Annual Report

2020-2021 Crop Year

Monitoring the Canadian Grain Handling and Transportation System

Government of Canada / Gouvernement du Canada

Quorum Corporation

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

Cover Image: An aerial view of Paterson Grain's Foothills Terminal, located just outside of Bowden, Alberta. Officially opened in August 2018, this 64,000-tonne inland terminal became the fourth high-efficiency facility constructed in Alberta by the company. The facility, which features a loop track allowing for the loading of a 150-car unit train, was also the first in the province to originate an 8,500-foot train for movement to Vancouver under the Canadian Pacific Railway's newly initiated High-Efficiency-Product train program. Trains from such facilities figured significantly in the carrier's ability to transport more grain to export position in the 2020-21 crop year. (Image courtesy of Canadian Pacific Railway)

Foreword

The following report details the performance of Canada's Grain Handling and Transportation System (GHTS) for the crop year that ended 31 July 2021, and focuses on the various events, issues and trends manifest in the movement of Western Canadian grain during the past year. This is the twenty-first 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 2020-21 crop year is largely gauged against that of the 2019-20 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 22 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 2022

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Executive Summary

From the outset of the 2020-21 crop year, it was apparent that the Grain Handling and Transportation System (GHTS) would again be required to handle the output of another banner year. Not only did the total grain supply reach a record 86.9 million tonnes, 1.5% more than in the previous crop year, but an early harvest allowed comparatively more grain to begin entering the country elevator system in August 2020. This frontloading of the crop foreshadowed what would be a heavier-than-normal workload right through to the end of the third quarter, before trailing off sharply in the fourth quarter. Despite the dampening impact of the fourth quarter's downturn on GHTS performance, Western Canadian producers ultimately delivered a record 64.5 million tonnes of grain for movement. The sheer volume of these deliveries, however, consistently exceeded the carrying capacity supplied by the railways, resulting in a pent-up demand that led to a progressive buildup in country-elevator inventories.

Western Canadian grain required an average of 42.2 days to move through the GHTS in the 2020-21 crop year. This proved to be 0.8% more than the 41.8-day average reported a year earlier. The 0.4-day worsening was largely the product of a 1.7-day increase in country-elevator storage time. This increase, however, was partially offset by a 0.4-day reduction in the railways' loaded transit time, along with a 0.9-day decline in terminal-elevator storage time. Even so, the net increase belies what amounted to generally good system performance throughout much of the crop year.

The stresses imposed on the GHTS would have been even greater if the railways had not been able to meet at least a portion of the additional demand for carrying capacity. Although more equipment and crews were deployed to handle much of the additional volume, the railways were not able to meet all the car-orders put forward, typically supplying better than 80% of what had been sought. Still, railway movements within Western Canada surpassed 4.0 million tonnes in August 2020, jumping 23.4% from that moved a year earlier. This presaged the traffic gains that would continue to be registered until a fourth-quarter downturn in demand and volume.

Much of the initial increase in carrying capacity came from the railways' injection of additional equipment, which jumped to an average of 22,809 serviceable hopper cars in the first quarter, a 20.5% gain over the 18,931 supplied in the same period a year earlier. This was bolstered by a general narrowing of the railways' average loaded-transit and car-cycle times, which by the close of April 2021 had fallen 7.1% and 10.6% respectively. Much of this improvement reflected the efficiencies being gleaned from servicing more loop-track facilities. Shipments from these facilities were estimated to account for almost one-fifth of the total in the 2020-21 crop year. Moreover, the average loaded-transit and car-cycle times associated with these movements proved significantly better than those from non-loop-track facilities, with advantages of up to four and six days respectively. To an extent, the lingering effects of the COVID-19 pandemic also had a beneficial impact on capacity as the attendant reduction in non-grain traffic continued to favour the movement of grain. All of this figured into the railways' ability to transport a record amount of grain to awaiting terminals.

Notwithstanding seasonal influences, the pace at which grain moved through the GHTS during the first nine months of the 2020-21 crop year rivaled some of the best monthly performance measures on record, frequently amounting to less than 40 days. By this point

a record 40.9 million tonnes had already been shipped by rail, a full 20% beyond that handled a year earlier. Moreover, the railways were beginning to eat into the existing traffic backlog owing to declining year-end producer deliveries. However, this decline also prompted the railways to store more of their hopper-car fleet in the fourth quarter, constricting capacity and elongating in-system times in the process. The situation was aggravated still further when wildfires around Lytton, British Columbia, led to lengthy service disruptions in July 2021. Even so, grain never required more than 50 days to move through the supply chain, a feat not seen since the 2016-17 crop year.

The larger movement of grain was reflected in the heightened activity of the terminal elevators as well, which loaded a record 44.7 million tonnes into the holds of 1,110 ships, turning out an average of three vessels per day for the first time in GMP history. In equal measure, grain spent an average of just 9.8 days in terminal inventory, the lowest recorded in the last seven crop years. The faster flow was manifest in ships that spent less time in port – an average of 10.6 days compared to 12.3 days a year earlier – which helped in the easing of port congestion.

HIGHLIGHTS FOR THE 2020-2021 CROP YEAR

(Comparisons are to the previous crop year)

Production and Supply

- Grain production increased 4.2% to 78.5 million tonnes; the largest crop recorded under the GMP.
    - Cereals comprised 60.4% of the crop; oilseeds 27.0%; and other commodities 12.5%.
    - Favourable weather conditions led to the early harvesting of a generally good-quality crop.
- Carry-forward stocks decreased 17.8% to 8.4 million tonnes.
- Carry-out stocks decreased 15.7% to 7.1 million tonnes.
- Total grain supply (production and carry-forward) increased 1.5% to 86.9 million tonnes, the largest on record.

Traffic and Movement

- Primary-elevator throughput increased by 3.6%, to 53.9 million tonnes, the largest on record.
    - Represented 83.6% of all producer deliveries (primary and process elevators, as well as producer cars).
- Railway shipments increased 5.2% to 61.6 million tonnes, a GMP record.
    - Traffic to Western Canada totaled 50.6 million tonnes, up 6.6%.
    - Traffic to Eastern Canada totaled 4.0 million tonnes, up 5.0%.
    - Traffic to the United States and Mexico totaled 6.9 million tonnes, down 4.3%.
- Terminal-elevator throughput increased 11.8% to 44.7 million tonnes, a GMP record.
    - Terminal unloads totaled 457,559 cars, up 9.4%.
    - CN/CP traffic shares widen to 47.0% and 53.0% respectively.
- Containerized traffic decreased 13.6% to 5.6 million tonnes due to reduced equipment-supply.
- Truck traffic to the United States increased 9.3% to 2.3 million tonnes.

HIGHLIGHTS FOR THE 2020-2021 CROP YEAR (continued)

(Comparisons are to the previous crop year)

Infrastructure

- The number of country elevators increased 2.2% to 411.
  - Reflected the licensing of 44 facilities along with the closure of 35 others.
  - Nine new or retrofitted loop-track elevators became operational.
    - Loop-track elevators totaled 34 at the end of the crop year.
  - Storage capacity increased 4.4% to 9.3 million tonnes, a GMP record.
- The railway network remained unchanged at 17,265.7 route-miles.
  - CN and CP operated 84.5% of the network.
  - Regional and shortline carriers operated 15.5% of the network.
- The railways' hopper-car fleet decreased by 2.7% to an annualized average of 25,679 cars.
  - Marks first decline in three years.
  - Proportion of cars in active service reached a height of 94.0% in October 2020.
- Terminal elevators increased by 5.9% to 18.
  - Reflects official opening of Fraser Grain Terminal; precedes planned closure of Parrish & Heimbecker facility.
  - Storage capacity increased by 2.7% to 2.8 million tonnes.

Commercial Relations

- Country elevator handling charges saw mixed changes.
  - Elevation rates decreased 0.1%; dockage rates decreased 0.4%; and storage rates increased 9.1%.
- Railway freight rates showed continuing cyclicality, with net changes as at 31 July 2021:
  - CN rates to Vancouver decreased 9.3%; Prince Rupert rates decreased 9.3%; and Thunder Bay rates decreased 14.4%.
  - CP rates to Vancouver increased 1.6%; and Thunder Bay rates increased 1.9%.
  - Multiple-car block discounts were unchanged.
    - CN and CP now only provide discounts on movements in blocks of 100 or more cars.
  - Maximum Revenue Entitlements:
    - CN exceeds its MRE by $2.4 million.
    - CP falls short of its MRE by $20.2 million.
- Terminal Country elevator handling charges moved higher.
  - Elevation rates increased 5.0%; and storage rates increased 0.1%.
- Commercial Developments:
  - G3 Terminal Vancouver opening induces faster car cycles.
  - Container supply seriously constricted as global supply chains adjust to COVID-19 traffic surge.
  - Roquette opens pea-processing facility in Portage la Prairie.
  - Churchill ownership changes, closes for extensive rehabilitation of the rail line.
  - British Columbia wildfires disrupt railway service.
  - Canola crushing capacity to expand with four investment projects.

HIGHLIGHTS FOR THE 2020-2021 CROP YEAR (continued)

(Comparisons are to the previous crop year)

System Efficiency and Performance

- Country elevator operations reflect heightened activity.
  - Capacity turnover ratio decreased 1.5% to 6.5 turns; reflected 374,900-tonne increase in storage capacity.
  - Average weekly stocks increased 12.1% to 3.8 million tonnes; reached record high of 4.6 million tonnes in March 2021.
  - Average days-in-store increased 7.0% to 25.4 days; reflected buildup in stocks through third quarter.
  - Stock-to-shipment ratio increased 4.7% to 3.7; reflected continuing maintenance of tighter grain stocks.
- Railway operations show strong performance through first three quarters before fourth-quarter downturn in traffic.
  - Average car-cycle to Western Canada decreased 6.2% to 15.3 days; average loaded transit time decreased 6.2% to 7.0 days.
  - Average car-cycle to Eastern Canada decreased 4.1% to 22.0 days; average loaded transit time decreased 1.4% to 10.8 days.
  - Average car-cycle to United States increased 2.6% to 26.2 days; average loaded transit time increased 8.1% to 10.7 days.
  - Multiple-car block movement share in Western Canada increased to 84.1% from 82.1%.
    - Annual freight savings increased 9.6% to an estimated $325.8 million.
- Terminal Elevator operations reflect heightened activity.
  - Capacity turnover ratio decreased 5.4% to 17.6 turns; reflected 255,000-tonne increase in storage capacity.
  - Average weekly stocks increased 3.5% to 1.3 million tonnes.
  - Average days-in-store decreased 8.4% to 9.8 days; reflected effects of record volume.
  - Out-of-car time increased to 12.8% from 12.6%, but continued to show high variability owing to uneven railway grain deliveries.

System Efficiency and Performance (continued)

- Port operations
  - Vessels calls increased 7.6% to 1,110 ships.
  - Average vessel time in port decreased 13.8% to 10.6 days in the face of better railway grain deliveries.
  - Net outlay for delayed vessels decreased 35.7% to $27.1 million.
    - Demurrage costs decreased 16.1% to $43.8 million; dispatch earnings increased 66.2% to $16.7 million.
- System performance
  - Average time spent in the system increased 0.8% to 42.2 days.
    - Reflected buildup and aging of country-elevator stocks in the face of record grain deliveries.

Producer Impact

- Producer Netback
  - 1CWRS wheat: Average price increased 16.6%; export basis increased 9.9%; netback increased 19.4% to $262.69 per tonne.
  - 1CWA durum: Average price increased 6.3%; export basis decreased 9.8%; netback increased 13.5% to $294.63 per tonne.
  - 1 Canada canola: Average price increased 51.0%; export basis increased 7.8%; netback increased 56.0% to $675.56 per tonne.
  - Large yellow peas: Average price increased 18.3%; export basis decreased 37.1%; netback increased 33.6% to $301.09 per tonne.
- Producer cars
  - Producer-car loading sites remained unchanged at 272.
  - Scheduled producer-car shipments decreased 1.3% to 2,734 carloads.
    - Second lowest volume recorded under the GMP.

Section 1: Production and Supply

Indicator Description	Table	1999-00	2018-19	2019-20	2020-21 Q1	Q2	Q3	Q4	YTD	% VAR
Western Canada Production and Supply										
Crop Production (000 tonnes)	1A-1	55,141.7	72,356.0	75,395.3	78,527.7				78,527.7	4.2%
Carry Forward Stock (000 tonnes)	1A-2	7,418.2	10,329.6	10,196.5	8,378.6				8,378.6	-17.8%
Grain Supply (000 tonnes)		62,559.9	82,685.6	85,591.8	86,906.3				86,906.3	1.5%
Crop Production (000 tonnes) – Special Crops	1A-3	3,936.7	6,725.8	7,511.7	8,420.0				8,420.0	12.1%

DISCUSSION AND ANALYSIS

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

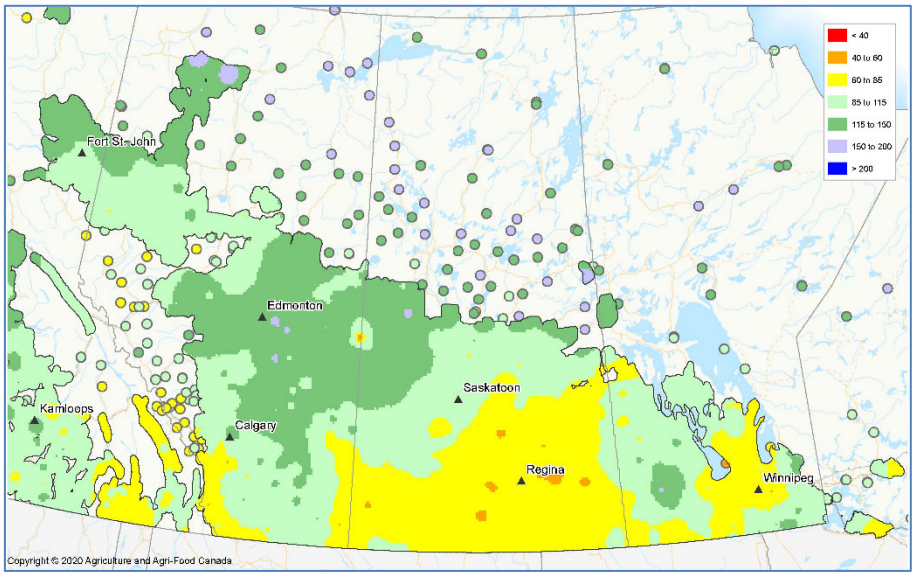
Western Canadian grain production rose to a record 78.5 million tonnes in the 2020-21 crop year, a 4.2% increase over the previous crop year's 75.4 million-tonne crop. This also denoted the second consecutive growing season in which total production exceeded 75 million tonnes.

The 2020 growing season began with the need to gather up over four million acres of crops that had been left to winter in the field since the autumn of 2019. Yet the snow and rain that had forced this harvesting delay also led to generally excellent spring sowing conditions across much of the Prairies. Soil moisture proved good except in some of the more southern growing areas, which permitted seeding to progress in a fairly timely manner. Conditions became more mixed as the growing season progressed, with limited rains through mid-June spurring moisture concerns across much of Saskatchewan and Manitoba. Fortunately, the arrival of rain later in June brought relief to most affected areas. Favourable summer growing conditions led to good crop development and generally optimistic crop projections.

A late-August heat wave sped crop maturity as the harvest got underway but was soon undermined by cool wet conditions, including frost across a wide swath of the Prairies in early September. The last half of September brought a substantial improvement in weather, which allowed the fall harvest to progress largely unimpeded, with many producers able to bin their crops relatively early. Although conditions varied widely throughout the growing season, the crop yields reported in most areas proved excellent, with generally good quality profiles.

Manitoba realized the largest increase in grain production, with a gain of 8.5%. This was followed by lesser expansions of 6.2% in Alberta, and 1.8% in Saskatchewan. British Columbia was the only province to post a reduction, with production decreasing by 25.0%. However, these variances did little to change the ranking of the provinces themselves. Saskatchewan remained the largest grain producer with 39.8 million tonnes harvested, or

Percent of Average Precipitation (1 April to 31 August 2020)



a 50.7% share. This was followed in turn by Alberta with 25.1 million tonnes, or 31.9%; Manitoba with 13.3 million tonnes, or 17.0%; and British Columbia with 277,900 tonnes, or 0.4%.

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 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 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 determinants.

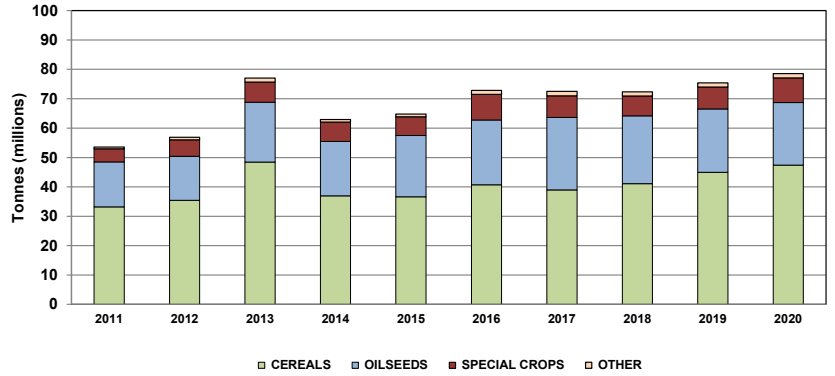
At the outset of the GMP, cereals constituted about three-quarters of all grains grown in Western Canada. Since the 2014-15 crop year, however, these same commodities have generally accounted for under 60% of the total tonnes harvested. The 2020-21 crop year denoted the first in which the share for cereals again rose above this mark, to reach 60.4%. Even so, current cereal production, which totaled 47.4 million tonnes, differs only moderately 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 27.0% and 12.5% 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 21.2 million tonnes in the 2020-21 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 8.4 million tonnes from 3.9 million tonnes during the same period.

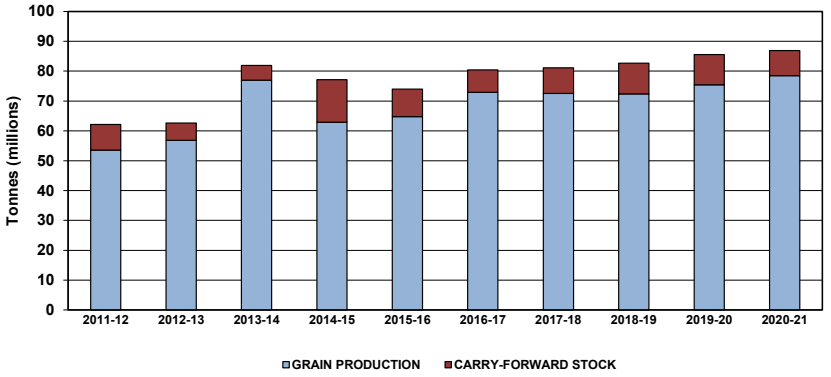
Increasing Grain Supply and GHTS Workload

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 8.4 million tonnes, the total grain supply reached a record 86.9 million tonnes in the 2020-21 crop year, an increase of 1.5% from the previous year's 85.6-million-tonne record. With 7.1 million tonnes remaining as carry-out stocks at the close of the 2020-21 crop year,

Grain Production - Principal Commodities
(Western Canada)



Grain Supply
(Western Canada)



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

this meant that 79.8 million tonnes of Western Canadian grain made its way into the domestic and export markets.

