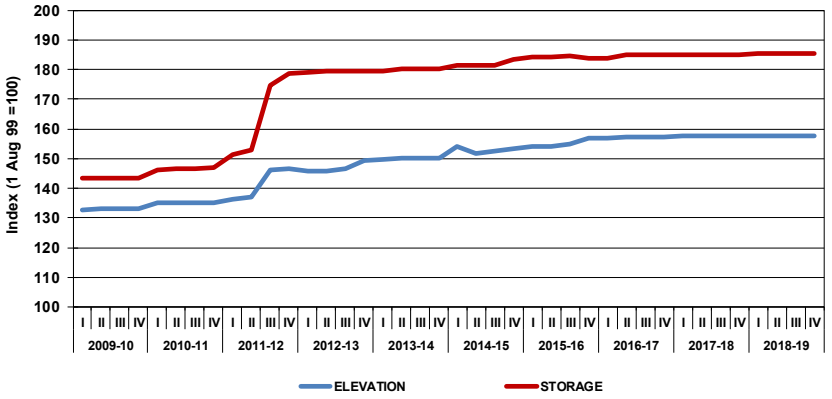
Under the federal government's Maximum Revenue Entitlement (MRE), established in 2000, the unadjusted revenues that CN and CP are entitled to earn from the movement of regulated grain are based on a legislated maximum of $348.0 million and $362.9 million respectively. However, these limits, expressed in year 2000 dollars, are adjusted annually to reflect changes in volume, average length of haul, and inflation. Outside of the inflationary component, these adjustments are determined by the Canadian Transportation Agency (Agency) following a detailed analysis of the traffic data submitted to it by CN and CP at the end of any given crop year.

The Volume-Related Composite Price Index (VRCPI), which provides for an inflationary adjustment to carrier revenues, is determined by the Agency in advance of each crop year. For the 2018-19 crop year, the Agency determined the value of the VRCPI to be 1.4114 for CN, and 1.4608 for CP. These values denoted year-over-year increases equating to 2.1% for CN, and 5.7% for CP.[12] As a result, the MRE for CN and CP were set at $933.7 million and $863.5 million respectively, or $1,797.2 million on a combined basis.[13] The Agency also determined that, for the 2018-19 crop year, the statutory revenues derived from the movement of regulated grain by CN and CP amounted to $933.4 million and $862.7 million respectively, or $1,796.1 million on a combined basis. These determinations found the revenues of both carriers to have fallen marginally short of their maximum entitlements: by $0.4 million in the case of CN; and by $0.8 million in the case of CP. This meant that carrier revenues fell a combined $1.1 million, or less than 0.1%, below the prescribed maximum. It is worth noting that this is consistent with previous results wherein total carrier revenues have not varied by more than 1% from their stipulated maximums since the 2007-08 crop year.

Maximum Revenue Entitlement - Carrier Compliance



Terminal Elevator Handling Charges



12 The Volume-Related Composite Price Index (VRCPI), which had been expressed as a single value applicable to both CN and CP, was re-established as separate values by amendment to the *Canada Transportation Act* in 2018. The originally calculated VRCPI value of 1.4197 was set aside with the subsequent re-determination of the carrier-specific values noted here. See Canadian Transportation Agency Decision Number R-2018-225 dated 25 October 2018.

13 See Canadian Transportation Agency Determination R-2019-245 dated 30 December 2019.

TERMINAL ELEVATOR HANDLING CHARGES
[See TABLE 4D-1]

About two-thirds of terminal-elevator revenues are derived from the charges levied for the receiving, elevating and loading out of grain. As with other price-related measures, the myriad of applicable tariff rates naturally lends itself to the use of composite indexes in gauging price movement over time.

The 2018-19 crop year saw negligible changes to these rates, which lifted the composite price index by a mere 0.1%, to 157.7 from 157.5 in the previous year. As with elevation, minor changes in the daily charge for storage also led to a 0.2% increase in the composite price index, which rose to 185.5 from 185.2 a year earlier.

COMMERCIAL DEVELOPMENTS

Hopper-car acquisitions enhance GHTS carrying capacity

Following the granting of Royal Assent to Bill C-49 in May 2018, both the Canadian National Railway Company (CN) and the Canadian Pacific Railway (CP) announced that they were placing their first orders for the next generation of high-capacity hopper cars from National Steel Car Limited (NSC). With these initial orders, a wave of nearly 2,000 new cars were expected to be added to the GHTS's hopper-car fleet by the close of the 2018-19 crop year.[14] In fact, their purchases helped increase the serviceable fleet by 7.4%, to reach a record average of 25,745 hopper cars from 23,967 cars a year earlier.

Although the purchase is noteworthy, the addition of new rolling stock is not unprecedented. While the cylindrical hopper cars provided to CN and CP by various governments since the 1970s served as the backbone of the GHTS, attrition spurred both railways into supplementing their steadily declining numbers for the better part of the last 30 years. Of the roughly 19,500 cars originally provided in the public interest by the governments of Canada, Alberta, Saskatchewan and the Canadian Wheat Board, less than half – about 8,300 cars – remained in public service at the close of the 2018-19 crop year.[15] In conjunction with the railways' substitution, large shippers – including Cargill, G3 Canada, GrainsConnect Canada, Louis Dreyfus, Parrish & Heimbecker, Richardson International, and Viterra – have all amassed their own private fleets to help in moving grain. In fact, of the nearly 25,700 hopper cars in circulation during the 2018-19 crop year, the preponderance – comprising about 17,400 cars – were supplied by the railways and shippers themselves. This pool will only continue to increase until all remaining government hoppers are retired from service.

Several new 5,431 cubic-foot hopper cars are spotted for loading at the GrainsConnect Canada facility in Maymont, Saskatchewan. Privately supplied hopper cars, such as those depicted here, have become an important element in the operation of the GHTS today. (Image courtesy of GrainsConnect Canada)

14 The initial orders placed by CN and CP were for 1,000 cars apiece. However, the CP order was part of a broader 5,900-car acquisition plan that would enable the carrier to completely remove all low-capacity hoppers (including those still owned by the Government of Canada) from its fleet over the next four years.

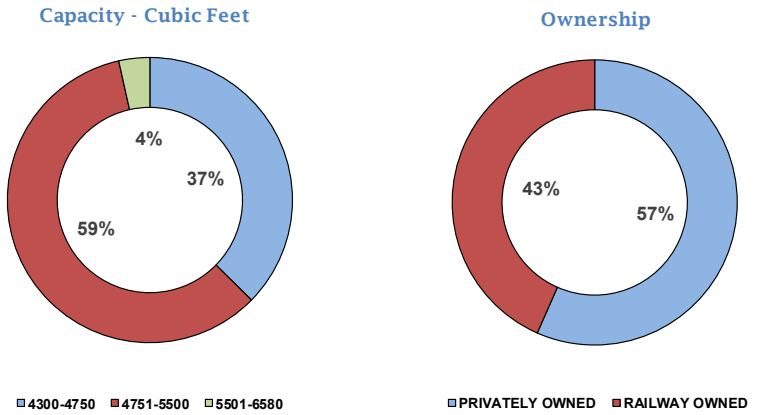
15 As at 31 July 2019, roughly 7,400 hopper cars remained in the publicly supplied fleet of the Government of Canada, along with another 900 cars furnished by the Government of Alberta. The publicly owned equipment previously supplied to CN and CP by the Canadian Wheat Board and the Saskatchewan government has now been privatized, with its ownership disbursed among several shortline railways and grain companies.

In addition to its ownership, the composition of the fleet is also changing. This is because much of the newer equipment brought into service can physically carry more grain than the hopper cars they are displacing. Quorum estimates that roughly 63% of the hopper cars employed in moving grain today are designed to carry more than 4,750 cubic feet of product. In fact, the new 5,431-cubic-foot NSC hoppers being purchased by CN and CP today effectively carry 19.4% more product by volume than the cylindrical hoppers that served as the mainstay of the GHTS for almost 50 years.[16] This hastening shift towards larger hoppers was reflected in a noticeably greater average payload, which reached 93.6 tonnes in the 2018-19 crop year, against 91.6 tonnes just two years earlier, and the broader 91.0 tonnes that prevailed a decade earlier.

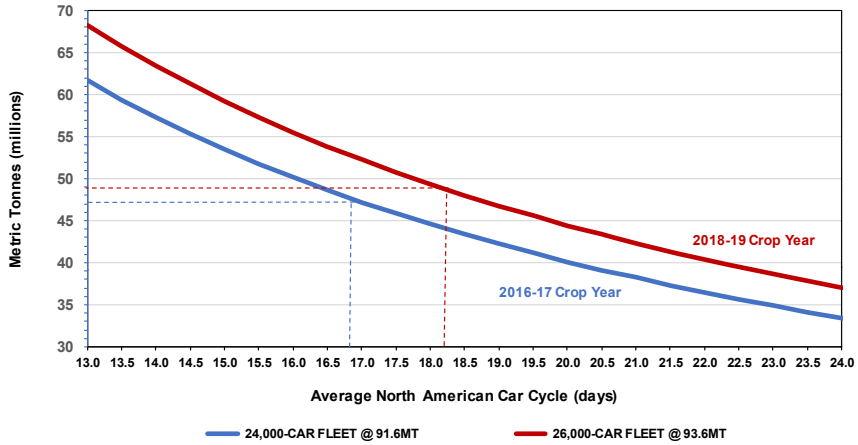
The combined effect of these forces has been to raise the standing capacity of the GHTS's grain fleet by roughly 10%. Using the 2016-17 crop year's estimated North American average car cycle of 16.8 days, this expansion could have lifted the grain fleet's annualized carrying capacity to 53 million tonnes from 48 million tonnes, had the average car cycle remained unchanged. To be sure, the carrying capacity of a defined fleet is largely determined by the average velocity of its constituent railcars. This was evidenced in the elongation of the average car cycle, which despite having increased to an estimated 18.2 days in the 2018-19 crop year, provided a near 26,000-car fleet with the comparable carrying capacity of the near 24,000-car fleet that existed two years earlier.

Such trade-offs mean that any improvement in the average car cycle of today's fleet could easily bolster its annual carrying capacity. By way of example, if the average North American car cycle were to fall to 16.0 days, the profiled 26,000-car fleet could be expected to accommodate the movement of some 55.0 million tonnes of grain. But, as has so often been witnessed over the course of the GMP, hopper cars alone do not define overall carrying capacity. Rather, it is a function of various resources, including physical infrastructure, motive power, rolling stock, people, and the various control systems used in efficiently employing them.

Hopper Car Fleet Profile



North American Carrying Capacity - Annualized



16 The standard carrying capacity of the cylindrical hopper cars adopted by the governments of Canada, Alberta and Saskatchewan was 4,550 cubic feet.

Investigation into Vancouver rail service conducted

On 15 April 2019 the Canadian Transportation Agency (Agency) rendered a decision in its investigation into possible freight rail service issues in the Vancouver area. The investigation, which was initiated in early January 2019 on concerns raised by various shipper associations, marked the first instance where the Agency, with the approval of the federal minister of transport, had moved to exercise the new investigatory powers granted to it under amendments made to the *Canada Transportation Act* in 2018. Although the investigation dealt broadly with impediments to the flow of various commodities – including grain – into and out of the Greater Vancouver Area, much of its focus was on the movement of wood pulp and related forest products. More specifically, the investigation sought to determine whether there was any evidence of discriminatory treatment, how embargoes and permits were used, and if railway companies operating in the Vancouver area were fulfilling their service obligations.

