

Annual Report

2019-2020 Crop Year



Monitoring the Canadian Grain Handling and Transportation System



Government of Canada
Gouvernement du Canada



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Annual Report of the Grain Monitor: 2019-20 Crop Year
ISBN - 978-0-9936969-7-8

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Cover Image: A wide-angle view of G3 Terminal Vancouver in North Vancouver, British Columbia. Construction of the 180,000-tonne terminal, which denoted the first all-new grain-handling facility to be built within the Port of Vancouver area since the 1960s, took nearly three years to complete, and was officially opened in July 2020. The state-of-the-art facility was specifically designed to meet the needs for high-velocity grain receiving and shipping, incorporating three large ship loaders capable of conveying up to 6,500 tonnes per hour, along with a loop track that can hold three 150-car trains. Fed by a primary-elevator network that currently encompasses ten loop-track facilities, an arriving train is unloaded while still in motion and then quickly cycled back to the prairies for reloading, all without uncoupling from its locomotives. Such train-handling techniques are expected to significantly enhance the efficiency of the company's supply chain. (Image courtesy of G3)

Foreword

The following report details the performance of Canada's Grain Handling and Transportation System (GHTS) for the crop year that ended 31 July 2020, and focuses on the various events, issues and trends manifest in the movement of Western Canadian grain during the past year. This is the twentieth 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 2019-20 crop year is largely gauged against that of the 2018-19 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 21 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
March 2021

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Executive Summary

Western Canadian grain required an average of 41.8 days to move through the Grain Handling and Transportation System (GHTS) in the 2019-20 crop year. This proved to be 4.5% less than the 43.8-day average reported a year earlier. The 2.0-day betterment was the product of reductions in each of the three key areas of GHTS activity, with the average amount of time grain spent in inventory at a country elevator decreasing by 1.7 days, the railways' loaded transit time by 0.1 days, and storage time at terminal elevators by 0.2 days. But these improvements belie the logistical difficulties encountered throughout much of the crop year. 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 85.3 million tonnes, 3.1% more than in the previous crop year. But comparatively poor weather conditions delayed harvesting and the delivery of grain into the country elevator system. Despite a strong start, railway shipments were soon lagging those of the 2018-19 crop year.

As more grain became available this gap began to narrow, with October shipments surging to a record 5.4 million tonnes. It was at about this point that a series of disruptive events began to weigh on the GHTS. The first involved a strike by train and yard workers against CN, which greatly curtailed the flow of grain just as the demand for rail transportation was reaching its seasonal height, and delays from winter operations loomed on the horizon. Efforts to restore service and make up for lost ground were soon undermined by the effects of heavy rains through the Rockies, which brought significant landslides and track washouts in late January and early February 2020, disrupting railway service in the vital Vancouver corridor for several days. No sooner had railway service been restored when anti-pipeline protests led to the erection of barricades along the railways' right-of-way at various locations throughout Canada, which prompted widespread shutdowns of freight and passenger railway services. Export grain movements suffered alongside other commodities in the face of this reduction in railway service, which led to elevator congestion, deferred producer deliveries, and delays to the shipment of an estimated 5.0 million tonnes of grain.

While still grappling with the aftereffects of the blockades, the GHTS found itself caught up in the throes of the global COVID-19 pandemic. Unlike other segments of the Canadian economy, the impact on the grain sector proved largely beneficial, as the overall decline in railway traffic volumes freed enough capacity to ensure its uninterrupted flow to export positions. This additional handling capacity facilitated the setting of several new monthly grain-shipment records by CN and CP in the second half of the crop year, which spurred the GHTS's overall handlings to an all-time best of 58.6 million tonnes.

The drag imposed on GHTS performance by these events were mirrored in the steadily rising average amount of time needed for grain to move through the system. From a low of 35.7 days in September 2019 this average moved progressively higher, attaining a height of 61.4 days in February 2020; a value seldom reached in the preceding decade. Much of the additional time requirement was tied to a near-record aging of stocks in the country, which were backlogged in the face of curbed railway capacity. This was similarly reflected in an elongation of the railways' average loaded-transit and car-cycle times. The downstream effects inherent in these delays 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 significant port congestion and a virtual doubling of the time vessels spent in port.

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. The strides made along all three fronts in the last two crop years became evident during the latter four months of the crop year when the railways expedited the movement of roughly 4.3 million tonnes each month. To an extent, this was because of a slump in traffic occasioned by the COVID-19 pandemic, which freed railway capacity. But the railways efforts to add capacity and provide greater resiliency to their operations, not the least of which involved orders for 8,400 new, high-capacity hopper cars, was also a factor. The ongoing 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 figured significantly in the movement of record volumes in the latter months of the crop year.

HIGHLIGHTS FOR THE 2019-2020 CROP YEAR

(Comparisons are to the previous crop year)

Production and Supply

- Grain production increased 3.8% to 75.1 million tonnes; the second largest crop recorded under the GMP.
 - Cereals comprised 59.9% of the crop; oilseeds 28.3%; and other commodities 11.8%.
 - Late season weather undermines harvest and leads to poorer overall quality.
- Carry-forward stocks decreased 1.3% to 10.2 million tonnes.
- Carry-out stocks decreased 20.8% to 8.1 million tonnes.
- Total grain supply (production and carry-forward) increased 3.1% to 85.3 million tonnes, the largest on record.

Traffic and Movement

- Primary-elevator throughput increased by 6.4%, to 52.0 million tonnes, the largest on record.
 - Represented 83.5% of all producer deliveries (primary and process elevators, as well as producer cars).
- Railway shipments increased 7.8% to 58.6 million tonnes, a GMP record.
 - Traffic to Western Canada totaled 47.5 million tonnes, up 9.4%.
 - Traffic to Eastern Canada totaled 3.8 million tonnes, up 2.6%.
 - Traffic to the United States and Mexico totaled 7.3 million tonnes, up 1.0%.
- Terminal-elevator throughput increased 7.8% to 40.0 million tonnes, a GMP record.
 - Terminal unloads totaled 418,245 cars, up 5.3%.
 - CN / CP traffic share remained closely divided at 47.8% and 52.2% respectively.
- Truck traffic to the United States decreased 3.8% to 2.1 million tonnes.

HIGHLIGHTS FOR THE 2019-2020 CROP YEAR (continued)

(Comparisons are to the previous crop year)

Infrastructure

- The number of country elevators increased 0.8% to 402.
 - Reflected the licensing of 26 facilities along with the closure of 23 others.
 - Increase included four newly commissioned, loop-track equipped elevators.
 - Loop-track equipped elevators totaled 25 at the end of the crop year.
 - Storage capacity increased 1.8% to 8.9 million tonnes, a GMP record.
- The railway network decreased 0.1% to 17,265.7 route-miles with the closure of CP's Kelvington Subdivision.
 - CN and CP operated 84.5% of the network.
 - Regional and shortline carriers operated 15.5% of the network.
- Hopper cars in service rose by 2.5% to an annualized average of 26,381 cars, the largest deployment on record.
 - Reflects impact of new equipment purchases by CN and CP.
 - Proportion of cars in active service reached 92.1% in November 2019.
- Terminal elevators remained unaltered at 17 in the face of two counteracting licensing changes.
 - G3 Terminal Vancouver officially opens, Thunder Bay's Western Grain By-Products Storage closes.
 - Storage capacity increased by 6.0% to 2.7 million tonnes.

Commercial Relations

- Country elevator handling charges saw modest changes.
 - Elevation rates increased 2.3%; dockage rates decreased 5.4%; and storage rates increased 3.3%.
- Railway freight rates showed continuing cyclicity, with net changes as at 31 July 2020:
 - CN rates to Vancouver increased 0.9%; Prince Rupert rates increased 2.8%; and Thunder Bay rates increased 2.4%.
 - CP rates to Vancouver increased 6.7%; and Thunder Bay rates increased 6.5%.
 - Multiple-car block discounts were restructured for the second time in as many years.
 - CN withdrew its \$4.00-per-tonne discount on movements in blocks of 50-99 cars.
 - CP introduced a \$10.00-per-tonne discount for 8,500-foot High-Efficiency Product trains.
 - CN and CP both exceed their Maximum Revenue Entitlements, by \$3.2 million and \$2.2 million respectively.
- Terminal Country elevator handling charges moved marginally higher.
 - Elevation rates increased 0.1%; and storage rates increased 0.2%.
- Commercial Developments
 - GHTS endures significant service disruptions due to a strike, landslides, and track blockades.
 - COVID-19 pandemic frees railway capacity, helping to ensure the flow of grain to export positions.
 - Parrish & Heimbecker acquires ten Louis-Dreyfus elevators.
 - G3 Canada opens Vancouver grain terminal.
 - CN orders 1,500 additional hopper cars.
 - Approval given to Prince Rupert terminal expansion.

HIGHLIGHTS FOR THE 2019-2020 CROP YEAR (continued)

(Comparisons are to the previous crop year)

System Efficiency and Performance

- Country elevator operations improve despite railway service issues.
 - Capacity turnover ratio increased 3.1% to 6.6 turns.
 - Average weekly stocks decreased 0.7% to 3.4 million tonnes; reached record high of 4.6 million tonnes in March 2020.
 - Average days-in-store decreased 6.5% to 23.7 days; reflected increased pace of grain shipments in first and fourth quarters.
 - Stock-to-shipment ratio decreased 4.0% to 3.6; reflected maintenance of tighter grain stocks.
- Railway operations buffeted by strike, landslides, blockades, and COVID-19 pandemic, but has strong recovery in second half.
 - Average car-cycle to Western Canada increased 1.8% to 16.3 days; average loaded transit time decreased 0.5% to 7.4 days.
 - Average car-cycle to Eastern Canada increased 7.6% to 22.9 days; average loaded transit time increased 7.1% to 10.9 days.
 - Average car-cycle to United States decreased 2.3% to 25.5 days; average loaded transit time decreased 8.5% to 9.9 days.
 - Multiple-car block movement share in Western Canada decreased to 82.1% from 87.2%.
 - Annual freight savings increased 10.3% to an estimated \$297.2 million.
- Terminal Elevator operations moderately impacted by uneven railway grain deliveries.
 - Capacity turnover ratio decreased 9.3% to 18.6 turns.
 - Average weekly stocks increased 3.3% to 1.2 million tonnes.
 - Average days-in-store decreased 1.8% to 10.7 days; reflected effects of record volume.
 - Out-of-car time decreased to 10.6% from 11.5%, but showed high variability owing to uneven railway grain deliveries.
- Port operations
 - Vessels calls increased 9.4% to 1,032 ships.
 - Average vessel time in port increased 19.9% to 12.3 days in the face of delayed railway grain deliveries.
 - Net outlay for delayed vessels increased 55.0% to \$42.2 million.
 - Demurrage costs increased 47.7% to \$52.2 million; dispatch earnings increased 23.3% to \$10.0 million.
- System performance
 - Average time spent in the system decreased 4.5% to 41.8 days.
 - Railways overcome mid-year service impediments with strong showing in second half.

Producer Impact

- Producer Netback
 - 1CWRS wheat: Average price decreased 5.0%; export basis decreased 0.2%; netback decreased 6.8% to \$220.07 per tonne.
 - 1CWA durum: Average price increased 13.2%; export basis increased 6.8%; netback increased 16.3% to \$259.49 per tonne.
 - 1 Canada canola: Average price decreased 2.7%; export basis decreased 17.2%; netback decreased 0.7% to \$432.99 per tonne.
 - Large yellow peas: Average price decreased 4.0%; export basis increased 2.9%; netback decreased 5.7% to \$225.44 per tonne.
- Producer cars
 - Producer-car loading sites remained unchanged at 272.
 - Scheduled producer-car shipments increased 1.7% to 2,771 carloads.
 - Second lowest volume recorded under the GMP.

Section 1: Production and Supply

Indicator Description	Table	2019-20									
		1999-00	2017-18	2018-19	Q1	Q2	Q3	Q4	YTD	% VAR	
Western Canada Production and Supply											
Crop Production (000 tonnes)	1A-1	55,141.7	72,500.3	72,356.0	75,090.3					75,090.3	3.8%
Carry Forward Stock (000 tonnes)	1A-2	7,418.2	8,574.0	10,329.6	10,196.5					10,196.5	-1.3%
Grain Supply (000 tonnes)		62,559.9	81,074.3	82,685.6	85,286.8					85,286.8	3.1%
Crop Production (000 tonnes) - Special Crops	1A-3	3,936.7	7,382.2	6,725.8	7,511.7					7,511.7	11.7%

DISCUSSION AND ANALYSIS

PRODUCTION AND SUPPLY

[See TABLES 1A-1 through 1A-3]

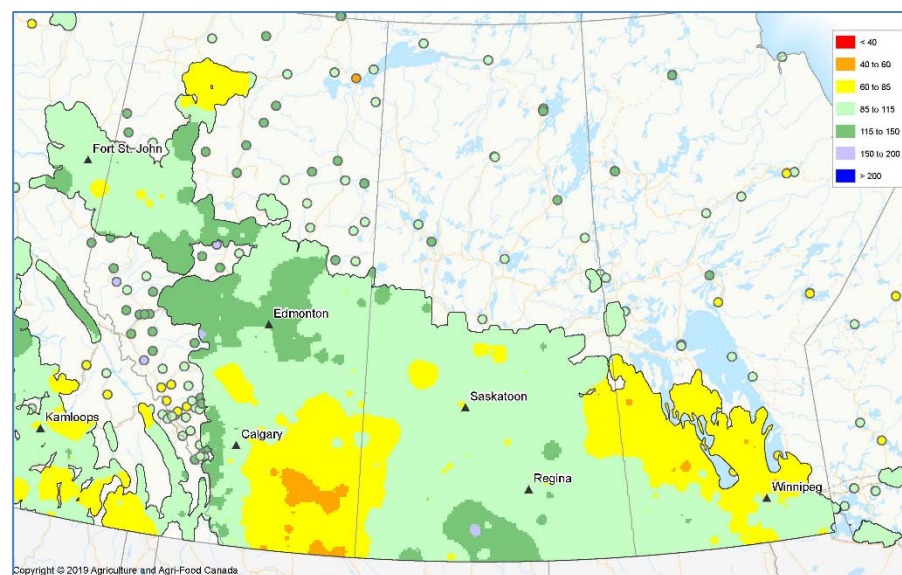
Western Canadian grain production rose to 75.1 million tonnes in the 2019-20 crop year, a 3.8% increase over the previous crop year's 72.4 million-tonne crop. This denoted the fifth growing season in which total production exceeded 70 million tonnes, and the second largest crop on record.

The 2019 growing season started with near-normal conditions throughout much of the prairies. Seeding began in early May and continued steadily through the remainder of the month, with completion coming in the first week of June. Temperatures during this period proved cooler than normal with below-average precipitation leading to abnormally dry conditions. These conditions provoked increasing concerns over germination and early crop development. However, the timely arrival of rain later in June brought much-needed relief to many growing areas, although it resulted in patchy germination.

Cooler-than-normal temperatures persisted throughout much of the summer with traditional crop development lagging by up to two weeks. This was accompanied by above-normal - but uneven - precipitation across the prairies. In Manitoba, the rainfalls were generally localized but severe thunderstorms also resulted in surface runoff and standing water in some areas. Saskatchewan also had to cope with higher moisture conditions although some zones proved quite dry. These dry regions extended into parts of eastern Alberta as well, with the rest of the province - especially the north and Peace River areas - reporting too much moisture. These disparities led to crop damage from both moisture extremes, which were supplemented by the injurious effects of high winds and hail.

Cold, wet conditions set in shortly after the start of harvest in late August, delaying activity throughout the month of September. This was followed by heavy snows across large parts of all western provinces in October. Producers struggled with one of the worst harvests in recent memory. Although collection efforts continued into November, in excess of four

Percent of Average Precipitation (1 April to 31 August 2019)



million acres of crop were ultimately left to winter in the field. The quality profile for much of the grains, oilseeds and special crops harvested was also lessened as a result.

Although subordinate in general quality, the 2019 crop still proved larger than the previous year's harvest. Saskatchewan realized the largest increase in grain production, with a gain of 6.5%. This was followed by a lesser expansion of 3.5% in Alberta, along with declines of 2.7% in Manitoba and 17.6% in British Columbia. However, these variances did little to change the ranking of the provinces themselves. Saskatchewan remained the largest grain producer with 38.8 million tonnes harvested, or a 51.7% share. This was followed in turn by Alberta with 23.6 million tonnes, or 31.5%; Manitoba with 12.3 million tonnes, or 16.4%; and British Columbia with 370,600 tonnes, or 0.5%.

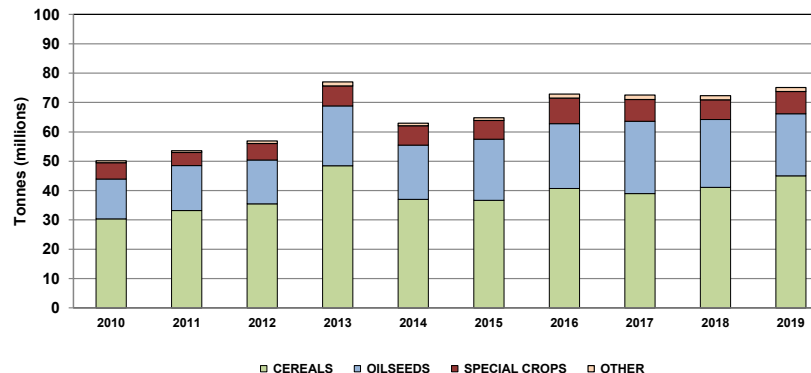
Changing Face of the Harvest

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 increased at a rate of nearly 2.5% annually, and regularly surpassed 70.0 million tonnes. Although these enlarged harvests reflect the better yields achieved through advancements in plant genetics and agronomic practices, favourable weather and moisture conditions remain key determinant variables.

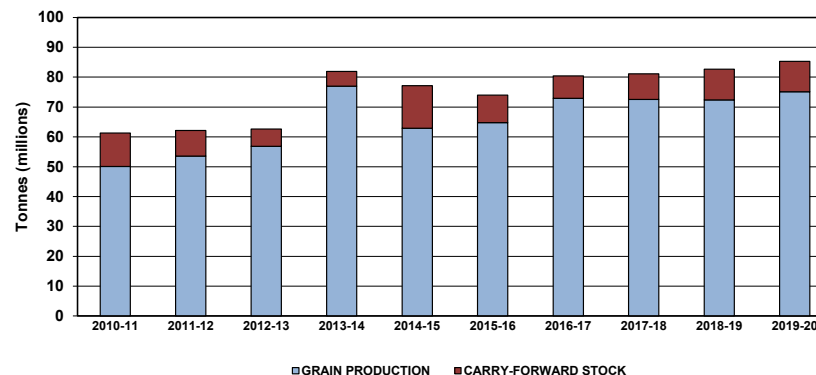
At the outset of the GMP, cereals constituted about three-quarters of all grains grown in Western Canada. Since the 2014-15 crop year, however, these same commodities have consistently accounted for under 60% of the total tonnes harvested, with a 59.9% share garnered in the 2019-20 crop year. Even so, current cereal production, which totaled 44.9 million tonnes, differs only modestly from the 41.1 million tonnes reported in the GMP's base year. Rather, its significance has simply been diminished when measured against the heightened output of oilseeds and other commodities, which took shares of 28.3% and 11.8% respectively.

There are two aspects to this expansion: increased oilseed production; and increased pulse production. On a combined basis, these commodities now account for about 40% of the grains grown in Western Canada. By far, the most significant contributor to the overall gain has been oilseeds, with combined canola, soybean and flaxseed harvests reaching 21.3 million tonnes in the 2019-20 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 7.5 million tonnes from 3.9 million tonnes during the same period.

Grain Production - Principal Commodities
(Western Canada)



Grain Supply
(Western Canada)



Increasing 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 have augmented current-year production values by as much as 20%.¹ With carry-forward stocks of 10.2 million tonnes the total grain supply reached a record 85.3 million tonnes in the 2019-20 crop year, an increase of 3.1% from the previous year's 82.7-million-tonne record. With 8.1 million tonnes remaining as carry-out stocks at the close of the 2019-20 crop year, this meant that 77.2 million tonnes of Western Canadian grain were traded in domestic and export markets throughout the crop year.

Changes in both the size and composition of recent crops has spurred the GHTS into adding new capacity. The most visible 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, with many 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 2019-20 crop year, 25 such facilities had already been commissioned, with several more either under construction or in the planning stages.

Significant investments in additional port handling capacity have also been made, with much of this being centred in Vancouver, British Columbia. The first of these came in 2016 when Richardson International completed a three-year expansion program that virtually doubled the capacity of its Vancouver Terminal. This was paralleled by major upgrades to the ship-loading galleries at Viterra's Pacific Terminal and the Alliance Grain Terminal, which substantially increased the handling capacities of both. Analogous modernization initiatives were also initiated at other terminals, including those of Fibreco Export Inc. and Columbia Containers Ltd.