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 still more 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 2020-21 crop year, 34 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. Similarly, the 72,000-tonne Fraser Grain Terminal, whose development was spearheaded by Parrish and Heimbecker Limited and GrainsConnect Canada, became operational in November 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 Ray-Mont Logistics to support growth through the port's still expanding Fairview Container Terminal.

And while financial resources have clearly been directed into addressing the immediate physical needs of handling a larger crop, the growth in non-traditional crop production has spurred other investments. Much of this has centered on the handling of special crops, 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. The 2020-21 crop year saw the advancement of several new investment proposals, all focused on the development of additional domestic canola crushing facilities.

But this new investment has not been the purview of producers and grain companies alone. These same market forces have also been exerting pressure on the railways to invest in additional grain-handling capacity, the most visible facet being their purchases of new covered hopper cars. Grain companies have contributed to this expansion as well, with a number of the larger handlers purchasing or leasing their own equipment. In addition, the Canadian National Railway (CN) and the Canadian Pacific Railway (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.

Section 2: Traffic and Movement

Indicator Description	Table	1999-00	2018-19	2019-20	2020-21 Q1	Q2	Q3	Q4	YTD	% VAR
Country Elevator Throughput										
Grain Throughput (000 tonnes) – Primary Elevators	2A-1	32,493.9	48,885.8	51,993.6	14,721.0	14,879.1	13,984.4	10,292.3	53,876.8	3.6%
Railway Traffic										
Traffic to Western Canada										
Railway Shipments (000 tonnes) – Ports Only	2B-1	26,439.2	42,686.8	46,501.8	13,865.6	13,690.3	12,667.3	9,551.1	49,774.3	7.0%
Railway Shipments (000 tonnes) – Western Domestic	2B-1	n/a	716.0	986.7	219.9	202.9	223.8	210.5	857.2	-13.1%
Traffic to Western Canada (Ports Only)										
Railway Shipments (000 tonnes) – All Grains	2B-1	26,439.2	43,402.8	47,488.5	14,085.6	13,893.2	12,891.2	9,761.6	50,631.5	6.6%
Railway Shipments (000 tonnes) – Hopper Cars	2B-1	25,664.6	41,368.4	45,244.6	13,537.3	13,292.8	12,263.8	9,355.5	48,449.5	7.1%
Railway Shipments (000 tonnes) – Non-Hopper Cars	2B-1	774.7	2,034.4	2,243.9	548.2	600.4	627.4	406.0	2,182.1	-2.8%
Special Crop Shipments (000 tonnes) – All Grains	2B-2	2,102.9	4,723.7	5,783.1	2,224.4	1,162.0	1,408.9	728.1	5,523.3	-4.5%
Special Crop Shipments (000 tonnes) – Hopper Cars	2B-2	1,844.1	4,301.7	5,385.3	2,115.9	1,056.1	1,285.4	668.6	5,126.1	-4.8%
Special Crop Shipments (000 tonnes) – Non-Hopper Cars	2B-2	258.7	422.1	397.7	108.5	105.8	123.4	59.5	397.2	-0.1%
Hopper Car Shipments (000 tonnes) – Origin Province	2B-3									
Hopper Car Shipments (000 tonnes) – Primary Commodities	2B-4	25,664.6	41,368.4	45,244.6	13,537.3	13,292.8	12,052.7	9,168.6	47,669.7	7.5%
Hopper Car Shipments (000 tonnes) – Detailed Breakdown	2B-5									
Hopper Car Shipments (000 tonnes) – Grain-Dependent Network	2B-6	8,685.9	12,537.9	13,270.1	4,102.8	3,767.2	3,247.2	2,406.1	13,523.2	1.9%
Hopper Car Shipments (000 tonnes) – Non-Grain-Dependent Network	2B-6	16,978.7	28,830.5	31,974.5	9,434.6	9,525.7	9,016.6	6,949.4	34,926.2	9.2%
Hopper Car Shipments (000 tonnes) – Class 1 Carriers	2B-7	23,573.5	40,501.1	43,753.8	12,949.6	12,838.0	11,858.0	9,079.6	46,725.2	6.8%
Hopper Car Shipments (000 tonnes) – Non-Class-1 Carriers	2B-7	2,091.0	867.3	1,490.8	587.7	454.9	405.8	275.9	1,724.3	15.7%
Traffic to Eastern Canada										
Railway Shipments (000 tonnes) – All Grains	2B-8	n/a	3,724.5	3,822.6	830.2	1,370.9	1,224.8	589.5	4,015.4	5.0%
Railway Shipments (000 tonnes) – Hopper Cars	2B-8	n/a	3,008.5	2,905.4	622.4	1,167.0	1,040.9	394.5	3,224.8	11.0%
Railway Shipments (000 tonnes) – Non-Hopper Cars	2B-8	n/a	716.0	917.2	207.8	203.9	183.9	195.0	790.6	-13.8%
Special Crop Shipments (000 tonnes) – All Grains	2B-9	n/a	422.1	629.5	135.6	118.8	92.7	161.9	509.0	-19.1%
Western Canadian Originated Traffic										
Railway Shipments (000 tonnes) – All Grains	2B-15	n/a	54,317.5	58,571.4	16,678.3	17,075.7	15,839.1	12,000.6	61,593.8	5.2%
Railway Shipments (000 tonnes) - Canada	2B-15	n/a	47,127.3	51,311.1	14,915.7	15,264.1	14,116.0	10,351.1	54,646.9	6.5%
Railway Shipments (000 tonnes) – United States	2B-15	n/a	6,872.4	7,001.1	1,680.8	1,721.6	1,633.0	1,556.9	6,592.2	-5.8%
Railway Shipments (000 tonnes) – Mexico	2B-15	n/a	317.7	259.2	81.8	90.0	90.2	92.7	354.7	36.8%
Terminal Elevator Throughput										
Grain Throughput (000 tonnes) – All Commodities	2C-1	23,555.5	37,086.0	39,981.9	11,968.2	12,250.5	10,727.5	9,740.6	44,686.8	11.8%
Hopper Cars Unloaded (number) – All Carriers	2C-2	278,255	397,212	418,245	130,382	123,532	113,832	89,813	457,559	9.4%
Hopper Cars Unloaded (number) – CN	2C-2	144,800	202,809	200,017	63,477	59,857	54,952	36,859	215,145	7.6%
Hopper Cars Unloaded (number) – CP	2C-2	133,455	194,403	218,228	66,905	63,675	58,880	52,954	242,414	11.1%
Truck Volumes to US Destinations										
Truck Shipments to US (000 tonnes) – Destination Region / Origin Province	2D-1									
Truck Shipments to US (000 tonnes) – Origin Province / Commodity	2D-2	n/a	2,168.9	2,087.0	634.1	522.5	572.3	552.3	2,281.3	9.3%
Truck Shipments to US (000 tonnes) – Destination Region / Commodity	2D-3									

DISCUSSION AND ANALYSIS

COUNTRY ELEVATOR THROUGHPUT
[See TABLE 2A-1]

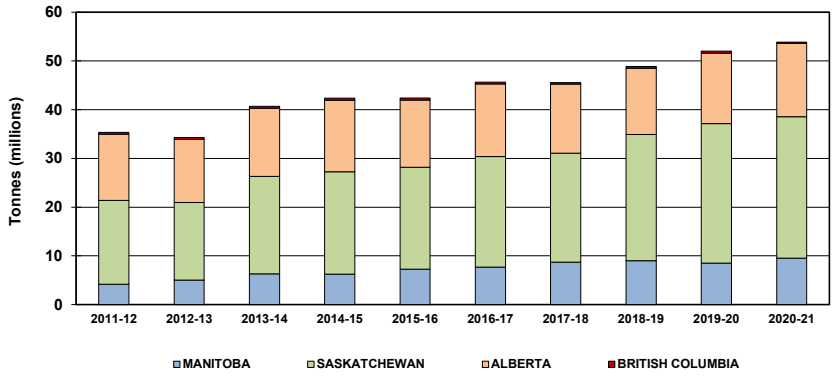
Country elevator throughput, as gauged by all road and rail shipments from the primary elevators situated across Western Canada, increased by 3.6% in the 2020-21 crop year, to 53.9 million tonnes. This constituted the most grain ever accepted into the system under the GMP.

Primary-elevator shipments from Saskatchewan increased by 0.4 million tonnes, or 1.4%, to 29.0 million tonnes. This was complemented by increases in the throughput for Alberta, which rose by 0.6 million tonnes, or 4.3%, to 15.1 million tonnes; and Manitoba, which climbed 1.0 million tonnes, or 12.2%, to 9.5 million tonnes. Offsetting these gains was a 171,000-tonne, or 43.0%, reduction in volume for British Columbia, which posted shipments of 226,600 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 53.9% share; Alberta, 28.0%; Manitoba, 17.7% share; and British Columbia, 0.4%.

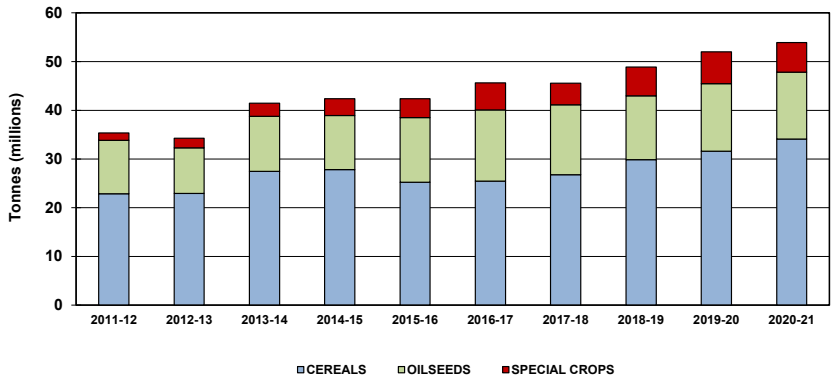
Cereals accounted for most of the grain shipped through the primary elevator network, with total shipments increasing by 8.0%, to 34.1 million tonnes from 31.6 million tonnes a year earlier. Their share of the total handle also rose, to 63.4% from 60.8%. Much of this gain was attributable to declines in the shipment of oilseeds and special crops. Oilseed shipments fell by 1.0%, to 13.7 million tonnes from 13.8 million tonnes, with its share slipping to 25.4% from 26.6%. Special-crop shipments posted a more substantial 7.6% decline, falling to 6.0 million tonnes from 6.5 million tonnes the previous year, to claim an 11.2% share against 12.6% a year earlier.

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 53.9-million-tonne throughput easily surpassing the previous

Primary Elevator Throughput - Originating Province



Primary Elevator Throughput - Principal Commodities



crop year's record handle of 52.0 million tonnes, still more pressure was brought to bear on the GHTS.

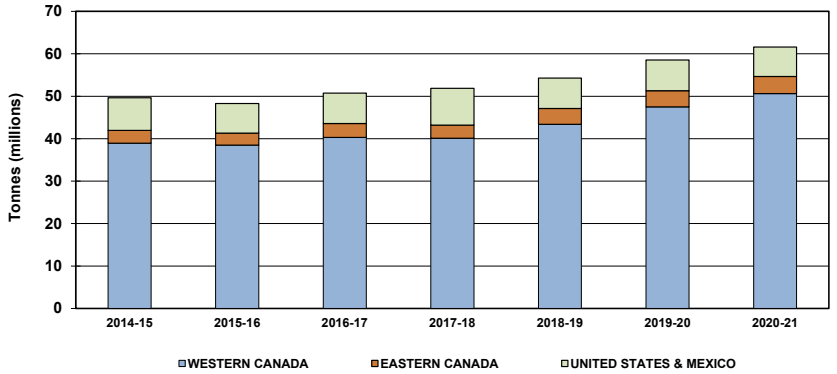
RAILWAY TRAFFIC
[See TABLES 2B-1 through 2B-20]

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 64.5 million tonnes in the 2020-21 crop year, 3.5% more than the 62.3 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]

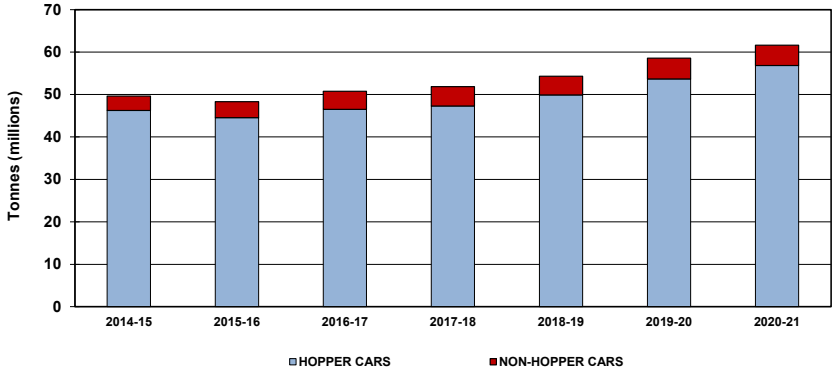
Railway grain shipments from Western Canada totaled a record 61.6 million tonnes in the 2020-21 crop year, up 5.2% from the previous crop year's 58.6 million tonnes. Over 54.6 million tonnes of this traffic, or 88.7%, was directed to destinations within Canada itself, be it for export or domestic use. Some 50.6 million tonnes, or 82.2%, of this volume were destined to points in Western Canada, chiefly the ports of Vancouver, Prince Rupert, and Thunder Bay. These same shipments also significantly overshadowed the 4.0 million tonnes, or 6.5%, directed to Eastern Canada, and the 6.9 million tonnes, or 11.3%, destined to the United States and Mexico.

Over 56.8 million tonnes of the traffic originated in Western Canada, or 92.3%, moved to its destination in covered hopper cars. The remaining 4.8 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 7.7% of total railway shipments in the 2020-21 crop year, its share has risen from the 6.9% benchmarked just six 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 structural deficiency in the reporting of railway grain volumes having been addressed, greater confidence can now be ascribed to the completeness of the traffic statistics presented throughout this report.

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

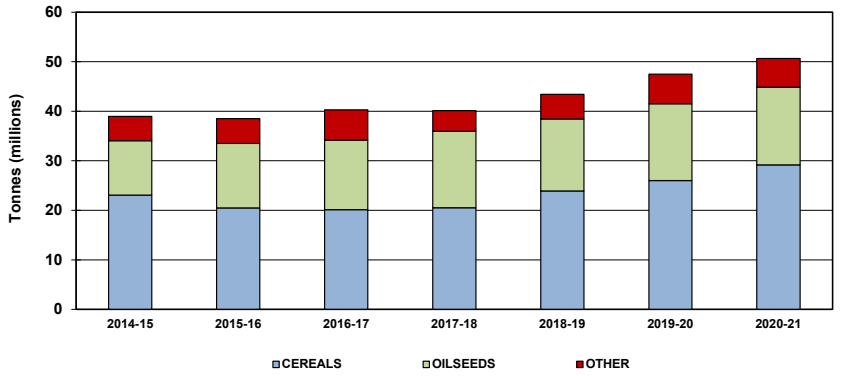
Much of the 50.6 million tonnes of grain moved by rail to points in Western Canada during the 2020-21 crop year were directed to one of its four ports: Vancouver, Prince Rupert, Thunder Bay, and Churchill. These shipments amounted to just under 49.8 million tonnes, an increase of 7.0% over the 46.5 million tonnes handled a year earlier. Another 857,200 tonnes were directed to points outside of the ports themselves, denoted as Western Domestic destinations, and which fell by 13.1% from the 986,700 tonnes handled the previous year.

As the largest element in the movement of grain to points in Western Canada, cereals represented more than half of all railway traffic in the 2020-21 crop year, some 29.2 million tonnes. This was followed by oilseeds at 15.7 million tonnes, and other commodities at 5.8 million tonnes. With a 12.1% gain, cereals posted the largest year-over-year increase in volume, followed by a 1.2% gain for oilseeds, and a 3.5% reduction for other commodities.

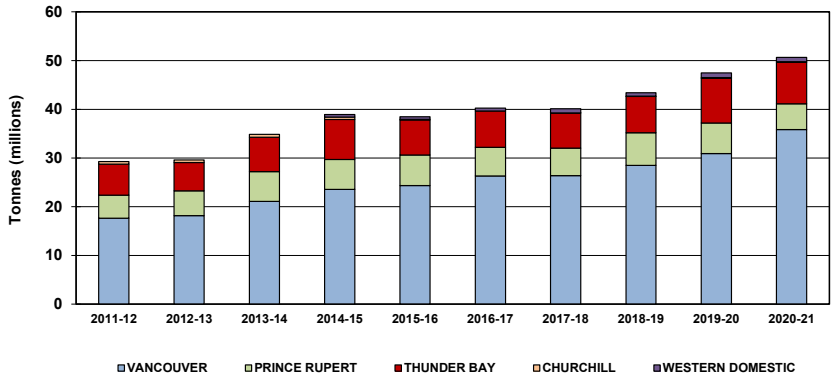
Of all the ports in Western Canada, Vancouver continues to be the preferred destination for railway grain shipments. This is due not only to the ready access it provides to Asia-Pacific markets, but to the concentration of export terminal facilities. During the 2020-21 crop year, Vancouver received 35.9 million tonnes of inbound grain, an increase of 16.0% over the previous year's 30.9-million-tonne handle. This denoted 72.1% of all railway shipments destined to points in Western Canada. Prince Rupert, which represents an additional west-coast outlet for this traffic, received 5.3 million tonnes of grain, falling 16.1% from the 6.3 million tonnes handled a year earlier. This resulted in the port's share declining to 10.6% from 13.5%. Together, these two ports accounted for 82.6% of the grain directed into Western Canada, up from the 80.0% share garnered a year earlier.

Although fueled in large measure by the need to move a larger crop, the gain in share for West Coast ports was also supported by a decrease in rail deliveries to Thunder Bay, which fell by 7.0% to 8.5 million tonnes from 9.2 million tonnes a year earlier. This reduced the port's share to 17.2%

Railway Grain Shipments - Main Commodities
(Western Canada)



Railway Grain Shipments - Main Destinations
(Western Canada)



from 19.7%. Similarly, the port of Churchill saw its handle decline by 20.9%, to 96,900 tonnes from 122,500, giving it a mere 0.2% share. Railway grain shipments to non-port destinations – designated as Western Domestic – accounted for just 1.7% of all traffic. However, this too proved noticeably less than the 2.1% share reported a year earlier, owing in large measure to a 13.1% decrease in tonnage, which fell to 857,200 tonnes from 986,700 tonnes.

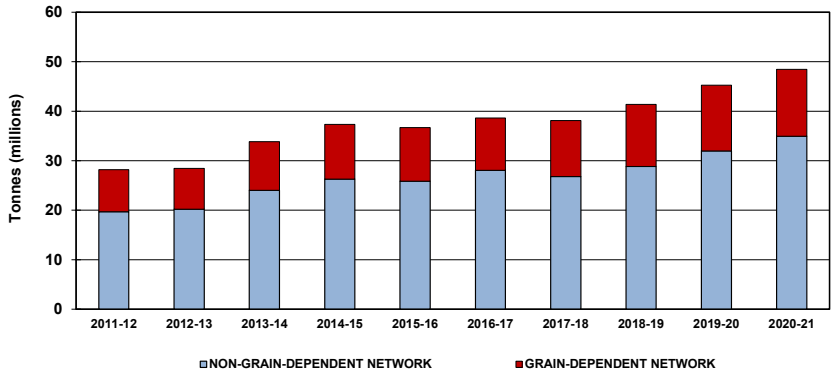
Covered Hopper Car Shipments

Covered hopper cars remain the primary means by which grain is conveyed to destinations within Western Canada. Of the 50.6 million tonnes shipped during the 2020-21 crop year, 48.4 million tonnes, or 95.7%, 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.