The Agency found that Canadian National Railway Company (CN) breached its level of service obligations by announcing its intention to impose embargoes on wood pulp shipments in September 2018, several months before rail congestion and other challenges emerged in the Vancouver area, rather than making every reasonable effort to deal with those challenges before unilaterally restricting shippers' traffic through the imposition of those embargoes in December 2018. The Agency ordered CN to develop and submit a plan to respond to future traffic surges in the Vancouver area and to avoid, or minimize, the use of embargoes. The determination also set out criteria for the lawful use of embargoes, including their imposition only in exceptional circumstances to address specific challenges, and that they be lifted as soon as possible. CN indicated that it planned on appealing the decision to the Federal Court of Appeal.

China bars Canadian canola imports

In March 2019 China revoked the canola export registrations of Richardson International Ltd. and Viterra Inc., effectively preventing Canada's two largest grain companies from selling canola into the Chinese market. Ostensibly, this was because the importer had detected various contaminants – in the form of weed seeds and plant diseases – in earlier shipments. Although Canada vehemently disputed the Chinese assertions, China's refusal to engage in resolving the issue had many observers speculating that the suspension was another means of retaliating against Canada's arrest of Huawei executive Meng Wanzhou under an American extradition warrant in December 2018.

As a major market for Canadian canola, China accounts for approximately 40% of all canola seed, oil and meal exports. Canola seed exports alone in the 2017-18 crop year amounted to almost 4.5 million tonnes worth an estimated $2.7 billion in sales. Despite a record of even stronger exports through the first seven months of the 2018-19 crop year, canola seed sales to China in the aftermath of the revoking of these licenses plunged by almost 80%: to 470,300 tonnes in the last five months of the crop year against 2.2 million tonnes in the same period a year earlier. This figured prominently in the ballooning of the carry-forward stocks for canola at the year's end, which rose to 3.4 million tonnes from 2.1 million tonnes twelve months before. Although the dispute remained unresolved at the close of crop year, the Government of Canada continued to seek a diplomatic resolution to the impasse.

Ilta Grain seeks bankruptcy protection

On 11 July 2019 the Canadian Grain Commission (CGC) suspended the licenses of Ilta Grain, a special-crops dealer headquartered in Surrey, British Columbia, after the company filed for creditor protection. The company, which operated six processing facilities in Saskatchewan – including two state-of-the-art loop-track facilities at Belle Plaine and Saskatoon – indicated that the move was necessary in order to restructure operations and secure additional financing. Under creditor protection, Ilta remained in control of its property and business, but was placed under the supervision of PricewaterhouseCoopers, which was appointed as monitor by the Supreme Court of British Columbia. Ilta indicated that trade restrictions in India, China and other countries, which reduced special crop prices, played a significant role in undermining its financial position.

In the weeks that followed, much of the company's physical assets were sold off. Viterra, which had entered into an agreement to acquire Ilta's two-year-old loop-track facility at Belle Plaine, Saskatchewan, prior to the filing, was the first of three purchasers. Their acquisition was followed in

October 2019 by Mississauga-based ETG Commodities' purchase of the company's processing facilities in North Battleford, Cut Knife, and Swift Current. Finally, DG Global, a Toronto-based exporter, acquired Ilta's loop-track facility at Saskatoon. It remained to be determined whether grain producers would be fully compensated for deliveries they made to Ilta, with the CGC stating that more than 300 claims had been filed by farmers for a portion of the $150 million in outstanding debts left by the company.

Ceres Global Ag Corp. acquires Delmar Commodities

On 15 July 2019 Minneapolis-based Ceres Global Ag Corp. announced that it had exercised its option to acquire all outstanding shares of Winkler-based Delmar Commodities, Ltd. Delmar, a grain merchandiser and processor with several facilities located in Manitoba, would operate as a subsidiary of Ceres, with Delmar's operations and employees integrated into the purchaser's overall network. Although better known as the operator of a 73,700-tonne grain-handling facility at Northgate, Saskatchewan, Ceres operates several other logistics centres in Eastern Canada and the United States. The company also has interests in a variety of other companies, including a 25% share in Stewart Southern Railway, a Saskatchewan-based shortline. The acquisition was completed on 16 August 2019.

Great Western Railway expands commercial activity

Early in 2019, Saskatchewan-based Great Western Railway (GWR) reached an agreement to formally acquire all outstanding shares in the Fife Lake Railway (FLR), a connecting 60-mile shortline that has largely been maintained and operated by the GWR since the FLR's formation in 2005. The acquisition follows other significant changes in the carrier's business activities, including: the formation of an affiliated grain dealer, Great Western Commodities; and the purchase of 150 hopper cars formerly belonging to the Saskatchewan Grain Car Corporation.

Port of Churchill reopens

On 31 August 2018 the federal government announced that a deal for the purchase of the Hudson Bay Railway had been concluded. Ownership of the railway, which had been put up for sale by OmniTRAX in late 2015, was transferred to the Arctic Gateway Group, a consortium of northern Manitoba First Nations and local governments, Toronto-based Fairfax Financial Holdings, and Regina-based AGT Foods and Ingredients. Along with assets belonging to the Hudson Bay Port Company and the Churchill Marine Tank Farm, the Arctic Gateway Group assumed full control over the Churchill gateway. With $117 million in financial assistance from the Western Diversification Program, repairs to the line were slated to begin almost immediately, with the restoration of service expected before year's end.

Although repair work remained, by the close of 2018 the line to Churchill had been made passable and the first trains had begun to move. The first grain train in almost four years arrived at the port of Churchill in late July 2019. Although details on the scope of its new commercial activities remained scant, the port's new owners indicated that they would be targeting the shipment of durum, wheat, canola, lentils and peas from Manitoba and Saskatchewan to Europe, North Africa and the Middle East.

Section 5: System Efficiency and Performance

Indicator Description	Table	1999-00	2016-17	2017-18	2018-19 Q1	Q2	Q3	Q4	YTD	% VAR
Country Elevator Operations										
Average Elevator Capacity Turnover Ratio	5A-1	4.8	6.4	6.2	1.8	1.7	1.4	1.5	6.4	3.2%
Average Weekly Elevator Stock Level (000 tonnes)	5A-2	3,699.3	3,152.8	3,575.0	3,393.7	3,756.5	4,087.2	2,665.9	3,457.9	-3.3%
Average Days-in-Store (days)	5A-3	41.7	24.9	28.3	24.0	26.6	31.6	20.2	25.4	-10.2%
Average Weekly Stock-to-Shipment Ratio – Grain	5A-4	6.2	3.6	4.2	3.4	3.8	4.7	3.0	3.7	-11.9%
Railway Operations										
Movements to Western Canada										
Railway Car Cycle (days) – Empty Movement	5B-1	10.7	7.6	8.4	7.3	6.7	7.8	8.2	7.5	-10.7%
Railway Car Cycle (days) – Loaded Movement	5B-1	9.2	6.5	7.3	8.0	9.4	9.3	7.7	8.5	16.4%
Railway Car Cycle (days) – Total Movement	5B-1	19.9	14.1	15.7	15.2	16.0	17.1	15.9	16.0	2.1%
Railway Car Cycle (days) – Non-Special Crops	5B-2	19.3	13.9	15.5	14.9	15.5	16.6	15.6	15.6	-2.1%
Railway Car Cycle (days) – Special Crops	5B-3	25.8	15.4	17.7	17.9	21.6	21.2	18.2	19.7	11.1%
Railway Loaded Transit Time (days)	5B-4	7.8	5.2	6.0	6.9	8.2	8.3	6.6	7.5	24.0%
Movements to Eastern Canada										
Railway Car Cycle (days) – Empty Movement	5B-5	n/a	9.7	11.0	9.1	8.4	10.7	8.6	9.4	-14.5%
Railway Car Cycle (days) – Loaded Movement	5B-5	n/a	11.2	13.1	12.2	11.9	13.1	10.2	12.0	-8.4%
Railway Car Cycle (days) – Total Movement	5B-5	n/a	20.9	24.2	21.3	20.3	23.8	18.8	21.3	-11.7%
Railway Loaded Transit Time (days)	5B-8	n/a	8.7	10.9	9.9	9.9	11.8	8.5	10.2	-6.7%
Movements to the United States										
Railway Car Cycle (days) – Empty Movement	5B-9	n/a	11.2	12.1	10.9	11.4	11.5	11.0	11.1	-8.3%
Railway Car Cycle (days) – Loaded Movement	5B-9	n/a	13.6	15.7	14.5	15.6	16.1	13.6	15.0	-4.5%
Railway Car Cycle (days) – Total Movement	5B-9	n/a	24.8	27.9	25.3	27.0	27.6	24.6	26.1	-6.3%
Railway Loaded Transit Time (days)	5B-12	n/a	9.8	12.0	10.4	11.2	12.1	9.3	10.8	-9.7%
Traffic to Western Canada										
Hopper Car Grain Volumes (000 tonnes) – Non-Incentive	5B-13	12,718.7	6,211.9	6,046.0	1,436.6	1,559.9	1,133.5	1,161.4	5,291.4	-12.5%
Hopper Car Grain Volumes (000 tonnes) – Incentive	5B-13	12,945.9	32,408.1	32,064.2	9,478.8	9,515.9	8,082.3	8,989.5	36,066.5	12.5%
Hopper Car Grain Volumes ($ millions) – Incentive Discount Value	5B-14	$31.1	$244.7	$241.9	$70.4	$71.1	$60.9	$67.0	$269.3	11.3%
Traffic Density (tonnes per route mile) – Total Network	5B-15	330.4	558.9	553.0	631.7	641.0	533.3	587.4	602.0	9.2%
Terminal Elevator Operations										
Average Terminal Elevator Capacity Turnover Ratio	5C-1	9.1	21.4	18.9	n/a	n/a	n/a	n/a	20.5	8.5%
Average Weekly Terminal Elevator Stock Level (000 tonnes)	5C-2	1,216.2	1,138.8	1,196.5	1,209.4	1,193.0	1,232.6	1,101.7	1,183.0	-1.1%
Average Days-in-Store – Operating Season (days)	5C-3	18.6	10.5	11.5	12.9	8.5	9.2	10.7	10.9	-5.2%
Average Weekly Out-of-Car Time	5C-5	n/a	12.1%	11.2%	12.1%	10.5%	15.9%	8.4%	11.5%	2.7%
Port Operations										
Average Vessel Time in Port (days)	5D-1	4.3	10.3	10.0	9.4	10.7	13.9	8.2	10.3	2.9%
Average Vessel Time in Port (days) – Waiting	5D-1	1.9	4.7	4.8	5.1	6.2	7.5	4.3	5.6	17.6%
Average Vessel Time in Port (days) – Loading	5D-1	2.4	5.6	5.2	4.3	4.5	6.4	3.9	4.6	-10.7%
System Performance										
Total Time in Supply Chain (days)	5E-1	68.1	40.6	45.8	43.8	43.3	49.1	37.5	43.8	-4.5%

DISCUSSION AND ANALYSIS

COUNTRY ELEVATOR OPERATIONS
[See TABLES 5A-1 through 5A-4]

The net effect of changes in primary elevator throughput and storage capacity is reflected in the system's capacity-turnover ratio. With primary elevator throughput having increased by 7.3% to 48.9 million tonnes, the turnover ratio for the 2018-19 crop year also rose, albeit by a somewhat lesser 2.9%, to 6.4 turns from the 6.2 turns reported a year earlier. This differential was largely attributable to the dampening effect of a further 315,400-tonne expansion in the storage capacity of the primary-elevator system, which has been steadily rising for several years.

