



July 31, 2021

The Honourable Omar Alhabra, P.C., M.P.  
Minister of Transport  
330 Sparks Street  
Ottawa, ON  
K1A 0N5

Dear Minister Alhabra:

On behalf of Canadian Pacific (CP), I am writing to submit CP's 2021–2022 Grain Service Outlook Report.

As required by section 151.01(1) of the *Canada Transportation Act*, this report provides an assessment of CP's ability to move grain during the upcoming 2021–2022 crop year, taking into account the total volume of grain expected to be moved.

The report also describes the process that CP undertakes each year to prepare for, and respond to, market demand for grain transportation.

Sincerely,

Keith Creel

President and Chief Executive Officer



# Dedicated to Grain

Grain Service Outlook Report for the 2021–2022 Crop Year

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## Table of Contents

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Message from the President and Chief Executive Officer . . . . .	4
Executive summary . . . . .	5
Introduction . . . . .	6
<b>Part 1: Looking back at a record-breaking crop year . . . . .</b>	<b>7</b>
Performance highlights from the 2020–2021 crop year . . . . .	7
Industry-leading safety performance . . . . .	8
CP wildfire safety and risk mitigation . . . . .	9
Customer and industry collaboration and communication . . . . .	10
CP grain performance scorecard . . . . .	11
Grain Elevator of the Year award . . . . .	11
COVID-19 response . . . . .	11
<b>Part 2: Looking forward to grain service excellence in 2021-2022 . . . . .</b>	<b>12</b>
Hopper car targets for the 2021–2022 crop year . . . . .	12
Forecasting the crop size . . . . .	13
Responding to changing market dynamics . . . . .	14
Locomotives and operating crews . . . . .	16
<b>Part 3: Unparalleled innovation and investment . . . . .</b>	<b>17</b>
High Efficiency Product (HEP) train . . . . .	17
Grain hopper car investment . . . . .	18
Dedicated Train Program . . . . .	19
Capital expenditure . . . . .	19
Capacity-enhancing projects . . . . .	20
Technology and innovation . . . . .	21
Hydrogen locomotive program . . . . .	23
<b>Part 4: CP-KCS merger . . . . .</b>	<b>24</b>
Conclusion . . . . .	25



## Message from the President and Chief Executive Officer

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On behalf of Canadian Pacific (CP), it is my distinct pleasure to present our 2021–2022 Grain Service Outlook Report. This is CP's fourth annual report that describes our plan to continue delivering outstanding service for our grain customers.

Again this year, I am proud of the record-breaking results achieved by our talented team of railroaders, especially during the challenges of the COVID-19 pandemic. In each of the past four years, CP has transported more Canadian grain and grain products than ever before in our 140-year history. CP has exceeded 30 million metric tonnes (MMT) for the movement of grain during the 2020–2021 crop year, beating our previous record of 29.52 MMT, which was achieved during the 2019–2020 crop year. This will mark yet another record-breaking year, due to CP's commitment to service excellence.

These record-breaking volumes have been made possible thanks to a focus on innovation and strong investment in capacity-building assets and infrastructure. Our 8,500-foot High Efficiency Product (HEP) train model, together with our new high-capacity hopper cars, produces a train that carries in excess of 40 percent more grain than our historical 7,000-foot grain train. CP is investing \$500 million to renew our fleet of hopper cars. Today, we have more than 4,600 CP-owned and leased new high-capacity hopper cars in active service, with plans to add 1,600 more by the end of 2021. In total, CP has committed to acquiring and leasing a total of 7,400 new hopper cars by the end of 2022. Despite the challenges created by COVID-19, we continue to make significant investments in our network infrastructure. In 2021, our capital plan calls for an investment of \$1.55 billion to improve safety, expand capacity and support long-term, sustainable growth.

These records would not be possible without ongoing strong collaboration with our customers, many of whom are investing in their grain elevator infrastructure to handle 8,500-foot HEP trains. By the end of 2021, more than 40 percent of our Canadian grain customers will be able to accommodate 8,500-foot HEP trains, further increasing capacity and efficiency in the grain supply chain.

In March 2021, CP announced one of the most significant transactions in our 140-year history: an agreement to acquire Kansas City Southern (KCS) to create the first and only rail network connecting Canada, the U.S. and Mexico. Although KCS subsequently received an offer from our main competitor,

there are significant uncertainties whether that proposal can secure regulatory approval in the U.S. Should that proposal fail, CP will be in a position to re-engage with KCS to pursue a merger that is fundamentally in the public interest.