More noteworthy still was the completion of the first all-new terminal facility in several decades, the 183,000-tonne G3 Terminal Vancouver,

which officially opened in early July 2020. Yet another, the 72,000-tonne Fraser Grain Terminal, whose development is being spearheaded by Parrish and Heimbecker Limited, was expected to become operational in late 2020.

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, but it also encompassed the creation of a new, state-of-the-art container transloading operation by Raymond 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 to special crop handling, as exemplified by the growth of AGT Foods and Ingredients, and value-added operations such as Roquette's new pea protein manufacturing facility in Portage la Prairie, Manitoba.

But these new investments have 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. Grain companies have contributed to this expansion as well, with a number of the larger handlers purchasing or leasing their own equipment. 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. All these elements have played a role in enabling the GHTS to deal with ever-increasing grain volumes.

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).

Section 2: Traffic and Movement

Indicator Description	Table	2019-20								
		1999-00	2017-18	2018-19	Q1	Q2	Q3	Q4	YTD	% VAR
Country Elevator Throughput										
Grain Throughput (000 tonnes) - Primary Elevators	2A-1	32,493.9	45,549.4	48,885.8	12,264.9	12,544.2	13,042.0	14,142.5	51,993.6	6.4%
Railway Traffic										
Traffic to Western Canada										
Railway Shipments (000 tonnes) - Ports Only	2B-1	26,439.2	39,263.1	42,686.8	11,001.0	11,099.2	11,019.4	13,382.1	46,501.8	8.9%
Railway Shipments (000 tonnes) - Western Domestic	2B-1	n/a	842.5	716.0	238.2	281.6	284.7	182.2	986.7	37.8%
Traffic to Western Canada (Ports Only)										
Railway Shipments (000 tonnes) - All Grains	2B-1	26,439.2	40,105.6	43,402.8	11,239.3	11,380.8	11,304.2	13,564.3	47,488.5	9.4%
Railway Shipments (000 tonnes) - Hopper Cars	2B-1	25,664.6	38,110.2	41,368.4	10,766.0	10,805.6	10,692.7	12,890.2	45,244.6	9.4%
Railway Shipments (000 tonnes) - Non-Hopper Cars	2B-1	774.7	1,995.4	2,034.4	473.2	575.2	611.4	584.1	2,243.9	10.3%
Special Crop Shipments (000 tonnes) - All Grains	2B-2	2,102.9	3,676.5	4,723.7	1,623.1	1,449.4	1,390.8	1,319.8	5,783.1	22.4%
Special Crop Shipments (000 tonnes) - Hopper Cars	2B-2	1,844.1	3,290.9	4,301.7	1,569.1	1,338.5	1,273.1	1,204.7	5,385.3	25.2%
Special Crop Shipments (000 tonnes) - Non-Hopper Cars	2B-2	258.7	385.6	422.1	54.0	110.9	117.8	115.1	397.7	-5.8%
Hopper Car Shipments (000 tonnes) - Origin Province	2B-3									
Hopper Car Shipments (000 tonnes) - Primary Commodities	2B-4	25,664.6	38,110.2	41,368.4	10,766.0	10,805.6	10,692.7	12,980.2	45,244.6	9.4%
Hopper Car Shipments (000 tonnes) - Detailed Breakdown	2B-5									
Hopper Car Shipments (000 tonnes) - Grain-Dependent Network	2B-6	8,685.9	11,294.9	12,537.9	3,348.5	3,304.1	3,009.1	3,608.4	13,093.3	5.8%
Hopper Car Shipments (000 tonnes) - Non-Grain-Dependent Network	2B-6	16,978.7	26,815.2	28,830.5	7,417.5	7,501.5	7,683.6	9,371.8	31,974.5	10.9%
Hopper Car Shipments (000 tonnes) - Class 1 Carriers	2B-7	23,573.5	36,517.7	40,501.1	10,376.9	10,481.9	10,317.8	12,577.2	43,753.8	8.0%
Hopper Car Shipments (000 tonnes) - Non-Class-1 Carriers	2B-7	2,091.0	667.1	867.3	389.1	323.7	374.9	403.0	1,490.8	71.9%
Traffic to Eastern Canada										
Railway Shipments (000 tonnes) - All Grains	2B-8	n/a	3,095.4	3,724.5	715.6	1,185.5	1,247.8	673.7	3,822.6	2.6%
Railway Shipments (000 tonnes) - Hopper Cars	2B-8	n/a	2,275.2	3,008.5	521.3	944.1	1,008.3	431.7	2,905.4	-3.4%
Railway Shipments (000 tonnes) - Non-Hopper Cars	2B-8	n/a	820.2	716.0	194.3	241.4	239.6	242.0	917.2	28.1%
Special Crop Shipments (000 tonnes) - All Grains	2B-9	n/a	501.9	422.1	92.3	152.0	239.9	145.3	629.5	49.1%
Western Canadian Originated Traffic										
Railway Shipments (000 tonnes) - All Grains	2B-15	n/a	51,844.1	54,317.5	13,717.9	14,527.1	14,487.6	15,838.9	58,571.4	7.8%
Railway Shipments (000 tonnes) - Canada	2B-15	n/a	43,201.0	47,127.3	11,954.8	12,566.3	12,552.0	14,238.0	51,311.1	8.9%
Railway Shipments (000 tonnes) - United States	2B-15	n/a	8,271.9	6,872.4	1,715.3	1,888.0	1,874.3	1,523.5	7,001.1	1.9%
Railway Shipments (000 tonnes) - Mexico	2B-15	n/a	371.2	317.7	47.8	72.8	61.2	77.4	259.2	-18.4%
Terminal Elevator Throughput										
Grain Throughput (000 tonnes) - All Commodities	2C-1	23,555.5	34,875.7	37,086.0	9,154.8	9,151.8	9,314.9	12,360.4	39,981.9	7.8%
Hopper Cars Unloaded (number) - All Carriers	2C-2	278,255	372,685	397,212	102,101	95,840	100,666	119,638	418,245	5.3%
Hopper Cars Unloaded (number) - CN	2C-2	144,800	191,690	202,809	48,229	45,502	50,611	55,675	200,017	-1.4%
Hopper Cars Unloaded (number) - CP	2C-2	133,455	180,995	194,403	53,872	50,338	50,055	63,963	218,228	12.3%
Truck Volumes to US Destinations										
Truck Shipments to US (000 tonnes) - Destination Region / Origin Province	2D-1	n/a	2,405.3	2,168.9	496.4	489.2	590.7	510.7	2,087.0	-3.8%
Truck Shipments to US (000 tonnes) - Origin Province / Commodity	2D-2									
Truck Shipments to US (000 tonnes) - Destination Region / Commodity	2D-3									

DISCUSSION AND ANALYSIS

COUNTRY ELEVATOR THROUGHPUT

[See TABLE 2A-1]

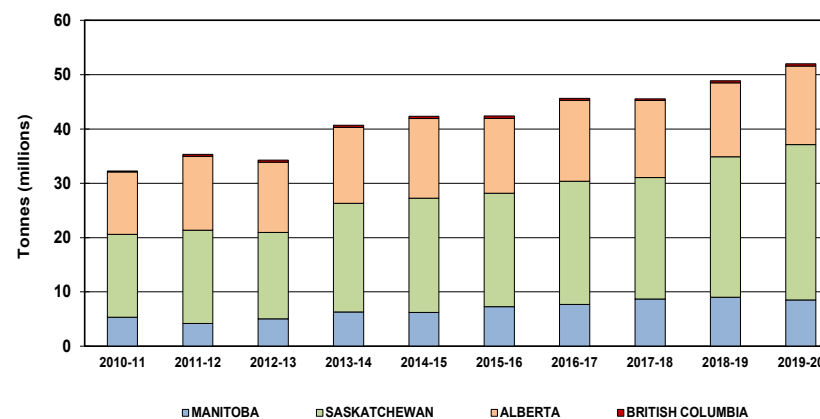
Country elevator throughput, as gauged by all road and rail shipments from the primary elevators situated across Western Canada, increased by 6.4% in the 2019-20 crop year, to 52.0 million tonnes. This constituted the most grain ever accepted into the system under the GMP.

Primary-elevator shipments from Saskatchewan increased by 2.8 million tonnes, or 10.7%, to 28.6 million tonnes. This was complemented by increases in the throughput for Alberta, which rose by 0.9 million tonnes, or 6.4%, to 14.5 million tonnes; and British Columbia, which climbed 15,000 tonnes, or 3.9%, to 397,600 tonnes. Offsetting these gains was a 0.5-million tonne, or 5.9%, reduction in volume for Manitoba, which posted shipments of 8.5 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. Saskatchewan held a majority 55.1% share; Alberta, 27.8%; Manitoba, 16.3% share; and British Columbia, 0.8%.

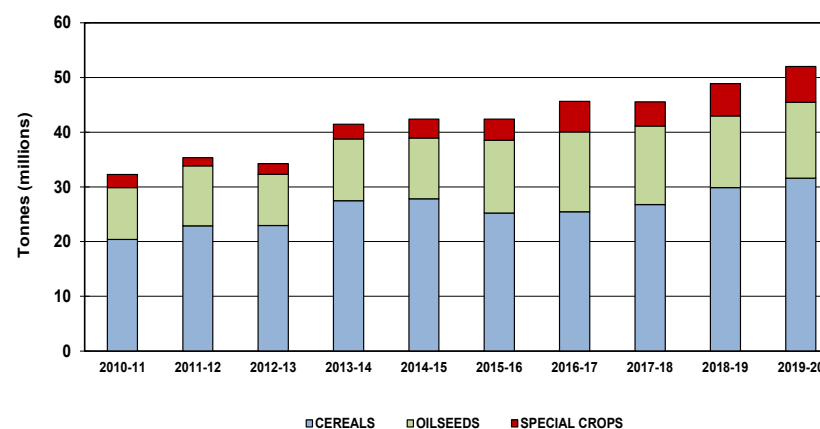
Cereals accounted for most of the grain shipped through the primary elevator network, with total cereal shipments increasing by 5.9%, to 31.6 million tonnes from 29.9 million tonnes a year earlier. Even so, their share of the total handle slipped to 60.8% from 61.1%. Much the same was true of oilseed shipments, which rose by 5.5%, to 13.8 million tonnes from 13.1 million tonnes, but saw its share decline to 26.6% from 26.8%. Both fell in the face of larger special-crop shipments, which rose by 10.6%, to 6.5 million tonnes from 5.9 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. With the current 52.0-million-tonne throughput easily surpassing the previous crop year's record handle of 48.9 million tonnes, still more pressure was brought to bear on the GHTS.

Primary Elevator Throughput - Originating Province



Primary Elevator Throughput - Principal Commodities



RAILWAY TRAFFIC

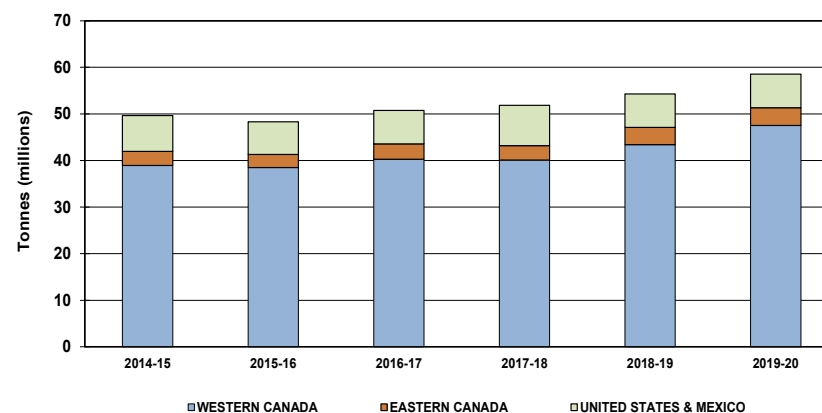
[See TABLES 2B-1 through 2B-20]

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 62.3 million tonnes in the 2019-20 crop year, 6.2% more than the 58.6 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

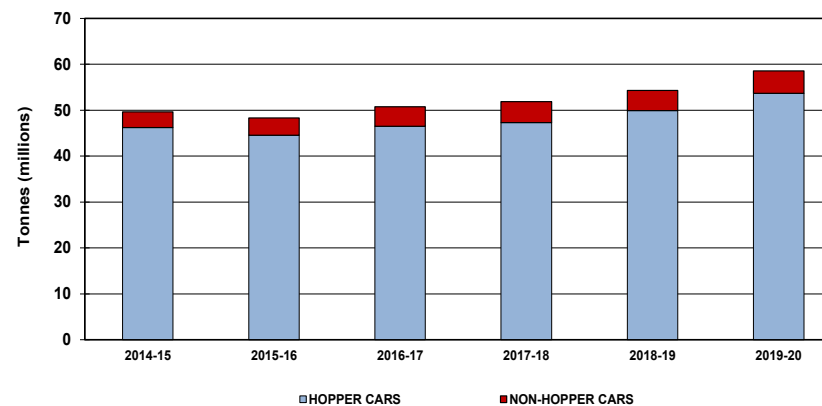
Railway grain shipments from Western Canada totaled a record 58.6 million tonnes in the 2019-20 crop year, up 7.8% from the previous crop year's 54.3 million tonnes. Just over 51.3 million tonnes of this traffic, or 87.6%, was directed to destinations within Canada itself, be it for export or domestic use. Some 47.5 million tonnes, or 81.1%, of this volume were destined to points in Western Canada, chiefly the ports of Vancouver, Prince Rupert, Thunder Bay and Churchill. These same shipments also significantly overshadowed the 3.8 million tonnes, or 6.5%, directed to Eastern Canada, and the 7.3 million tonnes, or 12.4%, destined to the United States and Mexico.

Just under 53.7 million tonnes of the traffic originated in Western Canada, or 91.7%, moved to its destination in covered hopper cars. The remaining 4.9 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 8.3% of total railway shipments in the 2019-20 crop year, its share has risen from the 6.9% benchmarked just five years earlier, with much of the gain tied to increased tankcar shipments of canola oil.

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 improvement in the reporting of railway grain volumes, 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]

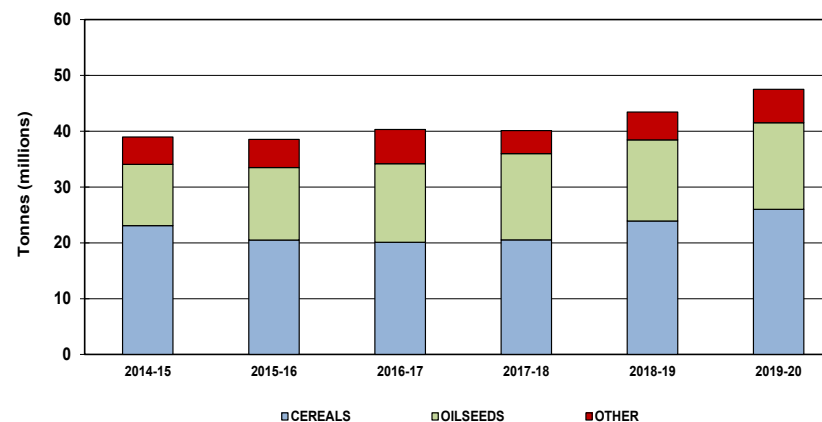
Much of the 47.5 million tonnes of grain moved by rail to points in Western Canada during the 2019-20 crop year were directed to one of its four ports: Vancouver, Prince Rupert, Thunder Bay, and Churchill. These shipments amounted to just over 46.5 million tonnes, an increase of 8.9% over the 42.7 million tonnes handled a year earlier. Another 986,700 tonnes were directed to points outside of the ports themselves, denoted as Western Domestic destinations, which climbed 37.8% from 715,900 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 in the 2019-20 crop year, some 26.0 million tonnes. This was followed by oilseeds at 15.5 million tonnes, and other commodities at 6.0 million tonnes. All three commodity groupings posted year-over-year volume increases, amounting to 8.8%, 6.7% and 20.4% respectively.

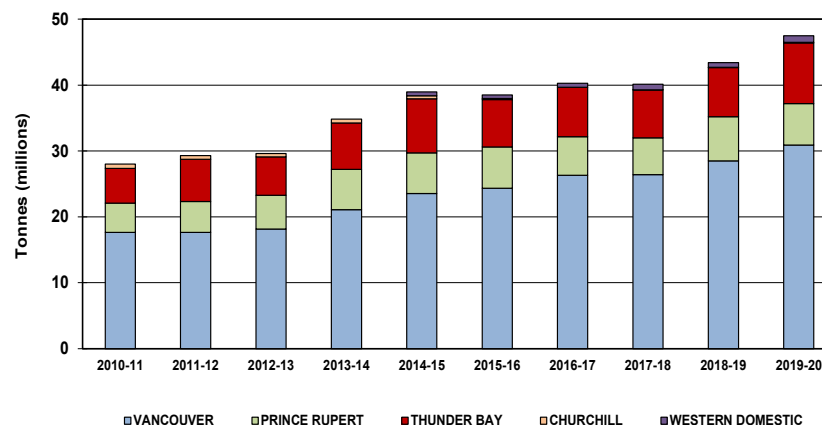
Of all the ports in Western Canada, Vancouver continues to be the preferred destination for railway grain shipments. This is due not only to the ready access it provides to Asia-Pacific markets, but to the concentration of export terminal facilities as well. During the 2019-20 crop year, Vancouver received 30.9 million tonnes of inbound grain, an increase of 8.5% over the previous year's 28.5-million-tonne handle. This denoted 66.5% of all railway shipments destined to points in Western Canada. Prince Rupert, which represents an additional west-coast outlet for this traffic, received 6.3 million tonnes of grain, falling 6.1% from the 6.7 million tonnes handled a year earlier. This resulted in the port's share declining to 13.5% from 15.7%. Together, these two ports accounted for 80.0% of the grain directed into Western Canada, down from the 82.4% share seen just a year earlier.

The loss of share for West Coast traffic was largely spurred by a 22.6% increase in rail deliveries to Thunder Bay, which totalled 9.2 million tonnes against 7.5 million tonnes a year earlier and lifted its share to 19.7% from 17.5%. This disproportionate gain was driven by the heightened demand for durum and canola in Europe, which were spurred by Spanish crop

Railway Grain Shipments - Main Commodities
(Western Canada)



Railway Grain Shipments - Main Destinations
(Western Canada)



failures along with a strategic shift towards a greater use of biofuels. A further 122,500 tonnes were directed to the port of Churchill in its first full year of operations since reopening towards the end of the 2018-19 crop year, giving it a 0.3% share. Railway grain shipments to non-port destinations - designated as Western Domestic - accounted for just 2.1% of all traffic. However, this proved noticeably more than the 1.7% share garnered a year earlier, owing in large measure to a 37.8% increase in tonnage, which rose to 986,700 tonnes from 715,900 tonnes.

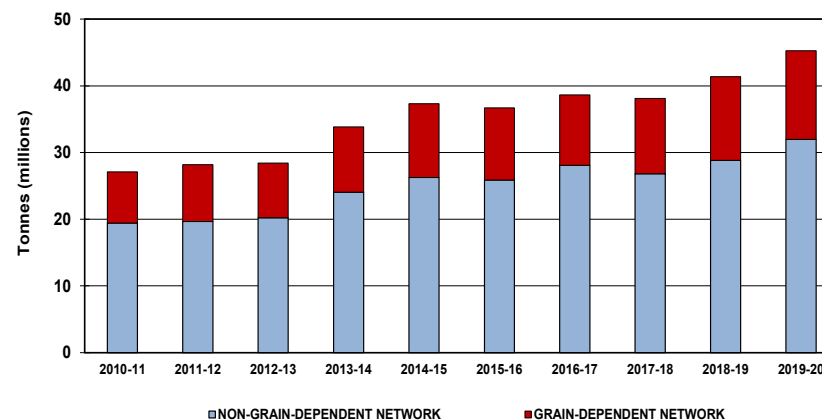
Covered Hopper Car Shipments

Covered hopper cars remain the primary means by which grain is conveyed to destinations within Western Canada. Of the 47.5 million tonnes shipped during the 2019-20 crop year, 45.2 million tonnes, or 95.3%, moved in covered hopper cars. Just 2.2 million tonnes of grain and grain-related products moved in other forms of railway equipment, including boxcars, tankcars and containers.