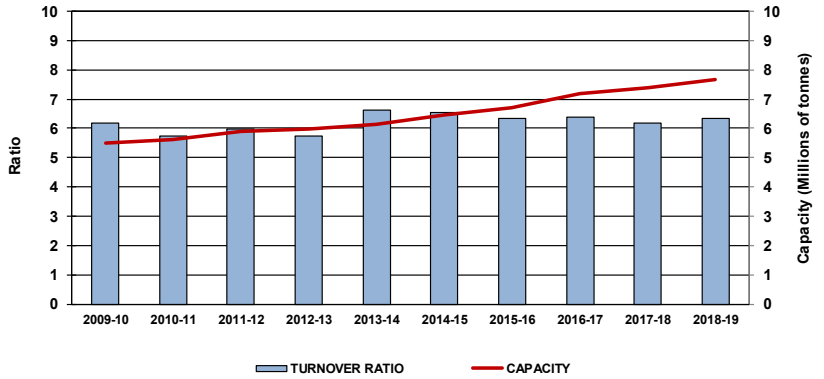
Elevator Inventories

In assessing the operational efficiency of the primary elevator system, the GMP also considers the amount of grain maintained in inventory. Beyond measuring stock levels alone, this examination also considers the amount of time grain spent in inventory, along with its ability to satisfy immediate market needs.

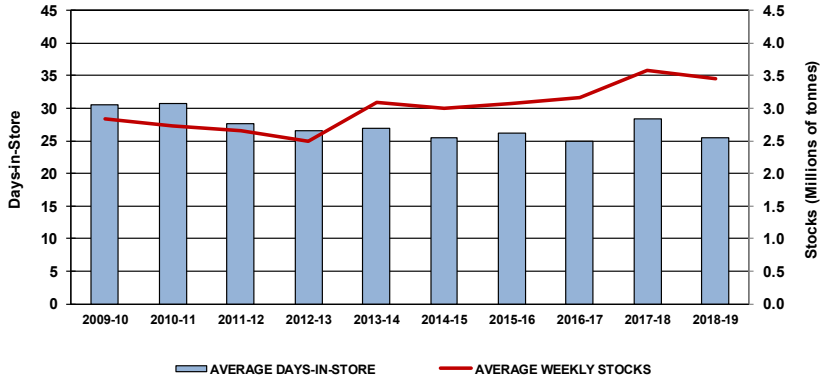
Notwithstanding periodic fluctuations, approximately half of the GHTS's primary elevator storage capacity is employed in maintaining its operational grain inventories. Even as the system's associated storage capacity rose, stocks seldom moved above the 3.0-million-tonne mark until the 2013-14 crop year. It was not until then that the expansion in storage capacity, coupled with the need to accommodate larger harvests, allowed primary elevator stocks to consistently rise beyond this level without congesting the system. In fact, the 2018-19 crop year saw average primary elevator inventories reach above this threshold for a sixth consecutive year, although stocks fell by 3.3%, to almost 3.5 million tonnes from 3.6 million tonnes a year earlier. The net addition of almost 1.9 million tonnes of storage capacity over this same period also allowed elevator stocks to reach a GMP record of 4.5 million tonnes in March 2019.

While stock levels have continued to rise, the amount of time spent by grain in inventory has fallen. After having fluctuated around 30 days for several years the average now stands closer to the 25-day mark. This

Primary Elevator Capacity Turnover Ratio



Primary Elevator Inventories

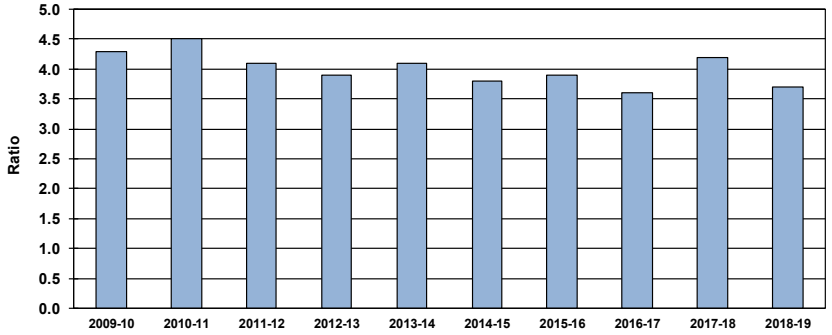


reduction simply reflects the faster pace at which grain has had to flow through an elevator in order to process heightened deliveries while remaining fluid. The overall average for the 2018-19 crop year fell by 10.2%, to 25.4 days from 28.3 days a year earlier.

Stock-to-Shipment Ratios

The adequacy of country elevator inventories can be gauged by comparing their level at the end of any given shipping week, with the truck and railway shipments that follow in the next seven days. A decade ago, the average stock-to-shipment ratio generally stood somewhere around a value of 4.5. In more recent years, however, the average has repeatedly fallen below 4.0, suggesting the maintenance of tighter inventories in relation to the volume of grain slated for shipment in the coming week. The 2018-19 crop year conformed with this observation, producing an average ratio that fell by 11.9%, to 3.7 from 4.2 a year earlier. Moreover, this denoted the second lowest on record, and might have fallen still further had there not been an inventory buildup in the second and third quarters owing to reduced GHTS fluidity.

Primary Elevators - Stock-to-Shipment Ratio



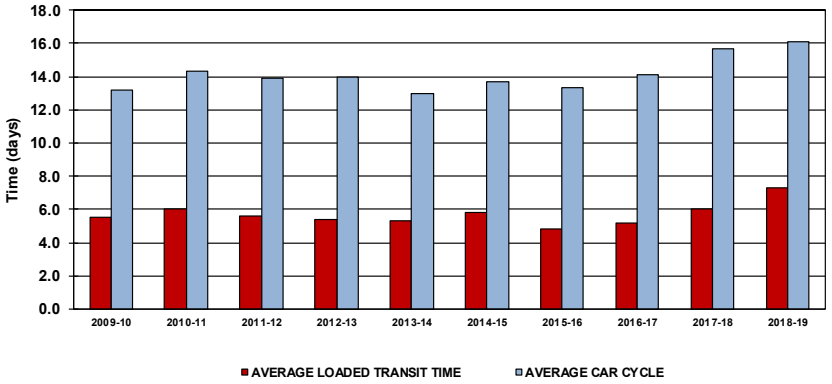
RAILWAY OPERATIONS
[See TABLES 5B-1 through 5B-15]

The average amount of time taken by the railways in delivering a load of grain to its destination and then returning the empty railcar back to the prairies for reloading is represented by the average car cycle. Since expansion of the GMP's measures in the 2014-15 crop year, car cycle data are gathered on movements to Western Canada, Eastern Canada and the United States.

Movements to Western Canada
[See Tables 5B-1 through 5B-4]

During the 2018-19 crop year the car cycle for shipments terminating within Western Canada averaged 16.0 days, a 2.1% increase over the 15.7-day average recorded a year earlier. It also denoted a third consecutive increase, and the highest annual average recorded since the 2006-07 crop year. Although this rise reflected increases in all corridors, it was driven primarily by a 3.2% increase in the Vancouver corridor, where the average car cycle climbed to 16.8 days from 16.3 days a year earlier. This was

Railway Car Cycles and Loaded Transit Times
(Western Canada)



supported by a marginal 0.5% increase in the Prince Rupert average, which remained effectively unchanged at 16.2 days. The same was true of the Thunder Bay corridor, which rose by a lesser 0.1%, and prolonged its 13.2-day average. Much of these overall elongations could be traced to increases shouldered in the winter months, which recurrently constricted the movement of grain to the west coast.

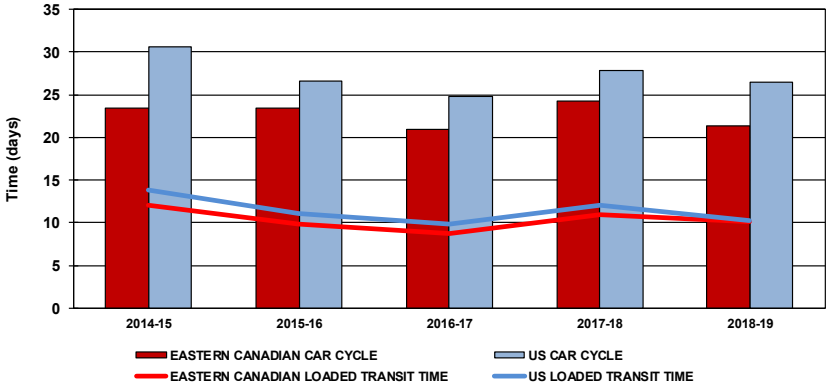
Owing to the heavy weighting of non-special crops in the overall traffic mix, the car cycle for these commodities showed an analogous increase, with the average rising 0.8%, to 15.6 days from 15.5 days a year earlier. A substantially greater increase was noted for the car cycle tied to special crops, which rose by 11.1%, to an average of 19.7 days from 17.7 days. The comparatively higher average for special crops still appears linked to the handling characteristics of these shipments, which tend to move in smaller numbers in regular merchandise-train service rather than in the unit-train lots typical of non-special crops.

Loaded Transit Time

Allied with the railways' average car cycle is the movements' average loaded transit time. This measure focuses on the amount of time taken in moving grain from a country elevator to a port terminal for unloading. Given its relationship to the overall car cycle, the average loaded transit time tends to move in tandem with it. In keeping with recent increases in the former, the average loaded transit time has also risen. The 2018-19 crop year saw the third consecutive escalation in this average, which increased 24.0%, to 7.5 days from 6.0 days a year earlier. Moreover, this represented the highest value observed since the 2002-03 crop year.

The irregularity in the underlying distribution, as gauged by the coefficient of variation, proved little different in the 2018-19 crop year, rising moderately to 37.4% from 32.7% a year earlier. Both values are not far removed from those observed in earlier years, indicating that the amount of time taken in moving a loaded hopper car to a port in Western Canada remains highly variable.

Railway Car Cycles and Loaded Transit Times
(Eastern Canada and the United States)



Movements to Eastern Canada and the United States
[See Tables 5B-5 through 5B-12]

Parallel performance measures for grain shipments into Eastern Canada and the United States were added to GMP reporting in the 2014-15 crop year. Owing to the greater distances involved in reaching these markets, these data show noticeably higher averages than observed for Western Canadian destinations. In the case of movements into Eastern Canada, the car cycle fell by 11.7% in the 2018-19 crop year, with the average declining to 21.3 days from 24.2 days a year earlier. A lesser 6.3% decrease was observed on movements into the United States, with the average car cycle falling to 26.1 days from 27.9 days.

In equal measure, the average loaded-transit time associated with movements into Eastern Canada and the US are substantially higher than those to Western Canadian destinations. In the case of the former, this amounted to an average of 10.2 days, which represented a decrease of 6.7% from the 10.9 days reported a year earlier. For movements into the United

States, the decrease amounted to a more substantive 9.7%, with the average falling to 10.8 days from 12.0 days. The underlying distributions showed similar patterns, with the coefficient of variation on movements into Eastern Canada standing at 34.6% against 43.6% for those into the United States.