Together, CP and KCS would enhance competition for shippers throughout North America, while delivering unsurpassed levels of service, safety and efficiency, generating economic growth and lowering greenhouse gas (GHG) emissions. The proposed combined network is a transformative opportunity for Canadian shippers, including grain shippers and farmers, because it would seamlessly connect production-rich CP origins to new export destinations in the U.S. and Mexico. Shippers of varied capacity are enthusiastically recognizing the significant benefit this acquisition would have for rail transportation in North America.

We believe that transportation of freight by rail will continue to play an integral role in the low-carbon future for North America. In light of the significant emissions reduction targets achieved to date, CP is a leader in this transformation. In an effort to achieve our ambitious long-term sustainable growth vision, in December 2020, CP launched the development of North America's first line-haul hydrogen-powered locomotive. This project, based in Calgary, aims to develop the next generation of locomotive; one that produces zero emissions. In addition, I was proud to announce on April 1, 2021, the completion of the solar energy farm installation at our Calgary headquarters. The project is one of the largest private solar farms in Alberta and is expected to generate more power than consumed annually at CP's headquarters.

Grain is CP's largest line of business by revenue. We are proud to be transporting record-breaking volumes for our grain customers, and look forward to continuing the strong momentum well into the future. As detailed in this report, CP is once again in a strong position to meet the transportation needs of our grain customers and the broader Canadian economy during the upcoming 2021–2022 crop year.



Keith Creel  
President and CEO



## Executive summary

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This report highlights CP's strong commitment to delivering for our grain customers, day in and day out. We remain focused on growing our grain business by offering customers the most competitive transportation service and by driving efficiency through the grain supply chain. Significant capital investments by customers and CP, and impressive innovations, are enhancing supply chain capacity, efficiency and performance.

By working closely with our customers in the supply chain during the 2020–2021 crop year, CP achieved several records for the movement of Canadian grain. We have exceeded our record of 29.52 MMT of Canadian grain and grain products moved, which was set in the 2019–2020 crop year.

### Key highlights of the 2021-2022 report:

- CP anticipates the 2021-2022 Western Canadian grain crop volume to be lower than the past two crop years. CP is concerned that above average temperatures and persistent dryness – experienced in early summer– may impact crop yields. This forecast is consistent with the expectation of our customers.
- For the 2021–2022 crop year, CP plans to supply 6,000 grain hopper cars to country elevators with CP equipment each week, from August through mid-December, and from April to July, subject to market demand. During the winter months when the Port of Thunder Bay is closed, CP plans to supply 4,350 grain hopper cars with CP equipment each week, subject to market demand.
- Through most of the upcoming crop year, CP anticipates moving on average 1,050 cars of grain products each week, in customer-supplied equipment.
- CP plans to make available 1,050 to 1,150 locomotives, approximately 15,500 grain hopper cars and 3,950 to 4,050 Train and Engine (T&E) employees throughout the 2021–2022 crop year.

- CP is investing \$500 million over four years to purchase 5,900 new high-capacity grain hopper cars, and will have a total of 6,190 new owned and leased grain hopper cars in active service by the end of 2021. The new hopper cars are already providing significant capacity gains.
- CP's innovative 8,500-foot HEP train model, amplified by new high-capacity grain hopper cars, is responsible for more than a 40 percent increase in the volume of grain per train.
- CP is investing \$1.55 billion in 2021 to enhance the safety, fluidity, capacity and resiliency of our rail network.
- CP is the safest railway in North America, as measured by the Federal Railroad Administration (FRA)-reportable train accident frequency rate. We are proud to have achieved this leading position for 15 consecutive years.
- CP is well-positioned to move grain in the 2021–2022 crop year. We expect to move in excess of 30 MMT of grain and grain products this crop year, which is aligned with last year's forecast and the volumes we transported.
- Should it succeed, our CP-KCS merger would provide seamless service from CP's origin-rich grain network to grain outlets in the U.S. and Mexico, including direct access to 12 additional Gulf and Pacific ports.

CP looks forward to delivering for our customers and the broader Canadian economy during the upcoming 2021–2022 crop year.

## Introduction

CP is pleased to submit our 2021–2022 Grain Service Outlook Report to the Minister of Transport, as required by the *Canada Transportation Act*.