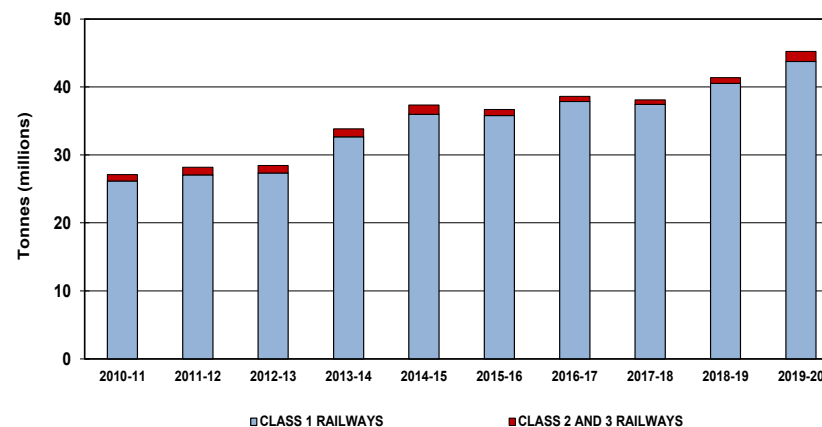
From the outset of the GMP, roughly two-thirds of covered-hopper-car shipments have originated at points on the railways' non-grain-dependent branchline network. Of the 45.2 million tonnes that were directed to destinations in Western Canada in the 2019-20 crop year, 32.0 million tonnes, or 70.7%, were sourced from points on such lines. This proportion stands only marginally above the 66.2% share recorded two decades earlier. Conversely, just 13.3 million tonnes, or 29.3%, originated at points on the grain-dependent network.

More significantly, almost 43.8 million tonnes, or 96.7% of the covered-hopper-car traffic, originated on the railway lines directly operated by the major Class I carriers, CN and CP. This dominance stands moderately above the 91.9% share that had been observed at the beginning of the GMP. Likewise, the share garnered by the smaller Class 2 and 3 carriers (commonly referred to as regional and shortline railways) has contracted to little more than two-fifths of what it represented twenty years earlier. Just under 1.5 million tonnes, or 3.3%, originated with these smaller carriers in the 2019-20 crop year.

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]

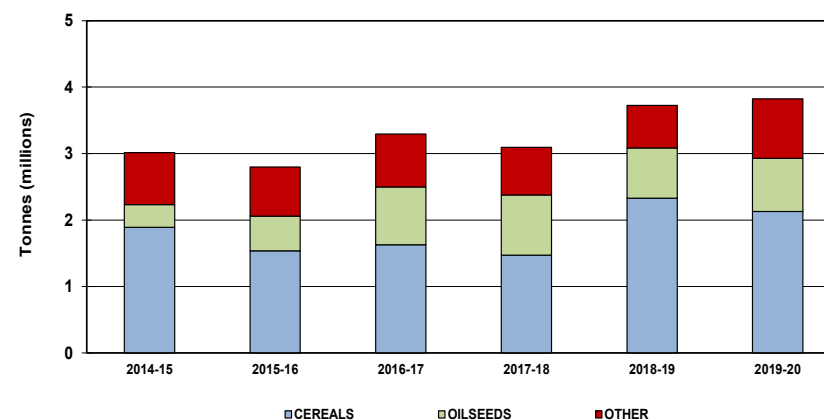
The movement of grain into Eastern Canada represents a fraction of what is directed into Western Canada. During the 2019-20 crop year, these railway shipments amounted to slightly more than 3.8 million tonnes, a gain of 2.6% over the 3.7 million tonnes shipped a year earlier. Comparatively, this amounted to less than one-twelfth of the tonnage directed into Western Canada. Over two-thirds of this traffic, almost 2.6 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 1.3 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 2.9 million tonnes, moved in covered hopper cars. The remaining 917,200 tonnes moved in other types of railway equipment. These latter movements represented a more substantive 24.0% of the regional total than the 4.7% they constituted in Western Canada.

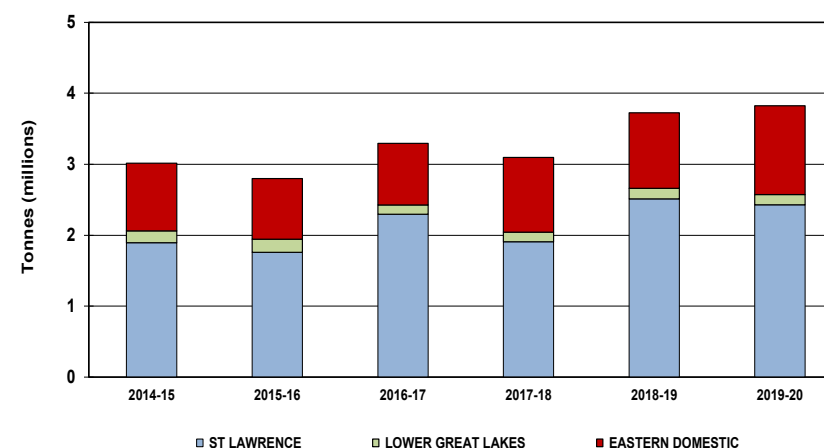
Similarly, cereals also embodied the largest traffic segment on eastbound movements, with total shipments of 2.1 million tonnes, down 8.7% from 2.3 million tonnes a year earlier. Oilseeds accounted for 800,600 tonnes, an increase of 6.0% from the previous crop year's 755,200 tonnes. A further 894,500 tonnes were tied to other commodities, which climbed 39.7% from 640,400 tonnes.

Special-crop shipments to Eastern Canada, which encompassed most other commodities, totalled 629,500 tonnes, up 49.1% from the 422,100 tonnes directed there the previous year. Like those headed to Western Canadian destinations, these shipments accounted for a moderate share of the overall volume, 16.5%. Only 244,000 tonnes of this moved in covered hopper cars. Most special crops, representing 61.2% of the total volume, moved as non-hopper-car shipments (in either boxcars, tankcars or containers).

Railway Grain Shipments - Main Commodities (Eastern Canada)



Railway Grain Shipments - Main Destinations (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 2019-20 crop year this amounted to 2.4 million tonnes, up a marginal 0.6% from that originated a year earlier. Traffic originating at points on the grain-dependent network fell by 20.2%, to 461,500 tonnes from 578,700 tonnes. With 84.1% of the tonnage attributable to non-grain-dependent originations, this division is noticeably greater than the 70.7% share tied to traffic destined to points in Western Canada.

Similarly, almost 2.8 million tonnes, or 94.9% 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 147,600 tonnes, accounted for just 5.1%. These proportions are also consistent with the shares observed for traffic destined to points within Western Canada.

Traffic to the United States and Mexico

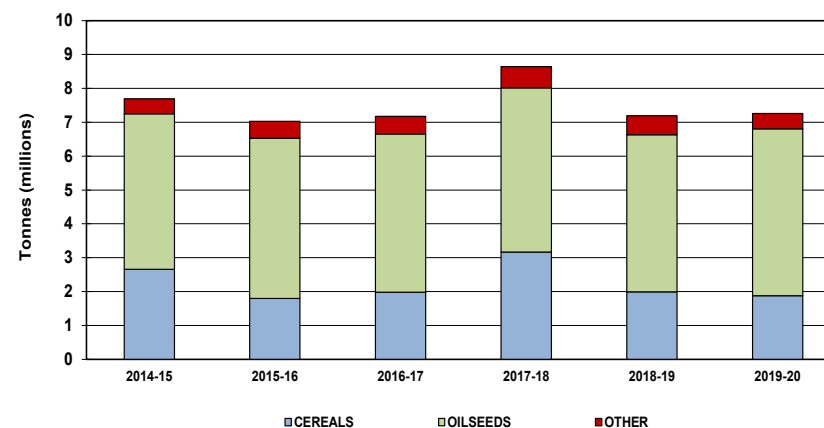
[See Tables 2B-15 through 2B-18]

The amount of grain moved by rail to the United States and Mexico during the 2019-20 crop year totaled almost 7.3 million tonnes. This marked a 1.0% increase from the 7.2 million tonnes directed into these markets a year earlier. Slightly more than 7.0 million tonnes of this were destined to the United States, up 1.0% from the 6.9 million tonnes handled the previous year. Although just 259,200 tonnes were earmarked for Mexico, shipments to that country grew by a slightly greater 1.9%. Much of the overall tonnage gain was attributable to a larger movement of oilseeds in the face of reduced cereal grains and other commodities.

Some 5.4 million tonnes of US-bound traffic moved in covered hopper cars in the 2019-20 crop year. This represented a 1.8% increase over the 5.3 million tonnes handled a year earlier. Another 1.6 million tonnes moved in other types of railway equipment, which amounted to a gain of 2.2% from what had been shipped the previous year.

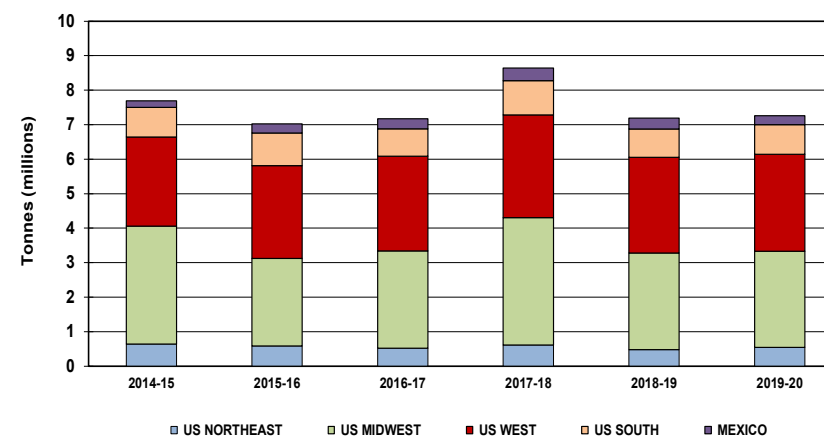
Railway Grain Shipments - Main Commodities

(United States and Mexico)



Railway Grain Shipments - Main Destinations

(United States and Mexico)



Almost two-thirds of US-bound shipments, amounting to just under 4.8 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, 2.5 million tonnes, was directed to states in the US West, chiefly California. This was followed by another 1.2 million tonnes that moved into the Midwest, 715,700 tonnes into the South, and 336,800 tonnes into the Northeast. Cereals and other commodities accounted for a lesser 34.4% of the total tonnage.

On a broader basis, the US West proved to be the largest market for Western Canadian grain, drawing in slightly more than 2.8 million tonnes. This was closely followed by destinations in the US Midwest, with just under 2.8 million tonnes; the US South, with 856,000 tonnes; and the US Northeast, with 543,900 tonnes. Special crops figured marginally within this framework, with a total of only 42,600 tonnes being shipped to US destinations.

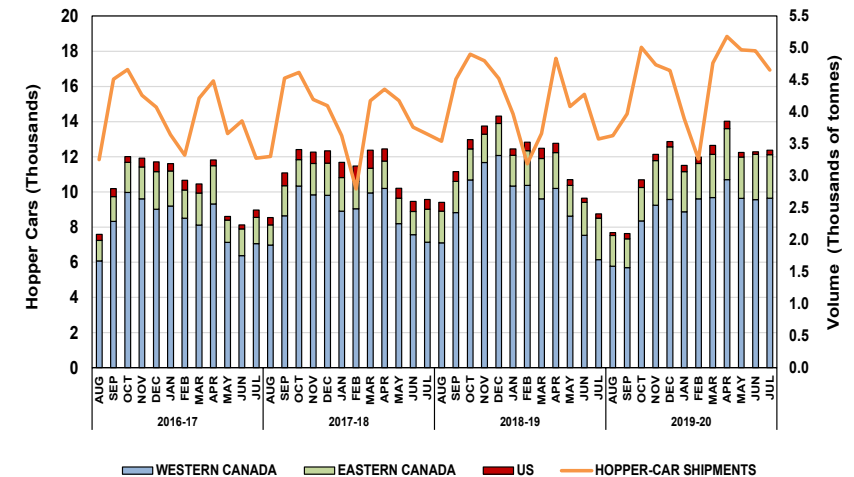
Grain imported into Canada by rail from the United States during the 2019-20 crop year totaled only 223,800 tonnes. However, this denoted a 42.6% increase over the 156,900 tonnes shipped a year earlier. The largest portion, amounting to 218,200 tonnes, was destined to points in Western Canada, with Eastern Canadian destinations drawing in just 5,700 tonnes. The bulk of this traffic, 46,600 tonnes, was comprised of soybean related products.

Loads on Wheels [See Table 2B-20]

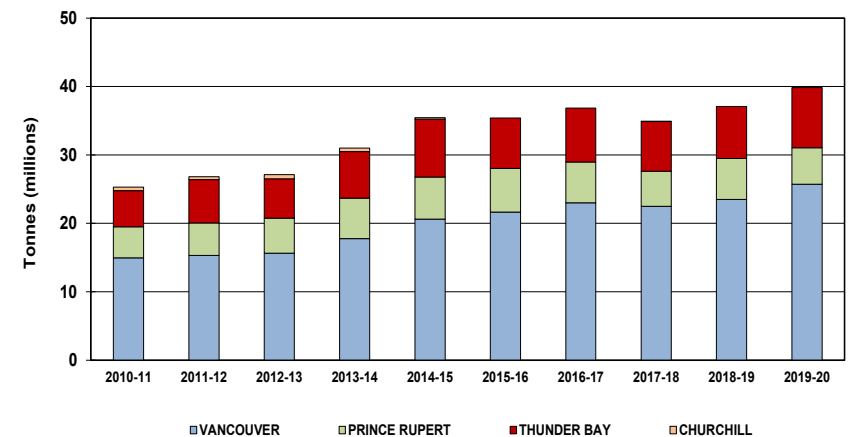
The pace at which grain traffic moves through the GHTS can be gauged by tabulating the number of loaded hopper cars in transit at regular moments in time; normally the Friday of any given week.⁴ The 2019-20 crop year began with a weekly in-transit average of 7,686 cars for the month of August 2019. This increased gradually through the next four months of the crop year, ultimately peaking with a weekly average of 12,869 cars in December 2019. The onset of winter operations coupled with extensive

⁴ 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)



track blockades soon served to slow traffic, steadily increasing the number of cars caught in route through March 2020. The surge in traffic that followed ultimately helped lift the moving-car count to a height of 14,019 cars in April 2020. As opposed to the pattern exhibited in previous crop years, the average remained elevated, hovering around the 12,300-car mark through July 2020.

Collectively, an average of 11,584 loaded cars were in transit to their destinations during any given week of the 2019-20 crop year, 1.1% less than the 11,710-car average recorded a year earlier. The broader characteristics proved consistent with other traffic measures, with 77.0% of the equipment involved in moving grain to destinations in Western Canada, 20.2% to markets in Eastern Canada, and 2.8% to those in the United States. However, the lower in-transit average suggests that private equipment played a larger role in handling the year-over-year increase in overall traffic volume.

TERMINAL ELEVATOR THROUGHPUT

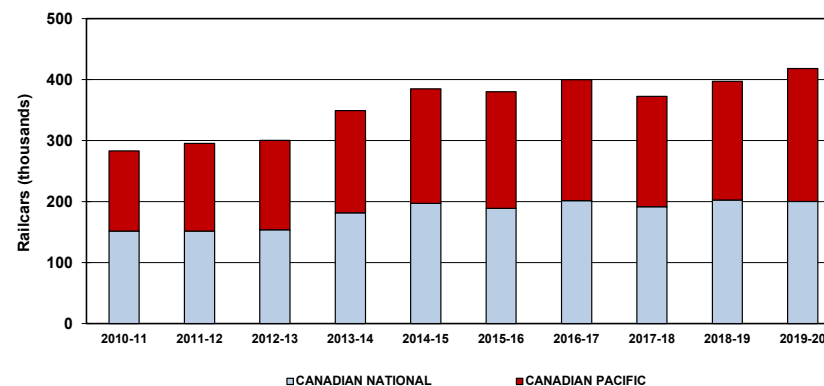
[See TABLES 2C-1 through 2C-2]

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 7.8% in the 2019-20 crop year, rising to a GMP record of 40.0 million tonnes from 37.1 million tonnes a year earlier.

The most significant grain volumes continued to move through the west-coast ports of Vancouver and Prince Rupert. For Vancouver, total terminal elevator throughput increased by 9.4%, to reach a GMP record of 25.7 million tonnes, from 23.5 million tonnes a year earlier. Prince Rupert posted a decline of 10.5%, with terminal shipments falling to 5.4 million tonnes from 6.0 million tonnes. Combined, the tonnage passing through these two west-coast ports represented 77.7% of the overall handle, down from the 79.5% share seen a year earlier.

Much of the noted share loss was given over to Thunder Bay, where a stouter 15.9% increase in volume lifted throughput to almost 8.8 million

Terminal Elevator Unloads - Carrier (Western Canada)



tonnes from the previous crop year's 7.6 million tonnes. As a result, the port's overall share rose to 22.0% from 20.4%. This gain was supported by Churchill, which saw throughput rise to 137,300 tonnes of grain - primarily durum - to garner a 0.3% share.

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 2019-20 crop year increased by 5.3%, rising to 418,245 cars from 397,212 cars a year earlier. The division between handling carriers was, again, roughly comparable. The Canadian National Railway (CN) unloaded 200,017 hopper cars, down 1.4% from the 202,809 cars delivered a year earlier, while the Canadian Pacific Railway's (CP) handlings increased by 12.3%, to 218,228 cars from 194,403 cars. This made CP the largest serving railway to bulk grain terminals in Western Canada, with a share of 52.2% against 47.8% for CN.

EXPORT CONTAINER TRAFFIC

[See TABLE 2C-3]

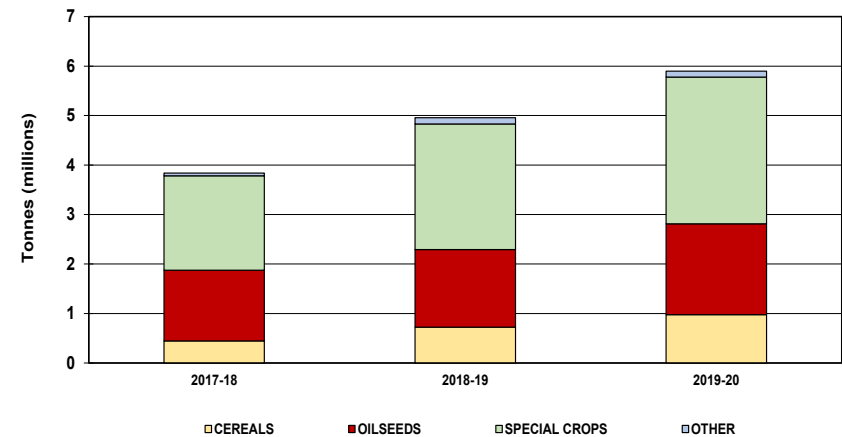
For well over a century, Canadian grain exports have been reliant on bulk ocean shipping to reach offshore markets. With the advent of larger ships, the preponderance of grain exports now physically moves in shipload lots of 50,000 or more tonnes. Yet an increasing share of total annual grain exports has been moving in containers, with that share rising to roughly 10% from 4% two decades earlier. Central to this growth has been the emergence of new, state-of-the-art transloading facilities, which allows grain carried to port in railway hopper cars to be efficiently reloaded into containers for shipment overseas. Moreover, transloaders are expected to help facilitate the containerized movement of still more grain in future.

Containerized export grain shipments are tied to the servicing of much smaller-lot purchasers who typically cater to the needs of niche markets, be it specialty flour mills, brewers or processors. In large measure, these movements are made possible by the opportunity to use empty container equipment already being returned by steamship lines to their offshore origins (predominantly Asia-Pacific countries) for reloading. The use of this returning equipment typically engenders lower “backhaul” freight rates that make foreign purchases of Canadian-sourced grain in small quantities more price competitive.

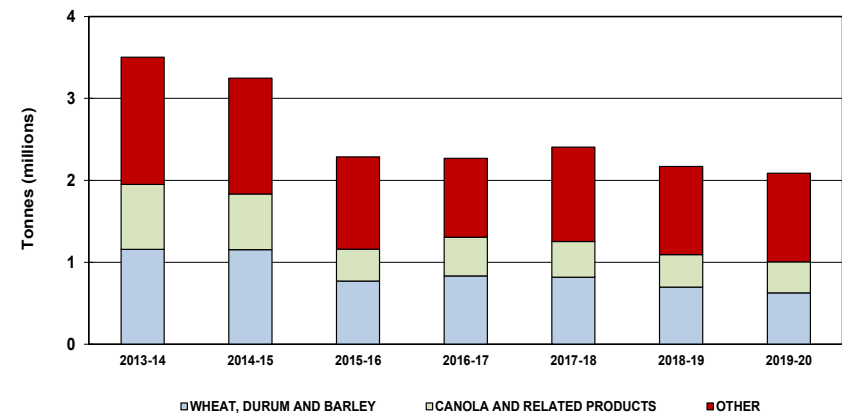
Having worked to secure data relating to overall port-loading activity in Montreal, Vancouver and Prince Rupert, the GMP is now better positioned to more fully gauge the volume of grain leaving the country in containers. For the 2019-20 crop year, this amounted to almost 5.9 million tonnes, which denoted an 18.9% gain over the 5.0 million tonnes shipped a year earlier. The largest portion of this increase came from a surge in the volumes directed through the port of Montreal but was supported by heightened volumes through Vancouver and Prince Rupert as well.