Multiple Car Blocks
[See Tables 5B-13 through 5B-14]

The amount of railway traffic moving in multiple car blocks has increased substantially over the past two decades. In fact, since the 2014-15 crop year, at least 80% of the regulated grain moving to the four ports in Western Canada has earned an incentive discount, against only half in the GMP's base year. However, the structure of these discounts has been changing, with the 2018-19 crop year seeing greater emphasis placed on larger block movements.

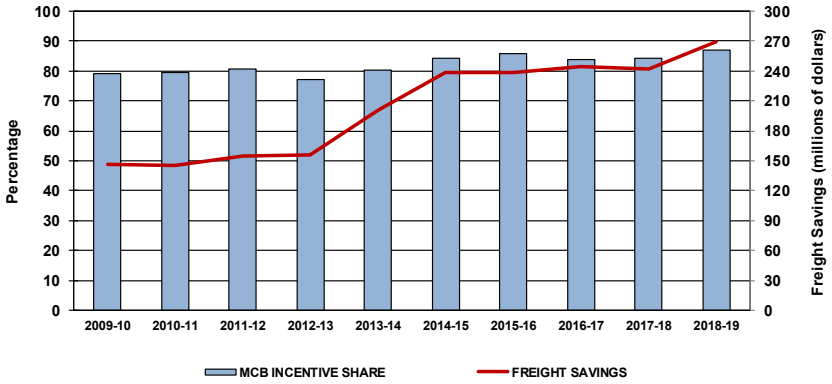
To this end, CP effectively eliminated its $4.00-per-tonne discount on blocks of 56 to 111 cars, leaving in place only the $8.00-per-tonne reduction for trainload shipments of 112 or more cars. At the same time, CN supplemented its 100-or-more-car incentive by up to $2.00 per tonne for shippers with more efficient loop-track operations. These actions served to increase the proportion of grain shipped in multiple car blocks, which rose to a record 87.2% from 84.1% a year earlier.

With traffic migrating towards the largest block movements, the monetary value of the discounts earned by grain shippers – estimated as gross savings in railway freight charges – moved sharply higher. These savings are estimated to have grown by 11.3% in the 2018-19 crop year, to $269.3 million from $241.9 million a year earlier, although the average discount earned fell to an estimated $7.47 per tonne from $7.55 per tonne.

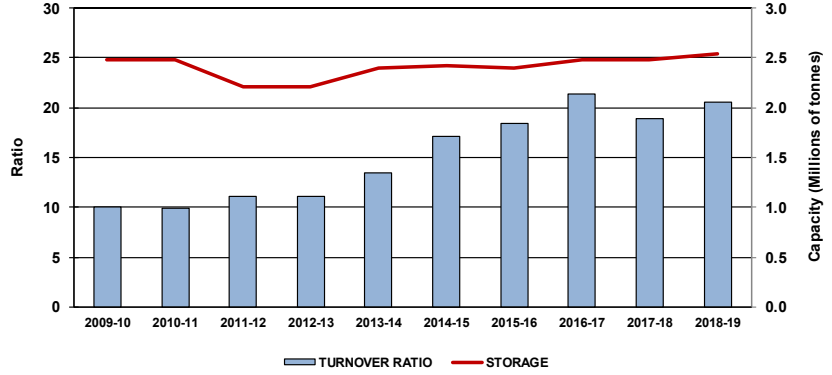
TERMINAL ELEVATOR OPERATIONS
[See TABLES 5C-1 through 5C-5]

The net effect of changes in terminal-elevator throughput and storage capacity is reflected in the system's capacity-turnover ratio, which rose by 8.5%, to an average of 20.5 turns from 18.9 turns a year earlier. This increase is consistent with the 6.3% gain in terminal-elevator throughput

MCB Movements and Freight Savings
(Western Canada)



Terminal Elevator Capacity Turnover Ratio



noted earlier. Changes in the turnover ratio are often amplified because, as a simple composite value, the overall ratio is sensitive to any significant swing in the tonnage handled through individual facilities. The turnover values tied to some of the smaller terminals at the ports of Vancouver and Thunder Bay can be especially distortionary.

Nevertheless, the GHTS's annual terminal throughput of 37.1 million tonnes now stands almost 60% above the 23.5 million tonnes benchmarked at the beginning of the GMP. More significantly, the west-coast gateways of Vancouver and Prince Rupert have shouldered much of the additional workload. Although storage capacity is now increasing in the wake of recently completed terminal expansion projects, the turnover ratio of 20.5 has virtually doubled the 9.1 recorded in the GMP's base year.

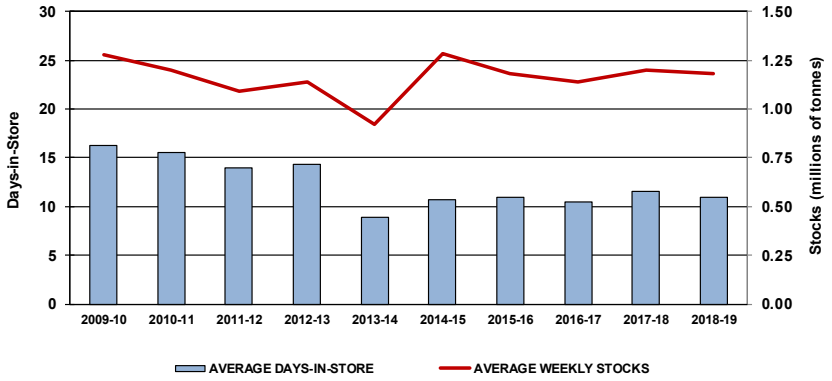
Terminal Elevator Inventories

Given that there have been few physical changes to the GHTS's terminal elevator system over the past two decades, grain inventories have not varied substantially since the beginning of the GMP. In fact, average weekly stock levels have tended to fluctuate in a band between 1.0 million tonnes and 1.5 million tonnes. This was again the case in the 2018-19 crop year, with the average weekly stock level falling by just 1.1%, to remain effectively unchanged at 1.2 million tonnes.

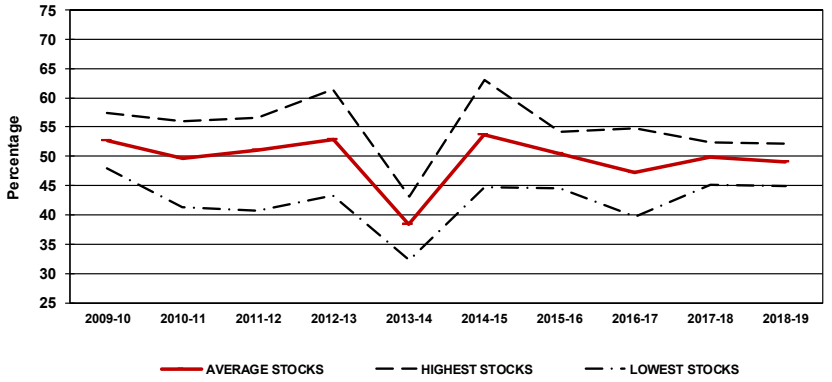
Moreover, terminal stocks have typically been maintained at about half of the system's licensed storage capacity. Still, stocks fluctuate from week to week, rising and falling in conjunction with the workings of the supply chain itself. This means that stocks normally use anywhere from 40% to 60% of the licensed storage capacity at any given time. A utilization rate that exceeds these bounds, such as was the case in the 2013-14 crop year, typically denotes a major exception in the orderly flow of grain through the GHTS. While weekly terminal stocks varied significantly in the 2018-19 crop year, they still averaged 49.0% of the system's stated storage capacity.

But higher throughput has brought more pressure to bear on the maintenance of adequate terminal stocks. The average stock level now represents about 3% of the system's annual throughput rather than the 5% it did 20 years earlier. This has placed even greater emphasis on just-in-

Terminal Elevator Inventories



Terminal Elevator Capacity Utilization



time inventory practices, heightening the need for a consistent flow of the right grain, to the right terminal, at the right time. Characteristic of these practices has been a longer-term decrease in the amount of time grain spends in terminal inventory, which has been cut by almost eight days over the life of the GMP, falling to an annualized average of 10.9 days from 18.6 days.

The 2018-19 crop year's average of 10.9 days fell 5.2% from the previous crop year's 11.5-day average. Much of this decrease was shaped by time reductions at the west-coast ports of Vancouver and Prince Rupert. However, owing to a reporting change adopted by the Canadian Grain Commission, port-specific year-over-year comparisons are unavailable.[17] Running counter to this was Thunder Bay, which posted a 3.6% increase, with its average rising to 20.1 days from 19.4 days.

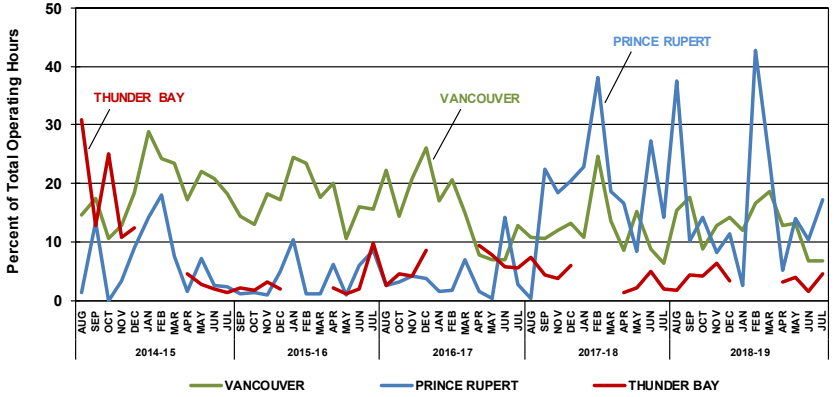
However, these annual averages disguise some of the more significant monthly changes, among them: Vancouver's decline from an average of 10.7 days in August 2018 to 5.8 days in December 2018, and its rebound to 10.0 days by July 2019. These averages suggest that the port's stocks were being drawn down substantially in the face of slower inbound rail movements at the height of winter.

Equally indicative of tighter terminal inventories was an apparent decline in many of the grain-specific stock-to-shipment ratios.[18] Although most commodities showed averages that stood comfortably above 1.0, all had minimums that fell substantially below this threshold. As such, every grain was in short supply at some point during the crop year.

Port Terminal Out-of-Car Time

A related measure, denoted as out-of-car time, gauges how often a port terminal had no railcars to unload while staffed and operating. The indicated proportion points to how consistently grain flowed through the terminal system during a specified period. This measure offers some insight into how the pace of inbound rail deliveries matches with the terminals' handling capacity, and whether a slowdown in the flow of traffic has generated any undue idle activity. These statistics tend to show a degree of seasonality, with out-of-car time often peaking in the winter months, typically a more difficult operational period.

Terminal Elevator Out-of-Car Time



With its greater operating hours, Vancouver's out-of-car time is most indicative of the system's overall efficiency. Proportionately, 12.8% of the port's total terminal operating hours were idled during the 2018-19 crop year, up marginally from the 12.2% recorded in the previous year. In parallel with this, the monthly values continued to fluctuate, from a low of 6.7% to a high of 18.6%, with sharp swings among terminals on both the north and south shores. Despite the slight year-over-year worsening, the broader trajectory has been downwards, with proportion of time idled cut by more than a third from the 20.0% recorded five years earlier.

17 At the outset of the 2018-19 crop year, the Canadian Grain Commission reversed the statistical reporting that had combined Vancouver and Prince Rupert as "Pacific Seaboard" ports since the 2013-14 crop year. Much of the port-specific data needed to compare activity in the 2018-19 crop year with those of the 2013-14 through 2017-18 crop years is unavailable.