This annual report provides an assessment of CP's ability to move grain during the upcoming 2021–2022 crop year, taking into account the total volume of grain expected to be moved.

Part 1 looks back at the 2020–2021 crop year. It reviews CP's outstanding grain performance, our industry-leading safety performance and our strong collaboration with customers to understand their transportation requirements. We also highlight our company's response to the COVID-19 pandemic in 2021.

Part 2 of the report looks forward to the 2021–2022 crop year. It highlights the process that CP undertakes to forecast the size of the upcoming year's grain crop, and then supply

the assets and resources to respond to the market demand for grain transportation.

Part 3 outlines the exciting opportunities that are possible thanks to CP's extraordinary innovations and investments. We outline CP's 2021 capital investments, which are enhancing the safety, fluidity, capacity and resiliency of the railway. We also review CP's deployment of technology and innovation to drive safety and efficiency gains.

Finally, Part 4 provides an overview of our proposed CP-KCS merger and the extensive benefits it would bring to Canadian shippers, including grain shippers and farmers.

Consistent with past years, this report demonstrates that CP is in a strong position to once again meet the transportation needs of our customers, and the broader Canadian economy, during the 2021–2022 crop year.



## Part 1: Looking back at a record-breaking crop year

### Performance highlights from the 2020–2021 crop year

CP has beaten our all-time record of 29.52 MMT of Canadian grain and grain products moved, which was set in the 2019–2020 crop year. Our performance resulted in CP moving record volumes of grain in the first two quarters of the crop year. This was achieved through close collaboration across the supply chain and the relentless focus of CP's world-class operating team.

CP broke several records during the 2020–2021 crop year:

- September 2020: 2.80 MMT (best-ever September)
- Q3 2020: new quarterly Q3 record at 7.72 MMT, which beat our previous Q3 2014 record by 750,000 metric tonnes (MT)
- October 2020: 3.04 MMT (best-ever October and first month to ever exceed 3 MMT)
- November 2020: 2.96 MMT (best-ever November)
- December 2020: 2.84 MMT (best-ever December)
- Q4 2020: Best quarter on record with 8.84 MMT moved. The Q4 result breaks the company's previous quarterly record, set in Q2 2020, by 200,000 MT.
- January 2021: moved 2.22 MMT (best-ever January)
- Q1 2021: new quarterly Q1 record at 7.14 MMT, which beat our previous quarterly record for the first quarter of 2020 by 765,000 MT
- April 2021: CP moved 2.84 MMT, matching the April 2020 record

These achievements demonstrate the ongoing strength of CP's operating model and robust collaboration with our customers. From August 1, 2020, to the end of June 2021, CP moved 28.77 MMT of Canadian grain and grain products. This is approximately 1.84 MT more grain than our previous record during the same time frame, which was set in the 2019–2020 crop year and represents a 6.8 percent year-over-year increase in grain shipments.

We also achieved a record for the movement of grain through Vancouver, the largest outlet for the flow of Canadian export grain. From Aug. 1, 2020 to June 30, 2021, CP moved 17.01 MMT through Vancouver, up 28.9 percent and 3.81 MT above the prior high point achieved in the previous crop year.<sup>1</sup> CP is pleased to see the ongoing investment and operational improvements at the Port of Vancouver and continued progress towards 24/7 operations across the various terminals.

**“From a combine’s first cut in the field to a ship’s departure from port, many dedicated individuals, teams and organizations must come together to make grain transportation a success. As we reflect on the record movements of grain this crop year, we must think about the hard-working people across the supply chain who’ve helped to feed the world in a year of great adversity.”**

**Joan Hardy**

*Vice-President Sales and Marketing  
Grain and Fertilizers*

<sup>1</sup>The 17.01 MMT figure is whole grains only.

## Industry-leading safety performance

Safety is foundational to everything we do at CP. We are proud to have achieved the lowest FRA-reportable train accident frequency rate among all Class 1 railways in North America for 15 consecutive years.<sup>2</sup> CP knows that safety is a journey, not a destination, and we continually work to improve safety measures. We are currently focused on several important initiatives, including CP Home Safe, which is aimed at fostering a strong safety culture across the company. CP Home Safe is an awareness program that encourages the elimination of risky behaviour that can lead to incidents. CP has modified training for new employees to enhance the safety focus with longer instructional duration and innovative presentation methods, including simulation and video conference. CP is also expanding the implementation of technology and the use of big data to detect and predict track and equipment failure.