The growth witnessed over the last three crop years has been broad based, increasing at a pace equating to almost 1.0 million tonnes annually, with significant gains in cereals, oilseeds, and special crops alike. Special crops figure prominently in containerized shipments, accounting for nearly 3.0 million tonnes, or 50.3%, of the total volume in the crop year just ended.

Export Container Shipments - Canadian Ports



Truck Shipments - United States Destinations



This is only marginally higher than the 49.6% share claimed three years earlier. Oilseeds ranked second in size, garnering a 31.1% share, while cereals accounted for a much lesser 16.6% share.

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 2.1 million tonnes in the 2019-20 crop year. This proved 3.8% less than the 2.2 million tonnes shipped a year earlier. Reductions were noted for most commodity groups, with a 9.9%, or 68,900-tonne, decline in cereals accounting for over three quarters of the total loss. This was enlarged by a 5.1%, or 20,300-tonne, decline for canola and related products. A 0.7%, or 7,200-tonne, increase in various other commodities served to marginally offset these losses.

In contrast to railway shipments, the preponderance of the grain trucked into the United States travels shorter distances. Almost 1.3 million tonnes, or 60.1% of the total volume, were directed into the US Midwest, a market closer to the international border. This was followed by destinations in the US West, with 480,800 tonnes; the US Northeast, with 242,900 tonnes; and the US South, with 99,800 tonnes.

Section 3: Infrastructure

Indicator Description	Table	2019-20								
		1999-00	2017-18	2018-19	Q1	Q2	Q3	Q4	YTD	% VAR
Country Elevator Infrastructure										
Delivery Points (number)	3A-1	626	281	277	278	280	279	278	278	0.4%
Elevator Capacity (000 tonnes)	3A-1	7,443.9	8,311.7	8,717.9	8,725.1	8,770.1	8,845.9	8,875.4	8,875.4	1.8%
Elevators (number) - Province	3A-1	917	400	399	399	403	403	402	402	0.8%
Elevators (number) - Railway Class	3A-2									
Elevators (number) - Grain Company	3A-3									
Elevators Capable of MCB Loading (number) - Province	3A-4	317	257	256	254	257	259	260	260	1.6%
Elevators Capable of MCB Loading (number) - Railway Class	3A-5									
Elevators Capable of MCB Loading (number) - Railway Line Class	3A-6									
Elevator Closures (number)	3A-7	130	3	25	3	15	3	2	23	-8.0%
Elevator Openings (number)	3A-8	43	12	24	3	19	3	1	26	8.3%
Delivery Points (number) - Accounting for 80% of Deliveries	3A-9	217	101	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	17,279.9	17,279.9	17,279.9	17,279.9	17,265.7	17,265.7	17,265.7	-0.1%
Railway Infrastructure (route-miles) - Class-1 Network	3B-1	14,503.0	14,610.3	14,610.3	14,610.3	14,610.3	14,596.1	14,596.1	14,596.1	-0.1%
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	14,028.7	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	3,251.2	3,251.2	3,251.2	3,251.2	3,237.0	3,237.0	3,237.0	-0.4%
Railway Fleet Size (railcars) - Average Weekly	3B-2	n/a	23,967	25,745	25,046	26,620	26,720	27,136	26,381	2.5%
Served Elevators (number)	3B-3	884	361	352	350	353	353	352	352	0.0%
Served Elevators (number) - Class 1 Carriers	3B-3	797	327	321	319	322	322	321	321	0.0%
Served Elevators (number) - Non-Class-1 Carriers	3B-3	87	34	31	31	31	31	31	31	0.0%
Served Elevators (number) - Grain-Dependent Network	3B-3	371	117	106	106	105	105	104	104	-1.9%
Served Elevators (number) - Non-Grain-Dependent Network	3B-3	513	244	246	244	248	248	248	248	0.8%
Served Elevator Capacity (000 tonnes)	3B-3	7,323.0	8,109.0	8,487.1	8,487.1	8,541.6	8,617.4	8,646.9	8,646.9	1.9%
Served Elevator Capacity (000 tonnes) - Class 1 Carriers	3B-3	6,823.2	7,885.5	8,256.6	8,256.6	8,311.2	8,387.0	8,416.4	8,416.4	1.9%
Served Elevator Capacity (000 tonnes) - Non-Class-1 Carriers	3B-3	499.7	223.5	230.4	230.4	230.4	230.4	230.4	230.4	0.0%
Served Elevator Capacity (000 tonnes) - Grain-Dependent Network	3B-3	2,475.4	2,004.8	1,995.7	1,995.7	1,989.9	1,989.9	1,983.2	1,983.2	-0.6%
Served Elevator Capacity (000 tonnes) - Non-Grain-Dependent Network	3B-3	4,847.6	6,104.2	6,491.3	6,491.3	6,551.7	6,627.5	6,663.7	6,663.7	2.7%
Terminal Elevator Infrastructure										
Terminal Elevators (number)	3C-1	15	16	17	17	17	17	17	17	0.0%
Terminal Elevator Storage Capacity (000 tonnes)	3C-1	2,678.6	2,485.0	2,542.5	2,542.5	2,542.5	2,695.5	2,695.5	2,695.5	6.0%

DISCUSSION AND ANALYSIS

COUNTRY ELEVATOR INFRASTRUCTURE

[See TABLES 3A-1 through 3A-9]

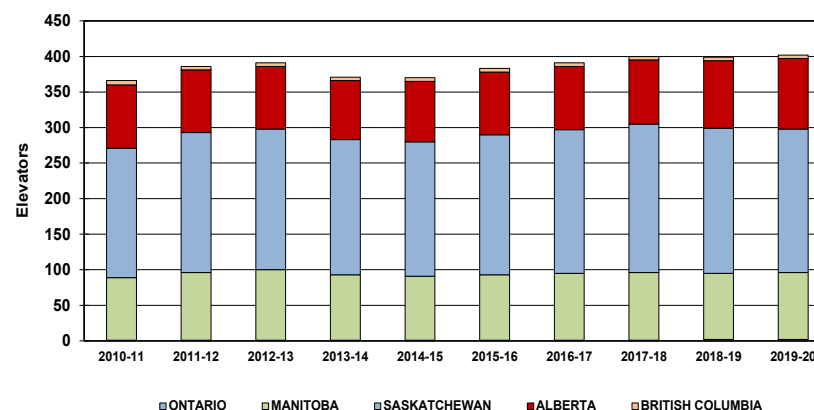
At the outset of the 1999-2000 crop year, there were 1,004 licensed primary and process elevators situated across the prairies. By the close of the 2019-20 crop year, what remained encompassed a total of 402 facilities, representing a reduction of 60.0% from the GMP's base year. This decline marks one of the most visible changes that have taken place in the GHTS. 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 2019-20 crop year produced a three-elevator increase in the network. This came about through the closure of 23 elevators, chiefly smaller Class A and B facilities, along with the licensing of 26 others.⁵ Among the newly licensed elevators were four recently constructed loop-track facilities: three opened by G3 Canada, and one by GrainsConnect Canada.

At the close of the 2019-20 crop year, 202, or 50.2% of Western Canada's licensed elevators, were situated in Saskatchewan. This was followed by Alberta and Manitoba, with 99 and 94 elevators respectively, and corresponding shares of 24.6% and 23.4%. 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, 565 licensed Class A elevators, along with 133 Class B elevators, ultimately closed their doors during the last 21 years. These

Country Elevators - Provincial Distribution



closures effectively drove a 407-community constriction in the grain-delivery network itself, which by the end of the 2019-20 crop year encompassed 278 locations as compared to the 685 benchmarked at the beginning of the GMP's base year.

However, the smaller, wood-crib facilities were not the only elevators to be closed. In more recent years, several smaller Class C high-throughput elevators have also been shuttered, producing a net reduction of 28 facilities. Only the largest high-throughput facilities, the licensed Class D elevators, have increased during this period, expanding more than fourfold, to 162 from 38 in the base year. By the close of the 2019-20 crop year, high-throughput facilities accounted for 53.5% of total system

⁵ 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.

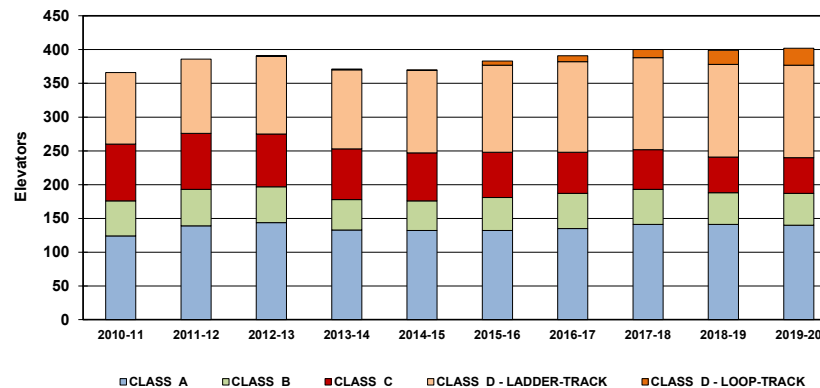
elevators and 83.0% of its storage capacity. Both shares stand significantly above their respective base-year values of 11.9% and 39.4%.

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, but they also feature loop tracks with standing capacity for up to 150 hopper cars (roughly 9,000 feet), which theoretically allows for faster grain 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 ten such facilities now forming the backbone of its 13-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 five crop years - including those of new entrants such as Ceres Global Ag Corp., GrainsConnect Canada and the former Ilta Grain - have adopted loop-track designs. At the close of 2019-20 crop year, 25 such loop-track facilities were in operation, with four having opened in the previous twelve months. Together, these facilities accounted for 6.2% of all elevators and 11.9% of the network’s storage capacity.

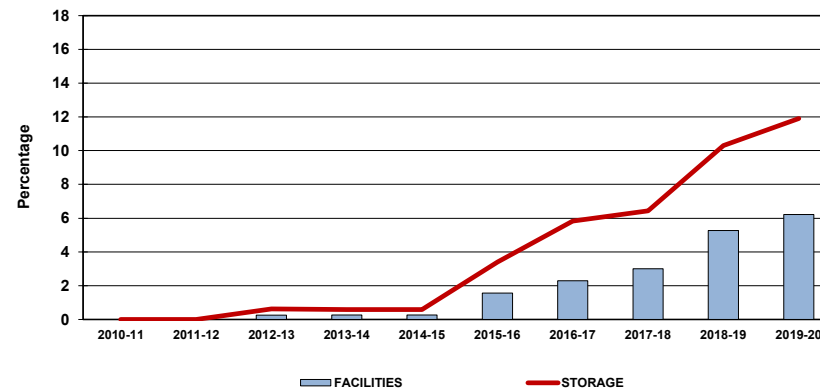
Yet this expansion also threatens to compound some of the service issues already associated with long-train movements. Much of this stems from the railways’ efforts to leverage the operational efficiencies that come from consolidating different shipments in order to maximize in-route train lengths, which now reach as much as 12,000 feet (roughly the equivalent of 200 conventional cylindrical hopper cars). This means that the consist of an originating 8,500-foot unit train can be reallocated for movement as part of two or more longer trains. Moreover, these longer trains must still traverse a rail network with sidings, intermediate yards and terminals designed to handle shorter trains.⁶ This can necessitate the further partitioning of the original consist into still more separate car-blocks. Such train-splitting activities frequently result in cars from the same original train arriving at widely different times. While this practice may be practical from the carriers’ perspective, it often conflicts with the needs of shippers,

⁶ Although CN and CP have been investing in longer sidings and receiving tracks, their networks are largely designed to handle trains under 9,000 feet in length.

Country Elevators - Facility Class



Loop-Track Elevators - Share of Facilities and Storage



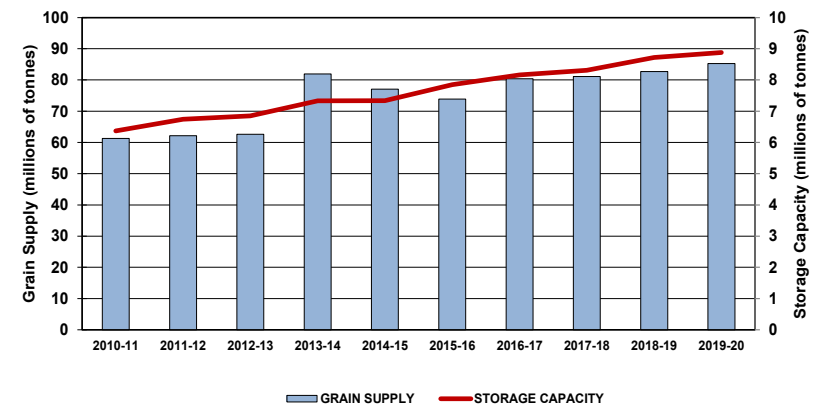
who generally expect railcars moving from the same originating facility (be it as a small block of cars or an entire train) to arrive intact at destination. This splitting has consistently undermined the efficient flow of grain into the port of Vancouver owing to the non-uniform delivery of the train's divided consist. The delays associated with such actions are often measured in days and leads directly to postponed vessel loading and lengthier stays in port. Employing still longer originating trains may potentially exacerbate these problems as only the two newest terminals in Vancouver have receiving tracks long enough to accommodate such trains without having to first split them apart.

Despite the promise of potential future improvements in GHTS efficiency, the advent of these next-generation facilities has yet to put non-major grain handlers at a significant disadvantage. In fact, the specialization of many smaller grain companies 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 Scouler Canada all having expanded their presence in a highly competitive environment. Whether this will continue to be the case remains to be seen.

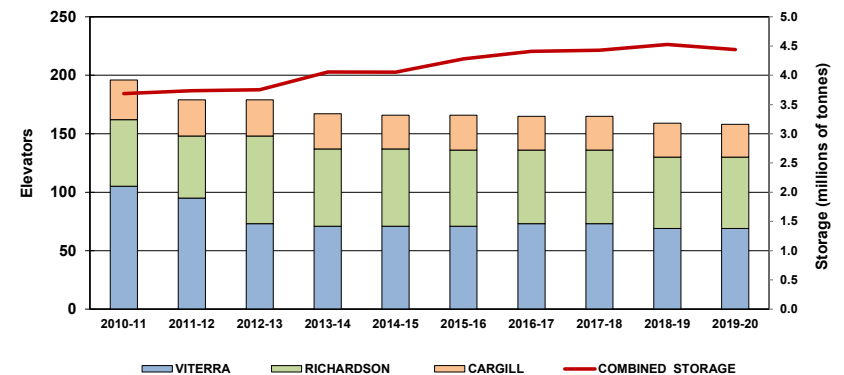
While the overall number of elevators has fluctuated moderately over the last decade, the network's storage capacity has risen steadily. By the close of the 2019-20 crop year, it stood at just under 8.9 million tonnes, a new GMP record. Moreover, this embodies a 55.3% increase over the 5.7-million-tonne low reached under the GMP 16 years earlier. Over the last decade, this expansion has advanced with roughly one tonne of storage being added for every ten-tonne increase in the grain supply.

The 402 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 39.3% of its facilities and 50.0% of its associated storage capacity.

Grain Supply and Country Elevator Storage Capacity



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



RAILWAY INFRASTRUCTURE

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

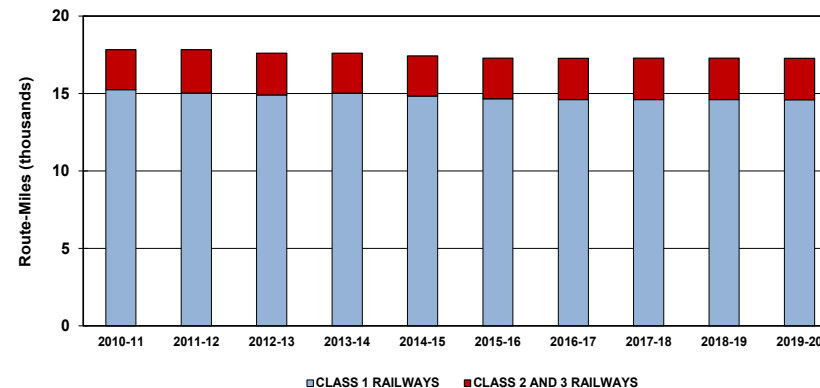
Changes to the GHTS’s railway infrastructure have been substantially less than that of the country-elevator network. This is chiefly because elevator closures precede any railway rationalization effort that would ensue. Moreover, given the breadth of the railway network and the diversity of the traffic it supports, any rationalization can never fully mimic that of grain elevators alone. In fact, over the last 21 years, the railway network contracted only one-sixth as much as the country elevator network, shedding 2,202.5 route-miles, or 11.3%, of the 19,468.2 route-miles originally benchmarked in the GMP’s base year.

More importantly, this decline has all but ceased in the face of the last five year’s minimal changes. This was evidenced in the discontinuance of the last vestiges of CP’s Saskatchewan-based Kelvington Subdivision in the third quarter, with the railway network reduced by a mere 14.2 route-miles, or less than 0.1%, in the 2019-20 crop year, to 17,265.7 route-miles from 17,279.9 route-miles a year earlier.

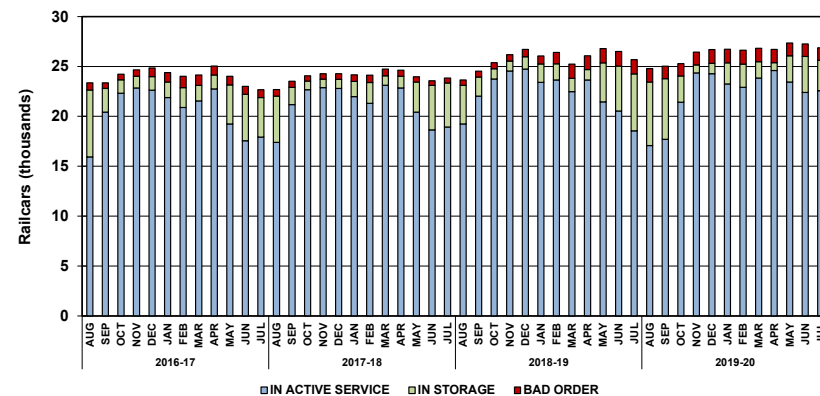
To date, over three-quarters of the network reduction can be attributed to the discontinuance of some 1,717.7 route-miles of light-density, grain-dependent branch lines.⁷ Other changes in the composition of the railway network came from the transfer of various branch lines to smaller shortline railways, although none were recorded in the last twelve months. At the close of the 2019-20 crop year Class-1 carriers operated 84.5%, or 14,596.1 route-miles, while the smaller Class-2 and 3 carriers operated the remaining 15.5%, or 2,669.6 route-miles.⁸

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

Railway Infrastructure - Route-Miles Operated (Western Canada)



Covered Hopper Cars - Number and Status



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 2019-20 crop year, an average of 26,381 hopper cars were deployed to move grain, a 2.5% increase over the 25,745-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 636-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.⁹

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.

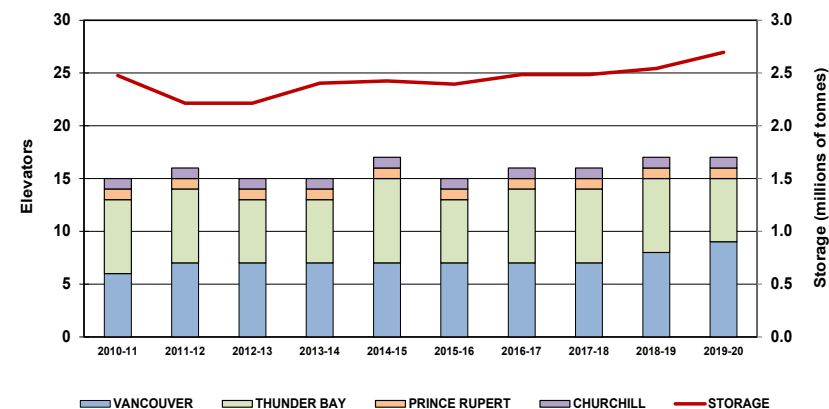
While the proportion in active service rose to a height of 92.1% in November 2019, slightly under the 93.8% reached in the same period a year earlier, a greater-than-normal share of the fleet remained in service through the latter half of the 2019-20 crop year, with the utilization rate never falling below the 82.1% reached in June 2020. This meant that the GHTS was able to accommodate a 7.6% increase in hopper-car traffic with just a 110-car, or 0.5%, increase in its active fleet.

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. These facilities were primarily

Terminal Elevators - Location and Storage Capacity (Western Canada)



clustered at the ports of Thunder Bay and Vancouver, with complementary stand-alone terminals at Churchill and Prince Rupert. By the close of the 2019-20 crop year, the overall number of facilities had risen to 17, an increase of 21.4%, with the associated storage capacity having increased by a lesser 5.4%, to just under 2.7 million tonnes from 2.6 million tonnes.

Thunder Bay has long been home to the majority of the GHTS's terminal elevators. But its position in the GHTS has been steadily eroding in the face of the growing Asian grain trade. Its position was further undermined with the delicensing of Western Grain By-Products Storage Ltd. in January 2020. This left the port with six facilities, representing 35.3% of the total system's elevators, and 45.2% of its licensed storage capacity; both down from the 50.0% shares benchmarked two decades earlier.