18 Reporting changes at the Canadian Grain Commission also prevents direct year-over-year comparisons of the stock-to-shipment ratios for west coast ports. The observation made here is, therefore, contextually broader.

The same cannot be said of Prince Rupert, which has seen a substantial increase in its out-of-car times during this same five-year period. And while Prince Rupert has continued to lose a greater share of its operating hours to out-of-car time, and grappled with greater service variability than did Vancouver, its idle-time proportion for the 2018-19 crop year actually declined marginally, to 16.9% from 18.0% a year earlier.

Thunder Bay also saw a reduction in the 2018-19 crop year, with its out-of-car time proportion dropping marginally, to 3.9% from 4.0% a year earlier. It should be noted, however, that while Thunder Bay has regularly posted the lowest proportion among the three principal ports in Western Canada, its monthly scores belie as equally an irregular pattern as those of Vancouver and Prince Rupert.

Taken collectively, terminal elevators were left without grain to unload 11.5% of the time, up marginally from the 11.2% noted the previous year. Even so, the overall statistics blur the fact that inbound terminal elevator activity was significantly curtailed at the height of winter and that Prince Rupert shouldered a disproportionate share of the burden. This can be seen in the out-of-car time values for February 2019, with the proportions reaching heights of 16.6% for Vancouver and 42.8% for Prince Rupert.

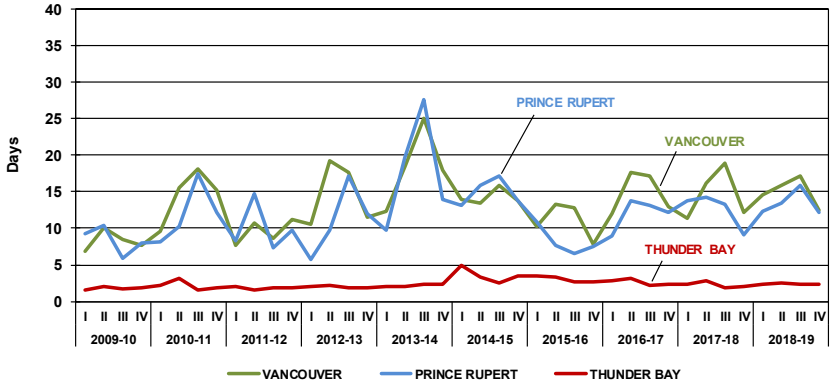
PORT OPERATIONS
[See TABLES 5D-1 through 5D-8]

A total of 943 vessels called for grain at Western Canadian ports during the 2018-19 crop year. This represented a 6.8% increase over the 883 ships that arrived for loading a year earlier. Over half of these, 487, called at Vancouver. This was followed by Thunder Bay with 339, Prince Rupert with 116, and Churchill with one.

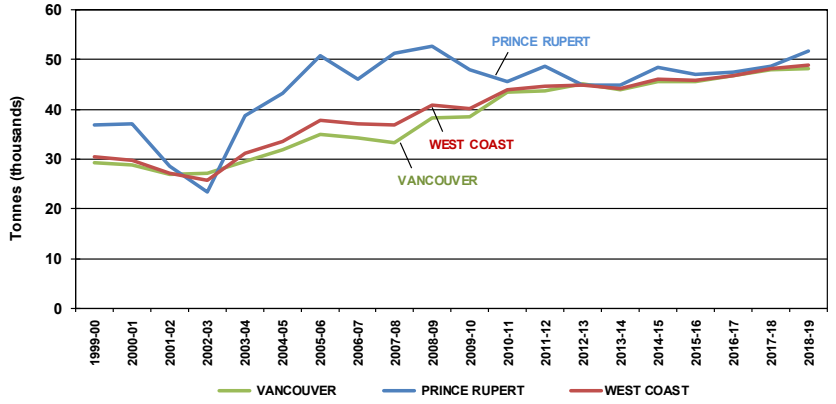
Average Vessel Time in Port

The amount of time spent by vessels in port is generally indicative of the GHTS's overall efficiency: when low, it suggests that grain is moving through the system in a timely and uniform manner; when high, it hints at some underlying impediment. The 2018-19 crop year saw a 2.9% increase in this average, which rose to 10.3 days from 10.0 days a year earlier. This was chiefly due to a 17.6% increase in the amount of time vessels spent

Vessel Time in Port
(Western Canada)



Average Load per Vessel



waiting to load, which rose to an average of 5.6 days from 4.8 days a year earlier. However, this additional time was partially offset by a 10.7% decrease in the amount of time vessels spent loading, which fell to an average of 4.6 days from 5.2 days.

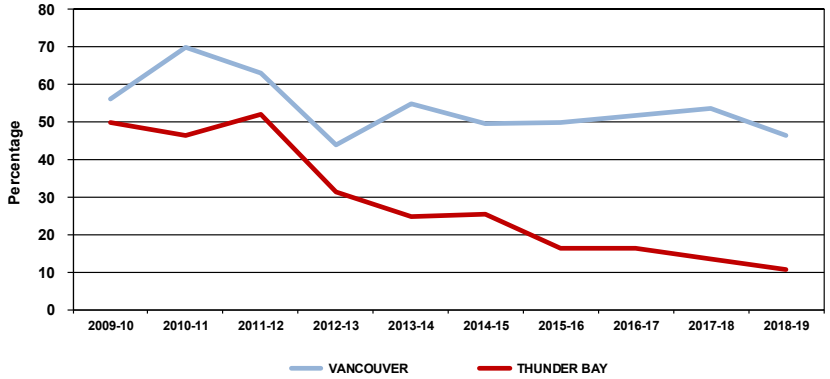
Similar patterns were found at all four ports in Western Canada, with each helping to elongate the overall average. At Vancouver, a vessel's average time-in-port increased by 3.6%, to 15.0 days from 14.5 days a year earlier. This was accompanied by a 4.8% increase for Prince Rupert, which saw its average climb to 13.4 days from 12.8 days. For Thunder Bay, the gain proved a somewhat greater 5.3%, with the average having risen to 2.4 days from 2.3 days a year earlier. Even Churchill, which loaded its first ship in three years, recorded a 12-day stay; the longest recorded by the port under the GMP.

It is worth noting that, once again, the time spent by vessels in port spiked noticeably in the third quarter, with the overall average for March 2019 reaching a height of 18.7 days. This was driven by a progressive rise in the amount of time ships spent in the west-coast ports of Vancouver and Prince Rupert, which peaked at an average of 19.9 days and 18.8 days respectively during this period. Undoubtedly, much of the increase arose out of the winter-related delays incurred in getting grain to port, which again gave rise to complaints over the consistency of railway service.

Beyond the need to better coordinate the inbound movement of grain by rail, the physical demands of arriving ships has placed additional pressure on the GHTS. For a commercially active centre such as Vancouver, this frequently involves the disproportionate allocation of available achorages. Accordingly, there have been instances during the last six crop years where vessels waiting to load grain in Vancouver have tied up all of the nearby anchorages, with the overflow then forced to moor further to the west along the coast of Vancouver Island. Not only does this necessitate additional pilotage services, it contributes to harbour congestion and drives up demurrage costs.

At the same time, the ships calling for grain at west-coast ports have also been getting larger. The aggressive building programs of various ship owners has resulted in newer and bigger vessels replacing the smaller bulk vessels that were reaching the end of their serviceable lives. Ships taking

Multiple Vessel Berthing Rate



on loads of close to 50,000 tonnes are now commonplace at both Vancouver and Prince Rupert. The use of these larger ships results in longer loading times, with their physical accommodation having spurred operators such as Pacific Elevators and Alliance Grain Terminal to replace their smaller shipping galleries with new, more efficient ones.

Distribution of Vessel Time in Port

Another impediment to the flow of grain through the terminal network is reflected in the number of ships spending long periods of time in port. The proportion of ships with stays of more than five days rose marginally in the 2018-19 crop year, to 55.0% from 54.6% a year earlier. Moreover, ships in port for an unusually long time remained comparatively high, with the proportion of vessels spending 16 or more days in port increasing marginally to 27.0% from 25.6%. This, however, was virtually double the 14.5% level witnessed just three years earlier. With almost all delays tied to ships calling at Vancouver and Prince Rupert, west-coast exports are the most adversely affected by impairments to terminal grain shipments.

Distribution of Berths per Vessel

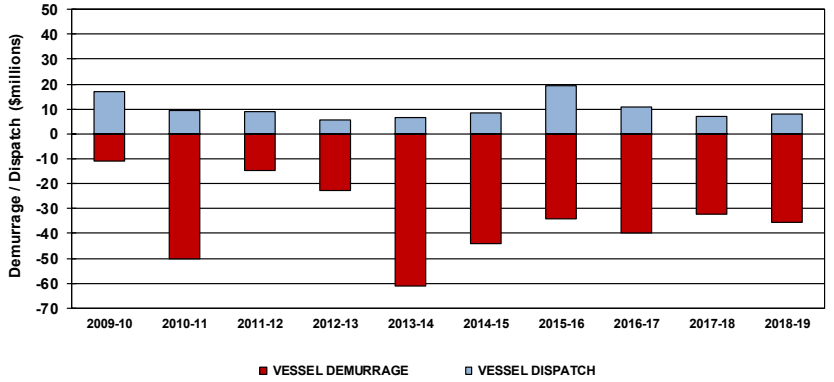
Similarly, there were only modest changes in the proportion of vessels needing to berth more than once during the 2018-19 crop year. At Vancouver, this proportion fell to 46.4% from 53.6% a year earlier. While at Thunder Bay the proportion fell to 10.9% from 13.5%. Although the Vancouver proportion remains generally consistent with those observed in the first years of the GMP, the reduction posted by Thunder Bay continues to show a progressive improvement.

Demurrage and Dispatch

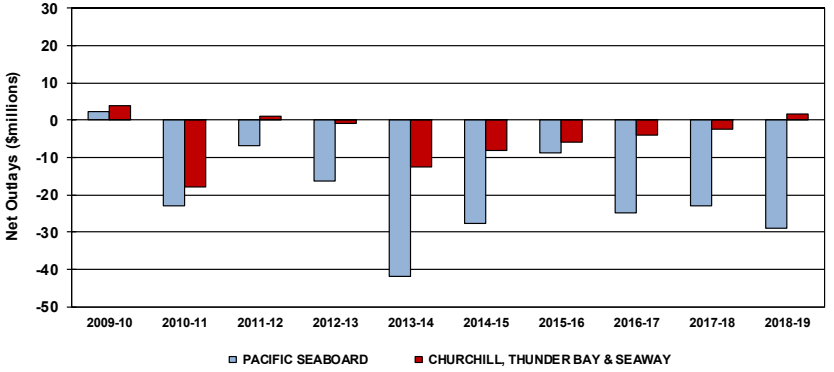
Changes to the amount of time vessels spend in port are often reflected in the demurrage costs and dispatch earnings reported by the WGEA, which provides a monetary indication of how efficiently grain flowed through Western Canadian ports. For the ninth consecutive year, these two elements dovetailed to produce a net cash outlay for grain handlers. Although the $27.2 million paid out in the 2018-19 crop year was 8.2% greater than the previous crop year's $25.2 million expenditure, it still proved almost double the $14.7 million expended three years earlier. This financial result was shaped chiefly by a 10.5% increase in demurrage costs, which rose to $35.4 million from $32.0 million the previous year. Even so, a 19.0% increase in dispatch earnings, which rose to $8.1 million from $6.8 million, helped to contain the growth in demurrage costs.[19]

These results were chiefly driven by the financial penalties incurred along the Pacific Seaboard, which had a net cash outlay of $28.8 million against $22.8 million a year earlier. The results from activity at Churchill, Thunder Bay and points along the St. Lawrence Seaway were more positive, with reduced demurrage costs and higher dispatch earnings producing a net cash inflow of $1.5 million against a net cash outflow of $2.3 million a year earlier.