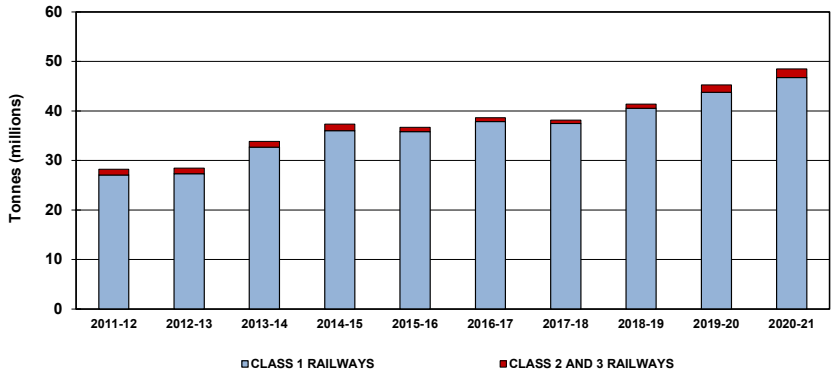
From the outset of the GMP, roughly two-thirds of covered-hopper-car shipments have originated at points on the railways' non-grain-dependent branchline network. Of the 48.4 million tonnes that were directed to destinations in Western Canada in the 2020-21 crop year, 34.9 million tonnes, or 72.1%, were sourced from points on such lines. This proportion stands slightly above the 66.2% share recorded two decades earlier. Conversely, just 13.5 million tonnes, or 27.9%, originated at points on the grain-dependent network.

More significantly, 46.7 million tonnes, or 96.4% of the covered-hopper-car traffic, originated on the railway lines directly operated by the major Class I carriers, CN and CP. This dominance is modestly greater than the 91.9% share 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 over 1.7 million tonnes, or 3.6%, originated with these smaller carriers in the 2020-21 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]

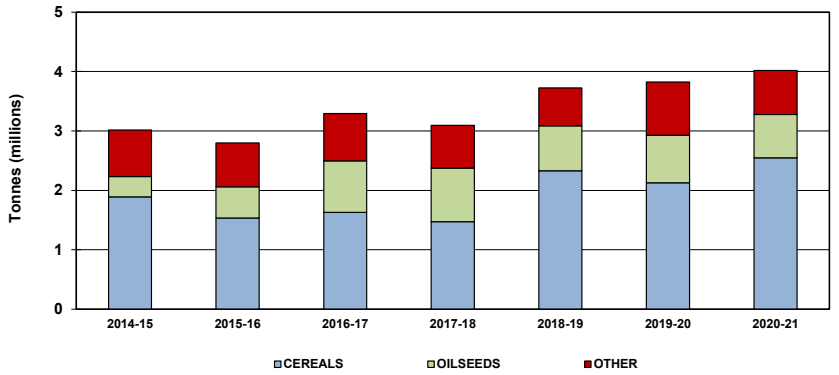
The movement of grain into Eastern Canada represents a fraction of what is directed into Western Canada. During the 2020-21 crop year, these railway shipments amounted to slightly more than 4.0 million tonnes, a gain of 5.0% over the 3.8 million tonnes shipped a year earlier. Comparatively, this amounted to less than one-twelfth of the tonnage directed into Western Canada. About three-quarters of this traffic, just over 2.9 million tonnes, were shipped to the ports that extend from the Lower Great Lakes through the Gulf of St. Lawrence, and on to Halifax. Another 1.1 million tonnes were directed to inland points, designated as Eastern Domestic destinations.

Consistent with traffic routed to destinations in Western Canada, much of the traffic headed to points in Eastern Canada, just over 3.2 million tonnes, moved in covered hopper cars. The remaining 790,600 tonnes moved in other types of railway equipment. These latter movements represented a more substantive 19.7% of the regional total than the 4.3% they constituted in Western Canada.

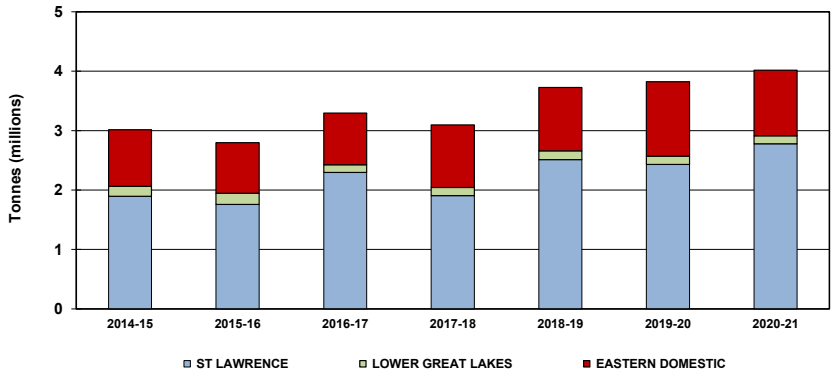
Similarly, cereals also embodied the largest traffic segment on eastbound movements, with total shipments of 2.5 million tonnes, up 19.7% from 2.1 million tonnes a year earlier. Oilseeds accounted for 732,400 tonnes, a decrease of 8.5% from the previous crop year's 800,600 tonnes. A further 736,400 tonnes were tied to other commodities, which declined by 17.7% from 894,500 tonnes.

Special-crop shipments to Eastern Canada, which encompassed most other commodities, totalled 509,000 tonnes, down 19.1% from the 629,500 tonnes directed there the previous year. Like those headed to Western Canadian destinations, these shipments accounted for a moderate share of the overall volume, 12.7%. Only 189,300 tonnes of this moved in covered hopper cars. Most special crops, representing 62.8% 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 2020-21 crop year this amounted to 2.5 million tonnes, up a marginal 0.4% from that originated a year earlier. Traffic originating at points on the grain-dependent network rose by 67.3%, to 772,300 tonnes from 461,500 tonnes. With 76.1% of the tonnage attributable to non-grain-dependent originations, this division is only marginally greater than the 72.1% share tied to traffic destined to points in Western Canada.

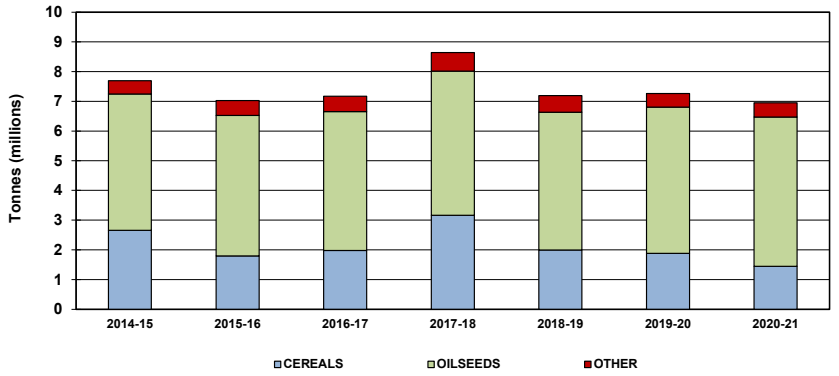
Similarly, some 2.9 million tonnes, or 90.8% of the grain shipped to Eastern Canada in covered hopper cars, originated on the lines of the major Class-1 railways. The tonnage originated by non-Class-1 carriers, which amounted to 296,200 tonnes, accounted for just 9.2%. These proportions are also consistent 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]

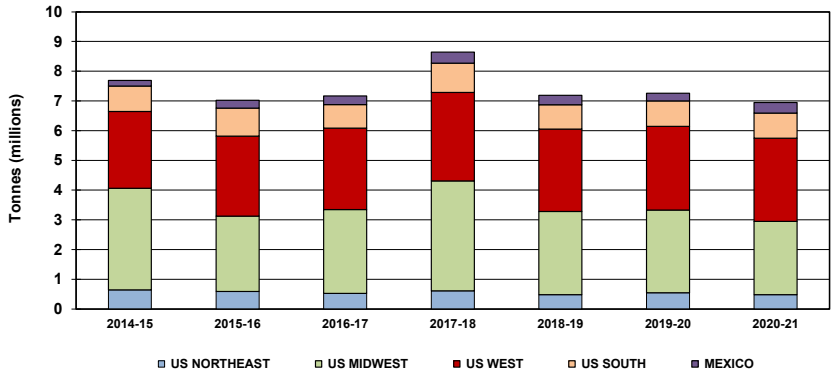
The amount of grain moved by rail to the United States and Mexico during the 2020-21 crop year totaled over 6.9 million tonnes. This marked a 4.3% decrease from the 7.3 million tonnes directed into these markets a year earlier. Almost 6.6 million tonnes of this were destined to the United States, down 5.8% from the 7.0 million tonnes handled the previous year. Although just 354,700 tonnes were earmarked for Mexico, shipments to that country grew by 36.8%. Much of the overall tonnage decline was attributable to a 22.8% reduction in cereal volumes, which were offset by modest gains in oilseeds and other commodities.

Some 5.0 million tonnes of US-bound traffic moved in covered hopper cars in the 2020-21 crop year. This represented a 7.8% decrease from the 5.4 million tonnes handled a year earlier. Another 1.6 million tonnes moved in other types of railway equipment, which encompassed a marginal gain of 0.6% 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 three-quarters 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, 2.6 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, 707,100 tonnes into the South, and 259,300 tonnes into the Northeast. Cereals and other commodities accounted for a lesser 27.5% of the total tonnage.

On a broader basis, the US West proved to be the chief destination for US-bound grain shipments, drawing in slightly under 2.8 million tonnes. This was closely followed by destinations in the US Midwest, with just under 2.5 million tonnes; the US South, with 849,800 tonnes; and the US Northeast, with 481,500 tonnes. Special crops figured marginally within this framework, with a total of only 45,200 tonnes being shipped to US destinations.

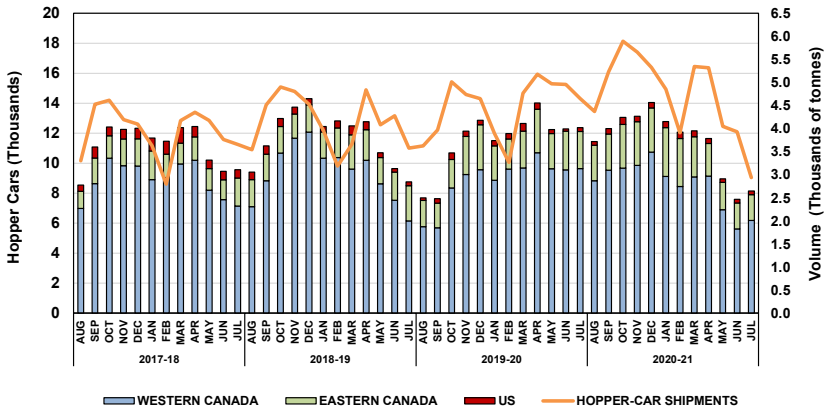
Grain imported into Canada by rail from the United States during the 2020-21 crop year totaled only 229,300 tonnes. This denoted a 2.4% increase over the 223,800 tonnes shipped a year earlier. The largest portion, amounting to 224,600 tonnes, was destined to points in Western Canada, with Eastern Canadian destinations drawing in just 4,700 tonnes. The bulk of this traffic, 229,300 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 2020-21 crop year began with a weekly in-transit average of 11,442 cars for the month of August 2020. This increased gradually through the next four months of the crop year, ultimately peaking with a weekly average of 14,052 cars in December 2020. The onset of winter operations served to slow traffic, steadily reducing the moving-car count to a lesser 11,650 by April 2021.

4 The measure cited here relates only to railway-supplied equipment. It specifically excludes the private equipment also employed by shippers in moving grain.

Loads on Wheels



As opposed to the pattern exhibited in previous crop years, the average fell in the face of a sharp fourth-quarter downturn in volume, hovering around the 8,200-car mark through July 2021.

Collectively, an average of 11,438 loaded cars were in transit to their destinations during any given week of the 2020-21 crop year, 1.3% less than the 11,584-car average recorded a year earlier. The broader characteristics proved consistent with other traffic measures, with 75.1% of the equipment involved in moving grain to destinations in Western Canada, 21.9% to markets in Eastern Canada, and 3.0% 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 11.8% in the 2020-21 crop year, rising to a GMP record of 44.7 million tonnes from 40.0 million tonnes a year earlier.

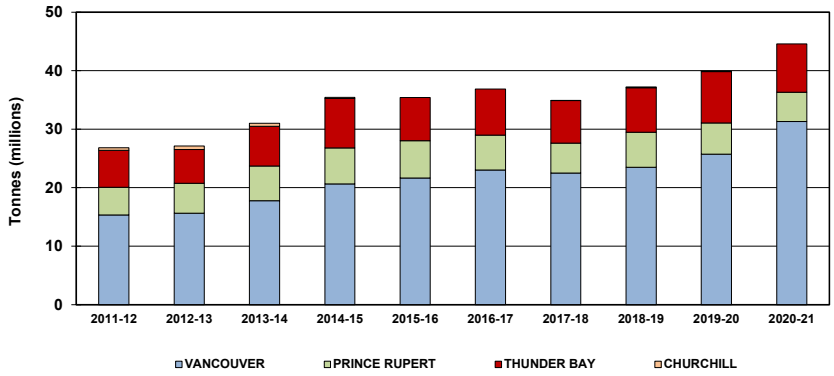
The most significant grain volumes continued to move through the west-coast ports of Vancouver and Prince Rupert. For Vancouver, total terminal elevator throughput increased by 21.9%, to reach a GMP record of 31.3 million tonnes, from 25.7 million tonnes a year earlier. Prince Rupert posted a decline of 6.9%, with terminal shipments falling to 5.0 million tonnes from 5.4 million tonnes. Combined, the tonnage passing through these two west-coast ports represented 81.3% of the overall handle, up from the 77.7% share held a year earlier.

Conversely, traffic directed through the eastern gateways of Thunder Bay and Churchill declined. Thunder Bay volumes fell by 5.7%, to 8.3 million tonnes from the previous crop year's 8.8 million tonnes. As a result, the port's overall share fell to 18.5% from 22.0%. This loss was widened by a 30.3% reduction in throughput for Churchill, which fell to 95,700 tonnes from 137,300 tonnes, and provided the port with a mere 0.2% share.

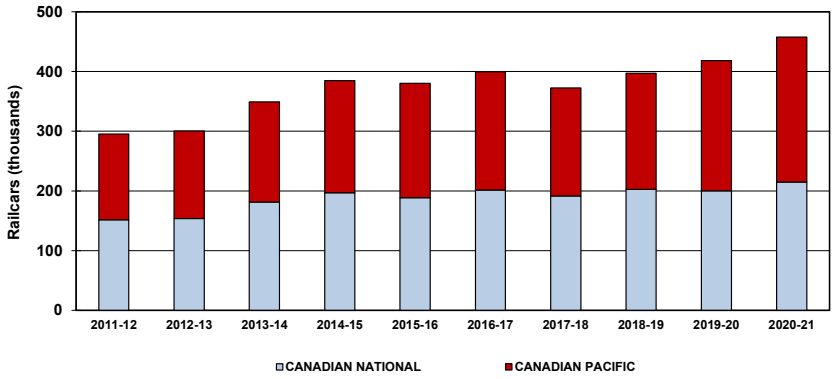
Terminal Elevator Unloads

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 2020-21 crop year increased by 9.4%, rising to 457,559 cars from 418,245 cars a year earlier. CN unloaded 215,145 hopper cars, up 7.6% from the 200,017 cars delivered a year earlier, while CP's handlings increased by 11.1%, to 242,414 cars from 218,228 cars. This made CP the largest serving railway to bulk grain terminals in Western Canada, with a share of 53.0% against 47.0% for CN.

Terminal Elevator Throughput - Port
(Western Canada)



Terminal Elevator Unloads - Carrier
(Western Canada)



EXPORT CONTAINER TRAFFIC
[See TABLE 2C-3]

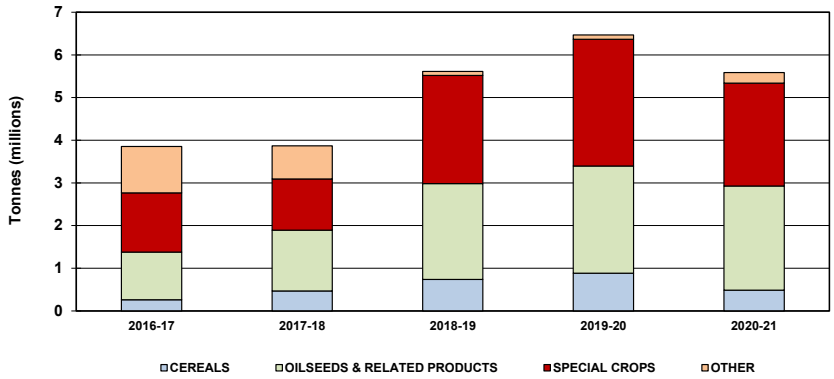
For well over a century, Canadian grain exports have been reliant on bulk ocean shipping to reach offshore markets. With the advent of larger ships, the preponderance of grain exports now physically moves in shipload lots of 50,000 or more tonnes. Yet an increasingly larger share of total grain exports has been moving in containers. This share hit a highwater mark in the 2019-20 crop year, when it reached roughly 11% compared to just 4% in the GMP's base year. Central to this growth was the emergence of new, state-of-the-art transloading facilities, which allowed grain carried to port in railway hopper cars to be efficiently reloaded into containers for shipment overseas.

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

Containerized grain shipments from the ports of Montreal, Vancouver and Prince Rupert totaled almost 5.6 million tonnes in the 2020-21 crop year. This denoted a 13.6% reduction from the 6.5 million tonnes shipped a year earlier. As opposed to being reflective of a reduction in market demand, this decline was largely the product of an imposed constriction in the supply of empty container equipment made available by steamship lines beginning in late 2020.

Until the 2020-21 crop year, containerized grain traffic had been increasing by almost 900,000 tonnes annually, with significant volume gains for cereals, oilseeds and related products, and special crops alike. Special crops, which figured most prominently in the growth of containerized shipments, accounted for 2.4 million tonnes, or 43.1%, of the total volume in the crop year just ended. However, this share was somewhat lower than the 45.9% claimed just a year earlier. Shipments of oilseeds and related products, which totalled a comparable 2.4 million tonnes, garnered a slightly greater 43.7% share. Cereals accounted for a much lesser 485,500 tonnes and an 8.7% share.

Export Container Shipments - Canadian Ports

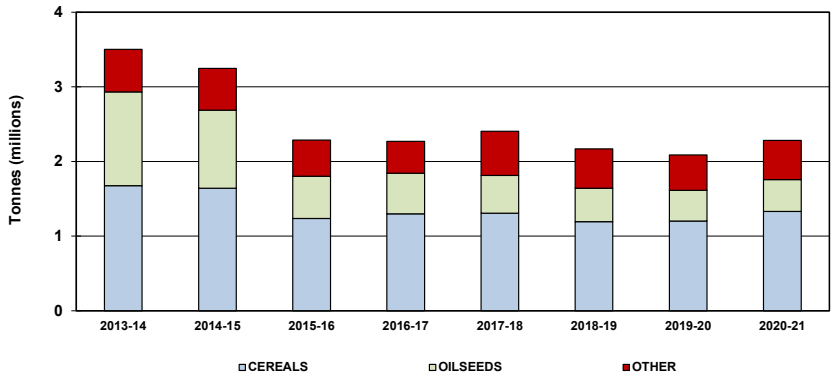


TRUCK TRAFFIC TO THE UNITED STATES
[See TABLES 2D-1 through 2D-3]

Shipments of Western Canadian grain into the United States by truck totaled almost 2.3 million tonnes in the 2020-21 crop year. This proved 9.3% more than the 2.1 million tonnes shipped a year earlier. Gains were noted for most commodity groups, with a 10.9%, or 130,300-tonne, increase in cereals accounting for over two-thirds of the total expansion. This was enlarged by a 3.6%, or 14,800-tonne, increase for oilseeds. A 10.4%, or 49,200-tonne, increase in various other commodities added to these gains.