⁹ The fleet information supplied by the railways is believed to exclude many of the privately-owned or leased cars supplied by the grain companies themselves. The actual number of cars in grain service is, therefore, believed to be understated.

Nevertheless, the growing handling needs of the GHTS - particularly along the west coast - has spurred the need for new capacity. Vancouver has seen much of the resultant investment, with an 81,720-tonne expansion of the Richardson International terminal in North Vancouver - completed in 2016 - being but the first. This was followed by major upgrades to the ship-loading galleries at Viterra's Pacific Terminal and the Alliance Grain Terminal, and a significant upgrading of the Fibreco Export facility to permit handling of other commodities, including agricultural products.

More noteworthy still has been G3 Canada's construction of an all new 180,000-tonne loop-track terminal in North Vancouver. Opened officially in July 2020, this new terminal lifted the number of licensed facilities at the port to nine from eight, giving the port a 52.9% share of total system elevators, and a 45.2% share of its licensed storage capacity. Even so, the expansion continues, with the new 72,000-tonne Fraser Grain Terminal, whose development is being spearheaded by Parrish and Heimbecker Limited, expected to become operational in late 2020.

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. Notwithstanding the decline in volume occasioned by the COVID-19 pandemic, increased movements of grain, 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 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.¹⁰ This is likely to become a much larger issue once G3 Terminal Vancouver is in full operation. When coupled with

the increased volumes occasioned by the expansions at Fibreco and Neptune Terminals (to accommodate increased coal and potash movements) it is estimated that a further 12 million tonnes 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 being advanced, it will likely be two or more years before they are complete.

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 over \$300 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, they alone do not fully address the longer-term investment needs of the GHTS.

¹⁰ 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	2019-20								
		1999-00	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	135.1	135.3	136.6	136.6	137.1	138.4	138.4	2.3%
Composite Rate Index - Dockage	4B-1	100.0	153.8	153.8	153.8	145.0	145.7	145.5	145.5	-5.4%
Composite Rate Index - Storage	4B-1	100.0	214.6	222.6	224.8	226.9	228.8	229.8	229.8	3.3%
Railway Freight Rates										
Composite Freight Rate Index - CN Vancouver	4C-1	100.0	133.7	152.4	159.9	159.9	159.9	153.8	153.8	0.9%
Composite Freight Rate Index - CP Vancouver	4C-1	100.0	143.7	154.0	164.4	164.4	164.4	164.4	164.4	6.7%
Composite Freight Rate Index - CN Thunder Bay	4C-1	100.0	140.5	166.9	178.1	177.9	177.9	170.9	170.9	2.4%
Composite Freight Rate Index - CP Thunder Bay	4C-1	100.0	141.1	162.2	172.8	172.8	172.8	172.8	172.8	6.5%
Effective Freight Rate (\$ per tonne) - Maximum Revenue Entitlement	4C-3	n/a	\$36.87	\$38.99	n/a	n/a	n/a	n/a	\$40.25	3.2%
Terminal Elevator Handling Charges										
Composite Rate Index - Receiving, Elevating and Loading Out	4D-1	100.0	157.5	157.7	162.6	162.6	157.9	157.9	157.9	0.1%
Composite Rate Index - Storage	4D-1	100.0	185.2	185.5	184.5	184.5	185.9	185.9	185.9	0.2%

DISCUSSION AND ANALYSIS

COUNTRY ELEVATOR HANDLING CHARGES

[See TABLE 4B-1]

Grain companies assess fees for a variety of elevator-handling activities, predominantly 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 generally higher, albeit by varying margins. Modest changes were again observed in the 2019-20 crop year. Elevation rates increased by 2.3%, which raised the index to 138.4 from 135.3; dockage fees declined by 5.4%, with the index falling to 145.5 from 153.8; and storage rates increased 3.3%, which lifted the index to 229.8 from 222.6.

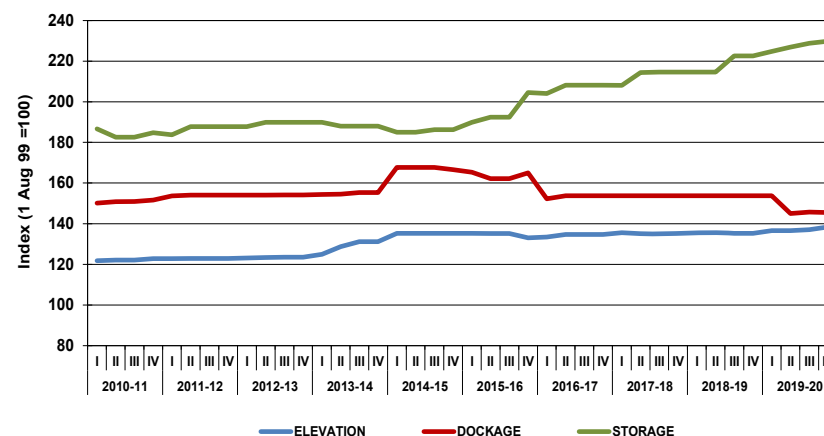
RAILWAY FREIGHT RATES

[See TABLES 4C-1 through 4C-3]

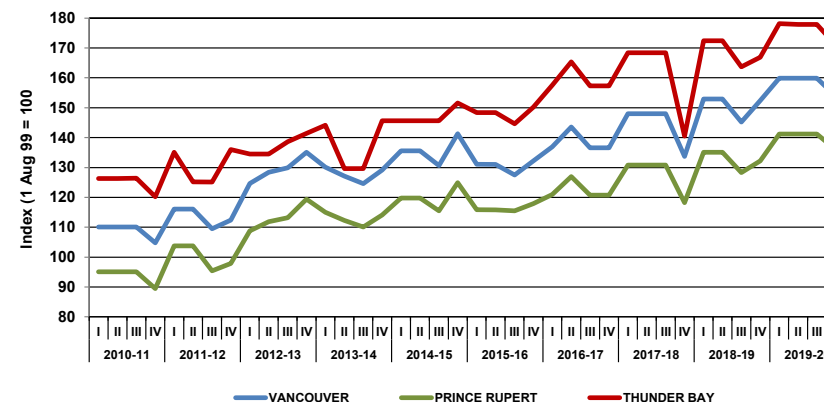
The single-car freight rates charged by CN and CP for the movement of regulated grain have changed substantially since the beginning of the GMP, evolving from what were largely mileage-based rates into a less rigidly structured set of more market-responsive rates. Likewise, these changes also employed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

CN initially reduced its single-car freight rates at the beginning of August 2019, with reductions ranging from 3.0% in the Prince Rupert corridor to 5.0% in the Thunder Bay corridor. These were reversed in September with corridor-specific increases that ranged from 4.9% to 7.0%. October brought a secondary cross-the-board escalation of 5.0%. CN's rates remained largely unchanged until May 2020, when they were reduced by 4.0%. By the close of the 2019-20 crop year these various pricing actions had effectively lifted CN's rates on movements to Vancouver, Prince Rupert and Thunder Bay by 0.9%, 2.8% and 2.4% respectively.

Primary Elevator Handling Charges



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



In comparison, CP followed an initial 5.0% reduction at the outset of the crop year with increases approaching 7.0% in September, and 5.0% in October. Unlike CN, CP retained these rates unchanged through July 2020. At the end of the crop year these pricing actions had raised CP's rates on traffic destined to Vancouver by 6.7%, and Thunder Bay by 6.5%.

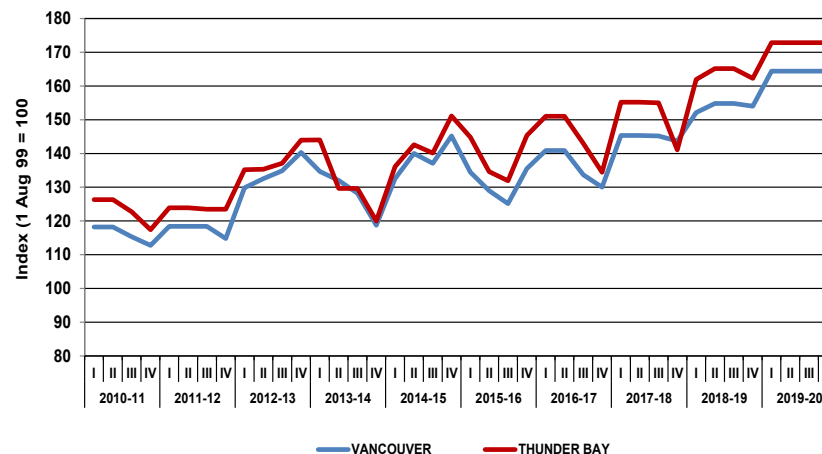
Multiple-Car-Block Discounts

Discounting single-car freight rates has been the principal mechanism employed by the railways to entice shippers into moving grain in larger strings of hopper cars. These multiple-car-block discounts have continued to evolve since the beginning of the GMP. The first significant structural change in this evolution came with the elimination of the discounts applicable on movements in blocks of less than 50 cars, along with an escalation in those tied to blocks of 50 or more cars, over a decade ago. Together, these actions provided grain handlers with a powerful economic incentive to ship in trainload - or partial trainload - quantities.

The next important change came in the 2018-19 crop year, when CP withdrew the \$4.00-per-tonne incentive that it had long been offering 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 in additional discounts if shippers also complied with certain "heavy-loading" criteria.¹¹

The resultant disparities occasioned by these actions were narrowed at the outset of the 2019-20 crop year when CN eliminated its \$4.00-per-tonne discount on movements of 50-99 cars, effectively matching the commercial step taken by CP a year earlier. At the same time, CP brought

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



forward a \$10.00-per-tonne discount for movements under its newly introduced High-Efficiency-Product train program, which builds on the deeper discounts previously made available by CN to qualifying trainload shippers.¹²

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. It remains to be seen whether such a handicap can be overcome or if it will precipitate further rationalization of the grain-gathering network.

higher-capacity hopper cars it is purchasing to increase trainloads by over 40%. When combined with the promise of faster and more efficient loop-track loading systems, these trains can help accelerate the flow of grain to market.

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 its new "Loop/Tangent Track Incentive."

¹² CP's High-Efficiency-Product train program is built around the carrier's plan to operate trains to an 8,500-foot standard and takes advantage of the efficiency gains to be had by using the

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 2019-20 crop year, the Agency determined the value of the VRCPI to be 1.4498 for CN, and 1.5311 for CP. These values denoted year-over-year increases of 2.7% for CN, and 4.8% for CP.¹³ As a result, the MRE for CN and CP were set at \$930.3 million and \$997.1 million respectively, or \$1,927.4 million on a combined basis.¹⁴ The Agency also determined that, for the 2019-20 crop year, the statutory revenues derived from the movement of regulated grain by CN and CP amounted to \$933.5 million and \$999.2 million respectively, or \$1,932.7 million on a combined basis. These determinations cited both carriers for having exceeded their maximum revenue entitlements: by \$3.2 million in the case of CN; and by \$2.2 million in the case of CP. This meant that carrier revenues reached a combined \$5.3 million, or 0.3%, above 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.

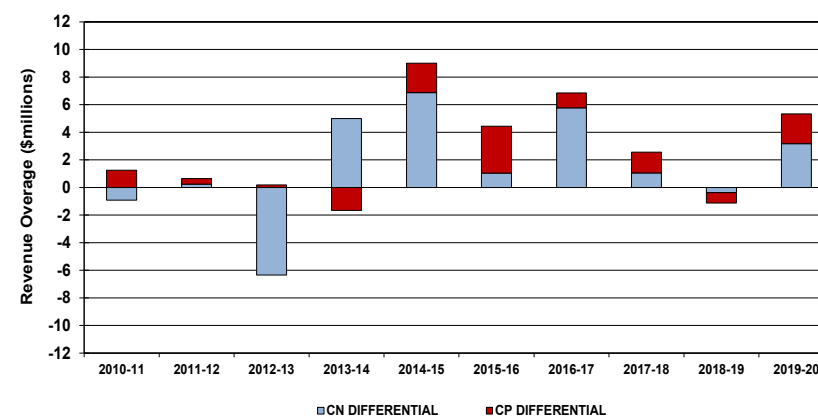
TERMINAL ELEVATOR HANDLING CHARGES

[See TABLE 4D-1]

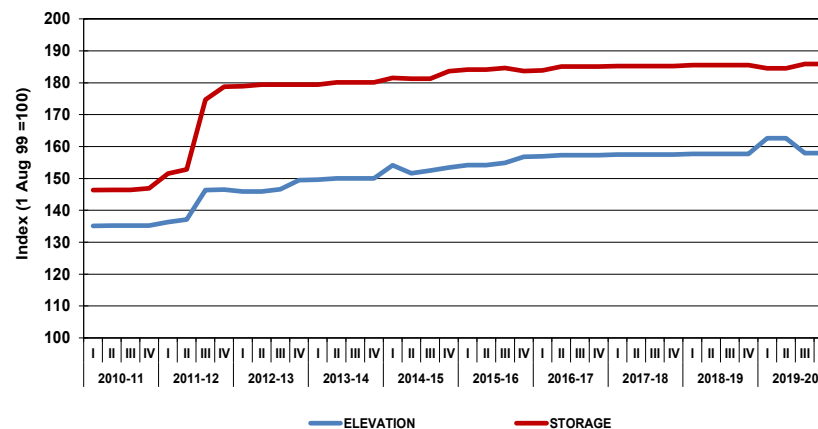
About two-thirds of terminal-elevator revenues are derived from the charges levied for the receiving, elevating and loading out of grain. As

13 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.

Maximum Revenue Entitlement - Carrier Compliance



Terminal Elevator Handling Charges



14 See Canadian Transportation Agency Determination R-2020-207 dated 22 December 2020.

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 2019-20 crop year saw negligible changes to these rates, with the composite price index for elevation rising by a mere 0.1%, to 157.9 from 157.7 in the previous year. Likewise, minor changes in the daily charge for storage also led to a 0.2% increase in the associated composite price index, which rose to 185.9 from 185.5 a year earlier.

COMMERCIAL DEVELOPMENTS

GHTS endures significant service disruptions

On 19 November 2019 about 3,200 conductors, train workers and yard workers, represented by the Teamsters Canada Rail Conference (TCRC), went on strike against the Canadian National Railway Company (CN), citing safety concerns, work hours and health benefits as key issues. The strike greatly restricted freight operations across the company's Canadian network until a tentative new collective agreement between the parties was negotiated, and unionized employees began returning to work on 26 November. The new three-year agreement, which was subsequently ratified by the TCRC membership in late January 2020, was made retroactive to 23 July 2019. However, the strike's economic impact was far-reaching, prompting temporary plant closures and employee layoffs throughout the country. The GHTS was equally impacted, with the flow of grain curtailed just as the demand for rail transportation was reaching its seasonal height, and delays tied to winter operations loomed on the horizon. Even so, CN moved quickly to restore service and make up lost ground.

CN's efforts to contend with the backlog were soon undermined by the effects of heavy rains along its route through the Rockies, which occasioned significant landslides and track washouts in late January and early February 2020. As much of this was centred on its mainline between Kamloops and Hope, British Columbia - a section jointly used by CN and CP for westbound movements under a coproduction agreement - railway service for both carriers in the vital Vancouver corridor was disrupted for several days.



A view of one of the many blockades setup throughout the country by protestors in support of the Wet'suwet'en First Nation and its opposition to construction of a natural gas pipeline through its traditional territory. The blockade seen here was established on the western outskirts of Edmonton, Alberta, in February 2020, disrupting railway service on CN's mainline to the West Coast. (Image courtesy of David Bloom/POSTMEDIA)

However, within days of restoring normal railway service, long-simmering opposition to the construction of a natural gas pipeline through traditional Wet'suwet'en First Nation territory in northern British Columbia brought further disruptions. Initial efforts by Vancouver police to take down road barricades erected on unceded land spurred sympathy protests throughout the Lower Mainland, which snarled local traffic and blocked commercial vehicle access to the Port of Vancouver. These quickly proliferated to include blockades on adjacent railway lines. Within a few days other protesters began targeting the railway network at large, erecting track barricades at various locations throughout Canada in a show of solidarity. This prompted widespread shutdowns of freight and passenger railway services, particularly in the eastern portion of the country, which soon led to calls for governmental intervention.

The impact was no less severe in Western Canada, where rotating blockades backlogged the flow of railway traffic from Winnipeg through to

the West Coast. The CN network was particularly hard hit, with an across-the-board cut to service in the Prince Rupert corridor stranding the port altogether. Export grain movements suffered alongside other commodities in the face of reduced railway service, which led to elevator congestion and deferred producer deliveries in the country. When the blockades were finally lifted in early March, 53 ships were waiting at West Coast ports to take delivery of some 2.8 million tonnes of delayed railway grain shipments. Notwithstanding this, the railways moved quickly to restore service and expedite its movement, handling near-record volumes in the process. By the close of the third quarter, railway movements were once again in balance with arriving vessels, the backlog having effectively been eliminated.

[COVID-19 pandemic impacts on GHTS](#)

While still grappling with the aftereffects of the blockades that had disrupted railway service for close to six weeks, the GHTS found itself caught up in the grips of the global COVID-19 pandemic. Unlike other sectors of the Canadian economy, much of the impact proved beneficial. To begin with, foreign grain buyers were becoming increasingly concerned with the vulnerabilities of their existing supply chains. This was occasioned by the restrictions being imposed by several grain-exporting nations to ensure domestic food security. And while Canada's reputation as a reliable supplier had again been tarnished by the earlier service disruptions that had slowed grain movements and delayed export sales programs, foreign buyers were reportedly appreciative of the efforts being made by Canadian exporters to honour their obligations in the international marketplace.

That is not to say that the GHTS was unimpacted. But the designation of essential services along with the adoption of appropriate physical-distancing protocols at country elevators, railways, and port terminals went a long way in protecting the efficient movement of grain. Moreover, the attendant decline in overall railway traffic volumes freed enough capacity to ensure the uninterrupted flow of grain to export positions. In fact, this additional handling capacity facilitated the setting of several new monthly grain-shipment records by CN and CP in the second half of the 2019-20 crop year, which spurred the GHTS's overall handlings to an all-time best of 58.6 million tonnes.

While bulk grain shipments fared comparatively well alongside the general reduction in other railway traffic, Canadian exporters employing containers to move smaller volumes – such as pulses and special crops – struggled with the constricted supply of equipment occasioned by the pandemic. During the third quarter, the ports of Vancouver and Prince Rupert saw dozens of scheduled vessel arrivals cancelled outright. This led to a shortage of empty 20-foot containers on the West Coast which, in turn, caused backlogs at the container-stuffing facilities that transload grain into containers for shipment overseas. This shortage persisted through the remainder of the 2019-20 crop year with most industry observers suspecting that relief would not come until the pandemic had passed, North Americans had returned to work, and the importing of Asian consumer goods had resumed.

[Parrish & Heimbecker acquires ten Louis Dreyfus elevators](#)

On 4 September 2019 Winnipeg-based grain handler Parrish & Heimbecker (P&H) announced that it had reached a deal with Louis Dreyfus Commodities (LDC) to acquire ten of the latter company's Western Canadian elevator facilities. Specifically excluded from the transaction were LDC's grain terminal in Port Cartier, Quebec, and its canola crushing plant and refinery in Yorkton, Saskatchewan. The purchase marked yet another milestone in P&H's efforts to improve the scope and competitiveness of its grain-gathering network, which would grow to 32 licenced elevators having close to 1.1 million tonnes of storage capacity. This would vault P&H ahead of Cargill as the third largest owner of elevator facilities in Western Canada.

The transaction, which was subject to regulatory approval and other conditions, was finalized in the closing days of 2019. However, the Competition Bureau announced on 19 December 2019 that it would be challenging P&H's procurement of the LDC elevator at Virden, Manitoba. The Bureau filed an application with the Competition Tribunal seeking an order requiring P&H to sell either the newly acquired Virden facility or its own elevator in Moosomin, Saskatchewan. The regulator claimed that P&H's acquisition of the LDC facility at Virden would effectively eliminate the commercial rivalry that had existed between it and the P&H elevator at Moosomin, to the detriment of grain producers situated along a 180-kilometre stretch of the connecting Trans-Canada Highway. Although P&H

sought to have the application dismissed early in 2020, a formal hearing was not scheduled until late in the year, with a final decision by the Competition Tribunal expected sometime in 2021.