Annual Demurrage and Dispatch



Annual Demurrage and Dispatch - Region



19 Demurrage is charged when an ocean vessel remains in port for a period longer than that contracted with the shipper in the charter party agreement. Dispatch is paid when the contracted vessel loads and departs the port in less time than stated in the agreement.

SYSTEM PERFORMANCE
[See TABLE 5E-1]

Overall GHTS performance can be most readily gauged by the amount of time taken by grain in moving through the system. For the 2018-19 crop year, this meant an average of 43.8 days, a 4.4% reduction from the 45.8-day average posted a year earlier. Moreover, this denoted a 35.7% decrease from the 68.2 days benchmarked in the GMP's base year.

Notwithstanding the broader downward trend, periodic disruptions to the flow of grain have undermined the supply chain's performance, which reached a 40.6-day low in the 2016-17 crop year. Although the 43.8-day average posted in the last crop year marks a 7.9% increase from this touchstone value, it still constitutes a full 2.0-day improvement over the 2017-18 crop year's higher 45.8-day average.

This 2.0-day betterment was the product of reductions in two key areas of GHTS activity, with the average amount of time grain spent in inventory at a country elevator decreasing by 2.9 days being coupled with a 0.6-day decline in its storage time at terminal elevators. But this combined 3.5-day time reduction was partially offset by a 1.5-day increase in the railways' loaded transit time. Despite the net improvement, each of these time variances proved symptomatic of broader logistical issues.

Foremost among these was the fact that the GHTS was required to handle the output of yet another banner year, where the total grain supply reached a record 82.1 million tonnes. Furthermore, non-grain shipments were also at historic levels, with all railway traffic reaching a record 393.0 million tonnes in the 2018-19 crop year.[20] This heightened demand for railway carrying capacity perpetuated the concerns of many stakeholders regarding the sufficiency of railway resources, and its injurious potential on railway service.

Shipper frustrations with railway service have long been a fixture in grain logistics. The railway service problems experienced in the winter of 2017-18 led both CN and CP to acknowledge the need for more capacity, particularly in the Vancouver and Prince Rupert corridors, and to commit

Days Spent Moving Through the GHTS Supply Chain

FARM OPERATIONS

COUNTRY ELEVATOR STORAGE TIME

RAILWAY LOADED TRANSIT TIME

TERMINAL ELEVATOR STORAGE TIME

MARINE OPERATIONS

				TOTAL	NET CHANGE
1999-00	41.7	7.8	18.6	68.1	
2015-16	26.1	4.8	10.9	41.8	-35.7%
2016-17	24.9	5.2	10.5	40.6	
2017-18	28.3	6.0	11.5	45.8	
2018-19	25.4	7.5	10.9	43.8	

20 Drawn from Statistics Canada, Table 23-10-0216-01, *Railway Carloadings Statistics.*

themselves to investing in additional plant, equipment and personnel. By all accounts, both railways had made notable strides on all three fronts in the ensuing year.

But the problems manifest in the 2017-18 crop year largely resurfaced in the 2018-19 crop year, beginning yet again with an elongation of the average loaded-transit and car-cycle times. Moreover, these averages proved worse than those reported a year earlier. At its peak in February 2019, the average loaded transit time on grain movements to Western Canadian ports had risen to 9.3 days, 17.7% above the 7.9-day high posted in the same month a year earlier. And although the average settled down to 7.5 days for the crop year at large, it still proved 24.0% greater than the previous year's 6.0-day average, and the highest value reported under the GMP in 16 years.

With the elongation of the railways' car cycle initially slowing the flow of railcars, it soon led to a backlog of unfilled car orders and burgeoning country elevator stocks. The downstream effects presented corollary issues for terminals awaiting inbound grain – especially along the west coast – which soon found themselves short of the grain they needed to load ships in a timely manner. This in turn led to port congestion and vessel delays.

Yet, the scope and duration of these problems proved less disruptive than those experienced a year earlier. To a large extent this was because the railways had taken steps to add capacity and provide greater resiliency to their operations, not the least of which involved the addition of some 2,000 new, high-capacity hopper cars. The gradual injection of these cars into their general fleets helped to improve the flow of grain throughout the GHTS by offsetting the carrying capacity lost by way of reduced velocity and asset turnover. This was figured significantly in the 2.0-day improvement over the previous crop year's 45.8-day average for grain to move through the system.

Section 6: Producer Impact

Indicator Description	Table	1999-00	2016-17	2017-18	2018-19 Q1	Q2	Q3	Q4	YTD	% VAR
Export Basis										
1CWRS Wheat ($ per tonne) – Original Methodology	6A-10A	$54.58	n/a	n/a						
1CWRS Wheat ($ per tonne) – Revised Methodology (1)	6A-10A	n/a	$94.30	$91.50					$92.51	1.1%
1CWA Durum ($ per tonne) – Original Methodology	6A-10B	$67.63	n/a	n/a						
1CWA Durum ($ per tonne) – Revised Methodology (1)	6A-10B	n/a	$116.86	$112.88					$109.99	-2.6%
1 Canada Canola ($ per tonne)	6A-10C	$52.51	$65.63	$63.10					$61.33	-2.8%
Canadian Large Yellow Peas – No. 2 or Better ($ per tonne)	6A-10D	$54.76	$69.11	$63.47					$60.35	-4.9%
Producer Cars										
Producer-Car-Loading Sites (number) – Class 1 Carriers	6B-1	416	160	142	142	142	142	142	142	0.0%
Producer-Car-Loading Sites (number) – Class 2 and 3 Carriers	6B-1	122	130	130	130	130	130	130	130	0.0%
Producer-Car-Loading Sites (number) – All Carriers	6B-1	538	290	272	272	272	272	272	272	0.0%
Producer-Cars Scheduled (number) – Covered Hopper Cars	6B-2	3,441	5,519	3,778	740	815	698	473	2,726	-27.8%

(1) The methodology used to calculate the export basis in the 2012-13 through 2018-19 crop years does not allow for direct comparison with those of previous crop years.

DISCUSSION AND ANALYSIS

CALCULATION OF THE EXPORT BASIS

One of the GMP's principal objectives involves gauging the logistics cost associated with moving prairie grain to market – commonly referred to as the "export basis" – along with the resultant "netback" earned by producers after subtracting these costs from a grain's sale price. Both the export basis and the producer netback are location-specific calculations that include provisions for the elevation, cleaning, storage and transportation costs tied to the handling of grain.

There are well over 1,000 distinct origin-destination pairs that arise from tying together the hundreds of grain-delivery points scattered across the prairies with the four principal export gateways in Western Canada. Moreover, given the number of differing grains, grain grades, grain company service charges, and freight rates, the permutations inherent in calculating the export basis and netback of individual producers takes on extraordinary dimensions.

The only practical means of addressing these calculations rests in standardizing the estimates around a representative sample of grains, and grain stations. As a result, the GMP consciously limits its estimations to four specific grains: wheat; durum; canola; and peas.[21] The export basis and producer netback for each commodity is then calculated for each of the 43 grain stations in the sample. These location-specific calculations are then clustered to portray the averages for nine geographic areas, comprised of four to six grain stations each, namely: Manitoba East; Manitoba West; Saskatchewan Northeast; Saskatchewan Northwest; Saskatchewan Southeast; Saskatchewan Southwest; Alberta North; Alberta South; and Peace River.

Components of the Calculation

It is important to remember that every individual producer's cost structure differs. As a result, no general calculation can be expected to precisely depict the export basis and netback that is specific to each farmer. The methodology employed here is intended to typify the general case within each of the nine geographic areas identified. Caution, therefore, must be exercised in any comparison between the general values presented, and those arising to individual producers within each of these areas. The specific assumptions employed in these determinations are delineated in the table that follows. The reader is encouraged to consider these before drawing any specific conclusions from the calculations presented.

21 In addition to the grains themselves, the GMP also specified the grades to be used, namely: 1 CWRS Wheat; 1 CWA Durum; 1 Canada Canola; and Canadian Large Yellow Peas (No. 2 or Better).

ELEMENT	WHEAT AND DURUM	CANOLA AND YELLOW PEAS
Grain Price	The price for 1 Canada Western Red Spring Wheat and 1 Canada Western Amber Durum are tonnage-based weighted averages of the West Coast export quotation from Canadian Grain Exporters and the St. Lawrence export quotation from the International Grains Council (ICG), as reported by AAFC.	As of the 2015-16 crop year, the price for 1 Canada Canola is represented by the Track Vancouver Cash price (as reported by AAFC). For all previous crop years, the price for 1 Canada Canola was the weighted average Vancouver cash price provided by ICE Futures Canada. The weights used reflect monthly exports as recorded by the Canadian Grain Commission (CGC). The price for Canadian Large Yellow Peas is based on the average weekly dealer closing price, track Vancouver, reported by Stat Publishing for the months of October and November.[1]
Trucking Costs	The trucking costs are based on the commercial short-haul trucking rates for an average haul of 40 miles as presented in Table 4A-1. Although current data is unavailable, the last published value is still employed for the purpose of continuity.	The trucking costs are based on the commercial short-haul trucking rates for an average haul of 40 miles as presented in Table 4A-1. Although current data is unavailable, the last published value is still employed for the purpose of continuity.
Price Differential	A price differential – or spread – is used to estimate certain costs for 1 Canada Western Red Spring Wheat and 1 Canada Western Amber Durum. For the 2012-13 through 2014-15 crop years this spread was based on the difference between the weighted average of the West Coast and St. Lawrence export quotations and the average Saskatchewan producer spot price (both reported by AAFC). However, the average Saskatchewan producer spot price encompassed all grades and, therefore, provided an imperfect comparison to the export quotations. As of the 2015-16 crop year the latter element in this comparison was altered, with it now being made against an average of the daily bid prices within each region as reported by PDQ.[2] Readers should consider this when attempting to draw conclusions from the data.	A price differential – or spread – is used to estimate certain costs for 1 Canada Canola. Prior to the 2015-16 crop year this spread was based on the difference between the weighted Vancouver cash price and the weighted average spot price in each of the nine regions as reported by ICE Futures Canada. As of the 2015-16 crop year this was replaced by a differential based on the Track Vancouver Cash price (as reported by AAFC) and the average of the daily bid prices within each region reported by PDQ.[2] For yellow peas, a price differential is calculated using the average weekly dealer closing price, track Vancouver, and the average weekly grower bid closing price for the months of October and November. These differentials effectively represent the incorporated per-tonne cost of freight, elevation, storage and any other ancillary elements. As such, it encompasses a large portion of the Export Basis.
Grower Association Deductions	Elevator deliveries of wheat and durum are subject to various per-tonne "check-offs" in order to fund variety research, market development and technical support to the industry. The check-offs are administered by the appropriate provincial wheat commission.	Elevator deliveries of canola and peas are subject to various per-tonne "check-offs" in order to fund variety research, market development and technical support to the industry. The check-offs are administered by the appropriate provincial canola and pulse-grower association.
Trucking Premiums	Grain companies report on the trucking premiums they pay to producers at each of the facilities identified in the sampling methodology.[3] The amounts depicted reflect the average per-tonne value of all premiums paid for the designated grade of wheat or durum within the reporting area. In the post-monopoly environment, grain companies have increased the use of their basis (the spread between their cash and the nearby futures price) as the mechanism to attract producer deliveries. This has been accompanied by a significant decline in the use of trucking premiums.	Grain companies use their basis (the spread between their cash and the nearby futures price) as the mechanism to attract producer deliveries. Narrowing their basis, resulting in higher return to producers, is the signal that a company needs a commodity. Conversely a wide basis signals a lack of demand for the product. Some companies, however, offer premiums over and above their basis in order to attract delivery of some commodities. These premiums are presented as a producer benefit when factored into the export basis. Owing to the limited use of this mechanism, they assume relatively small values when weighted by the applicable tonnage at a regional level.
Other Deductions	Other deductions, such as drying charges, GST on services, etc., may also be applied to, and appear as an itemized entry on the cash ticket of, any grain delivery. No attempt is made to capture these deductions within the framework employed here.	Other deductions, such as drying charges, GST on services, etc., may also be applied to, and appear as an itemized entry on the cash ticket of, any grain delivery. No attempt is made to capture these deductions within the framework employed here.