In contrast to railway shipments, much of the grain trucked into the United States travels shorter distances. Almost 1.4 million tonnes, or 61.8% 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 504,100 tonnes; the US Northeast, with 258,200 tonnes; and the US South, with 110,100 tonnes.

Truck Shipments - United States Destinations



Section 3: Infrastructure

Indicator Description	Table	1999-00	2018-19	2019-20	2020-21 Q1	Q2	Q3	Q4	YTD	% VAR
Country Elevator Infrastructure										
Delivery Points (number)	3A-1	628	285	286	288	288	289	287	287	0.3%
Elevator Capacity (000 tonnes)	3A-1	7,443.9	8,717.9	8,875.4	8,943.9	9,038.6	9,132.1	9,269.2	9,269.2	4.4%
Elevators (number) – Province	3A-1									
Elevators (number) – Railway Class	3A-2	917	399	402	407	408	409	411	411	2.2%
Elevators (number) – Grain Company	3A-3									
Elevators Capable of MCB Loading (number) – Province	3A-4									
Elevators Capable of MCB Loading (number) – Railway Class	3A-5	317	256	260	264	264	265	269	269	3.5%
Elevators Capable of MCB Loading (number) – Railway Line Class	3A-6									
Elevator Closures (number)	3A-7	130	25	24	4	5	19	7	35	45.8%
Elevator Openings (number)	3A-8	43	24	27	9	6	20	9	44	63.0%
Delivery Points (number) – Accounting for 80% of Deliveries	3A-9	217	101	101	n/a	n/a	n/a	n/a	104	3.0%
Railway Infrastructure										
Railway Infrastructure (route-miles) – Total Network	3B-1	19,390.1	17,279.9	17,265.7	17,265.7	17,265.7	17,265.7	17,265.7	17,265.7	0.0%
Railway Infrastructure (route-miles) – Class-1 Network	3B-1	14,503.0	14,610.3	14,596.1	14,596.1	14,596.1	14,596.1	14,596.1	14,596.1	0.0%
Railway Infrastructure (route-miles) – Non-Class-1 Network	3B-1	4,887.1	2,669.6	2,669.6	2,669.6	2,669.6	2,669.6	2,669.6	2,669.6	0.0%
Railway Infrastructure (route-miles) – Non-Grain-Dependent Network	3B-1	14,513.5	14,028.7	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	3,237.0	3,237.0	3,237.0	3,237.0	3,237.0	3,237.0	0.0%
Railway Fleet Size (railcars) – Average Weekly	3B-2	n/a	25,745	26,381	25,506	26,515	25,810	24,880	25,679	-2.7%
Served Elevators (number)	3B-3	884	352	352	355	354	340	342	342	-2.8%
Served Elevators (number) – Class 1 Carriers	3B-3	797	321	321	323	322	309	310	310	-3.4%
Served Elevators (number) – Non-Class-1 Carriers	3B-3	87	31	31	32	32	31	32	32	3.2%
Served Elevators (number) – Grain-Dependent Network	3B-3	371	107	105	108	108	101	102	102	-2.9%
Served Elevators (number) – Non-Grain-Dependent Network	3B-3	513	245	247	247	246	239	240	240	-2.8%
Served Elevator Capacity (000 tonnes)	3B-3	7,323.0	8,487.1	8,646.9	8,706.3	8,785.3	8,743.4	8,886.3	8,886.3	2.8%
Served Elevator Capacity (000 tonnes) – Class 1 Carriers	3B-3	6,823.2	8,256.6	8,416.4	8,465.3	8,547.8	8,468.5	8,610.1	8,610.1	2.3%
Served Elevator Capacity (000 tonnes) – Non-Class-1 Carriers	3B-3	499.7	230.4	230.4	241.1	237.5	274.9	276.1	276.1	19.8%
Served Elevator Capacity (000 tonnes) – Grain-Dependent Network	3B-3	2,475.4	2,023.5	2,011.0	2,033.7	2,064.8	2,069.0	2,084.4	2,084.4	3.6%
Served Elevator Capacity (000 tonnes) – Non-Grain-Dependent Network	3B-3	4,847.6	6,463.5	6,635.9	6,672.7	6,720.5	6,674.4	6,801.9	6,801.9	2.5%
Terminal Elevator Infrastructure										
Terminal Elevators (number)	3C-1	15	17	17	17	18	18	18	18	5.9%
Terminal Elevator Storage Capacity (000 tonnes)	3C-1	2,678.6	2,542.5	2,695.5	2,695.5	2,767.5	2,767.5	2,767.5	2,767.5	2.7%

DISCUSSION AND ANALYSIS

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

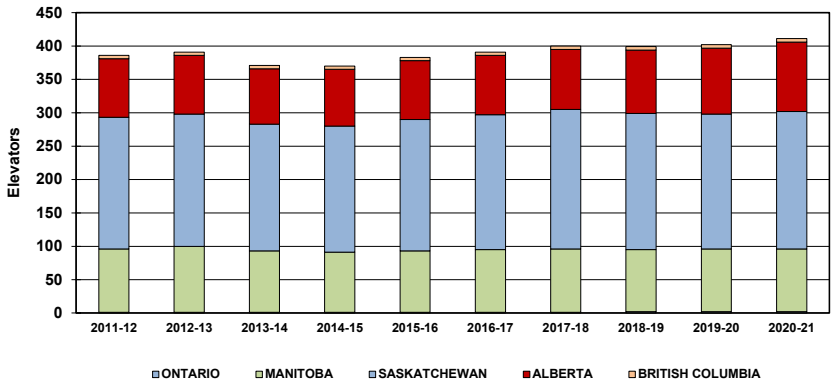
At the outset of the 1999-2000 crop year, there were 1,004 licensed primary and process elevators situated across the prairies. By the close of the 2020-21 crop year, what remained encompassed a total of 411 facilities, representing a reduction of 59.1% from the GMP's base year. This decline marks one 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 2020-21 crop year produced a nine-elevator increase in the network. This came about through the closure of 35 elevators, chiefly smaller Class A and B facilities, along with the licensing of 44 others.[5] Among these were nine recently constructed or retrofitted loop-track facilities: four operated by G3 Canada, three by Viterra; and one apiece by Parrish & Heimbecker and Richardson International.

At the close of the 2020-21 crop year, 206, or 50.1% of Western Canada's licensed elevators, were situated in Saskatchewan. This was followed by Alberta and Manitoba, with 104 and 94 elevators respectively, and corresponding shares of 25.3% and 22.9%. The GHTS's remaining seven facilities were divided between British Columbia, with five, and Ontario, with two. None of these proportions are far removed from those observed in the GMP's base year.

Much of the observed decline in elevators came from the closure of hundreds of the iconic wood-crib facilities that used to be found in virtually every small prairie town. Although some would be repurposed by new owners, 564 licensed Class A elevators, along with 129 Class B elevators, ultimately closed their doors during the last 22 years. These closures effectively drove a 398-community constriction in the grain-delivery network itself, which by the end of the 2020-21 crop year encompassed 287 locations as compared to the 685 benchmarked at the beginning of the GMP's base year.

Country Elevators - Provincial Distribution



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 35 facilities. Only the largest high-throughput facilities, the licensed Class D elevators, have increased during this period, expanding more than threefold, to 173 from 38 in the base year. By the close of the 2020-21

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.

crop year, high-throughput facilities accounted for 53.3% of total system elevators and 83.8% of its storage capacity. Both shares stand significantly above their respective base-year values of 11.9% and 39.4%.

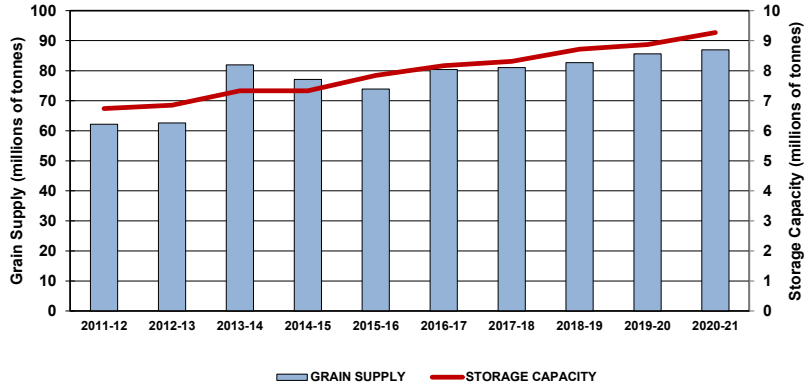
While the overall number of elevators has increased moderately over the last decade, the network's storage capacity has risen steadily. By the close of the 2020-21 crop year, the system's overall storage capacity stood at just under 9.3 million tonnes, a new GMP record. Moreover, this embodies a 61.3% increase over the 5.7-million-tonne low reached under the GMP 17 years earlier. Over the last decade, this expansion has advanced with roughly one tonne of storage being added for every nine-tonne increase in the grain supply.

Loop-Track Facilities

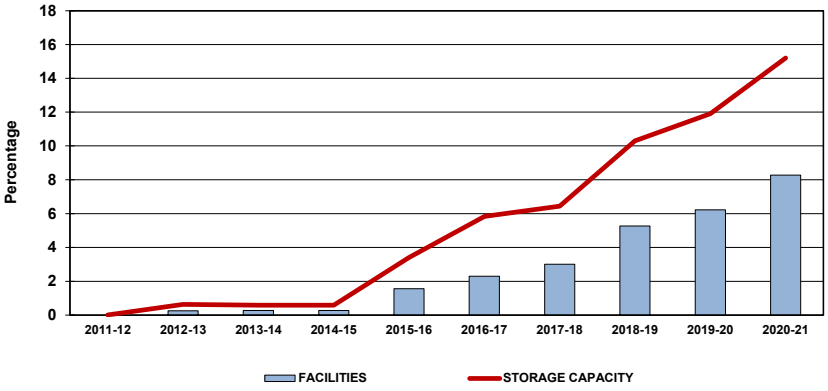
Much of this increase in elevators and storage capacity can be traced to the emergence of still more efficient Class-D facilities. Not only do these facilities have more storage capacity than their forerunners, but they also feature loop tracks with standing capacity for up to 150 conventional hopper cars (extending 9,000 feet in total length), which conceptually allows for faster grain loading and more efficient unit-train operations.[6]

Pioneered in Canada by Paterson Grain almost a decade ago, the concept has been embraced by most major grain handlers. In fact, virtually all new elevator construction undertaken in Western Canada since 2015 has incorporated a loop-track. Furthermore, several established ladder-track facilities have also been retrofitted for loop-track operations. G3 Canada has made the greatest strides in this regard, with 14 such facilities now forming the backbone of its 17-elevator network. By the close of 2020-21 crop year, 34 loop-track facilities with 1.4 million tonnes of storage capacity had been established. Nine of these – just over a quarter of the segmental total – commenced operations in the preceding twelve months. Moreover, they now account for 8.3% of total system elevators and 15.2% of its storage capacity.

Grain Supply and Country Elevator Storage Capacity



Loop-Track Elevators - Share of Facilities and Storage



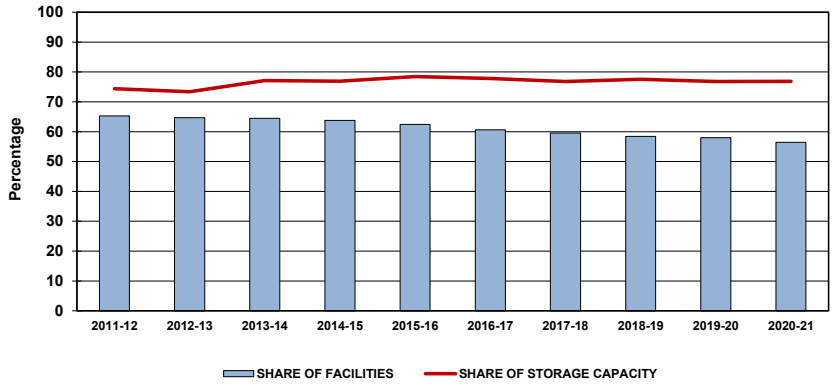
6 A conventional hopper car is deemed to be of cylindrical design reaching 60 feet in length.

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.[7] 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, 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. The grain industry has long voiced its frustration with this practice as it often interferes with the planned flow of grain into – and through – their port terminals. As the associated delivery delays are often measured in days, it frequently leads to postponed vessel loading and lengthier stays in port. While longer trains may potentially exacerbate these problems for terminals with shorter receiving tracks, those with longer tracks are less vulnerable and have even benefited from faster point-to-point service in the 2020-21 crop year.

The 411 facilities comprising the country-elevator network are licensed by dozens of separate companies. Yet much of Western Canada's grain-handling assets are controlled by just seven companies. Chief among them are such established names as Cargill Limited, Parrish & Heimbecker Limited, Paterson Grain, Richardson International, and Viterra Inc. But their ranks have also increased with the emergence of newer market entrants, including G3 Canada Limited and GrainsConnect Canada. Together, these companies have driven much of the industry's

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



modernization efforts, and collectively oversee the operation of 56.4% of its facilities and 76.8% of its associated storage capacity.

Despite this dominance, non-major grain handlers continue to thrive, with the specialization of many in the pulse and special-crops sectors serving to fortify their positions in a highly competitive environment. These include firms like AGT Foods and Ingredients, Ceres Global Ag, Providence Grain Group and Scoular Canada, which, along with other players, jointly operate 43.6% of the GHTS's licensed facilities but only 23.2% of its associated storage capacity.

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

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 22 years, the railway network contracted only one-fifth 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.

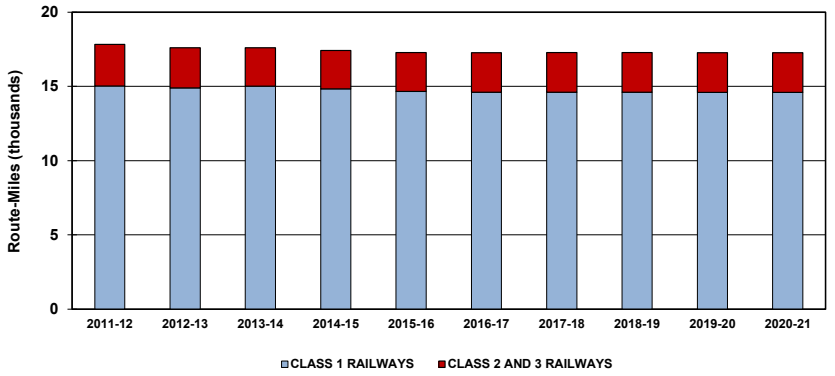
More importantly, this decline has all but ceased in the face of the last decade's minimal elevator changes. This was amply signalled in the 2020-21 crop year, where no changes were again recorded, and the railway network was left unaltered at 17,265.7 route-miles.

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.[8] 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 2020-21 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.[9]

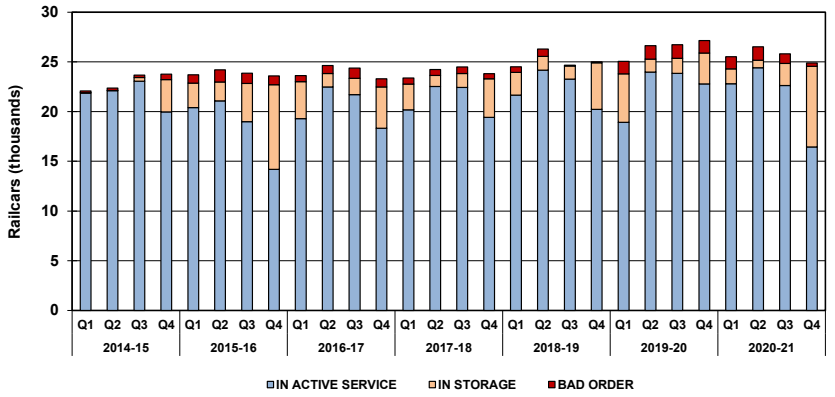
Covered Hopper Car Fleet

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

Railway Infrastructure - Route-Miles Operated
(Western Canada)



Covered Hopper Cars - Number and Status



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

9 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.

and contracting with changes in traffic volume. During the 2020-21 crop year, an average of 25,679 hopper cars were deployed by the railways to move grain, 2.7% less than the 26,381-car average noted the previous year. It is worth noting that this marked the first overall reduction recorded since CN and CP both announced new hopper-car acquisition programs two years earlier. Ultimately aimed at replacing the government hoppers that are now reaching the end of their useful lives, this new equipment was instrumental in providing the additional carrying capacity needed to accommodate the largest grain movement recorded under the GMP.[10]

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 a zenith sometime in the fall or early winter.

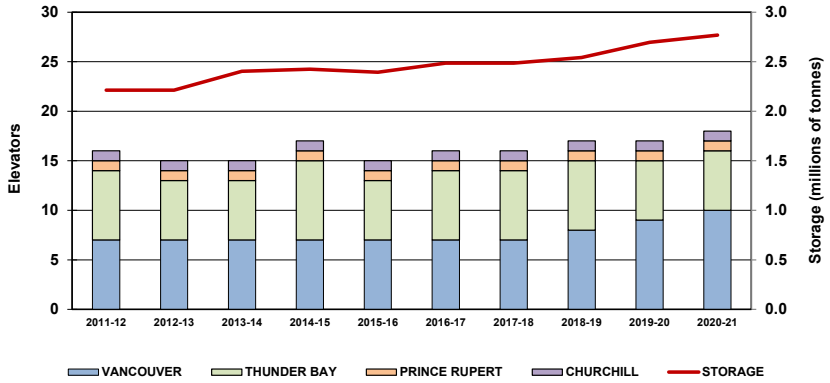
While the proportion in active service rose to a height of 94.0% in October 2020, slightly above the 92.1% height reached a year earlier, fewer cars remained in service through the latter half of the 2020-21 crop year, with the utilization rate falling to a low of 63.3% in June 2021. This meant that the GHTS was able to leverage a 5.8% increase in hopper-car traffic while reducing its average active fleet by 3.7%, which fell to 21,550 cars from 22,383 cars a year earlier, through better fleet productivity.

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 clustered at the ports of Thunder Bay and Vancouver, with complementary stand-alone terminals at Churchill and Prince Rupert. By the close of the 2020-21 crop year, the overall number of facilities had risen to 18, an increase of 28.6%, with the associated storage capacity having increased by a lesser 8.2%, to just under 2.8 million tonnes from 2.6 million tonnes.

10 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.

Terminal Elevators - Location and Storage Capacity
(Western Canada)



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. Recent facility closures have left the port with six facilities, representing 33.3% of the total system's elevators, and 40.7% of its licensed storage capacity; both down from the 50.0% shares benchmarked two decades earlier.

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 was G3 Canada's construction of an all new 180,000-tonne loop-track terminal in North Vancouver, which opened officially in July 2020.