[G3 opens Vancouver grain terminal](#)

On 8 July 2020 G3 Canada Limited officially opened its new terminal elevator in North Vancouver. Construction of the facility, which denoted the first all-new grain terminal to be built at the Port of Vancouver since the 1960s, began in 2017 with an estimated budget of about \$500 million. The complex, which had been accepting test shipments of grain for some four months in advance of the opening, encompasses 48 grain bins, each 14 stories tall, and a 79-metre-tall workhouse that can accommodate the storage of some 183,000 tonnes of grain. The facility also boasts an extensive set of loop-tracks that can receive up to three 150-car trains. Its dock can also accommodate the loading of Capesize vessels and employs three ship-loaders designed to discharge up to 6,500 tonnes of grain per hour. Together, these elements unite to make the G3 Vancouver Terminal potentially the most efficient in Canada. Moreover, when fully employed to receive grain from the company's still-expanding network of inland elevators, it holds the promise of significantly improving the movement of grain through its supply chain.

On this latter point, the 2019-20 crop year saw the company open three of the new Alberta elevators it had under construction, these being situated at Carmangay, Morinville and Wetaskiwin. The two other facilities - located in Alberta at Irricana and Stettler - were expected to be commissioned sometime in the 2020-21 crop year. In addition to these five, the company announced on 12 December 2019 that it would also be building two others, one to be served by CN at Vermilion, Alberta, and another by CP at Swift Current, Saskatchewan. Each of these elevators incorporates the same high-efficiency design features: quick truck discharging amenities; and a loop track capable of loading 150-car unit trains. When complete, G3 will have assembled a network of 14 such facilities, the greatest collection of any grain handler on the prairies.

[CN orders 1,500 additional hopper cars](#)

On 21 July 2020, the Canadian National Railway Company (CN) announced that it had ordered an additional 1,500 high-capacity hopper cars with delivery beginning in January 2021. The order follows the carrier's initial purchase of 1,000 cars from National Steel Car in 2018 and increases its cumulative acquisition plans to 2,500 cars. These next-generation hopper cars are largely being used to supplement and rejuvenate what had been an aging public fleet, and phase-out much of the lower-capacity equipment employed in grain service for almost half a century.

CN's announced purchases for 2,500 new cars stands substantially below the 5,900-car acquisition plan now being advanced by CP. Much of the numerical difference between these two acquisition plans appears to be rooted in the comparative size of their federal hopper-car fleets. Even as they do so, some large shippers have continued to amass their own private fleets, with G3 Canada being the most recent to acquire new equipment.

[Approval given to Prince Rupert terminal expansion](#)

The Port of Prince Rupert received final regulatory approval for DP World to expand its Fairview container terminal to an annual capacity of 1.6 million TEUs, up from the current 1.4 million TEUs. The project is expected to be completed in late 2021 or early 2022. A second expansion project to boost Fairview's capacity to 1.8 million TEUs is planned for late 2022. The project includes provisions for an expanded container yard, additional on-dock rail capacity, and the purchase of an eighth gantry crane.

Section 5: System Efficiency and Performance

Indicator Description	Table	2019-20								
		1999-00	2017-18	2018-19	Q1	Q2	Q3	Q4	YTD	% VAR
Country Elevator Operations										
Average Elevator Capacity Turnover Ratio	5A-1	4.8	6.2	6.4	1.6	1.6	1.6	1.8	6.6	3.1%
Average Weekly Elevator Stock Level (000 tonnes)	5A-2	3,699.3	3,575.0	3,457.9	2,609.7	3,749.1	4,497.0	2,925.4	3,433.3	-0.7%
Average Days-in-Store (days)	5A-3	41.7	28.3	25.4	19.8	26.8	31.0	18.0	23.7	-6.5%
Average Weekly Stock-to-Shipment Ratio - Grain	5A-4	6.2	4.2	3.7	2.7	3.8	4.9	2.8	3.6	-4.0%
Railway Operations										
Movements to Western Canada										
Railway Car Cycle (days) - Empty Movement	5B-1	10.7	8.4	7.5	8.5	8.0	7.7	7.1	7.8	4.6%
Railway Car Cycle (days) - Loaded Movement	5B-1	9.2	7.3	8.5	7.0	9.4	9.7	8.1	8.5	-0.6%
Railway Car Cycle (days) - Total Movement	5B-1	19.9	15.7	16.0	15.5	17.4	17.4	15.3	16.3	1.8%
Railway Car Cycle (days) - Non-Special Crops	5B-2	19.3	15.5	15.6	15.1	16.9	16.9	15.0	15.9	1.9%
Railway Car Cycle (days) - Special Crops	5B-3	25.8	17.7	19.7	18.0	21.3	21.2	17.8	19.4	-1.2%
Railway Loaded Transit Time (days)	5B-4	7.8	6.0	7.5	5.9	8.2	8.6	7.1	7.4	-0.5%
Movements to Eastern Canada										
Railway Car Cycle (days) - Empty Movement	5B-5	n/a	11.0	9.4	9.7	10.3	10.9	10.2	10.4	11.2%
Railway Car Cycle (days) - Loaded Movement	5B-5	n/a	13.1	12.0	11.4	11.7	13.3	14.0	12.6	4.8%
Railway Car Cycle (days) - Total Movement	5B-5	n/a	24.2	21.3	21.2	22.0	24.2	24.2	22.9	7.6%
Railway Loaded Transit Time (days)	5B-8	n/a	10.9	10.2	9.9	10.0	11.8	12.3	10.9	7.1%
Movements to the United States										
Railway Car Cycle (days) - Empty Movement	5B-9	n/a	12.1	11.1	11.8	12.8	11.3	10.9	11.7	5.0%
Railway Car Cycle (days) - Loaded Movement	5B-9	n/a	15.7	15.0	13.4	14.3	13.6	14.0	13.8	-7.8%
Railway Car Cycle (days) - Total Movement	5B-9	n/a	27.9	26.1	25.2	27.1	24.9	24.8	25.5	-2.3%
Railway Loaded Transit Time (days)	5B-12	n/a	12.0	10.8	8.7	10.2	10.3	10.1	9.9	-8.5%
Traffic to Western Canada										
Hopper Car Grain Volumes (000 tonnes) - Non-Incentive	5B-13	12,718.7	6,046.0	5,293.4	2,029.7	1,887.5	2,060.3	2,111.4	8,088.9	52.8
Hopper Car Grain Volumes (000 tonnes) - Incentive	5B-13	12,945.9	32,064.2	36,074.9	8,736.3	8,918.1	8,632.4	10,868.8	37,155.7	3.0%
Hopper Car Grain Volumes (\$ millions) - Incentive Discount Value	5B-14	\$31.1	\$241.9	\$269.4	\$69.9	\$71.3	\$69.1	\$87.0	\$297.2	10.3%
Traffic Density (tonnes per route mile) - Total Network	5B-15	330.4	553.0	602.0	623.0	625.3	619.3	751.8	622.6	3.4%
Terminal Elevator Operations										
Average Terminal Elevator Capacity Turnover Ratio	5C-1	9.1	18.9	20.5	n/a	n/a	n/a	n/a	18.6	-9.3%
Average Weekly Terminal Elevator Stock Level (000 tonnes)	5C-2	1,216.2	1,196.5	1,183.0	1,028.9	1,232.6	1,373.5	1,256.5	1,222.1	3.3%
Average Days-in-Store - Operating Season (days)	5C-3	18.6	11.5	10.9	10.8	11.6	10.4	9.2	10.7	-1.8%
Average Weekly Out-of-Car Time	5C-5	n/a	11.2%	11.5%	8.9%	10.5%	14.0%	9.3%	10.6%	-7.8%
Port Operations										
Average Vessel Time in Port (days)	5D-1	4.3	10.0	10.3	8.5	12.8	18.6	10.6	12.3	19.9%
Average Vessel Time in Port (days) - Waiting	5D-1	1.9	4.8	5.6	5.3	7.0	12.3	5.8	7.4	30.3%
Average Vessel Time in Port (days) - Loading	5D-1	2.4	5.2	4.6	3.3	5.8	6.3	4.7	5.0	7.2%
System Performance										
Total Time in Supply Chain (days)	5E-1	68.1	45.8	43.8	36.5	46.6	50.0	34.2	41.8	-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 6.4% to 52.0 million tonnes, the turnover ratio for the 2019-20 crop year also rose, albeit by a somewhat lesser 3.1%, to 6.6 turns from the 6.4 turns reported a year earlier. This differential was largely attributable to the dampening effect of a further 151,900-tonne expansion in the storage capacity of the primary-elevator system, which has been steadily rising for several years.

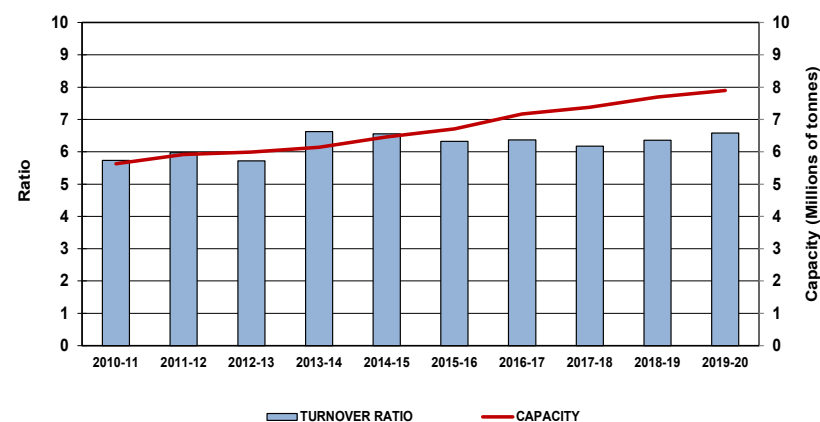
Elevator Inventories

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.

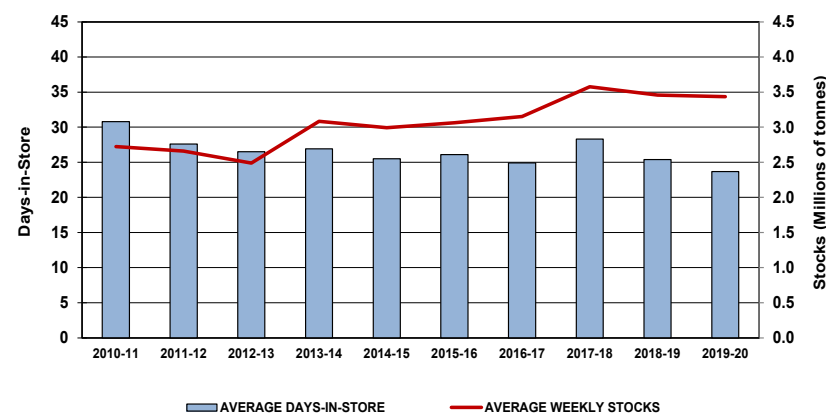
Notwithstanding periodic fluctuations, approximately half of the GHTS's primary elevator storage capacity is employed in maintaining its operational grain inventories. Even as the system's associated storage capacity rose, stocks seldom moved above the 3.0-million-tonne mark until the 2013-14 crop year. 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 2019-20 crop year saw average primary elevator inventories reach above this threshold for a seventh consecutive year, although stocks fell by 0.7%, to 3.4 million tonnes from 3.5 million tonnes a year earlier. The net addition of almost 2.0 million tonnes of storage capacity over this same period also allowed elevator stocks to reach a GMP record of 4.6 million tonnes in March 2020.

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

Primary Elevator Capacity Turnover Ratio



Primary Elevator Inventories



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 2019-20 crop year fell by 6.5%, to 23.7 days from 25.4 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 typically assumed a value around 4.5. In more recent years, however, the average ratio 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 2019-20 crop year conformed with this observation, producing an average ratio that fell by 4.0%, to 3.6 from 3.7 a year earlier. Moreover, this denoted a tie for the 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.

RAILWAY OPERATIONS

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

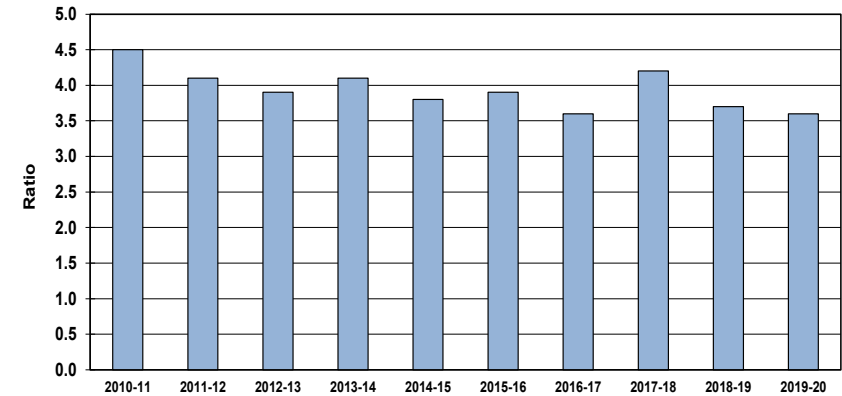
The average amount of time taken by the railways in delivering a load of grain to its destination and then returning the empty railcar back to the prairies for reloading is represented by the average car cycle. Since expansion of the GMP's measures in the 2014-15 crop year, car cycle data are gathered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

Movements to Western Canada

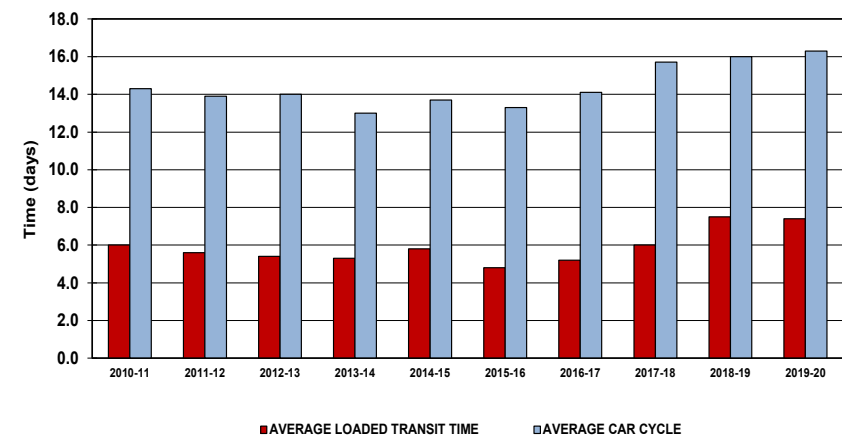
[See Tables 5B-1 through 5B-4]

During the 2019-20 crop year the car cycle for shipments terminating within Western Canada averaged 16.3 days, a 1.8% increase over the 16.0-day average recorded a year earlier. It also denoted a fourth consecutive increase, and the highest annual average recorded since the 2006-07 crop year. The rise was driven primarily by a 1.2% increase in the Vancouver corridor, where the average car cycle climbed to 17.0 days from 16.8 days a year earlier. This was bolstered by an 11.1% increase in the Prince Rupert

Primary Elevators - Stock-to-Shipment Ratio



Railway Car Cycles and Loaded Transit Times (Western Canada)



average, which rose to 18.1 days from 16.2 days. These increases were partially offset by 1.2% decline in the Thunder Bay corridor, which fell to an average of 13.1 days from 13.2 days.

Although much of the overall elongation can be traced to the seasonal increases typically shouldered during winter months, the unanticipated deployment of rotating blockades only aggravated the situation. Even so, the broader upward trend, which has added a full two days to the more typical 14-day average exhibited earlier in the decade, remains worrisome since it suggests - all other variables being equal - that overall railway carrying capacity is being undermined by reduced car velocity.

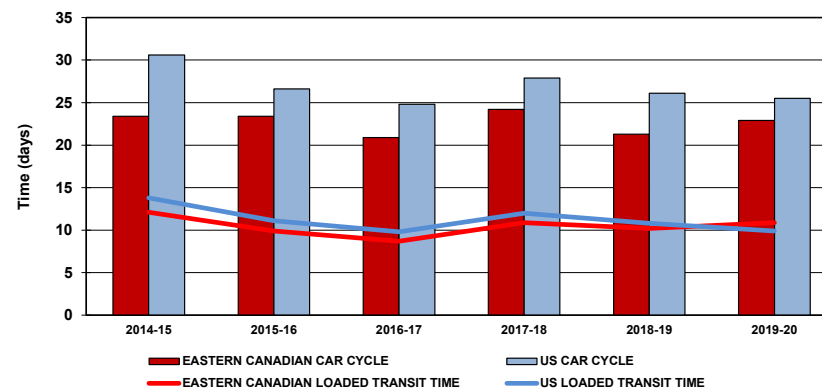
Owing to the heavy weighting of non-special crops in the overall traffic mix, the car cycle for these commodities showed an analogous increase, with the average rising 1.9%, to 15.9 days from 15.6 days a year earlier. Conversely, the car cycle tied to special crops showed a modest reduction, falling by 1.2%, to an average of 19.4 days from 19.7 days. The higher average for special crops still appears linked to the handling traits of these shipments, which tend to move in smaller numbers in 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. However, the 2019-20 crop year saw a marginal reduction in this average, which declined by 0.5%, to 7.4 days from 7.5 days a year earlier. Despite this improvement, the average ranks among the highest values 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 2019-20 crop year, rising marginally to 41.5% from 41.1% 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 rose 7.6% in the 2019-20 crop year, with the average increasing to 22.9 days from 21.3 days a year earlier. A 2.3% decrease was observed on movements into the United States, with the average car cycle falling to 25.5 days from 26.1 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 10.9 days, which represented an increase of 7.1% from the 10.2 days reported a year earlier. Movements into the United States saw a reduction of 8.5%, with the average falling to 9.9 days from

10.8 days. The underlying distributions showed similar patterns, with the coefficient of variation on movements into Eastern Canada standing at 31.8% against 40.6% for those into the United States.

Multiple Car Blocks

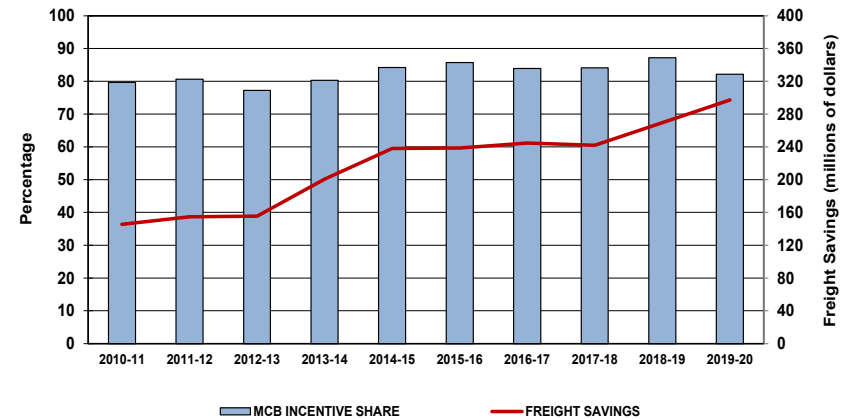
[See Tables 5B-13 through 5B-14]

The amount of railway traffic moving in multiple car blocks has increased substantially over the past two decades. In fact, since the 2013-14 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 2019-20 crop year seeing still greater emphasis placed on larger block movements.

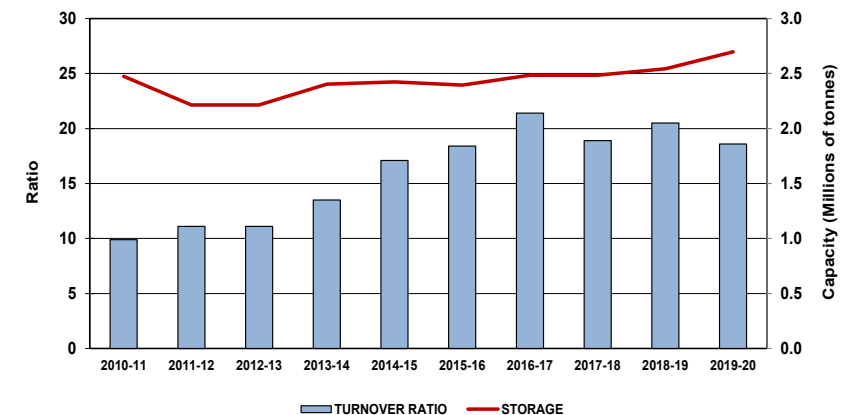
To this end, CP effectively augmented the \$8.00-per-tonne reduction it offered on trainload shipments of 112 or more cars to allow a \$10.00-per-tonne discount on qualifying 8,500-foot High-Efficiency-Product trains. This effectively matched the \$10.00-per-tonne discount that CN had introduced a year earlier for shippers with more efficient loop-track operations. These actions effectively precluded less-than-trainload shippers from receiving any discounts on what had previously been qualifying smaller car-block movements. Owing to these exclusions, the proportion of grain shipped in qualifying multiple car blocks fell to 82.1% from the record 87.2% reached a year earlier.

Even so, the monetary value of the discounts earned by qualifying grain shippers - estimated as gross savings in railway freight charges - moved sharply higher.¹⁵ These savings are estimated to have grown by 10.3% in the 2019-20 crop year, to \$297.2 million from \$269.4 million a year earlier, with the average discount earned rising to an estimated \$8.00 per tonne from \$7.47 per tonne.