FIGURE 2: FRA PERSONAL INJURY FREQUENCY, 2016–2020 (PER 200,000 EMPLOYEE HOURS)

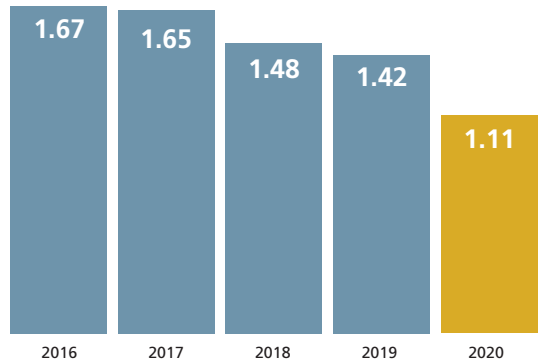


FIGURE 1: FRA TRAIN ACCIDENT FREQUENCY, 2016–2020 (PER MILLION TRAIN-MILES)

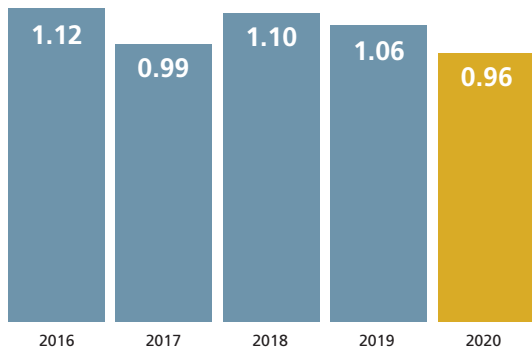
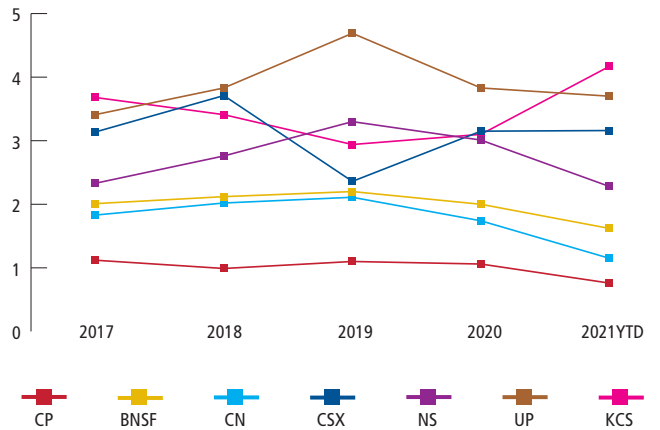


FIGURE 3: CLASS 1 COMPARE: FRA TRAIN ACCIDENT RATE, 2017–2021 YEAR TO DATE (YTD)\*



\*Train accidents: CP to June 30, 2021. CN to May 31, 2021. All other Class 1s average is presented to Apr. 30, 2021.

<sup>2</sup>Data collected and published annually by the FRA in the U.S. shows CP as the industry leader for achieving the lowest train accident frequency rate of all Class 1 railways in North America.



## CP wildfire safety and risk mitigation

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CP's operations were halted by the tragic June 30, 2021 wildfire in Lytton, B.C. Multiple government and law enforcement agencies are investigating the cause of this devastating wildfire. A cause has not been determined and statements that a freight train started this fire remain speculation.

Rail infrastructure is essential to Canada's national supply chain, depended upon by Canadians each day to deliver essential goods to their communities and move exports to international markets. Railways have limited routing options when a critical element of rail infrastructure, such as a bridge, is damaged and inoperable, by fire or any other natural occurrence. CP invests significantly in wildfire prevention, monitoring, and mitigation to maintain safe operations and to protect critical infrastructure from operational disruption caused by wildfires.

CP has dedicated professionals within our Operations Centre who continually assess wildfire risk in close proximity to our track network. This includes reviewing the current and forecasted weather and moisture conditions, assessing the mitigation measures in place, and modifying them as needed. CP works in close collaboration with government agencies, including the B.C. Wildfire Service, to share information on wildfire activity and risk.

### CP wildfire mitigation on-going activities

- CP has a robust vegetation management plan to limit vegetation growth on our right-of-way and in yards.
- CP clears trees and brush in proximity to the right-of-way to prevent vegetation encroachment and mitigate fire risk.
- CP soaks the track and surrounding vicinity with water to mitigate fire risk when undertaking railhead grinding, a critically important activity to maintain safe railway infrastructure.
- During periods of extreme temperatures, CP increases the frequency of track inspections and reduces train speeds or halts traffic (determined by conditions) to maintain a safe rail infrastructure to support train operations.