The 2020-21 crop year saw the opening of the new 72,000-tonne Fraser Grain Terminal, whose development was spearheaded by Parrish & Heimbecker Limited and GrainsConnect Canada. This new terminal temporarily lifted the number of licensed facilities at the port to ten from nine, giving the port a 55.6% share of total system elevators, and a 46.6% share of its licensed storage capacity.[11]

Critical Observations

While the grain industry's investment in country and terminal elevator infrastructure reflects the growing handling needs of the GHTS, it also underscores the additional pressure that is being brought to bear on the railway system. To be sure, CN and CP have made significant strides in this direction, making noteworthy investments in plant and new equipment. But the longer-term traffic growth associated with all commodities – notwithstanding recent declines in volume occasioned by the COVID-19 pandemic – continues to point to the need for still more railway capacity.

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.[12] This became an even more pressing issue once G3 Terminal Vancouver came into full operation in July 2020. With projected increases occasioned by other expansions (most notably that of Neptune Terminals to accommodate additional coal and potash movements), it is widely estimated that total volumes on this already congested route segment will surge from about 45 million tonnes to 65 million tonnes annually. While plans for increasing the capacity of the Thornton Tunnel and Second Narrows Bridge are being advanced, it will still be years before they are completed.

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 additional investment in railway infrastructure. The federal government alone earmarked $10.1 billion for such projects through 2028 under its Trade and Transportation Corridors Initiative, with over $400 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 will provide some modicum of relief, they alone do not fully address the longer-term investment needs of the GHTS.

11 The Fraser Grain Terminal was intended to replace the existing 15,000-tonne Parrish & Heimbecker facility, which remained licensed until November 2021.

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

Section 4: Commercial Relations

Indicator Description	Table	1999-00	2018-19	2019-20	2020-21 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	135.3	138.4	138.4	139.1	139.2	138.2	138.2	-0.1%
Composite Rate Index – Dockage	4B-1	100.0	153.8	145.5	145.5	144.9	144.9	144.9	144.9	-0.4%
Composite Rate Index – Storage	4B-1	100.0	222.6	229.8	229.8	232.4	232.4	250.7	250.7	9.1%
Railway Freight Rates										
Composite Freight Rate Index – CN Vancouver	4C-1	100.0	152.4	153.8	163.1	165.9	150.9	139.5	139.5	-9.3%
Composite Freight Rate Index – CP Vancouver	4C-1	100.0	154.0	164.4	159.1	159.1	159.1	167.1	167.1	1.6%
Composite Freight Rate Index – CN Thunder Bay	4C-1	100.0	166.9	170.9	181.4	181.3	157.7	146.4	146.4	-14.4%
Composite Freight Rate Index – CP Thunder Bay	4C-1	100.0	162.2	172.8	167.8	167.8	167.8	176.2	176.2	1.9%
Effective Freight Rate ($ per tonne) – Maximum Revenue Entitlement	4C-3	n/a	$38.99	$40.25	n/a	n/a	n/a	n/a	$39.36	-2.2%
Terminal Elevator Handling Charges										
Composite Rate Index – Receiving, Elevating and Loading Out	4D-1	100.0	157.7	157.9	157.9	164.6	167.7	165.8	165.8	5.0%
Composite Rate Index – Storage	4D-1	100.0	185.5	185.9	185.9	186.1	186.1	186.1	186.1	0.1%

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 according to the activity, grain, province, and company involved. Given the intricacy of these tariff rates, the GMP necessarily uses a composite price index to track changes in them over time.

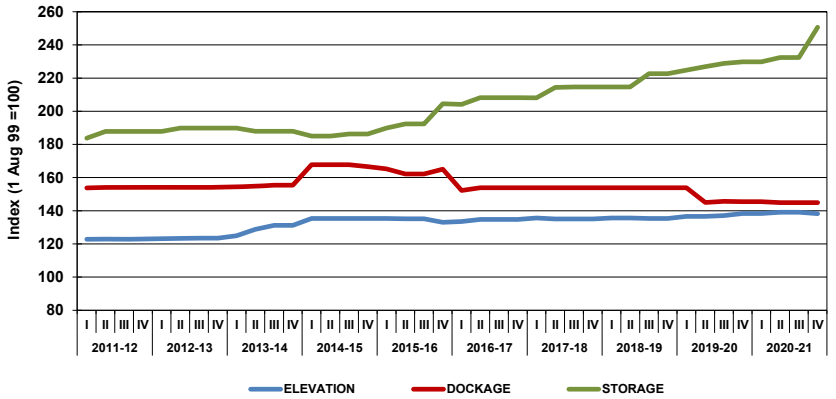
Throughout much of the GMP these rates have moved generally higher, albeit by varying margins. Generally modest changes were again observed in the 2020-21 crop year. Elevation rates decreased by a marginal 0.1%, which reduced the index to 138.2 from 138.4; dockage fees declined by 0.4%, with the index falling to 144.9 from 145.5; and storage rates increased 9.1%, which lifted the index to 250.7 from 229.8.

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

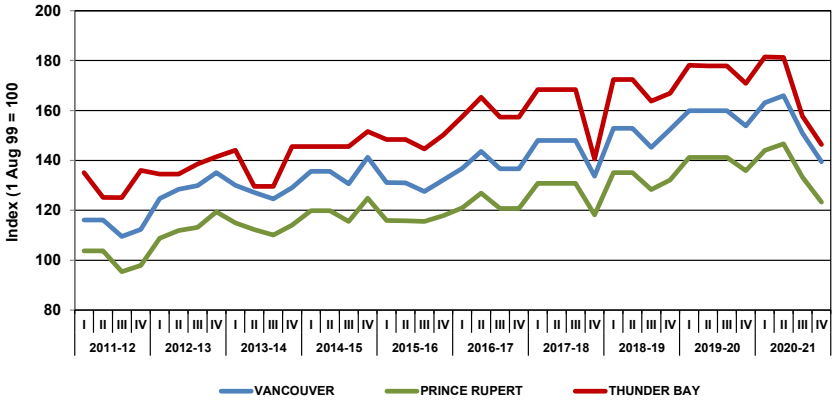
The single-car freight rates charged by CN and CP for the movement of regulated grain have changed substantially since the beginning of the GMP, evolving from what were largely mileage-based rates into a less rigidly structured set of more market-responsive rates. Likewise, these changes also employed 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 2020, with an across-the-board reduction of about 3.8%. However, this reduction was reversed with consecutive increases of up to 5.0% in September, 5.0% in October, and 1.9% November. The prevailing rates remained unchanged until March 2021 when CN reduced its rates in the Thunder Bay corridor by 13.0%, followed by a 9.1% cut in its West Coast rates in April. These were furthered by another across-the-board reduction of 7.5% in June 2021. By the close of the 2020-21 crop year CN had effectively reduced its rates on movements to Vancouver and Prince

Primary Elevator Handling Charges



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



Rupert by 9.3%, and Thunder Bay by 14.4%.

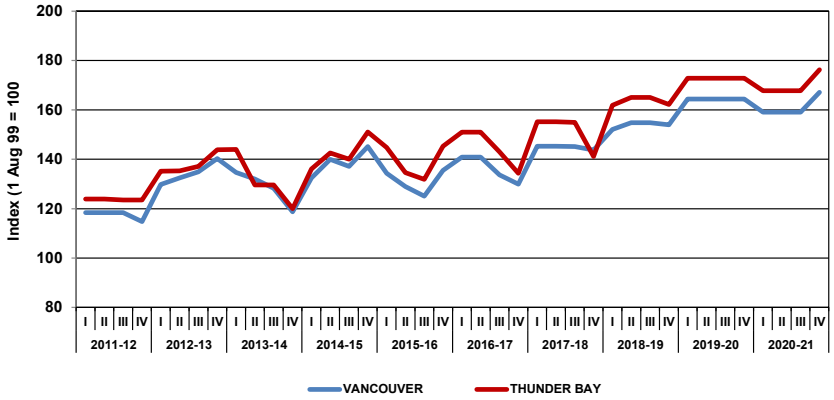
In comparison, CP applied an initial reduction of 3.2% on its rates to Vancouver at the beginning of August, with a marginally lesser cut of 2.9% on those to Thunder Bay. Unlike CN, however, CP maintained these rates unchanged until May 2021, when the carrier applied an across-the-board increase of 5.0%. At the close of the crop year, these pricing actions had effectively lifted CP's rates in the Vancouver and Thunder Bay corridors by 1.6% and 1.9% respectively.

Multiple-Car-Block Discounts

The discounting of 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. Such discounting – widely known as multiple-car-block discounts – have evolved considerably since the beginning of the GMP. The first significant structural change in this evolution came nearly two decades ago when the discounts on movements in blocks of 50 or more cars were increased while those for smaller block movements were phased out. 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.[13]

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



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 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.[14] These discounts remained effectively unchanged in the 2020-21 crop year.

Taken altogether, the railways' incentive programs are now 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

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

14 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 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.

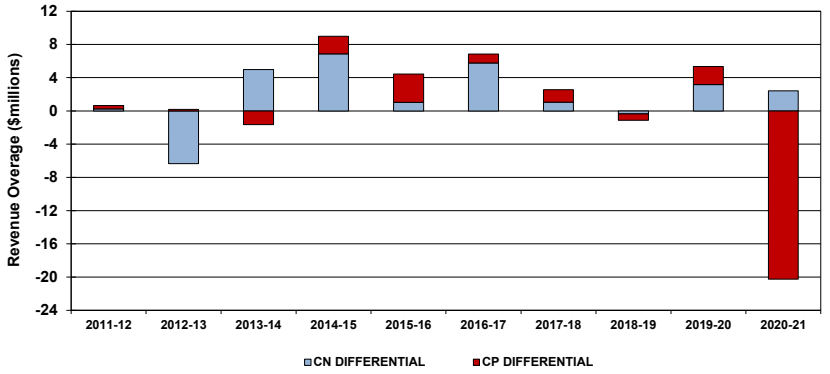
modern grain-handling facilities, those incapable of moving grain in trainload lots have seemingly been put at a commercial disadvantage. However, such impediments have not precipitated a sizable reduction in the number of smaller elevators.

Maximum Revenue Entitlement

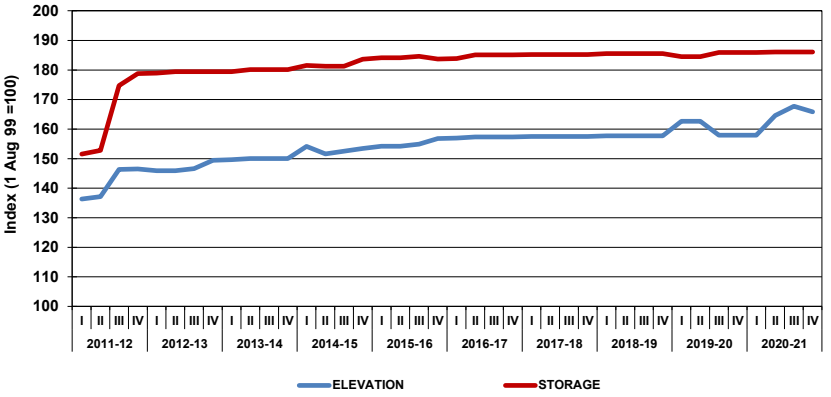
Under the federal government's Maximum Revenue Entitlement (MRE), established in 2000, the unadjusted revenues that CN and CP are entitled to earn from the movement of regulated grain are based on a legislated maximum of $348.0 million and $362.9 million respectively. However, these limits, expressed 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 2020-21 crop year, the Agency determined the value of the VRCPI to be 1.4441 for CN, and 1.5055 for CP. These values denoted year-over-year decreases of 0.4% for CN, and 1.7% for CP.[15] As a result, the MRE for CN and CP were set at $1,042.5 million and $1,035.2 million respectively, or $2,077.7 million on a combined basis.[16] The Agency also determined that, for the 2020-21 crop year, the statutory revenues derived from the movement of regulated grain by CN and CP amounted to $1,044.9 million and $1,014.9 million respectively, or $2,059.8 million on a combined basis. These determinations cited CN for having exceeded its maximum revenue entitlement by $2.4 million while noting a $20.2 shortfall for CP. This meant that combined carrier revenues fell $17.8 million, or 0.9%, below the prescribed maximum. It is worth noting that the unusually larger shortfall posted by CP marked the first instance since the 2007-08 crop year where a carrier's revenues missed its stipulated maximum by more than 1%.

Maximum Revenue Entitlement - Carrier Compliance



Terminal Elevator Handling Charges



15 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.

16 See Canadian Transportation Agency Determination R-2021-197 dated 22 December 2021.

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

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

The 2020-21 crop year again brought a wider range of changes to these rates, with the composite price index for elevation rising by 5.0%, to 165.8 from 157.9 in the previous year. A more marginal 0.1% increase was observed in the daily charge for storage, which lifted the associated composite price index to 186.1 from 185.9 a year earlier.

COMMERCIAL DEVELOPMENTS

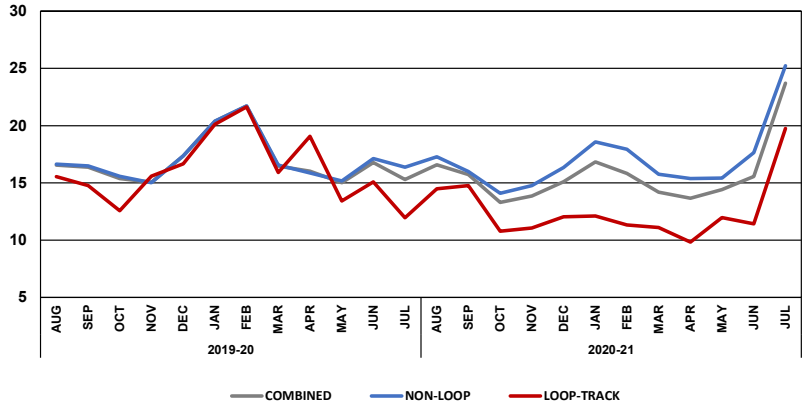
G3 Terminal Vancouver opening induces faster car cycles

The country-elevator network has evolved significantly over the GMP's 22-year history. Much of this reflected the closure of the network's older gable-roofed, wooden facilities. First erected in the 1920s, these smaller elevators – which typically loaded less than 25 railcars at a time – found themselves being rapidly displaced in the 1990s by more efficient concrete facilities capable of loading 50 or more railcars. By the early 2000s these first-generation, high-throughput elevators were themselves starting to give way to still larger terminals capable of originating 100 or more railcars.

All these facilities were built around conventional, ladder-track designs, which required traditional railway switching in advance of assembling a train for movement. The next step in this evolution came in 2012 when Paterson Grain opened its new Long Plain Terminal near Gleichen, Alberta. The facility featured an innovative loop-track design with standing capacity for up to 130 conventional hopper cars, which conceptually allowed for faster grain loading and more efficient unit-train operations. The concept was quickly embraced by other grain handlers. In fact, virtually all new elevator construction undertaken in Western Canada since 2015 has incorporated a loop-track, with several established ladder-track facilities being retrofitted for loop-track operations as well. In addition to the economic advantage inherent in reduced freight rates, grain companies have also underscored the associated benefits of better equipment supply and comparatively faster point-to-point service.

Through the 2017-18 crop year, traffic from loop-track elevators was estimated to have accounted for less than 5% of the railways' domestic hopper-car shipments. Moreover, these movements appear to have been fragmented, seldom reaching their intended destination as an unbroken train. In short, there was little to differentiate these movements from those originating at traditional ladder-track facilities. The opening of more loop-track facilities propelled their share of the total volume still higher, to nearly 9% in the 2019-20 crop year. But the promised efficiency gains for the GHTS were not yet in evidence. This began to change in the lead-up to the official opening of G3 Terminal Vancouver in July 2020. In conjunction with a network of ten loop-track facilities, G3 Canada was able to harness the fuller potential of its business model, leveraging loop-track efficiencies at both origin and destination to draw in significantly longer,

Car Cycles - Vancouver Corridor



and less frequently broken, trains to its new terminal.[17] Recognizing the competitive advantage, Viterra adapted the receiving tracks at its Cascadia terminal to accept the longer trains it had begun originating.

By the outset of the 2020-21 crop year, loop-track facilities had already begun funneling more of these longer grain trains into the Vancouver corridor. This continued until grain supplies began to diminish in the fourth quarter, and the supply chain was disrupted by the wildfires ravaging the British Columbia interior. While overall loop-track volumes surged to an estimated 15%, their share in the Vancouver corridor reached disproportionately higher, closer to 20%.[18]

More noteworthy still was the fact that the car cycles associated with loop-track shipments in the Vancouver corridor proved markedly lower than those from non-loop-track facilities. The advantage accorded to these movements reached as much as six days in the 2020-21 crop year. Analogous differences were found in the loaded and empty portions of the car cycle as well. A key driver in this comparatively better performance was the likelihood that loop-track originated unit-trains would arrive intact at their destination, an aspect made even more probable with the increased volume of traffic being directed into G3 Canada's new loop-track terminal. An estimated 77% of loop-track-originated unit trains arrived unbroken at their destination terminals in Vancouver during the 2020-21 crop year, versus only 20% for trains originating at ladder-track facilities.

As a matter of routine, the railways combine various small-block movements into longer trains to optimize their own traffic-management practices. Even unit trains would be taken apart, its railcars then distributed to other trains. This block or train "splitting" has repeatedly been cited as an issue for many rail shippers, particularly in an era centered on "just-in-time" logistics. The advent of still longer unit-trains between loop-track facilities may have facilitated the expansion of G3 Canada's commercial activities and shielded its movements from the severest block and train-splitting practices, but they have not been exempted entirely.

This differentiated service offering figured prominently in the supplying of additional railway carrying capacity, which allowed both CN and CP to deliver a record amount of grain in the 2020-21 crop year. But it also underscored a widening gap in the handling accorded movements from established grain shippers operating no such facilities.

Container supply seriously constricted

In late October 2020, marine-shipping giant Hapag-Lloyd announced that it was suspending container movements of agricultural products from North America. The Hamburg-based company, which is a major container handler along both the east and west coasts of North America, indicated that the action was being taken to expedite the return of empty containers and protect the movement of consumer goods out of Asia. While agricultural products generally provide container lines with the opportunity to earn additional backhaul revenues, Hapag-Lloyd said the time required to position and load containers only aggravated the shortage of empty equipment in Asia, which was struggling to makeup for lost sales occasioned by the COVID pandemic. Other container lines reported similar supply issues, informally following Hapag-Lloyd's lead in protecting their more lucrative head-haul shipments of high-value electronics, consumer goods and other manufactured products out of China.

However, what had been portrayed as a short-term measure to address a COVID-induced equipment imbalance by Christmas soon began to stretch into 2021, with little sign of abating. This left many Canadian agricultural exporters dependent on the availability of empty backhaul containers unable to secure the equipment they needed to fill smaller export grain sales. Moreover, the problem was exacerbated by the willingness of larger Asia-Pacific shippers to pay hefty premiums to ensure an adequate supply of empty containers. Many in Canada's soybean, pulse and special crops industries asserted that the resultant situation had reached crisis proportions. Farmers were left unable to deliver their on-farm stocks simply because marketers could not secure the empty containers needed to accommodate its shipment, thereby reducing the outbound flow to about a quarter of the norm.

17 By the close of the 2020-21 crop year G3 Canada's country-elevator network had increased to include 14 loop-track facilities.