1) – Data provided by Stat Publishing. Using a "snapshot" period of two months during the fall, when pricing of the new crop is relatively heavy, was deemed to be an appropriate representation of producer prices, thereby avoiding the need to incorporate a weighting factor.
2) – PDQ (Price, Data, Quotes) is a web-based information service operated by the Alberta Wheat Commission which publishes cash grain market price and related statistical data (www.pdqinfo.ca).
3) – Various terms are used by grain companies to describe the premiums they offer to producers in an effort to attract deliveries to their facilities – i.e., trucking premiums, marketing premiums, and location premiums. The most common term, however, remains "trucking premium," and it is utilized generically in the calculation of the Export Basis.

WHEAT AND DURUM
[See TABLES 6A-1A through 6A-10B]

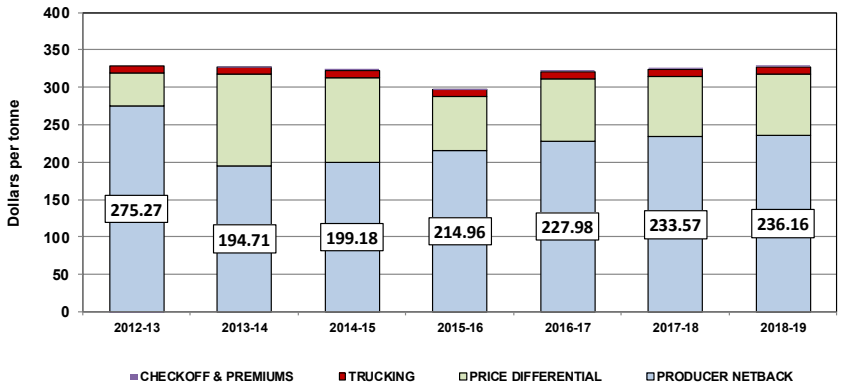
In its earlier reports, the Monitor described how higher prices have generally been responsible for any improvement in the per-tonne returns accruing to producers of wheat and durum. In comparison, reductions in the export basis have proven to be secondary. Whether it be price or the export basis, their periodic rise and fall have been the prime determinants in the financial returns for producers.

1CWRS Wheat
[See Tables 6A-1A through 6A-10A]

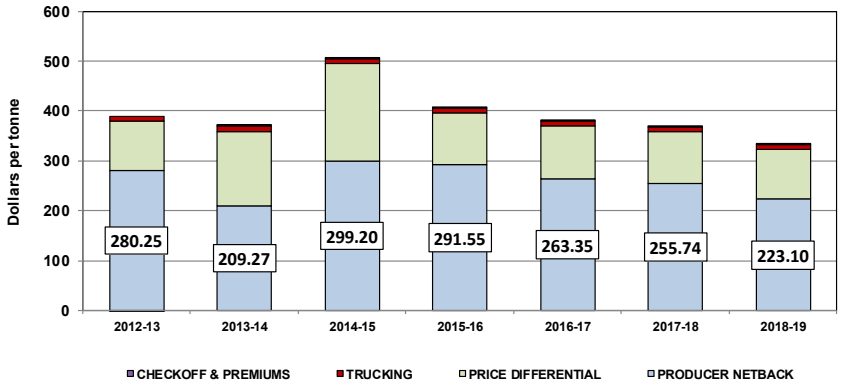
The financial return to farmers of 1CWRS wheat amounted to an estimated $236.16 per tonne in the 2018-19 crop year. This represented a gain of 1.1% over the $233.57 estimated a year earlier. Much of the improvement was attributable to an increase in the average price, which is constructed around a tonnage-based weighted average export quotation for 1CWRS wheat (13.5% protein), and that rose by 1.1%, to $328.67 per tonne from $325.07 per tonne a year earlier. Supported by the weak Canadian dollar, this modest increase reflected the continuing strong global demand for high-quality wheat.

The $3.60-per-tonne increase in wheat prices was partially offset by a $1.01-per-tonne increase in the export basis, which rose by 1.1%, to $92.51 per tonne from $91.50 per tonne a year earlier. Much of this increase was attributable to a widening of the price differential – or spread – between the export quotation and the elevator spot price, which rose 1.2%, to $81.73 per tonne from $80.74 per tonne a year earlier. In effect, the price differential includes applicable freight, handling, cleaning, storage, weighing and inspection charges, as well as an opportunity cost or risk premium. With trucking charges and check-offs remaining unchanged at $9.82 per tonne and $1.03 respectively, the only other contributors to the change in the export basis came from a $0.02-per-tonne reduction in applicable trucking premiums.

Producer Netback - 1CWRS Wheat



Producer Netback - 1CWA Durum



1CWA Durum
[*See Tables 6A-1B through 6A-10B*]

The financial return to farmers of 1CWA durum amounted to an estimated $223.10 per tonne in the 2018-19 crop year. This represented 12.8% less than the $255.74 per tonne reported in the 2017-18 crop year. The decline was driven mostly by lower durum prices, which fell to $333.09 per tonne, 9.6% below the $368.62-per-tonne average recorded a year earlier. Much of this decline reflected the continuing oversupply of world markets as well as the injurious effects of Italy's country-of-origin labelling rules.

The full effect of the price decline was cushioned by a modest decrease in the export basis, which fell by 2.6%, to $109.99 per tonne from $112.88 per tonne. Virtually all this $2.89 reduction was attributable to a $2.81 decrease in the price differential, which fell to $99.25 per tonne from $102.06 per tonne a year earlier. As outlined with respect to 1CWRS wheat, the $9.82-per-tonne trucking cost did not change in the 2018-19 crop year, so did not factor into a worsening of the producer netback. Nor did an unchanged check-off charge of $1.03 per tonne. However, a $0.08-per-tonne increase in the trucking premiums paid to producers helped soften the decline in the producer netback.

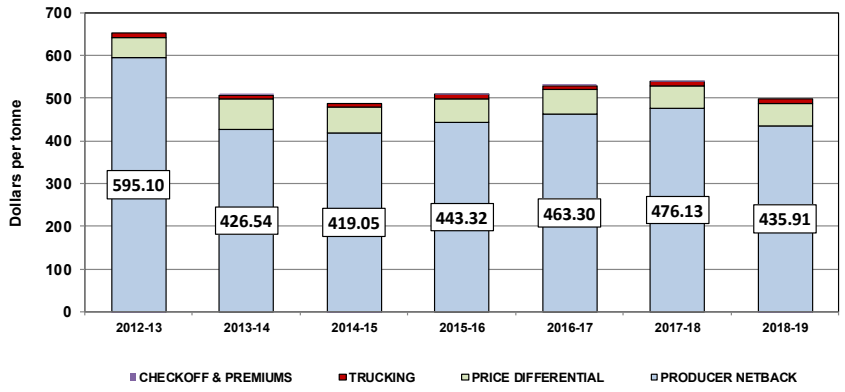
CANOLA AND YELLOW PEAS
[See TABLES 6A-1C through 6A-10D]

Like wheat and durum, the data used in calculating the financial return to producers of canola and large yellow peas shows that they have also been heavily influenced by the prevailing prices for these commodities. While the export basis has also risen over time, it has proven to have far less sway over these returns.

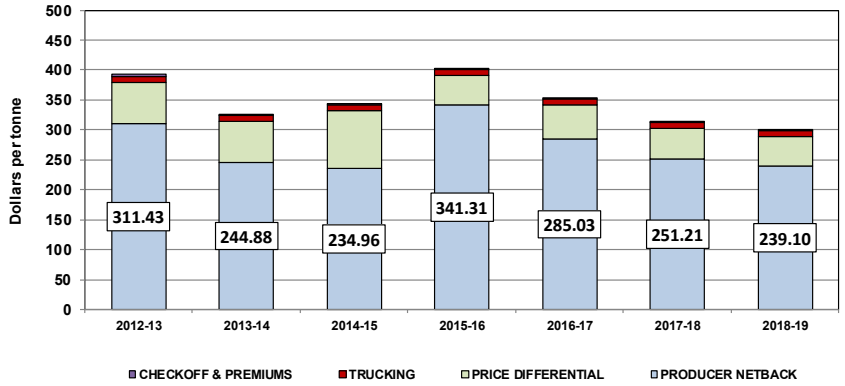
1 Canada Canola
[*See Tables 6A-1C through 6A-10C*]

The netback to producers of 1 Canada canola decreased by 8.4% in the 2018-19 crop year, falling to $435.91 per tonne from $476.13 per tonne a year earlier. This result was mostly driven by lower canola prices, with the average Vancouver cash price falling 7.8%, to $497.24 per tonne from $539.23 per tonne. The decline largely reflected a softening demand for canola, which was being partially displaced by cheaper soybeans along

Producer Netback - 1 Canada Canola



Producer Netback - Large Yellow Peas



with the chilling effects of China's restrictions against Canadian canola imports.

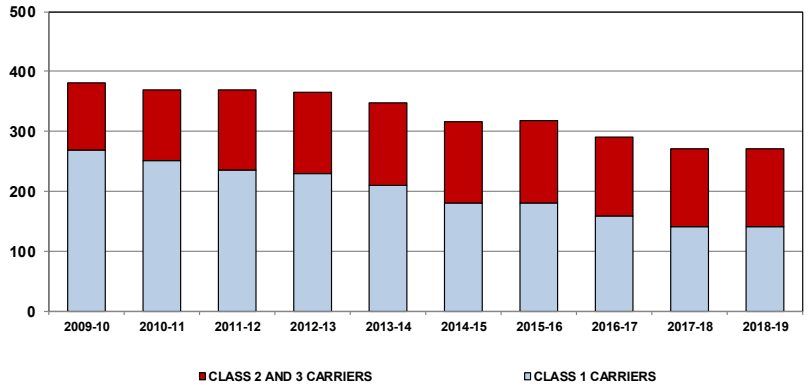
This decline was softened by a 2.8% reduction in the export basis, which fell to an average of $61.33 per tonne from $63.10 per tonne a year earlier. As observed with wheat and durum, virtually all the decrease was tied to a change in the price differential, which declined to $51.57 per tonne from $53.21 per tonne a year earlier. The costs derived from trucking and the payment of a check-off did not change in the 2018-19 crop year, so did not contribute to the variance in the producer netback. These were estimated at $9.82 per tonne and $0.92 per tonne respectively. Only a $0.13-per-tonne increase in the trucking premiums paid to producers aided in further reducing the export basis.