### CP Lytton wildfire response

In response to the Lytton, B.C. wildfire, CP took additional actions prior to the July 11 Transport Canada Ministerial Order. To avoid adversely impacting local, provincial or national emergency response assets, CP deployed the following additional emergency response assets to the area:

- Two water trucks (1,000 gallons and 500 gallons) and manpower stationed on standby on CP's right-of-way at Lytton
- 24/7 on-call supervisors stationed at Spences Bridge to respond quickly to any reports of fire along the right-of-way
- A grinder staged in North Bend with a tank that can store water with a capacity of up to 4,500 gallons
- A hi-rail support vehicle with a 250 gallon water tank
- Two high capacity (2,800 gallons) high rail water trucks in Kamloops
- Firefighting resources on standby
- Donation of a large water bladder (5,000 gallons) with fire pump/hose connections to Cooks Ferry First Nation to assist their efforts



## Customer and industry collaboration and communication

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CP is committed to strong customer communications and responsiveness. Our grain Sales and Marketing team is in regular contact with customers to gain insight about their business and determine how we can meet their transportation needs.

CP also meets with agriculture industry organizations and participates at industry events across Canada, often through presentations and sponsorships.

A number of events during the past year were cancelled due to COVID-19 restrictions. Despite this, CP participated in the following four agriculture industry events to provide updates on our grain performance and investment plans to our customers and senior government representatives:

- Grain Growers of Canada – October 2020
- Keystone Agricultural Producers – November 2020
- Prairie Oat Growers Association – March 2021
- Manitoba Agriculture Round Table – April 2021

**CP is committed to strong customer communications and responsiveness. Our grain Sales and Marketing team members are in regular contact with customers to better understand their business and how we can meet their demand.**

CP was proud to host a virtual consultation round table on April 12, 2021. Round table participants were Manitoba agriculture industry representatives; senior government leaders, including the Honourable Blaine Pedersen, Manitoba's Minister of Agriculture and Resource Development, and the Honourable Ron Schuler, Manitoba's Minister of Infrastructure; and CP representatives from grain Sales and Marketing. Attendees discussed grain supply chain capacity and efficiency, including the advantages of the HEP train model and how to ensure that all participants in the supply chain are aligning their organizations to maximize grain movement with CP.

We use additional tools to facilitate direct communications and provide access to up-to-date shipment and network information. These tools include shipment information, carload and intermodal tools; bulletins and messages on our website at [Customer Station](#); and the option to reach CP representatives at our Network Service Centre day or night via toll-free telephone (1-888-333-8111), email or online messaging ("log an issue" feature). CP believes this information, together with ongoing dialogue with our customers, is productive.

CP looks forward to direct and open dialogue with customers and industry representatives during the upcoming 2021–2022 crop year.