18 Monthly data for the Vancouver corridor showed loop-track originated traffic periodically reaching as high as 25%.

By the close of the 2020-21 crop year many observers were expressing the view that the shortfall would continue well into the 2021-22 crop year owing to the container lines' enduring willingness to forego loaded back-haul opportunities in favour of returning containers empty. The heightened demand for all nature of Asian goods only aggravated matters, straining existing global supply chains. Moreover, the container lines appeared ready to exploit the situation, availing themselves of a four-fold increase in freight rates to leverage higher carrier revenues.

Roquette opens pea-processing facility

Following the granting of a process-elevator licence, Roquette's new 200,000 square foot pea processing plant in Portage la Prairie, Manitoba, began accepting its first deliveries from local farmers in November 2020. Construction of the $600 million facility, which began some three years earlier in 2017, was touted as the largest pea-protein processing plant in the world. The site was strategically located to take advantage of Canada's standing as the world's largest producer of peas, accounting for about 30% of total global production.

The market for plant-based proteins – especially pea protein – has grown significantly in the wake of greater consumer health consciousness and sustainability concerns. The facility, which is expected to require around 125,000 tonnes of yellow peas annually when running at full capacity, steadily ramped-up its production processes throughout the 2020-21 crop year. This was made more difficult by the COVID-19 pandemic and its supply-chain impacts, which Roquette indicated had complicated – if not threatened – installation of some of the plant's various systems. Even so, the technologically advanced processing plant reported scaling up its test runs in anticipation of full production sometime in early 2022.

Churchill ownership change

On 11 March 2021, the Arctic Gateway Group (AGG), which has owned and operated the Port of Churchill, the Hudson Bay Railway, the Churchill Marine Tank Farm, and associated assets since 2018, announced that the company would be transitioning from a 50% interest by OneNorth (a consortium of Indigenous and northern communities) to its outright ownership. The announcement signalled a relinquishing of the 50% stake jointly held by AGT Food & Ingredients and Fairfax Financial Holdings since the formation of the original partnership nearly three years earlier. AGG oversaw the restoration of the crucial railway service that had been suspended by the previous owner, OmniTRAX, because of severe flooding and washouts in 2017.

The change in ownership also brought a new management team and a reenergized sense of purpose. Nowhere was this more evident than when AGG confirmed that grain likely would not be shipped through the northern Manitoba port before 2023 pending completion of an extensive rehabilitation of the rail line. Much of this effort will centre on the laying of a honeycomb-like substructure, known as geocells, to help stabilize the long-problematic railbed, which runs over an extensive expanse of muskeg. Construction, which was set to begin in August 2021, followed the federal government's decision to contribute $40 million to the project, with much of the work focused on a 150-mile stretch of track between Gillam and Churchill.

Although freight and passenger services would continue despite the attendant delays, grain shipments were effectively suspended for the 2021 shipping season pending these repairs as well as upgrades to the 92-year-old grain terminal itself. Furthermore, 2021's reduced crop means that little grain is likely to be available for movement to Churchill in 2022, thereby making the 2023 shipping season the most probable for the resumption of grain shipments through the port.

BC wildfires disrupt railway service

A protracted period of extremely hot, dry weather in British Columbia triggered the most devastating rash of wildfires in recent memory. At Lytton, a village located at the confluence of the Fraser and Thompson rivers, temperatures soared to an all-time Canadian record of 49.6° C on 29 June 2021. One day later, a wildfire swept through the community, destroying it along with much of the CN and CP railway infrastructure passing through it. Mainline rail service into and out of Vancouver was embargoed pending completion of repairs, backlogging the movement of all commodities – including grain – to the port.

The CP line was reopened to traffic on 5 July while clearance of the CN line, which sustained more extensive damage, came a week later. Given public-safety concerns, however, Transport Canada issued a Ministerial Order directing CN and CP to suspend any movements between Kamloops and Boston Bar for 48 hours beginning at midnight on 9 July. This was followed a day later by another Ministerial Order requiring the railways to undertake additional mitigation measures in the face of extreme fire risks. Although rail service had resumed by mid July, the flow of traffic remained greatly constricted. Fortunately for grain, this occurred at the tail end of a record shipping season, when volumes had already fallen off sharply, and the downstream impacts of reduced terminal deliveries and vessel delays were minimized.

Canola crushing capacity to expand

In the span of less than two months, four grain companies announced separate projects that would increase domestic canola crushing capacity by nearly 50% over the next three years. The first of these came in late March when Richardson International unveiled its plan to effectively double the processing capacity of its existing plant at Yorkton SK to 2.2 million tonnes annually. This was followed nearly a month later with Cargill stating that it intended to modernize both of its existing facilities as well as invest in a new Regina-based facility capable of processing one million tonnes of canola seed per year. A few days later Viterra revealed that it would be building the world's largest canola crush facility, also to be situated in Regina, capable of processing 2.5 million tonnes of seed annually. The announcement of a fourth followed in late May 2021 when Ceres Global Ag Corp. revealed that it was also planning to construct a new 1.2-million-tonne canola-crushing facility at Northgate SK.

In addition to the sustained growth for cooking oils around the globe, the need for further capacity is being spurred by the demands for canola meal along with the increasing needs of the biofuels sector. One prospective domestic customer is Federated Co-operative Limited, which had been rumoured to be exploring the potential for a one-billion-litre renewable-diesel plant in the Regina area.[19]

19 In November 2021 Federated Co-operative Limited (FCL) announced that the company had bought the land needed to construct a renewable diesel plant in Regina. This was followed in January 2022 with an announcement that FCL would be partnering with AGT Food and Ingredients Inc. to construct a canola-crushing facility that would supply half of the feedstock required by the renewable diesel plant.

Section 5: System Efficiency and Performance

Indicator Description	Table	1999-00	2018-19	2019-20	2020-21 Q1	Q2	Q3	Q4	YTD	% VAR
Country Elevator Operations										
Average Elevator Capacity Turnover Ratio	5A-1	4.8	6.4	6.6	1.8	1.8	1.7	1.2	6.5	-1.5%
Average Weekly Elevator Stock Level (000 tonnes)	5A-2	3,699.3	3,457.9	3,433.3	3,810.9	4,195.2	4,406.6	3,002.3	3,847.2	12.1%
Average Days-in-Store (days)	5A-3	41.7	25.4	23.7	23.5	25.1	28.0	25.4	25.4	7.0%
Average Weekly Stock-to-Shipment Ratio – Grain	5A-4	6.2	3.7	3.6	3.2	3.5	4.2	4.0	3.7	4.7%
Railway Operations										
Movements to Western Canada										
Railway Car Cycle (days) – Empty Movement	5B-1	10.7	7.5	7.8	6.8	6.9	7.0	9.0	7.3	-6.4%
Railway Car Cycle (days) – Loaded Movement	5B-1	9.2	8.5	8.5	7.9	8.3	8.2	7.6	8.0	-6.0%
Railway Car Cycle (days) – Total Movement	5B-1	19.9	16.0	16.3	14.7	15.2	15.2	16.6	15.3	-6.2%
Railway Car Cycle (days) – Non-Special Crops	5B-2	19.3	15.6	15.9	14.4	14.8	14.8	16.4	15.0	-5.9%
Railway Car Cycle (days) – Special Crops	5B-3	25.8	19.7	19.4	16.6	20.5	18.5	19.2	18.2	-6.2%
Railway Loaded Transit Time (days)	5B-4	7.8	7.5	7.4	6.8	7.2	7.2	6.7	7.0	-6.2%
Movements to Eastern Canada										
Railway Car Cycle (days) – Empty Movement	5B-5	n/a	9.4	10.4	8.9	8.7	9.9	13.8	9.7	-6.6%
Railway Car Cycle (days) – Loaded Movement	5B-5	n/a	12.0	12.6	13.2	12.0	11.8	13.5	12.3	-2.0%
Railway Car Cycle (days) – Total Movement	5B-5	n/a	21.3	22.9	22.2	20.8	21.7	27.3	22.0	-4.1%
Railway Loaded Transit Time (days)	5B-8	n/a	10.2	10.9	11.4	10.5	10.5	12.0	10.8	-1.4%
Movements to the United States										
Railway Car Cycle (days) – Empty Movement	5B-9	n/a	11.1	11.7	10.4	10.0	12.6	14.1	11.5	-2.2%
Railway Car Cycle (days) – Loaded Movement	5B-9	n/a	15.0	13.8	14.2	14.6	15.8	14.3	14.7	6.7%
Railway Car Cycle (days) – Total Movement	5B-9	n/a	26.1	25.5	24.6	24.7	28.4	28.4	26.2	2.6%
Railway Loaded Transit Time (days)	5B-12	n/a	10.8	9.9	10.2	10.4	11.8	10.3	10.7	8.1%
Traffic to Western Canada										
Hopper Car Grain Volumes (000 tonnes) – Non-Incentive	5B-13	12,718.7	5,293.4	8,088.9	2,133.2	1,996.5	2,225.6	1,368.9	7,724.1	-4.5%
Hopper Car Grain Volumes (000 tonnes) – Incentive	5B-13	12,945.9	36,074.9	37,155.7	11,404.1	11,296.3	10,038.2	7,986.7	40,725.3	9.6%
Hopper Car Grain Volumes ($ millions) – Incentive Discount Value	5B-14	$31.1	$269.4	$297.2	$91.2	$90.4	$80.3	$63.9	$325.8	9.6%
Traffic Density (tonnes per route mile) – Total Network	5B-15	330.4	598.5	654.9	784.1	769.9	710.3	541.9	701.5	7.1%
Terminal Elevator Operations										
Average Terminal Elevator Capacity Turnover Ratio	5C-1	9.1	20.5	18.6	n/a	n/a	n/a	n/a	17.6	-5.4%
Average Weekly Terminal Elevator Stock Level (000 tonnes)	5C-2	1,216.2	1,183.0	1,222.1	1,273.4	1,328.4	1,360.0	1,103.4	1,265.3	3.5%
Average Days-in-Store – Operating Season (days)	5C-3	18.6	10.9	10.7	10.1	9.6	8.9	10.3	9.8	-8.4%
Average Weekly Out-of-Car Time	5C-5	n/a	11.5%	12.6%	13.8%	10.6%	13.5%	13.1%	12.8%	1.6%
Port Operations										
Average Vessel Time in Port (days)	5D-1	4.3	10.3	12.3	11.3	12.3	11.5	7.1	10.6	-13.8%
Average Vessel Time in Port (days) – Waiting	5D-1	1.9	5.6	7.4	6.6	7.2	6.0	2.8	5.7	-21.9%
Average Vessel Time in Port (days) – Loading	5D-1	2.4	4.6	5.0	4.7	5.1	5.6	4.2	4.9	-1.7%
System Performance										
Total Time in Supply Chain (days)	5E-1	68.1	43.8	41.8	40.4	41.9	44.1	42.2	42.2	0.8%

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. Although primary elevator throughput increased by 3.6% to 53.9 million tonnes, the turnover ratio for the 2020-21 crop year declined by 1.5%, to 6.5 turns from 6.6 turns a year earlier. This was largely attributable to the dampening effects of a further 374,900-tonne expansion in the storage capacity of the primary-elevator system, which has been steadily rising for several years.

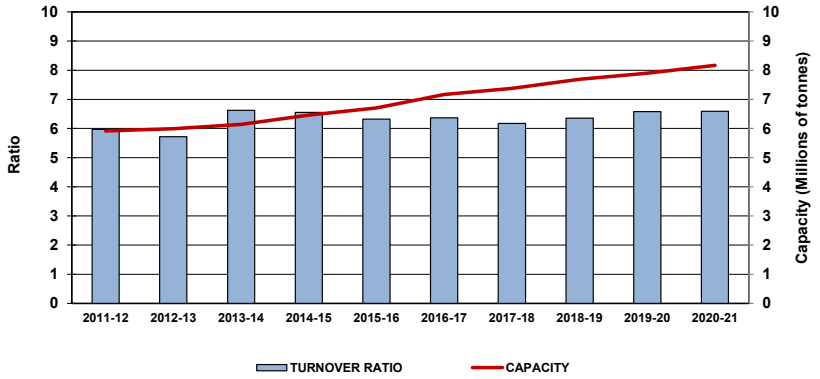
Elevator Inventories

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.

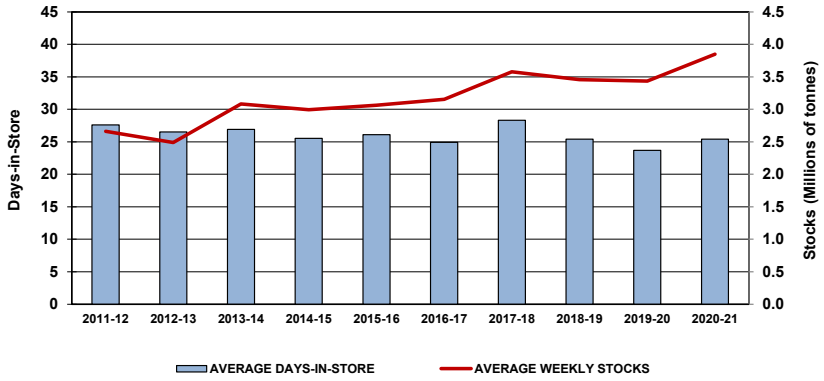
Notwithstanding periodic fluctuations, approximately half of the GHTS's primary elevator storage capacity is employed in maintaining its operational grain inventories. Even as the system's associated storage capacity rose, stocks seldom moved above the 3.0-million-tonne mark until the 2013-14 crop year. 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. The 2020-21 crop year saw average primary elevator inventories reach above this threshold for an eighth consecutive year, increasing 12.1%, to a GMP record of 3.8 million tonnes from 3.5 million tonnes a year earlier. The net addition of almost 2.4 million tonnes of storage capacity over this same period permitted average primary elevator stocks to reach a GMP record of 4.6 million tonnes in March 2021.

While stock levels have progressively risen, the amount of time spent by grain in inventory has declined. From a benchmark 41.7 days in the GMP's base year, the average has moved gradually lower, breaking through the

Primary Elevator Capacity Turnover Ratio



Primary Elevator Inventories

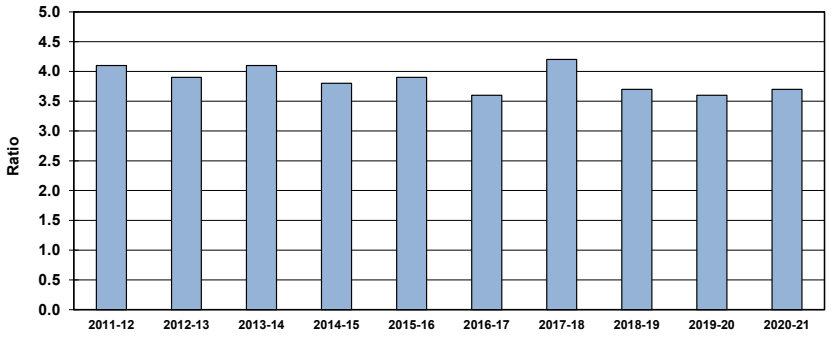


30-day mark about a decade later. Further reductions have since brought the average closer to 25 days. This decline simply reflects the faster pace at which grain has had to flow through an elevator to maintain its fluidity. A steady buildup in elevator stocks throughout much of the 2020-21 crop year caused the average to rise by 7.0%, to 25.4 days from 23.7 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 2020-21 crop year saw the average ratio rise by 4.7%, to 3.7 from 3.6 a year earlier.

Primary Elevators - Stock-to-Shipment Ratio



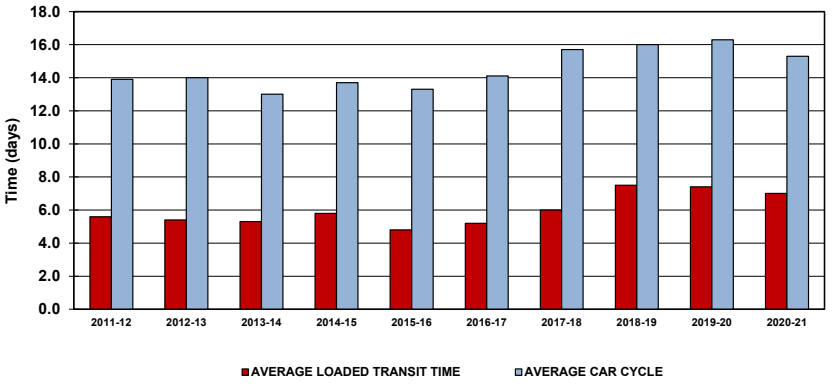
RAILWAY OPERATIONS
[See TABLES 5B-1 through 5B-15]

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

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

During the 2020-21 crop year the car cycle for shipments terminating within Western Canada averaged 15.3 days, a 6.2% decrease from the 16.3-day average recorded a year earlier. It also marked the first decline following four years of consecutive increases. The decrease was driven by reductions in each of the primary corridors, with the average Vancouver car cycle falling by 7.1%, to 15.8 days from 17.0 days a year earlier. This was bolstered by an 8.2% decrease in the Prince Rupert average, which fell to 16.6 days from 18.1 days, and a lesser 2.8% decline in the Thunder Bay corridor, where the average fell to 12.7 days from 13.1 days.

Railway Car Cycles and Loaded Transit Times
(Western Canada)



Owing to the heavy weighting of non-special crops in the overall traffic mix, the car cycle for these commodities showed an analogous reduction, with the average decreasing 5.9%, to 15.0 days from 15.9 days a year earlier. The car cycle tied to special crops showed a similar reduction, falling by 6.2%, albeit to a more elevated average of 18.2 days from 19.4 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

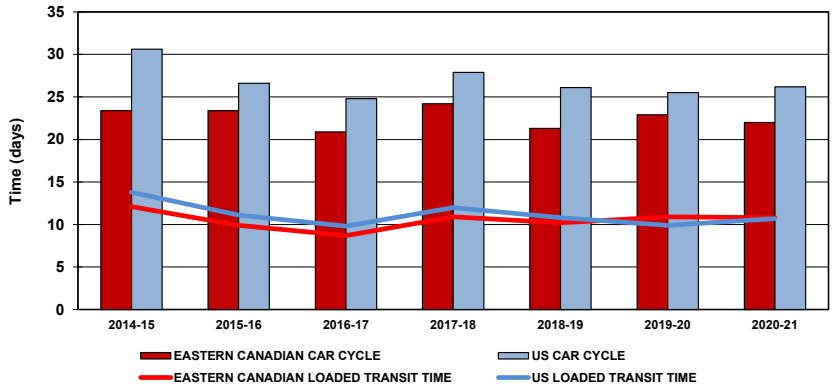
Allied with the railways' average car cycle is the movements' average loaded transit time. This measure focuses on the amount of time taken in moving grain from a country elevator to a port terminal for unloading. Given its relationship to the overall car cycle, the average loaded transit time tends to move in tandem with it. The 2020-21 crop year saw a 6.2% reduction in this average, which declined to 7.0 days from 7.4 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 2020-21 crop year, declining marginally to 41.4% from 41.5% 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.

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 decreased 4.1% in the 2020-21 crop year, with the average falling to 22.0 days from 22.9 days a year earlier. A 2.6% increase was observed on movements into the United States, with the average car cycle rising to 26.2 days from 25.5 days.

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



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 10.8 days, which represented a decrease of 1.4% from the 10.9 days reported a year earlier. Movements into the United States saw an increase of 8.1%, with the average rising to 10.7 days from 9.9 days. The underlying distributions showed similar patterns, with the coefficient of variation on movements into Eastern Canada standing at 33.3% against 41.7% 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 ever greater emphasis being placed on larger block movements.