Large Yellow Peas
[*See Tables 6A-1D through 6A-10D*]

The visible netback to producers of large yellow peas has proven the most volatile of the four commodities monitored under the GMP. Producers experienced an 4.8% decline in these returns during the 2018-19 crop year, which fell to $239.10 per tonne from $251.21 per tonne a year earlier. Much of this reduction was attributable to lower market prices brought on by the imposition of tariff and non-tariff barriers by India, traditionally a major Canadian export market, over a year earlier. As a result, the dealer's closing price fell by 4.8%, to $299.45 per tonne from $314.68 per tonne.

The export basis for large yellow peas fell by 4.9% in the 2018-19 crop year, to $60.35 per tonne from $63.47 per tonne a year earlier. As with other commodities, much of the decrease was rooted in a reduction of the price differential, which stands in for the cost of freight as well as other handling activities, and that fell by 6.0%, to $48.86 per tonne from $51.97 per tonne. This was supported by a $0.0.8-per-tonne reduction in Pulse Growers Association fees which was largely offset by a $0.07 decrease in trucking premiums. Since trucking costs remained unchanged at $9.82 per tonne, it had no contributory effect on the export basis.

Producer-Car Loading Sites



PRODUCER CARS
[See TABLES 6B-1 through 6B-2]

Producer-car loading increased substantially through the first decade of the GMP. This was due in large measure to the advent of modern producer-car loading groups that invested significantly in fixed trackside storage and carloading facilities. Some even went so far as to purchase the branch lines then being abandoned by CN or CP to establish shortline railways that became integral elements in their broader grain-handling operations. Ultimately, their aim was to safeguard a cost-competitive alternative for producers in moving their grain to market.

Loading Sites
[*See Table 6B-1*]

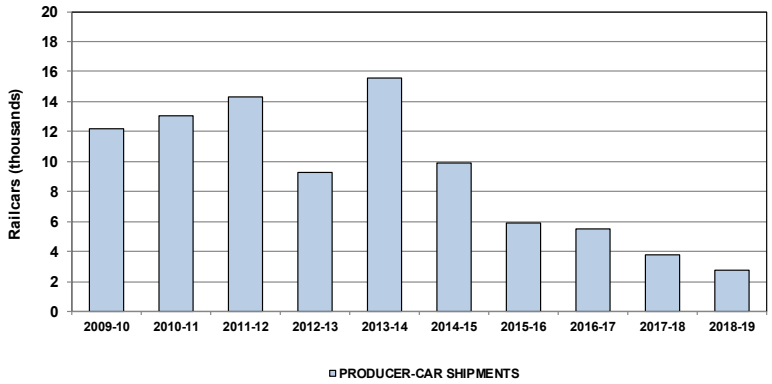
The number of producer-car loading sites situated across Western Canada has continued to decline from the 710 originally benchmarked at the beginning of the GMP. However, the 2018-19 crop year saw no further closures, with the overall number remaining unchanged at 272, with Class 1 carriers operating 142, while Class 2 and 3 carriers operated 130.

Producer-Car Shipments
[See Table 6B-2]

Producer-car shipments have declined significantly since reaching a high of 15,603 carloads in the 2013-14 crop year. In the 2018-19 crop year, scheduled shipments totaled just 2,726 carloads, less than a fifth of the volume recorded five years earlier. Much of this decline reflects the realities of today's competitive environment, where the limited financial reward of the producer-loading option is often outweighed by its broader commercial risks. Simply stated, few producers feel that it is worth the trouble. Still, what remains has largely been refocused on serving the American market for select grains, with about 60% of total producer-car shipments now being directed into the United States.

Equally noteworthy is the attendant shift in the mix of commodities handled. Until the 2009-10 crop year, wheat, durum and barley were dominant, representing virtually all the traffic moved. But the proportion accorded to oilseeds and other commodities soon began to climb. By the close of the 2018-19 crop year the share given over to wheat, durum and barley had fallen to an estimated 24.6%, down from 35.8% a year earlier. Conversely, shipments of oilseeds, special crops and oats increased, with their share climbing to 75.4% from 64.2% the previous year. This marked the fourth consecutive crop year in which the shipment of these commodities displaced those of wheat, durum and barley.

Producer-Car Shipments



Appendix 1: Program Background

The Government of Canada selected Quorum Corporation to serve as the Monitor of Canada's Grain Handling and Transportation System (GHTS) in June 2001. Under this mandate, Quorum Corporation provides the government with a series of regular reports relating to the system's overall performance, as well as the effects of the various policy reforms enacted by the government since 2000.

In a larger sense, these reforms were expected to alter the commercial relations that have traditionally existed between the primary participants in the GHTS: producers; the Canadian Wheat Board; grain companies; railway companies; and port terminal operators. Using a broad series of indicators, the government's Grain Monitoring Program (GMP) was designed to measure the performance of the GHTS as this evolution unfolded. Moreover, these indicators are intended to reveal whether grain is moving through the supply chain with greater efficiency and reliability.

To this end, the GMP provides for a number of specific performance indicators grouped under six broad series, namely:

- Series 1 – Production and Supply: Measurements relating to grain production in western Canada. In addition to the major cereal grains, this also includes oilseeds and special crops.

- Series 2 – Traffic and Movement: Measurements focusing on the amount of grain moved by the western Canadian GHTS. This includes shipments from country elevators; by rail to western Canada, eastern Canada, the United States and Mexico; by vessel from terminal elevators at the four ports in western Canada; and by truck to the United States.

- Series 3 – Infrastructure: Measurements illustrating the makeup of the GHTS. These statistics include both the number and capacity of the country as well as terminal elevator systems, and the composition of the western Canadian railway network.

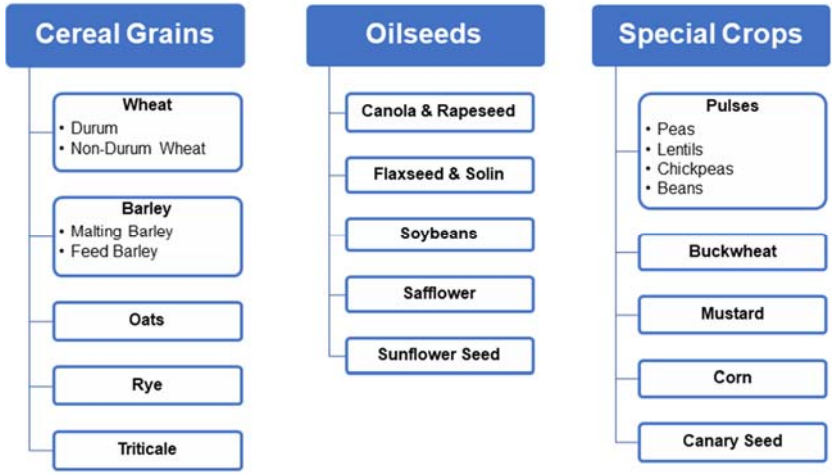
- Series 4 – Commercial Relations: Measurements relating to the rates applicable on various grain-handling and transportation services.

- Series 5 – System Efficiency and Performance: Measurements aimed at gauging the operational efficiency with which grain moves through the logistics chain.

- Series 6 – Producer Impact: Measurements designed to capture the value to producers from changes in the GHTS, and which are focused largely on the calculation of the "producers' netback."

Appendix 2: Commodity Guide

The following provides a high-level overview of the various commodities discussed in this report. The delineations made here are drawn from the Canadian Grain Commission's Official Grain Grading Guide Glossary.



Cereal Grains: Cereal grains are any grain or edible seed of the grass family which may be used as food.

Oilseeds: Oilseeds include flaxseed and solin, canola and rapeseed, soybeans, safflower and sunflower seed.

Canola: The term "canola" was trademarked in 1978 by the Western Canadian Oilseed Crushers' Association to differentiate the new superior low-erucic acid and low-glucosinolate varieties and their products from older rapeseed varieties.

Special Crops: Special crops are considered to be beans, buckwheat, chick peas, corn, fababeans, lentils, mustard, peas, safflower, soybeans, and sunflower.

Pulses: Pulses are crops grown for their edible seeds, such as peas, lentils, chick peas or beans.

Screenings: Screenings is dockage material that has been removed by cleaning from a parcel of grain.

Appendix 3: Acknowledgements

The scope of this review is far-reaching and could not have been completed without the assistance of the various stakeholders that submitted views on the detailed monitoring design and provided the data in support of the Grain Monitoring Program (GMP). Quorum Corporation would like to thank the following organizations, and more particularly the individuals within them, for the cooperation they have extended in our efforts to develop the GMP. We have come to appreciate not only their cooperation as suppliers of data under the program, but to value their assistance in helping to improve the GMP itself. We look forward to their continued input and cooperation.

Agricultural Producers Association of Saskatchewan
Agriculture and Agri-Food Canada
AGT Food and Ingredients
Alberta Agriculture and Forestry
Alberta Barley Commission
Alberta Federation of Agriculture
Alberta Transportation
Alberta Wheat Commission
Alliance Grain Terminal Ltd.
Archer Daniels Midland Co.
Battle River Railway
BC Chamber of Shipping
BC Maritime Employers Association
Boundary Trail Railway Company Inc.
Canada Grains Council
Canadian Canola Growers Association
Canadian Federation of Agriculture
Canadian Grain Commission
Canadian Maritime Chamber of Commerce
Canadian National Railway
Canadian Pacific Railway
Canadian Ship Owners Association
Canadian Special Crops Association
Canadian Transportation Agency
Canadian Transportation Research Forum
Cando Contracting Ltd.
Canola Council of Canada
Cargill Limited
Cereals Canada
Ceres Global Ag Corp.
Chamber of Shipping of British Columbia
CMI Terminal Ltd.
Fibreco Export Inc.
G3 Canada Limited
Government of British Columbia
Grain Growers of Canada
GrainsConnect Canada
Great Western Railway Ltd.
Inland Terminal Association of Canada
Intercontinental Exchange / ICE
Keystone Agricultural Producers
Kinder Morgan Canada
Lake Line Railroad Inc.
Long Creek Railroad
Louis Dreyfus Canada Ltd.
Manitoba Agriculture, Food and Rural Development
Manitoba Infrastructure and Transportation
Manitoba Wheat and Barley Growers Association
National Farmers Union
North West Terminal Ltd.
Northern Lights Rail
OmniTRAX Canada, Inc.
Parrish & Heimbecker Ltd.
Pacific Pilotage Authority
Paterson Grain
Port of Churchill
Port of Hamilton
Port of Montreal
Port of Thunder Bay
Prairie Oat Growers Association
Prince Rupert Grain Ltd.
Prince Rupert Port Authority
Pulse Canada
Railway Association of Canada
Red Coat Road and Rail Ltd.
Richardson Pioneer Ltd.
St. Lawrence Seaway Management Corporation
Saskatchewan Agriculture
Saskatchewan Highways and Infrastructure
Saskatchewan Association of Rural Municipalities
Saskatchewan Barley Development Commission
Saskatchewan Wheat Development Commission
South West Terminal
Statistics Canada
Stewart Southern Railway
The Scoular Company
Transport Canada
Vancouver Fraser Port Corporation
Viterra Inc.
Western Barley Growers Association
Western Canadian Short Line Railway Association
Western Canadian Wheat Growers Association
Western Grain By-Products Storage Ltd.
Western Grain Elevator Association