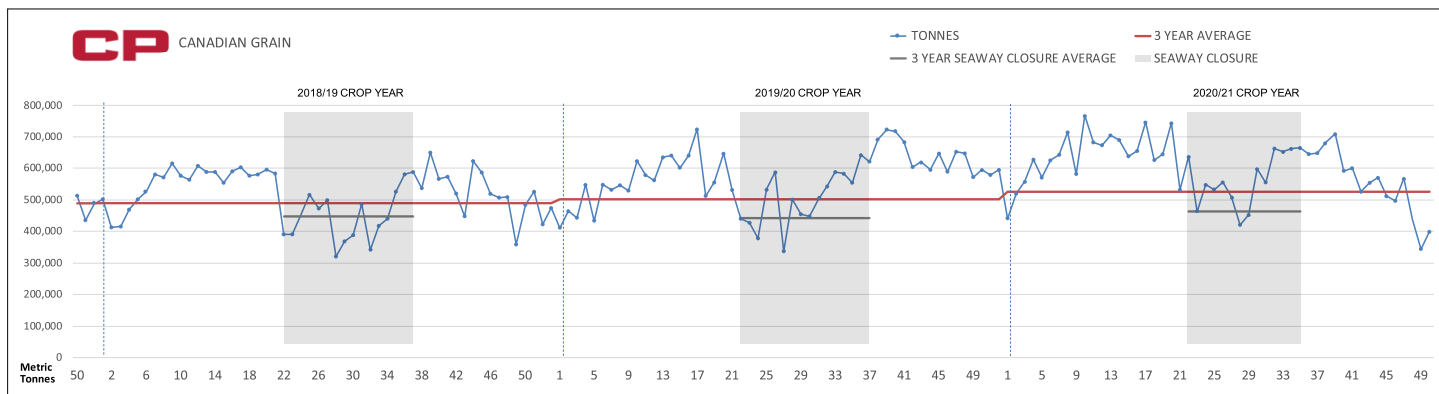
## CP grain performance scorecard

In an effort to increase the transparency of our weekly grain performance in Canada, CP developed a [supply chain scorecard](#).

The scorecard reports CP's performance for each previous week and includes, when necessary, detailed information on any internal or external factors affecting grain movement.

The scorecard reports movement of Canadian grain and grain products, consistent with those required by the minimum mandate legislation of 2013–2014 and the movement of other non-regulated principal field crops.

FIGURE 4: CP'S SUPPLY CHAIN SCORECARD



## Grain Elevator of the Year award

Viterra Gull Lake won CP's 2019–2020 crop year Elevator of the Year award. CP presents this award annually to the grain elevator that achieves high volumes from a single loading point while consistently demonstrating efficient railcar loading and a strong commitment to safety.

Viterra Gull Lake is located west of Swift Current, Sask., and is a valued stakeholder and an integral network node for CP. The Gull Lake elevator became 8,500-foot HEP train-capable in early 2020.

CP will announce the 2020–2021 crop year Elevator of the Year later this year.

## COVID-19 response

Throughout the COVID-19 pandemic, the health and safety of CP employees has been at the heart of our decision making. CP is steadfast in our commitment to protect employees while serving customers and the communities that rely on our network. The recognition of rail as an essential service by the Canadian and American federal governments, and by the governments of the provinces and states in which CP operates, has ensured that CP can continue to deliver for customers and the North American economy.

CP's actions included early policies restricting work travel and enforcing self-isolation for personal travel, the implementation of a dedicated COVID-19 resource line to address employee questions and concerns and to assess employees seven days a week, a face covering policy, educating employees about the importance of proper hygiene and physical distancing, implementing a work-from-home initiative for employees not in critical operations or operations-support roles and enhancing workplace sanitization products and methods.

CP is proud of everyone's efforts to ensure the health and safety of employees, while maintaining safe and effective rail operations. COVID-19 has not created staff shortages at CP or impaired our ability to provide critical transportation services.

## Part 2: Looking forward to grain service excellence in 2021-2022

### Hopper car targets for the 2021–2022 crop year

CP is well-positioned to move grain in the upcoming 2021–2022 crop year. We are planning to supply 6,000 grain hopper cars each week with CP-owned equipment, from August through mid-December, and from April to July, subject to market demand.

We anticipate a slow start to the crop year as the anticipated carry-in volume of Canadian grain is 7 MMT, an eight-year low. The typical carry-in stock is 11 MMT on average, which allows customers to use available grain supply chain capacity to move grain early in the crop year.

The Port of Thunder Bay is a major CP outlet for Canadian export grain moving by vessel on the St. Lawrence Seaway. Winter weather typically forces the Port of Thunder Bay and the seaway to close from mid-December to March. CP plans to supply 4,350 grain hopper cars with CP-owned equipment each week during this period.

In addition to these supply forecasts, CP anticipates moving on average 1,050 cars of grain products each week in customer-supplied equipment through most of the upcoming crop year.

On a weekly tonnage basis, this equates to 676,800 MT of grain and grain products during the spring, summer and fall periods, and 518,400 MT per week during the winter months when the Port of Thunder Bay is closed.

Figure 6 provides CP's quarterly grain and grain product volume targets. With the cooperation of all elements of the supply chain, and assuming demand is robust, CP hopes to exceed these movement forecasts. CP expects to move more than 30 MMT of grain and grain products during the 2021–2022 crop year. This target includes all Canadian grain and grain products moved by CP.