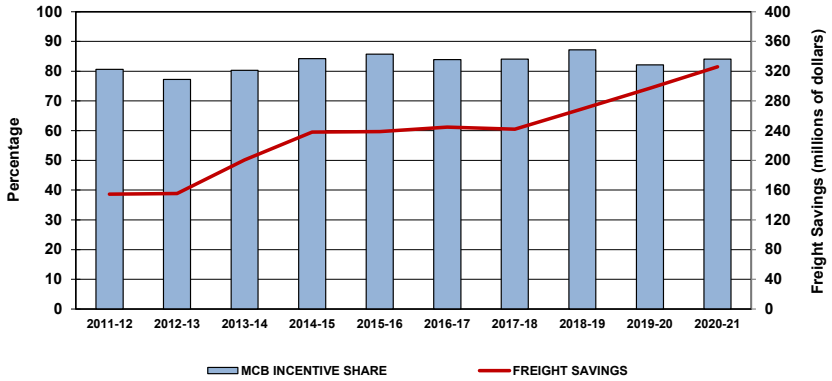
In effect, CN and CP now only offer an $8.00-per-tonne freight discount on trainload shipments of 100 or more cars (112 or more cars in the case of CP). A further $2.00-per-tonne discount can also be earned if such shipments meet certain high-efficiency train conditions, typically associated with loop-track originations. These requirements effectively preclude less-than-trainload shippers from receiving any discounts on what had previously been qualifying smaller car-block movements. Even so, the proportion of grain shipped in these qualifying multiple car blocks continues to reach above 80%, with 84.1% having done so in the 2020-21 crop year, up from 82.1% a year earlier.

The monetary value of the discounts earned by these qualifying grain shipments – estimated as gross savings in railway freight charges – has also risen.[20] These savings are estimated to have grown by 9.6% in the 2020-21 crop year, to $325.8 million from $297.2 million a year earlier.

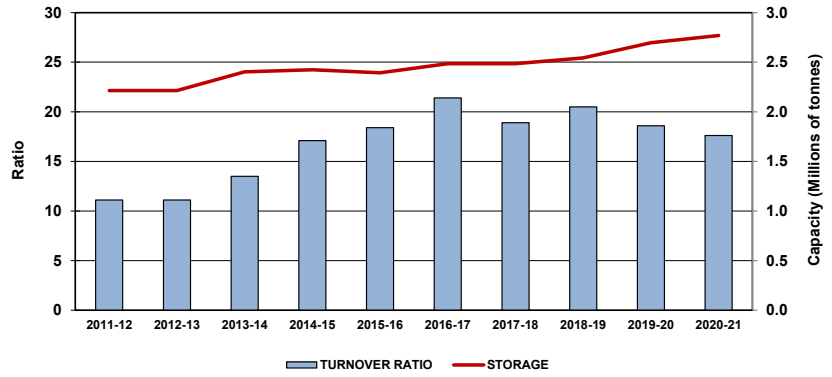
TERMINAL ELEVATOR OPERATIONS
[See TABLES 5C-1 through 5C-5]

A key indicator of terminal activity is the system's capacity-turnover ratio, which gauges terminal-elevator throughput against storage capacity. The 2020-21 crop year saw this measure fall by 5.4%, to an average of 17.6 turns from 18.6 turns a year earlier. This decrease contrasts with the 11.8% gain in terminal-elevator throughput noted earlier. Much of the reduction stems from the addition of two new facilities at the port of Vancouver, along with their 255,000 tonnes of storage capacity. Changes in the turnover ratio are often amplified because, as a simple composite value, it 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.

MCB Movements and Freight Savings
(Western Canada)



Terminal Elevator Capacity Turnover Ratio



20 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.

Nevertheless, the GHTS's annual terminal throughput of 44.7 million tonnes now stands almost 90% 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 17.6 stands nearly two times higher than the 9.1 recorded in the GMP's base year.

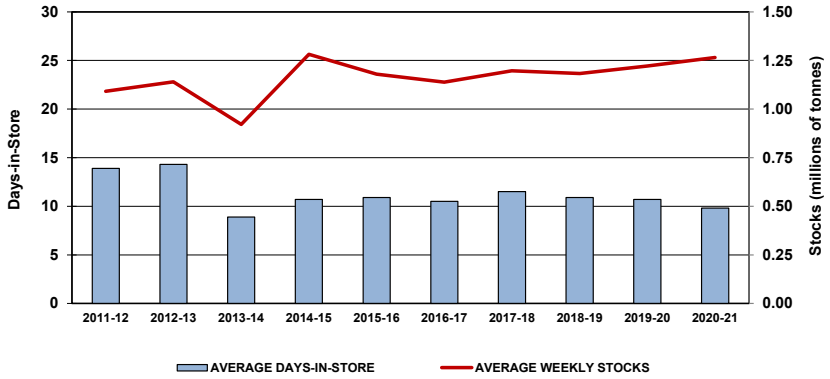
Terminal Elevator Inventories

Despite recent changes to the physical makeup of the GHTS's terminal elevator system, 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 2020-21 crop year, with the average weekly stock level rising by 3.5%, to nearly 1.3 million tonnes from 1.2 million tonnes a year earlier.

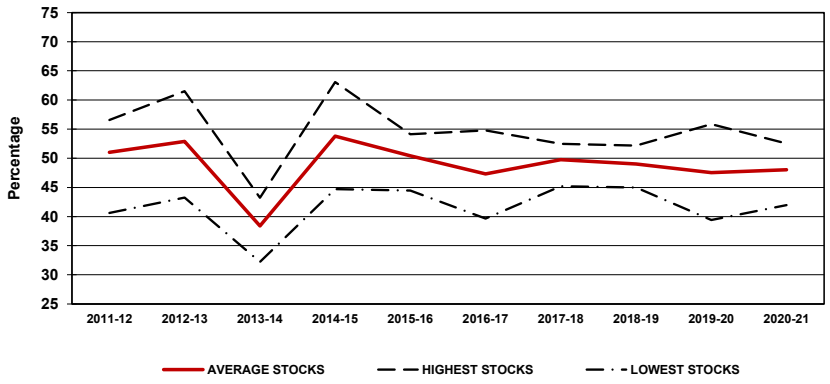
Although terminal stocks are typically maintained at about half of the system's licensed storage capacity, they fluctuate from week to week, rising and falling in conjunction with the workings of the supply chain itself. This means that stocks normally occupy anywhere from 40% to 60% of the licensed storage capacity at any given time. A utilization rate that exceeds these bounds, such as was the case in the 2013-14 crop year, typically denotes a major exception in the orderly flow of grain through the GHTS. While weekly terminal stocks varied throughout the 2020-21 crop year, they represented an average of 48.0% of the system's stated storage capacity.

But higher throughput has brought more pressure to bear on the maintenance of adequate terminal stocks. The average stock level now represents about 3% of the system's annual throughput rather than the 5% it did 20 years earlier. This has placed even greater emphasis on just-in-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 almost in half over the life of the GMP, falling to an annualized average of 9.8 days from 18.6 days.

Terminal Elevator Inventories



Terminal Elevator Capacity Utilization



The 2020-21 crop year's average of 9.8 days fell 8.4% from the previous crop year's 10.7-day average, denoting the lowest recorded since the 2013-14 crop year. Much of the decrease was shaped by a time reduction at Vancouver, which declined by 15.9%, to an average of 7.4 days from 8.8 days a year earlier. Running counter to this were the ports of Prince Rupert and Thunder Bay, which posted increases of 4.2% and 14.0% respectively, and produced corresponding averages of 7.5 days and 17.9 days.

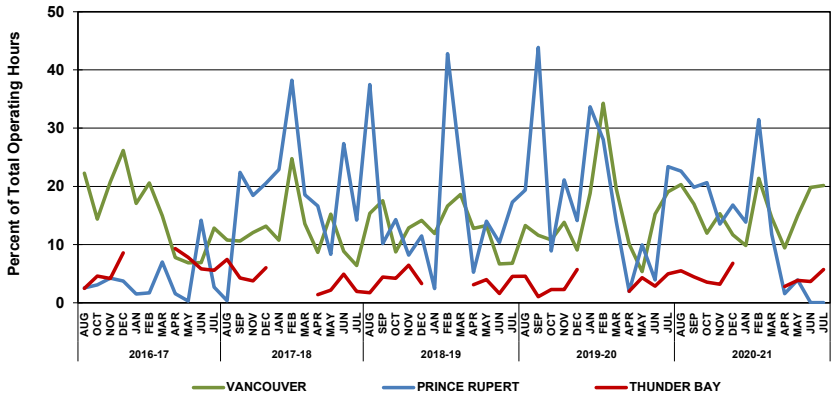
However, these annual averages disguise some of the more significant monthly swings, among them: Vancouver's decrease from an average of 10.4 days in September 2020 to a record low of 5.7 days in October, along with better-than-normal averages through July 2021. These averages reflect the generally faster pace at which grain moved through the GHTS in the 2020-21 crop year.

Equally indicative of a tightening in terminal inventories was an apparent decrease 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 reports that inbound rail deliveries are often out of sequence, which leads to erratic grain stocking and interruptions in vessel loading. Nonsequential railcar deliveries can be highly disruptive to the efficient flow of grain through a terminal. Oftentimes, vessel loading schedules must be juggled to deal with the grain on hand. This commonly requires the exporter to contend with the additional costs incurred, be it from the need for multiple berthings or vessel demurrage.

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 proportion suggests how consistently grain flowed through the terminal system during the period specified. 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

Terminal Elevator Out-of-Car Time



of seasonality, with out-of-car time often peaking in the winter months, typically the most difficult operational period of the crop year. Taken collectively, terminal elevators were left without grain to unload 12.8% of the time in the 2020-21 crop year, up marginally from 12.6% the previous year.

With its greater operating hours, Vancouver's out-of-car time is most indicative of the system's overall efficiency. Proportionately, 15.5% of the port's total terminal operating hours were idled during the 2020-21 crop year, up from the 14.9% recorded in the previous year. The underlying monthly values also proved modestly greater, ranging from a low of 9.4% to a high of 21.4%, with sharp swings among terminals on both the north and south shores. These gyrations continue to suggest that inconsistent rail service can contribute to terminal inefficiencies.

Much the same can be said of Prince Rupert, which has reported substantially elevated out-of-car times in each of the last four crop years. Even so, the port saw its idle-time proportion fall by 28.3% in the 2020-21 crop year, to 12.9% from 18.0% a year earlier.

As was the case with Vancouver, Thunder Bay also saw an increase in the 2020-21 crop year, with its out-of-car time proportion rising modestly, to 4.1% from 3.8% 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.

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

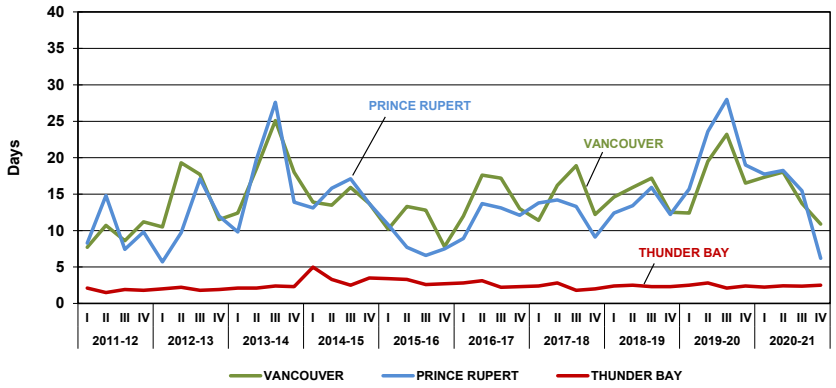
A total of 1,110 vessels called for grain at Western Canadian ports during the 2020-21 crop year. This represented a 7.6% increase over the 1,032 ships that arrived for loading a year earlier. Over half of these, 612, called at Vancouver. This was followed by Thunder Bay with 395, Prince Rupert with 100, and Churchill with three.

Average Vessel Time in Port

The amount of time spent by vessels in port is generally indicative of the GHTS's overall efficiency: when low, it suggests that grain is moving through the system in a timely and uniform manner; when high, it hints at some underlying impediment. The 2020-21 crop year saw a 13.8% decrease in this average, which fell to 10.6 days from 12.3 days a year earlier. This was chiefly due to a 21.9% reduction in the amount of time vessels spent waiting to load, which declined to an average of 5.7 days from 7.4 days a year earlier. This was supported by a 1.7% decrease in the amount of time vessels spent loading, which slipped to an average of 4.9 days from 5.0 days.

Similar patterns were found at all four ports in Western Canada, with each helping to reduce the overall average. At Vancouver, a vessel's average time-in-port decreased by 15.9%, to 15.1 days from 18.0 days a year earlier. This was accompanied by a 28.9% decrease for Prince Rupert, which saw its average fall to 15.6 days from 21.9 days. For Thunder Bay, the decline amounted to a substantially lesser 4.2%, with the average falling to 2.4 days from 2.5 days a year earlier. Even Churchill, which saw minimal activity in its shipping season, recorded an average 13.0-day stay; a 25.7% decrease from the previous year's 17.5-day average.

Vessel Time in Port
(Western Canada)



It is worth noting that the time spent by vessels in port fell sharply in the fourth quarter, with the overall average reaching a low of 6.3 days in June 2021. This was driven by progressive decreases in the amount of time ships spent in the west-coast ports of Vancouver and Prince Rupert, which posted averages of 9.4 days and 2.3 days respectively. These decreases were attributable to an unusually sharp drop in export grain shipments.

The broader improvements cited here point yet again to the critical underpinnings inherent in coordinating the inbound movement of grain by rail with its scheduled outbound movement by ship. The better synchronization of these flows led to fewer waiting vessels, and the better

use of available achorages.[21] All of this helped to limit harbour congestion and reduce vessel demurrage costs.

Distribution of Vessel Time in Port

Impediments to the flow of grain through the terminal network are also reflected in the number of ships spending long periods of time in port. The proportion of ships with stays of more than five days fell marginally in the 2020-21 crop year, to 55.6% from 55.7% a year earlier. Moreover, ships in port for an unusually long time declined, with the proportion of vessels spending 16 or more days in port decreasing to 28.1% from 34.1%. This, however, was almost double the 14.5% level witnessed just six 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

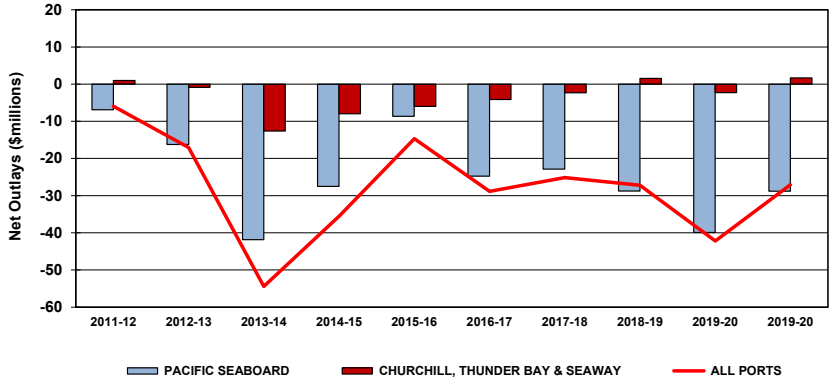
Similarly, there were only modest changes in the proportion of vessels needing to berth more than once during the 2020-21 crop year. At Vancouver, this proportion rose to 56.7% from 53.8% a year earlier. While at Thunder Bay the proportion decreased to 9.6% from 12.9%. Although the Vancouver proportion remains generally consistent with those observed in the first years of the GMP, the reduction posted by Thunder Bay continues to show 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 Western Grain Elevator Association, which provides a monetary indication of how efficiently grain flowed through Western Canadian ports. For an eleventh consecutive year, these two elements dovetailed to produce a net cash outlay for grain handlers. Moreover, the $27.1 million paid out in the 2020-21 crop year proved 35.7% less than the previous crop year's $42.2 million outlay. This financial result was shaped chiefly by a 16.1% decrease in demurrage costs, which fell to $43.8 million from $52.2 million the previous year. Even so, a 66.2% increase in dispatch earnings, which rose to $16.7 million from $10.0 million, helped offset a portion of these demurrage costs.[22]

These results were chiefly driven by a reduction in the financial penalties incurred along the Pacific Seaboard, which produced a net cash outlay of $28.8 million against $40.0 million a year earlier. The results from activity at Churchill, Thunder Bay and points along the St. Lawrence Seaway were less punitive, with reduced demurrage costs leading to a net cash inflow of $1.7 million against a net cash outflow of $2.3 million a year earlier.

Annual Demurrage and Dispatch



21 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.

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

SYSTEM PERFORMANCE
[See TABLE 5E-1]

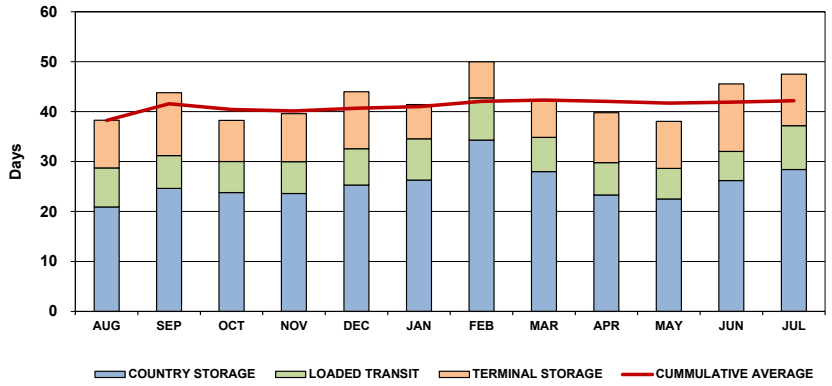
Overall GHTS performance can most readily be gauged by the amount of time taken by grain to move through the system. For the 2020-21 crop year, this meant that it took an average of 42.2 days for grain to move from the Prairies to destinations within Western Canada, a 0.8% increase from the 41.8-day average posted a year earlier. This, however, still denoted a 38.0% 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 at times undermined the supply chain's performance. The 42.2-day average posted in the 2020-21 crop year stands 3.9% above this touchstone value.

The 2020-21 crop year's 0.4-day worsening was largely the product of a 1.7-day increase in country-elevator storage time. This increase, however, was partially offset by a 0.4-day reduction in the railways' loaded transit time, along with a 0.9-day decline in terminal-elevator storage time. Even so, the net increase belies what amounted to generally good system performance throughout much of the crop year.

From the outset, it was apparent that the GHTS would again be required to handle the output of another banner year, where the total grain supply reached a record 86.9 million tonnes, 1.5% more than in the previous crop year. An early harvest allowed comparatively more grain to begin entering the country elevator system in August 2020. This foreshadowed what would be a heavier-than-normal workload, with weekly grain deliveries proving substantially stronger than in the 2019-20 crop year right through to the end of the third quarter, before trailing off sharply in the fourth quarter. Ultimately, Western Canadian producers delivered a record 64.5 million tonnes of grain into the GHTS. However, the sheer volume of deliveries exceeded the carrying capacity supplied by the railways, resulting in a progressive increase in elevator inventories along with the steady aging of these stocks, which rose from August's average of 20.9 days in-store to a height of 34.3 days in February 2021.

Time in the System



The stress imposed on the GHTS would have been even greater if the railways had not been able to meet at least a portion of the additional demand for carrying capacity. Although more equipment and crews were deployed to handle much of the additional volume, the railways were not able to meet all the car-orders put forward, typically supplying better than 80% of what had been sought. Still, railway shipments in August 2020 surpassed 4.0 million tonnes, jumping 23.4% from that moved a year earlier. This presaged the traffic gains that would continue to be registered until a fourth-quarter downturn in demand and volume.