MCB Movements and Freight Savings (Western Canada)



Terminal Elevator Capacity Turnover Ratio



¹⁵ Data supplied by CN and CP does not allow for the identification of grain movements earning the maximum \$10.00-per-tonne discounts made available on qualifying trainload shipments. As

a result, the gross savings in railway freight charges estimated here are based on a nominal \$8.00-per-tonne minimum, effectively understating the actual value of these discounts.

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 fell by 9.3%, to an average of 18.6 turns from 20.5 turns a year earlier. This decrease contrasts with the 7.8% gain in terminal-elevator throughput 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, or the storage capacity of, individual facilities. The turnover values tied to some of the smaller terminals at the ports of Vancouver and Thunder Bay can be especially distortionary.

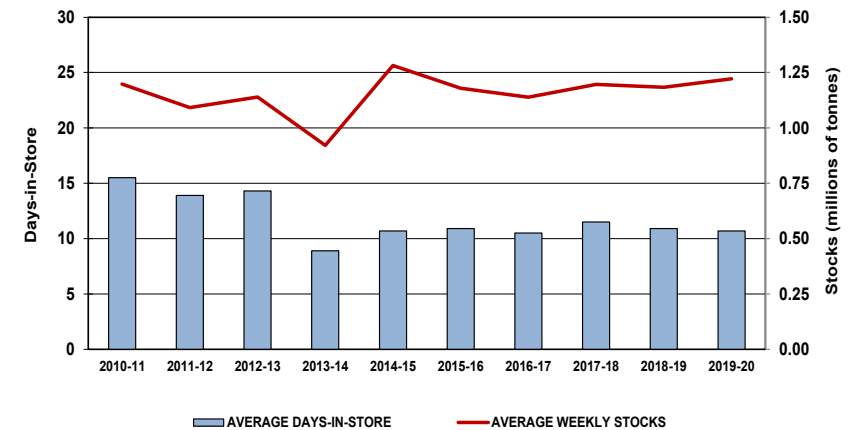
Nevertheless, the GHTS's annual terminal throughput of 40.0 million tonnes now stands almost 70% above the 23.5 million tonnes benchmarked at the beginning of the GMP. The west-coast gateways of Vancouver and Prince Rupert have shouldered much of this additional workload. But even with storage capacity increasing in the wake of recently completed terminal expansion projects, the turnover ratio of 18.6 stands more than two times the 9.1 recorded in the GMP's base year.

Terminal Elevator Inventories

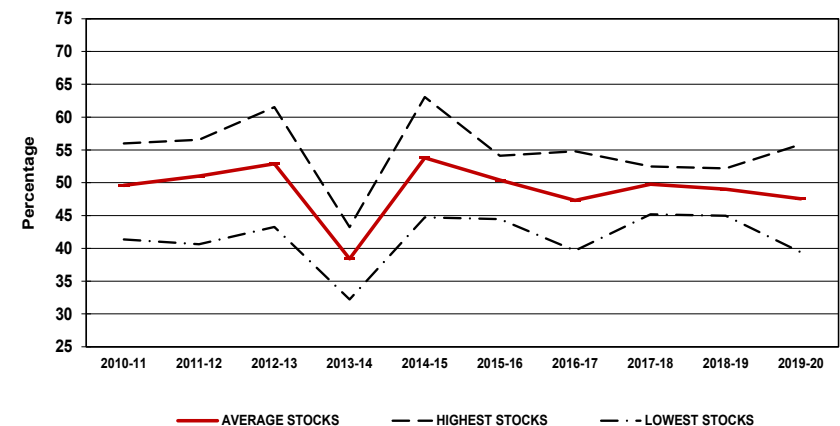
Given that there have been few physical changes to the GHTS's terminal elevator system over the past two decades, grain inventories have not varied substantially since the beginning of the GMP. In fact, average weekly stock levels have tended to fluctuate in a band between 1.0 million tonnes and 1.5 million tonnes. This was again the case in the 2019-20 crop year, with the average weekly stock level rising by 3.3%, but remaining 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

Terminal Elevator Inventories



Terminal Elevator Capacity Utilization



the GHTS. While weekly terminal stocks varied significantly in the 2019-20 crop year, they still averaged 47.6% of the system's stated storage capacity.

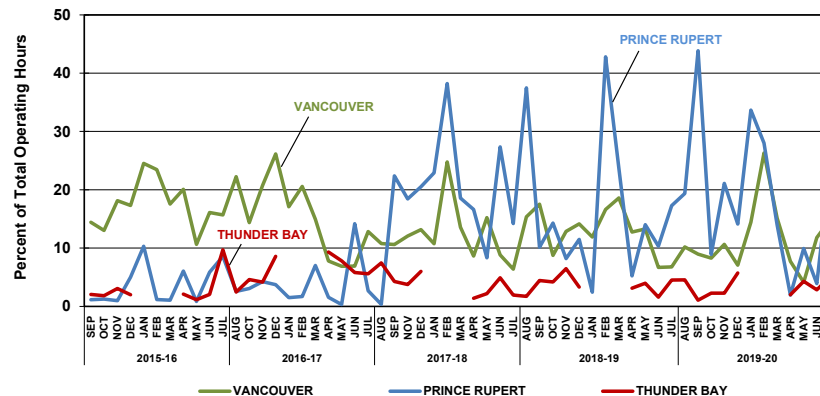
But higher throughput has brought more pressure to bear on the maintenance of adequate terminal stocks. The average stock level now represents about 3% of the system's annual throughput rather than the 5% it did 20 years earlier. This has placed even greater emphasis on just-in-time inventory practices, 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 10.7 days from 18.6 days.

The 2019-20 crop year's average of 10.7 days fell 1.8% from the previous crop year's 10.9-day average. Much of this decrease was shaped by a time reduction at Thunder Bay, which declined by 21.9%, to an average of 15.7 days from 20.1 days a year earlier. Running counter to this were the ports of Vancouver and Prince Rupert, which posted increases of 8.6% and 5.9% respectively, and produced corresponding averages of 8.8 days and 7.2 days.

However, these annual averages disguise some of the most significant monthly swings, among them: Vancouver's increase from an average of 9.1 days in August 2019 to 11.0 days in December 2019 and its later decline to 8.0 days by July 2020. These averages reflect the building of stocks in the face of slower inbound rail movements at the height of winter.

Equally indicative of a buildup in terminal inventories was an apparent increase in many of the grain-specific stock-to-shipment ratios. Although most commodities showed overall averages that stood comfortably above 1.0, all had minimums that fell substantially below this threshold. Moreover, these minimum ratios show that almost every grain was in short supply at various points during the crop year, which suggests that there were problems in getting the right grain in terminal position when needed. This is consistent with anecdotal reports that the inbound rail receipts were often out of the needed sequence, leading to stocking of unwanted grain and incomplete ship-loading.

Terminal Elevator Out-of-Car Time



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 the most difficult operational period of the crop year.

With its greater operating hours, Vancouver's out-of-car time is most indicative of the system's overall efficiency. Proportionately, 11.5% of the port's total terminal operating hours were idled during the 2019-20 crop year, down moderately from the 12.8% recorded in the previous year. Even so, the monthly values showed greater volatility, ranging from a low of 4.1% to a high of 26.3%, with sharp swings among terminals on both the north and south shores. While these gyrations were largely indicative of

the service problems encountered in the 2019-20 crop year, the broader trajectory has been downwards, with the proportion of time idled cut almost in half from the 20.0% recorded six years earlier.

The same cannot be said of Prince Rupert, which has seen a substantial increase in its out-of-car times during this same six-year period. In fact, the port saw its idle-time proportion virtually triple during this period, climbing to 18.0% in the 2019-20 crop year from 6.5%, with a more modest rise from the 16.9% recorded a year earlier.

As was the case with Vancouver, Thunder Bay also saw a reduction in the 2019-20 crop year, with its out-of-car time proportion dropping marginally, to 3.8% from 3.9% 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 an equally irregular pattern.

Taken collectively, terminal elevators were left without grain to unload 10.6% of the time, down moderately from the 11.5% 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. Once again, this is reflective of the difficulties encountered in getting grain into export position during this period.

PORT OPERATIONS

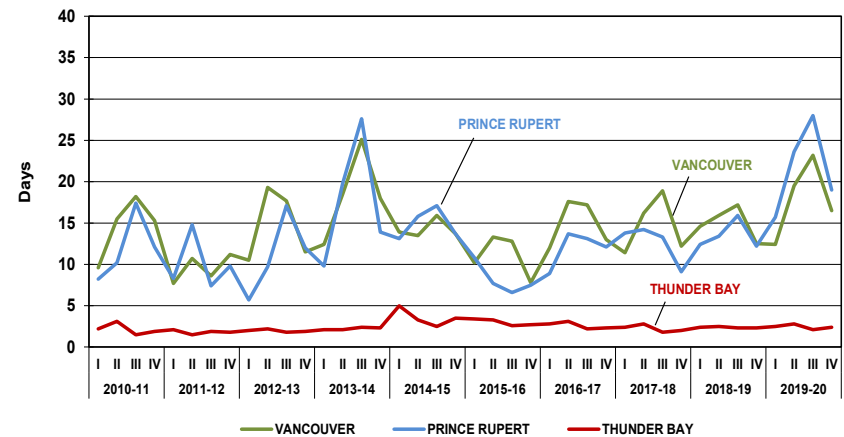
[See TABLES 5D-1 through 5D-8]

A total of 1,032 vessels called for grain at Western Canadian ports during the 2019-20 crop year. This represented a 9.4% increase over the 943 ships that arrived for loading a year earlier. Over half of these, 517, called at Vancouver. This was followed by Thunder Bay with 404, Prince Rupert with 107, and Churchill with four.

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

Vessel Time in Port
(Western Canada)



some underlying impediment. The 2019-20 crop year saw a 19.9% increase in this average, which rose to 12.3 days from 10.3 days a year earlier. This was chiefly due to a 30.3% increase in the amount of time vessels spent waiting to load, which rose to an average of 7.4 days from 5.6 days a year earlier. Adding to this was a 7.2% increase in the amount of time vessels spent loading, which rose to an average of 5.0 days from 4.6 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 19.9%, to 18.0 days from 15.0 days a year earlier. This was accompanied by a 63.1% increase for Prince Rupert, which saw its average climb to 21.9 days from 13.4 days. For Thunder Bay, the gain proved a substantially lesser 2.7%, with the average having risen to 2.5 days from 2.4 days a year earlier. Even Churchill, which entered a second year of operation, recorded an average 17.5-day stay; a 45.8% increase over the previous year's 12.0-day average and 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 reaching a height of 25.9 days in February 2020. This was driven by progressive increases in the amount of time ships spent in the west-coast ports of Vancouver and Prince Rupert, which peaked with averages of 25.0 days and 31.0 days respectively a month later. Undoubtedly, much of the increases cited were attributable to the delays normally tied to winter railway operations but also heightened by the external forces that unexpectedly impeded railway movements across the country beginning in February 2020.

These delays pointed yet again to the critical underpinnings inherent in coordinating the inbound movement of grain by rail with its scheduled outbound movement by ship. While many of the problems encountered in the 2019 crop year were beyond the control of the railways, the poor synchronization of these flows again led to a buildup in waiting vessels, and their disproportionate use of available anchorages.¹⁶ Not only did this necessitate additional pilotage services, it contributed to greater harbour congestion and higher demurrage costs.

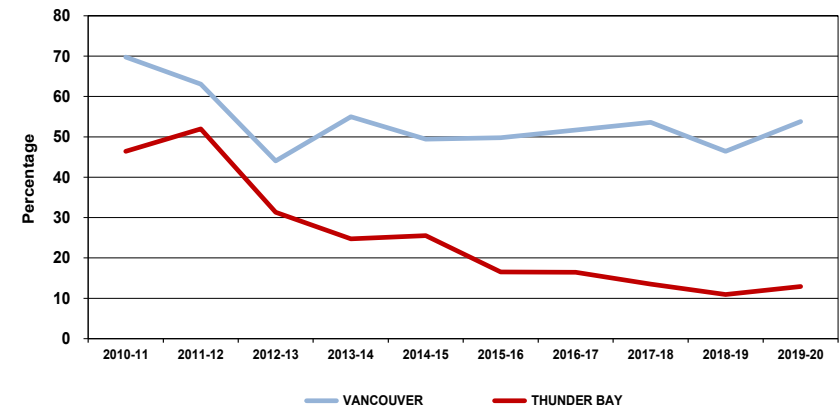
At the same time, the ships calling for grain at west-coast ports have also been getting larger. The aggressive building programs of various ship owners has resulted in newer and bigger vessels displacing the smaller bulk vessels that were more common at the beginning of the GMP. These larger ships, which take on loads of close to 50,000 tonnes, are now the norm at both Vancouver and Prince Rupert, requiring longer loading times in the best of circumstances.

Distribution of Vessel Time in Port

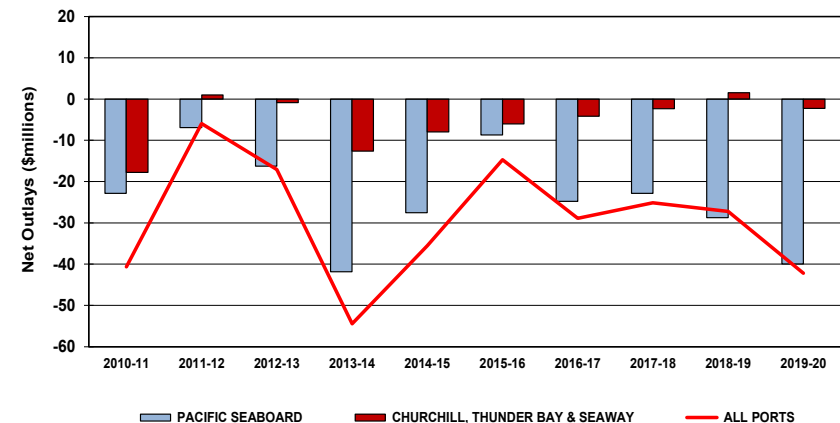
Another impediment to the flow of grain through the terminal network is reflected in the number of ships spending long periods of time in port. The proportion of ships with stays of more than five days rose marginally in the 2019-20 crop year, to 55.7% from 55.0% a year earlier. Moreover, ships in port for an unusually long time remained comparatively high, with the proportion of vessels spending 16 or more days in port increasing to 34.1% from 27.0%. This, however, was more than double the 14.5% level

¹⁶ There have been instances in the last several 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.

Multiple Vessel Berthing Rate



Annual Demurrage and Dispatch



witnessed just five years earlier. With almost all delays tied to ships calling at Vancouver and Prince Rupert, west-coast exports remain the most vulnerable to impediments in the flow of inbound grain by rail.

Distribution of Berths per Vessel

Similarly, there were only modest changes in the proportion of vessels needing to berth more than once during the 2019-20 crop year. At Vancouver, this proportion rose to 53.8% from 46.4% a year earlier. While at Thunder Bay the proportion increased to 12.9% from 10.9%. 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 tenth consecutive year, these two elements dovetailed to produce a net cash outlay for grain handlers. Moreover, while the \$42.2 million paid out in the 2019-20 crop year was 55.0% greater than the previous crop year's \$27.2 million expenditure, it proved second only to the \$54.4 million expended in the 2013-14 crop year. This financial result was shaped chiefly by a 47.7% increase in demurrage costs, which rose to \$52.2 million from \$35.4 million the previous year. Even so, a 23.3% increase in dispatch earnings, which rose to \$10.0 million from \$8.1 million, helped to contain the growth in demurrage costs.¹⁷

These results were chiefly driven by the financial penalties incurred along the Pacific Seaboard, which had a net cash outlay of \$40.0 million against \$28.8 million a year earlier. The results from activity at Churchill, Thunder Bay and points along the St. Lawrence Seaway were less punitive, with increased demurrage costs and higher dispatch earnings producing a net

cash outflow of \$2.3 million against a net cash inflow of \$1.5 million a year earlier.

SYSTEM PERFORMANCE

[See TABLE 5E-1]

Overall GHTS performance can most readily be gauged by the amount of time taken by grain to move through the system. For the 2019-20 crop year, this meant an average of 41.8 days, a 4.5% reduction from the 43.8-day average posted a year earlier. Moreover, this denoted a 38.6% decrease from the 68.1 days benchmarked in the GMP's base year.

Notwithstanding the broader downward trend, which saw a record 40.6-day low reached in the 2016-17 crop year, periodic disruptions to the flow of grain have undermined the supply chain's performance. Although the 41.8-day average posted in the last crop year marks a 3.0% increase from this touchstone value, it still constitutes a full 2.0-day improvement over the 2018-19 crop year's higher 43.8-day average.

This 2.0-day betterment was the product of reductions in each of the three key areas of GHTS activity, with the average amount of time grain spent in inventory at a country elevator decreasing by 1.7 days, the railways' loaded transit time by 0.1 days, and storage time at terminal elevators by 0.2 days. These overall improvements belie the logistical difficulties encountered throughout much of the crop year.

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 85.3 million tonnes, 3.1% more than in the previous crop year. But comparatively poor weather conditions delayed harvesting and the delivery of grain into the country elevator system. Even so, the residual carry-forward stocks from the previous crop year allowed the railways to move 3.1 million tonnes of grain in August 2019. Despite the strong start, by the close of September 2019 total railway shipments were lagging those of the 2018-19 crop year by 4.9%.

¹⁷ 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.

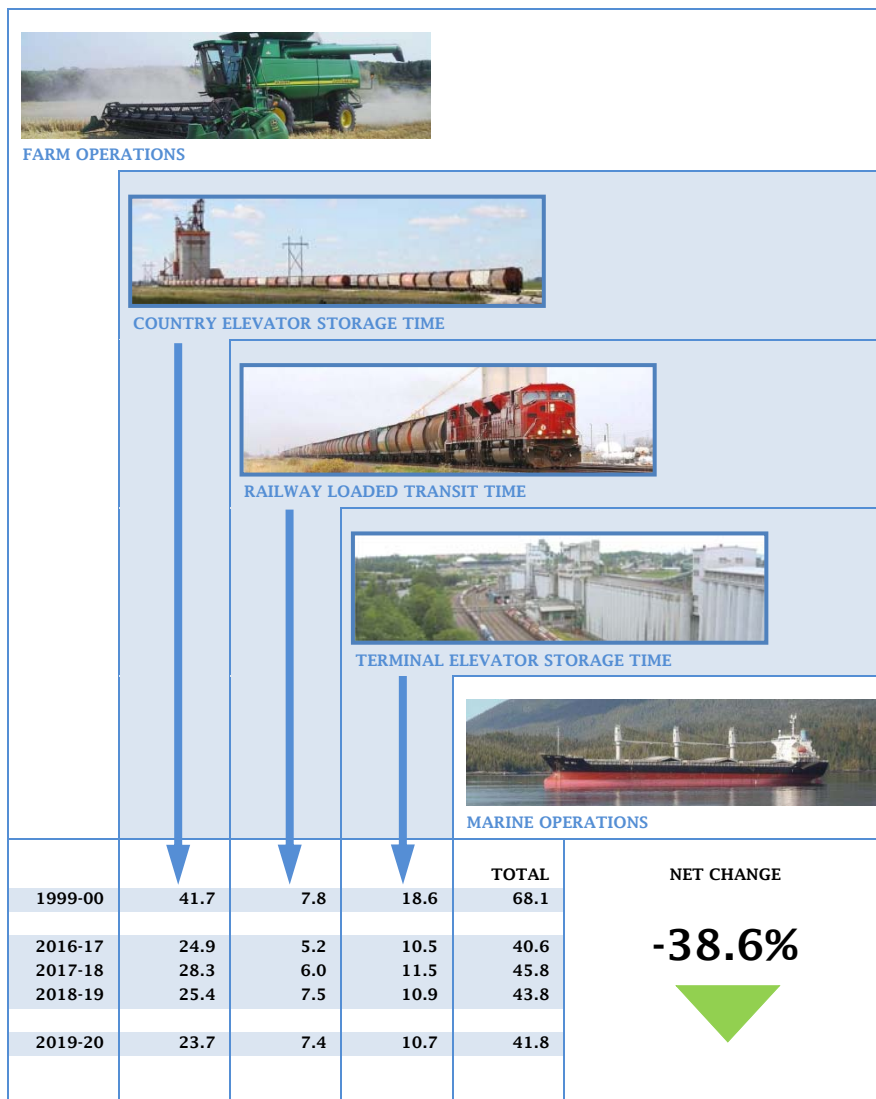
As more grain became available this gap began to narrow, with October shipments surging to a record 5.4 million tonnes. Given the heightened demand for railway carrying capacity, this meant that even more grain would need to be moved in a quickly compressing nine-month window. The competing capacity needs of non-grain shipments again perpetuated the concerns of many stakeholders regarding the sufficiency of railway resources in delivering the accumulating harvest.