Much of the initial increase in carrying capacity came from the railways' injection of additional equipment, which jumped to an average of 22,809 serviceable hopper cars in the first quarter, a 20.5% gain over the 18,931 supplied in the same period a year earlier. This was bolstered by a general narrowing of the railways' average loaded-transit and car-cycle times, which by the close of April 2021 had fallen 7.1% and 10.6% respectively.

Much of this improvement reflected the efficiencies being gleaned from servicing more loop-track facilities. Shipments from these facilities were

estimated to account for almost one-fifth of the total in the 2020-21 crop year. Moreover, the average loaded-transit and car-cycle times associated with these movements proved significantly better than those from non-loop-track facilities, with advantages of up to four and six days respectively. This differentiated service offering figured prominently in the supplying of additional railway carrying capacity and allowed both CN and CP to transport a record amount of grain to awaiting terminals.

The heightened efficiency of the supply chain was also reflected in the activity of the terminal elevators, which ultimately loaded a record 44.7 million tonnes into the holds of 1,110 ships, turning out an average of three vessels per day for the first time in GMP history. In equal measure, grain spent an average of just 9.8 days in terminal inventory, the lowest recorded in the last seven crop years. The faster flow was manifest in ships that spent less time in port – an average of 10.6 days compared to 12.3 days a year earlier – which helped in the easing of port congestion.

Notwithstanding seasonal influences, the pace at which grain moved through the GHTS during the first nine month of the 2020-21 crop year rivaled some of the best monthly performance measures on record, frequently amounting to less than 40 days. By this point a record 40.9 million tonnes had already been shipped by rail, a full 20% beyond that handled a year earlier. Moreover, the railways were beginning to eat into the existing traffic backlog owing to declining year-end producer deliveries. But a sharp fourth-quarter downturn prompted the railways to place more of its hopper-car fleet into storage, constricting overall carrying capacity and elongating in-system times. The situation was aggravated still further when wildfires around Lytton, British Columbia, led to lengthy service disruptions in July 2021. Even so, grain never required more than 50 days to move through the supply chain, a feat not seen since the 2016-17crop year.

The evidence suggests that both CN and CP have made significant strides in building carrying capacity over the last three crop years. The progress was especially apparent in the first half of the crop year when the railways contended with an average monthly movement of almost 4.7 million tonnes. To an extent, the lingering effects of the COVID-19 pandemic also had a beneficial impact on capacity as the attendant reduction in non-grain traffic continued to favour the movement of grain.

Days Spent Moving Through the GHTS Supply Chain

FARM OPERATIONS

COUNTRY ELEVATOR STORAGE TIME

RAILWAY LOADED TRANSIT TIME

TERMINAL ELEVATOR STORAGE TIME

MARINE OPERATIONS

				TOTAL	NET CHANGE
1999-00	41.7	7.8	18.6	68.1	
2017-18	28.3	6.0	11.5	45.8	-38.0%
2018-19	25.4	7.5	10.9	43.8	
2019-20	23.7	7.4	10.7	41.8	
2020-21	25.4	7.0	9.8	42.2	

Section 6: Producer Impact

Indicator Description	Table	1999-00	2018-19	2019-20	2020-21 Q1	Q2	Q3	Q4	YTD	% VAR
Export Basis										
1CWRS Wheat ($ per tonne) – Original Methodology	6A-10A	$54.58	n/a	n/a						
1CWRS Wheat ($ per tonne) – Revised Methodology (1)	6A-10A	n/a	$92.51	$92.29					$101.43	9.9%
1CWA Durum ($ per tonne) – Original Methodology	6A-10B	$67.63	n/a	n/a						
1CWA Durum ($ per tonne) – Revised Methodology (1)	6A-10B	n/a	$109.99	$117.46					$105.97	-9.8%
1 Canada Canola ($ per tonne)	6A-10C	$52.51	$61.33	$50.79					$54.75	7.8%
Canadian Large Yellow Peas – No. 2 or Better ($ per tonne)	6A-10D	$54.76	$60.35	$62.11					$39.08	-37.1%
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	2,726	2,771	958	821	734	221	2,734	-1.3%

(1) The methodology used to calculate the export basis in the 2012-13 through 2020-21 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.[23] 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.

23 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. For 2015-16 to 2019-20 crop yeasr 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 2020-21, the spread is the differential between the Par Region Cash Price and the Track Vancouver Cash Price (as reported by AAFC). For yellow peas, a price differential is calculated using the average weekly dealer closing price, track Vancouver, and the average weekly grower bid closing price for the months of October and November. These differentials effectively represent the incorporated per-tonne cost of freight, elevation, storage and any other ancillary elements. As such, it encompasses a large portion of the Export Basis.
Grower Association Deductions	Elevator deliveries of wheat and durum are subject to various per-tonne "check-offs" in order to fund variety research, market development and technical support to the industry. The check-offs are administered by the appropriate provincial wheat commission.	Elevator deliveries of canola and peas are subject to various per-tonne "check-offs" in order to fund variety research, market development and technical support to the industry. The check-offs are administered by the appropriate provincial canola and pulse-grower association.
Trucking Premiums	Grain companies report on the trucking premiums they pay to producers at each of the facilities identified in the sampling methodology.[3] The amounts depicted reflect the average per-tonne value of all premiums paid for the designated grade of wheat or durum within the reporting area. In the post-monopoly environment, grain companies have increased the use of their basis (the spread between their cash and the nearby futures price) as the mechanism to attract producer deliveries. This has been accompanied by a significant decline in the use of trucking premiums.	Grain companies use their basis (the spread between their cash and the nearby futures price) as the mechanism to attract producer deliveries. Narrowing their basis, resulting in higher return to producers, is the signal that a company needs a commodity. Conversely a wide basis signals a lack of demand for the product. Some companies, however, offer premiums over and above their basis in order to attract delivery of some commodities. These premiums are presented as a producer benefit when factored into the export basis. Owing to the limited use of this mechanism, they assume relatively small values when weighted by the applicable tonnage at a regional level.
Other Deductions	Other deductions, such as drying charges, GST on services, etc., may also be applied to, and appear as an itemized entry on the cash ticket of, any grain delivery. No attempt is made to capture these deductions within the framework employed here.	Other deductions, such as drying charges, GST on services, etc., may also be applied to, and appear as an itemized entry on the cash ticket of, any grain delivery. No attempt is made to capture these deductions within the framework employed here.

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

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

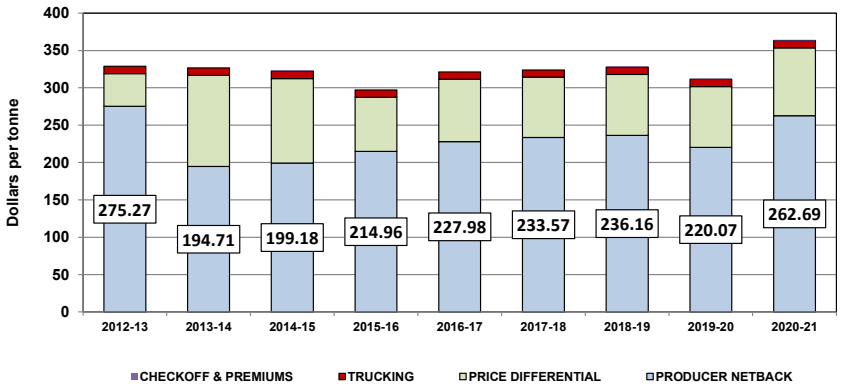
In its earlier reports, the Monitor described how higher prices have generally been responsible for any improvement in the per-tonne returns accruing to producers of wheat and durum. In comparison, reductions in the export basis have proven to be secondary. Whether it be price or the export basis, their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

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

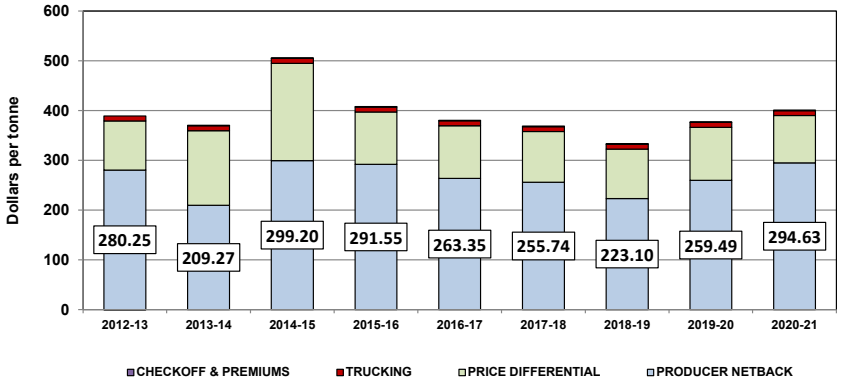
The financial return to farmers of 1CWRS wheat amounted to an estimated $262.69 per tonne in the 2020-21 crop year. This represented a 19.4% increase over the $220.07 estimated a year earlier. Much of the increase was attributable to an escalation in the average price, which is constructed around a tonnage-based weighted average export quotation for 1CWRS wheat (13.5% protein), and which rose by 16.6%, to $364.12 per tonne from $312.36 per tonne a year earlier. This price increase reflected the strong international demand for quality wheat in the face of tighter global supplies brought on by reduced exports from Russia and various European countries.

The $51.76-per-tonne increase in wheat prices was marginally offset by a $9.14-per-tonne increase in the export basis, which rose by 9.9%, to $101.43 per tonne from $92.29 per tonne a year earlier. All of this increase was attributable to a widening of the price differential – or spread – between the export quotation and the elevator spot price, which rose 11.2%, to $90.62 per tonne from $81.48 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. Trucking charges, check-offs, and trucking premiums remaining unchanged at $9.82 per tonne, $1.03, and $0.04 respectively.

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 $294.63 per tonne in the 2020-21 crop year. This represented 13.5% more than the $259.49 per tonne reported in the 2019-20 crop year. The gain was driven primarily by higher durum prices, which rose to an average of $400.60 per tonne, 6.3% above the $376.95-per-tonne average recorded a year earlier. Much of this price gain stemmed from reduced production in the Mediterranean region, which kept global supplies tight in the face of continuing strong demand.

The price gain was bolstered by a decrease in the export basis, which fell by 9.8, to $105.97 per tonne from $117.46 per tonne. Virtually all this $11.49 decrease was attributable to an $11.52 reduction in the price differential, which fell to $95.14 per tonne from $106.66 per tonne a year earlier. As outlined with respect to 1CWRS wheat, the $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 $0.03-per-tonne decline in trucking premiums marginally trimmed the improvement in the producer netback.

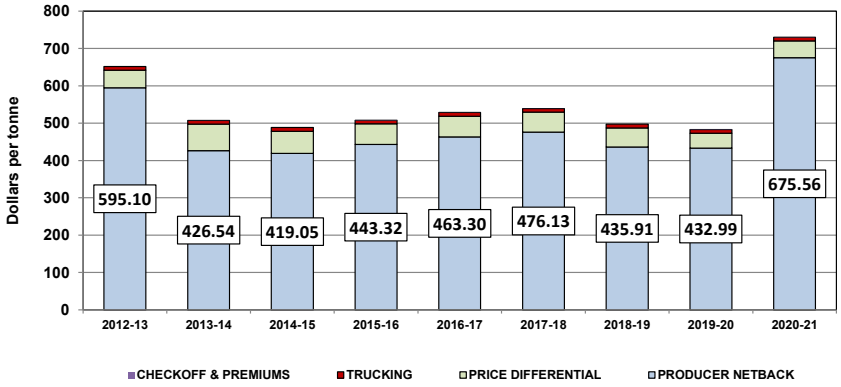
CANOLA AND YELLOW PEAS
[See TABLES 6A-1C through 6A-10D]

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.

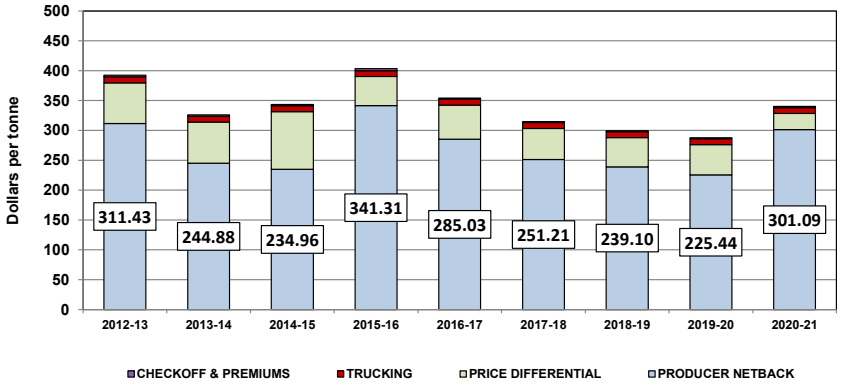
1 Canada Canola
[*See Tables 6A-1C through 6A-10C*]

The netback to producers of 1 Canada canola increased sharply in the 2020-21 crop year, rising to $675.56 per tonne from $432.99 per tonne a year earlier. This result was driven by significantly higher canola prices, with the average Vancouver cash price surging 51.0%, to $730.31 per tonne from $483.78 per tonne. The increase largely reflected the growing

Producer Netback - 1 Canada Canola



Producer Netback - Large Yellow Peas



demand for oilseeds in both domestic and international markets. In addition to exports to traditional purchasers such as China, Japan and Mexico, significant gains were derived from a growing biodiesel market in Europe. Concerns over extremely low carry-out stocks along with the prospect of reduced production in 2021 helped propel prices to record highs.

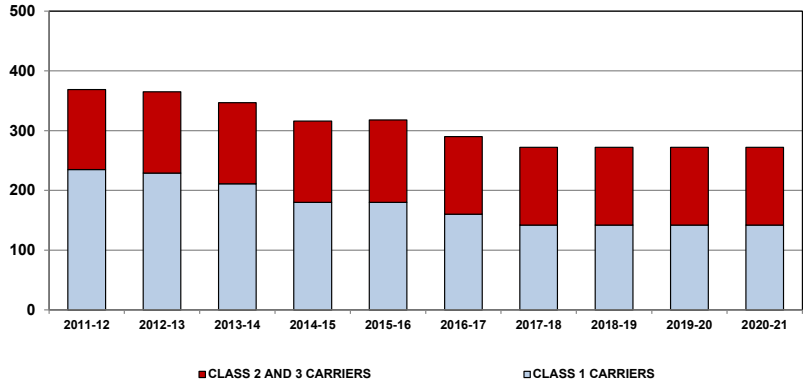
The gain was marginally dulled by a 7.8% increase in the export basis, which rose to an average of $54.75 per tonne from $50.79 per tonne a year earlier. As observed with wheat and durum, virtually all the increase was tied to a change in the price differential, which rose to $44.87 per tonne from $40.10 per tonne a year earlier. The costs derived from trucking and the payment of a check-off did not change in the 2019-20 crop year, so did not contribute to the variance in the producer netback. These were estimated at $9.82 per tonne and $0.92 per tonne respectively. However, an $0.81-per-tonne increase in the trucking premiums paid to producers served to partially offset the rise 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 erratic of the four commodities monitored under the GMP. Producers experienced a 33.6% increase in these returns during the 2020-21 crop year, which rose to $301.09 per tonne from $225.44 per tonne a year earlier. Much of this gain was attributable to the strong demand from China and Bangladesh, which emerged as a significant buyer in the wake of the virtual closure of the Indian market over the last three years. As a result, the dealer's closing price rose by 18.3%, to $340.17 per tonne from $287.55 per tonne.

The export basis for large yellow peas fell by 37.1% in the 2020-21 crop year, to $39.08 per tonne from $62.11 per tonne a year earlier. As with other commodities, much of the decrease was rooted in a lower price differential, which stands in for the cost of freight as well as other handling activities, and which fell by 46.4%, to $27.18 per tonne from $50.72 per tonne. This was marginally offset by a $0.51-per-tonne increase in Pulse Growers Association fees. No impact on the export basis was derived from changes in either trucking costs or trucking and premiums, which remained at $9.82 per tonne and $0.02 respectively.

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*]

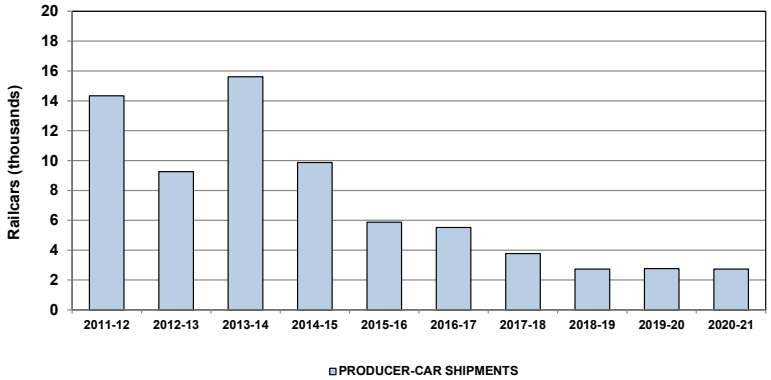
The number of producer-car loading sites situated across Western Canada has continued to decline from the 710 originally benchmarked at the beginning of the GMP. However, the 2020-21 crop year proved to be the fourth consecutive year in which the overall number remained unchanged at 272, with Class 1 carriers operating 142, while Class 2 and 3 carriers operated 130.

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

Scheduled producer-car shipments fell by a modest 1.3% in the 2020-21 crop year, to 2,734 cars from 2,771 a year earlier. This marked an 80% decline from the 15,603-car high reached 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 2020-21 crop year the share given over to wheat, durum and barley had fallen to an estimated 30.5%, up marginally from the 30.3% share estimated a year earlier. Conversely, shipments of oilseeds, special crops and oats slipped, claiming a 69.5% share, down from 69.7% the previous year. This marked the sixth consecutive crop year in which the shipment of these commodities displaced those of wheat, durum and barley.

Producer-Car Shipments



Appendix 1: Program Background

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

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

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

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

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

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

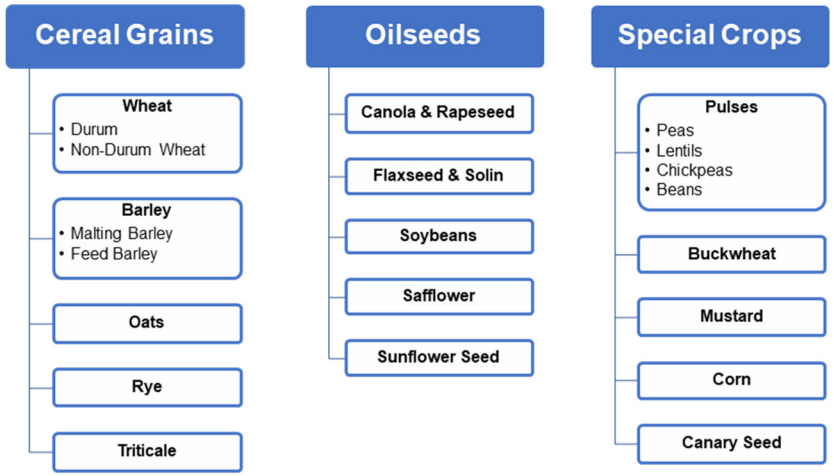
- Series 4 – Commercial Relations: Measurements relating to the rates applicable on various grain-handling and transportation services.

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

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

Appendix 2: Commodity Guide

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



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

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

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

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

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

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

Appendix 3: Acknowledgements

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

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