It was at about this point that a series of disruptive events began to weigh on the GHTS. The first involved a strike by about 3,200 train and yard workers against CN, which greatly restricted freight operations across the company’s Canadian network in November 2019. The strike’s economic impact was far-reaching and prompted temporary plant closures and employee layoffs throughout much of the country. This curtailed the flow of grain just as the demand for rail transportation was reaching its seasonal height, and delays from winter operations loomed on the horizon. Even so, CN moved quickly to restore service and make up for lost ground once the strike was settled.

These efforts were soon undermined by the effects of heavy rains along CN’s route through the Rockies, which occasioned significant landslides and track washouts in late January and early February 2020. As much of this was centred on its mainline between Kamloops and Hope, British Columbia - a section jointly used by CN and CP for westbound movements under a coproduction agreement - railway service for both carriers in the vital Vancouver corridor were disrupted for several days.

No sooner had railway service been restored when protests led to the erection of barricades along the railways’ right-of-way at various locations throughout Canada, which prompted widespread shutdowns of freight and passenger railway services. Export grain movements suffered alongside other commodities in the face of this reduction in railway service, which led to elevator congestion, deferred producer deliveries, and delays to the shipment of an estimated 5.0 million tonnes of grain. Notwithstanding this, the railways moved quickly to restore service once the blockades were lifted in March, handling near-record volumes in the process, and effectively eliminating the backlog.

Days Spent Moving Through the GHTS Supply Chain



While still grappling with the aftereffects of the blockades that had disrupted railway service for close to six weeks, the GHTS found itself caught up in the throes of the global COVID-19 pandemic. Unlike other sectors of the Canadian economy, much of the impact proved beneficial, with an attendant decline in overall railway traffic volumes freeing enough capacity to ensure the uninterrupted flow of grain to export positions. In fact, this additional handling capacity facilitated the setting of several new monthly grain-shipment records by CN and CP in the second half of the 2019-20 crop year, which spurred the GHTS's overall handlings to an all-time best of 58.6 million tonnes.

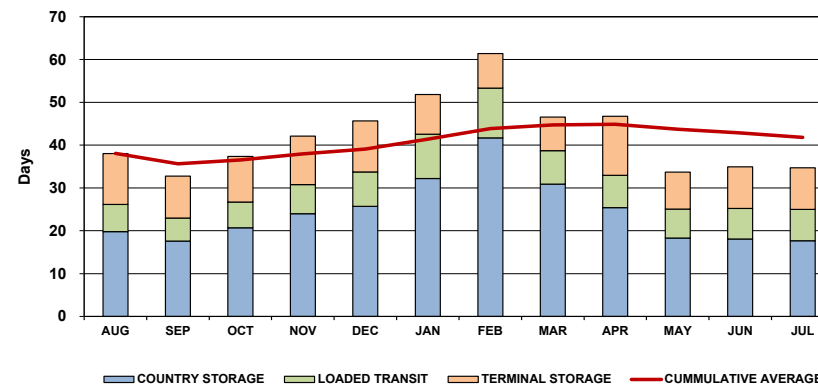
The drag imposed on GHTS performance by these events were mirrored in the steadily rising average amount of time needed for grain to move through the system. From a low of 35.7 days in September 2019 this average moved progressively higher, attaining a height of 61.4 days in February 2020; a value seldom reached in the preceding decade. Much of the additional time requirement was tied to a near-record aging of stocks in the country, which were backlogged in the face of curbed railway capacity and rose to a height of 41.7 days in February 2020.

This was similarly reflected in an elongation of the railways' average loaded-transit and car-cycle times. At its peak in February 2020, the average loaded transit time on grain movements to Western Canadian ports had risen to 11.6 days, 24.7% above the 9.3-day high posted in the same month a year earlier. Correspondingly, the railways' average car cycle reached a near-record height of 21.6 days.

The downstream effects inherent in these delays 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 significant port congestion and a virtual doubling of the time vessels spent in port.

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 have made noteworthy strides along all three fronts in the last two crop years. This became evident during the latter four months of

Time in the System



the crop year when the railways expedited the movement of roughly 4.3 million tonnes each month. To an extent, this was because of a slump in traffic occasioned by the COVID-19 pandemic, which freed railway capacity. But the railways efforts to add capacity and provide greater resiliency to their operations, not the least of which involved orders for 8,400 new, high-capacity hopper cars, was also a factor. The ongoing 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 figured significantly in the movement of record volumes in the latter months of the crop year.

Section 6: Producer Impact

Indicator Description	Table	1999-00	2017-18	2018-19	2019-20				YTD	% VAR
					Q1	Q2	Q3	Q4		
Export Basis										
ICWRS Wheat (\$ per tonne) - Original Methodology	6A-10A	\$54.58	n/a	n/a						
ICWRS Wheat (\$ per tonne) - Revised Methodology (1)	6A-10A	n/a	\$91.50	\$92.51					\$92.29	-0.2%
ICWA Durum (\$ per tonne) - Original Methodology	6A-10B	\$67.63	n/a	n/a						
ICWA Durum (\$ per tonne) - Revised Methodology (1)	6A-10B	n/a	\$112.88	\$109.99					\$117.46	6.8%
1 Canada Canola (\$ per tonne)	6A-10C	\$52.51	\$63.10	\$61.33					\$50.79	-17.2%
Canadian Large Yellow Peas - No. 2 or Better (\$ per tonne)	6A-10D	\$54.76	\$63.47	\$60.35					\$62.11	2.9%
Producer Cars										
Producer-Car-Loading Sites (number) - Class 1 Carriers	6B-1	416	142	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	272	272	272	272	272	272	272	0.0%
Producer-Cars Scheduled (number) - Covered Hopper Cars	6B-2	3,441	3,778	2,726	660	690	830	591	2,771	1.7%

(1) The methodology used to calculate the export basis in the 2012-13 through 2019-20 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.¹⁸ 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.

¹⁸ 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.
<p>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.</p> <p>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).</p> <p>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.</p>		

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.

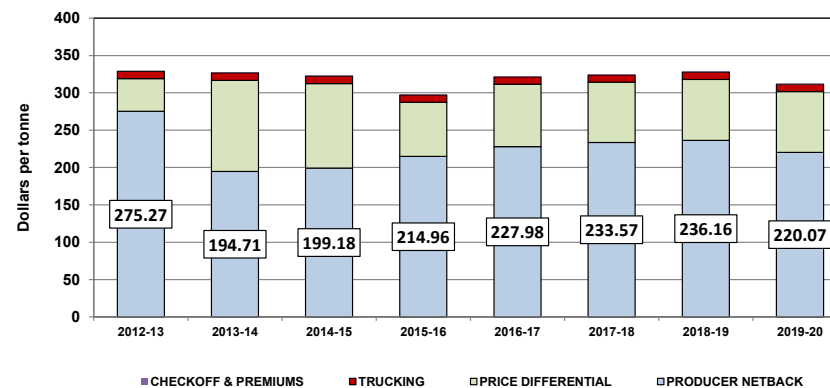
1CWRS Wheat

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

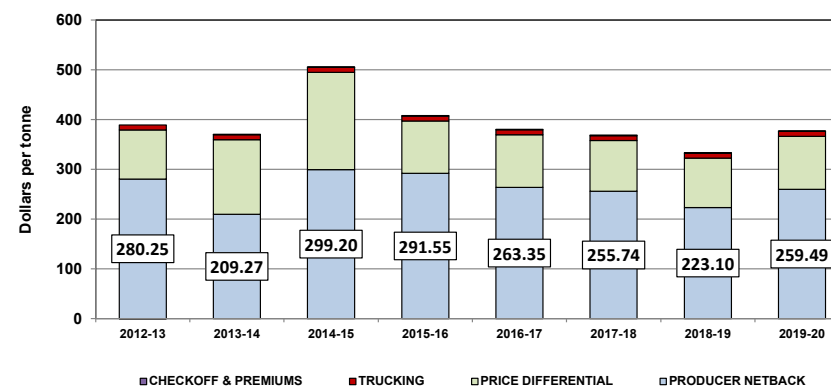
The financial return to farmers of 1CWRS wheat amounted to an estimated \$220.07 per tonne in the 2019-20 crop year. This represented a 6.8% decline from the \$236.16 estimated a year earlier. Much of the reduction was attributable to a decrease in the average price, which is constructed around a tonnage-based weighted average export quotation for 1CWRS wheat (13.5% protein), and which fell by 5.0%, to \$312.36 per tonne from \$328.67 per tonne a year earlier. Supported by the weak Canadian dollar, this modest decrease reflected the continuing oversupply of high-quality wheat in global markets.

The \$16.31-per-tonne decrease in wheat prices was marginally offset by a \$0.22-per-tonne decrease in the export basis, which fell by 0.2%, to \$92.29 per tonne from \$92.51 per tonne a year earlier. Much of this decline was attributable to a narrowing of the price differential - or spread - between the export quotation and the elevator spot price, which fell 0.3%, to \$81.48 per tonne from \$81.73 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 assumed trucking charges of \$9.82 per tonne and check-offs of \$1.03 per tonne remaining unchanged, the only other contributors to the change in the export basis came from a \$0.03-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 \$259.49 per tonne in the 2019-20 crop year. This represented 16.3% more than the \$223.10 per tonne reported in the 2018-19 crop year. The gain was driven primarily by higher durum prices, which rose to an average of \$376.95 per tonne, 13.2% above the \$333.09-per-tonne average recorded a year earlier. Much of this price gain stemmed from reduced global production, which helped draw down burdensome inventories to the lowest level witnessed in over a decade.

The full effect of the price gain was blunted by an increase in the export basis, which rose by 6.8%, to \$117.46 per tonne from \$109.99 per tonne. Virtually all this \$7.47 increase was attributable to a \$7.41 rise in the price differential, which climbed to \$106.66 per tonne from \$99.25 per tonne a year earlier. As outlined with respect to 1CWRS wheat, the assumed \$9.82-per-tonne trucking cost did not change in the 2019-20 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 \$0.06-per-tonne decline in the trucking premiums paid to producers marginally curbed the improvement in the producer netback.

CANOLA AND YELLOW PEAS

[See TABLES 6A-1C through 6A-10D]

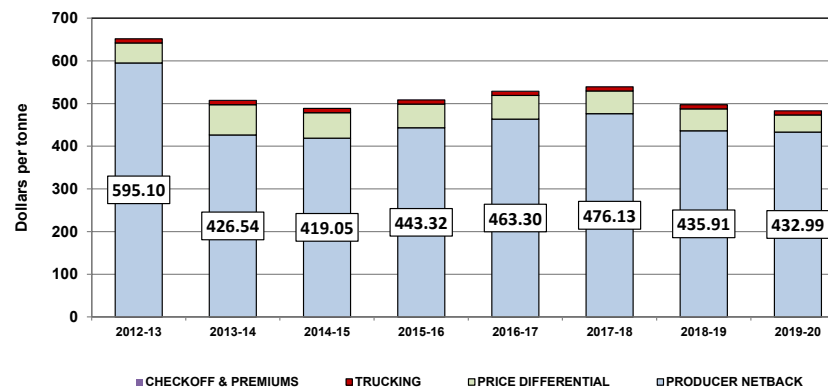
Like wheat and durum, the data used in calculating the financial return to producers of canola and large yellow peas shows that they have also been heavily influenced by the prevailing prices for these commodities. While the export basis has also risen over time, it has proven to have far less sway over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

1 Canada Canola

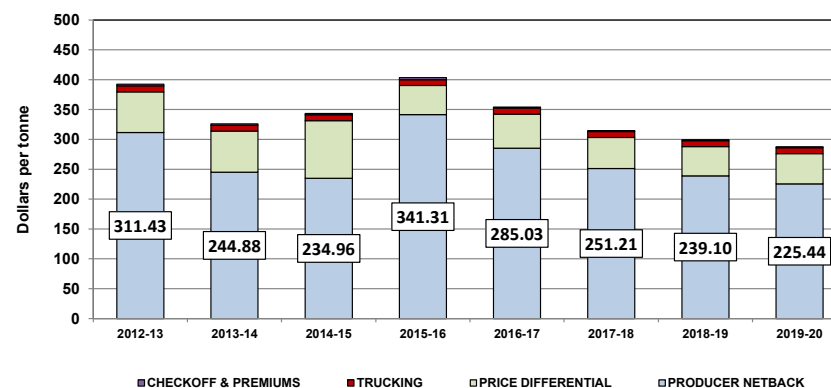
[See Tables 6A-1C through 6A-10C]

The netback to producers of 1 Canada canola decreased by 0.7% in the 2019-20 crop year, falling to \$432.99 per tonne from \$435.91 per tonne a year earlier. This result was driven mostly by lower canola prices, with the average Vancouver cash price slipping 2.7%, to \$483.78 per tonne from \$497.24 per tonne. The decline largely reflected the continuing difficulties

Producer Netback - 1 Canada Canola



Producer Netback - Large Yellow Peas



in the international trade of canola and soybeans with China. However, gains in other markets, especially Europe and the United Arab Emirates, helped support prices from slipping further.

This decline was softened by a 17.2% reduction in the export basis, which fell to an average of \$50.79 per tonne from \$61.33 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 \$40.10 per tonne from \$51.57 per tonne a year earlier. Since the assumed costs of trucking along with check-off payments did not change in the 2019-20 crop year, they did not contribute to the variance in the producer netback. These were estimated at \$9.82 per tonne and \$0.92 per tonne respectively. However, a \$0.93-per-tonne decrease in the trucking premiums paid to producers served to partially offset the broader decline in the export basis.

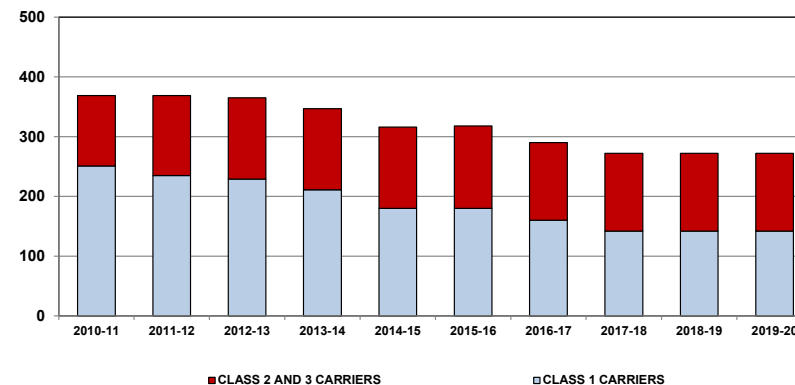
Large Yellow Peas

[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 a 5.7% decline in these returns during the 2019-20 crop year, which fell to \$225.44 per tonne from \$239.10 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 two years earlier. As a result, the dealer's closing price fell by 4.0%, to \$287.55 per tonne from \$299.45 per tonne.

The export basis for large yellow peas rose by 2.9% in the 2019-20 crop year, to \$62.11 per tonne from \$60.35 per tonne a year earlier. As with other commodities, much of the increase was rooted in a higher price differential, which stands in for the cost of freight as well as other handling activities, and which rose by 3.8%, to \$50.72 per tonne from \$48.86 per tonne. This was partially offset by a \$0.09-per-tonne reduction in Pulse Growers Association fees along with a \$0.01 increase in trucking premiums. Since assumed 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 2019-20 crop year proved to be the third consecutive year in which the overall number remained unchanged

at 272, with Class 1 carriers operating 142, while Class 2 and 3 carriers operated 130.

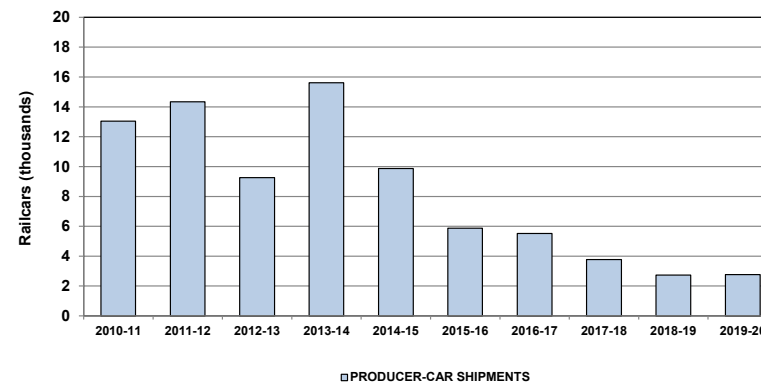
Producer-Car Shipments

[See Table 6B-2]

Producer-car shipments rose by a modest 1.7% in the 2019-20 crop year, to 2,771 cars from 2,726 a year earlier. Notwithstanding this recent uptick, scheduled producer-car shipments have fallen by more than 80% since reaching a high of 15,603 carloads in the 2013-14 crop year. 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. With the close of the 2019-20 crop year the share given over to wheat, durum and barley had fallen to an estimated 30.3%, up moderately from the 24.6% share estimated a year earlier. Conversely, shipments of oilseeds, special crops and oats increased, claiming a 69.7% share, down from 75.4% the previous year. This marked the fifth 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.

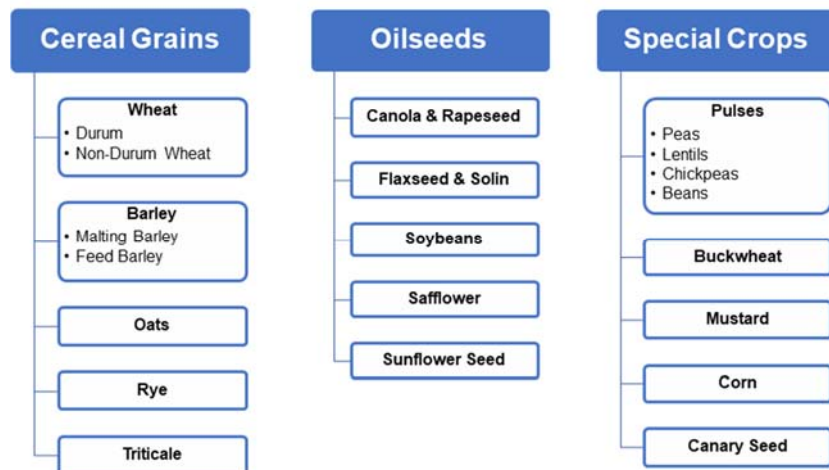
In a larger sense, these reforms were expected to alter the commercial relations that traditionally existed between the primary participants in the GHTS: producers; the Canadian Wheat Board; grain companies; railway companies; and port terminal operators. Using a broad series of indicators, the government's Grain Monitoring Program (GMP) was designed to measure the performance of the GHTS as this evolution unfolded. Moreover, these indicators were 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	Cereals Canada	Port of Hamilton
Agriculture and Agri-Food Canada	Ceres Global Ag Corp.	Port of Montreal
AGT Food and Ingredients	Chamber of Shipping of British Columbia	Port of Thunder Bay
Alberta Agriculture and Forestry	CMI Terminal Ltd.	Prairie Oat Growers Association
Alberta Barley Commission	Fibreco Export Inc.	Prince Rupert Grain Ltd.
Alberta Federation of Agriculture	G3 Canada Limited	Prince Rupert Port Authority
Alberta Transportation	Government of British Columbia	Pulse Canada
Alberta Wheat Commission	Grain Growers of Canada	Railway Association of Canada
Alliance Grain Terminal Ltd.	GrainsConnect Canada	Red Coat Road and Rail Ltd.
Archer Daniels Midland Co.	Great Western Railway Ltd.	Richardson Pioneer Ltd.
Battle River Railway	Inland Terminal Association of Canada	St. Lawrence Seaway Management Corporation
BC Chamber of Shipping	Intercontinental Exchange / ICE	Saskatchewan Agriculture
BC Maritime Employers Association	Keystone Agricultural Producers	Saskatchewan Highways and Infrastructure
Boundary Trail Railway Company Inc.	Lake Line Railroad Inc.	Saskatchewan Association of Rural Municipalities
Canada Grains Council	Long Creek Railroad	Saskatchewan Barley Development Commission
Canadian Canola Growers Association	Louis Dreyfus Canada Ltd.	Saskatchewan Wheat Development Commission
Canadian Federation of Agriculture	Manitoba Agriculture, Food and Rural Development	South West Terminal
Canadian Grain Commission	Manitoba Infrastructure and Transportation	Statistics Canada
Canadian Maritime Chamber of Commerce	Manitoba Wheat and Barley Growers Association	Stewart Southern Railway
Canadian National Railway	National Farmers Union	The Scouler Company
Canadian Pacific Railway	North West Terminal Ltd.	Transport Canada
Canadian Ship Owners Association	Northern Lights Rail	Vancouver Fraser Port Corporation
Canadian Special Crops Association	OmniTRAX Canada, Inc.	Viterra Inc.
Canadian Transportation Agency	Parrish & Heimbecker Ltd.	Western Barley Growers Association
Canadian Transportation Research Forum	Pacific Pilotage Authority	Western Canadian Short Line Railway Association
Cando Contracting Ltd.	Paterson Grain	Western Canadian Wheat Growers Association
Canola Council of Canada	PKM Canada Marine Terminal Limited Partnership	Western Grain Elevator Association
Cargill Limited	Port of Churchill	