**We expect to move more than 30 MMT of grain and grain products during the 2021–2022 crop year, subject to market demand.**

FIGURE 5: CP GRAIN AND GRAIN PRODUCT PERFORMANCE TARGET FOR THE 2021–2022 CROP YEAR (MT PER WEEK)

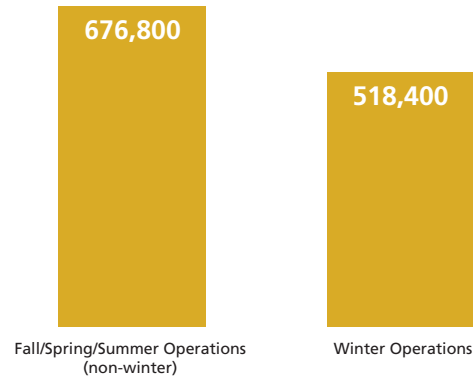
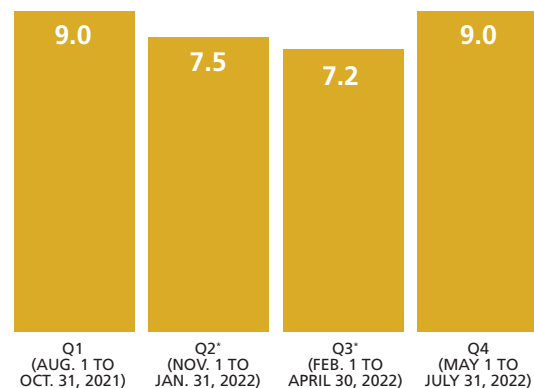


FIGURE 6: CP GRAIN AND GRAIN PRODUCT PERFORMANCE TARGET BY QUARTER FOR THE 2021–2022 CROP YEAR (MMT PER QUARTER)



\*Note: Estimates assume the Port of Thunder Bay closure from Dec. 22, 2021 to March 22, 2022.

## Forecasting the crop size

We understand the desire of the government and other stakeholders to gain as much insight as possible into the supply chain's ability to move grain, in support of producers and the broader Canadian economy. However, it is challenging to obtain an accurate forecast for the size of the upcoming crop until we are much closer to harvest. This timing challenge is amplified in years when the harvest occurs later in the fall. When forecasting the crop size, CP's grain Sales and Marketing team works extensively with our customers to gain a firm understanding of their specific forecasts and expectations for the upcoming crop year. Precise customer forecasts are critical to CP's resource-supply planning. In an effort to refine and validate customer forecasts, the team looks at the five-year historical averages and the latest Statistics Canada predictions on production and carry-in for the upcoming crop year.

CP anticipates the 2021-2022 Western Canadian grain crop volume will be lower than the past two crop years. CP is concerned that above average temperatures and persistent dryness – experienced in early summer – may impact crop yields. This forecast is consistent with the expectation of our customers. The 2020-2021 crop year carry-in volume for Western Canada is projected to be 7 MMT, an eight-year low, and 4 MMT lower than the 10-year average of 11 MMT. Reduced carry-in stock may impact customer demand early in the crop year.

**The crop size can fluctuate significantly from year to year. For example, we have seen shifts of up to 17 MMT from one year to the next.**

**CP's operational plan is sized to the available capacity throughout the supply chain. This includes the capacity available at in-country elevators and port terminals, and other facilities such as canola crush and container stuffing operations. Our forecast assumes that the entire supply chain, including the critical portion through Vancouver, will run at or near capacity throughout the entirety of the crop year.**

FIGURE 7: CP CROP PRODUCTION FORECAST PROCESS



Actions taken by other members of the supply chain can have a significant impact. For example, farmers will sometimes hold onto their grain, preferring to wait for market prices to improve. It is also important to recognize that the crop size can naturally fluctuate from year to year. For example, the industry has seen shifts of up to 17 MMT between crop years.<sup>3</sup> The 2017-2018 crop year was originally forecasted at approximately 65 MMT but was actually closer to 71 MMT, a variation of nearly 10 percent. That extra 6 MMT of grain and grain products represents an additional 66,000 grain hopper cars, or 590 grain unit trains, to be placed, loaded, delivered, unloaded and in most cases, deposited in a vessel.

<sup>3</sup>Statistics Canada. CANSIM 001-0017. Estimated areas, yield, production, average farm price and total farm value of principal field crops.

## Responding to changing market dynamics

Global demand for Canadian grain and grain products is expected to remain strong through 2021 and into 2022. Factors influencing grain markets include limited global grain supplies, strong Asian demand, COVID-19 recovery and economic re-stabilization.

Increased global demand has translated into higher exports for most field crops during the 2020–2021 crop year. Export demand was led by China, which has been actively purchasing grain worldwide and is the main driver behind higher Canadian exports for most principal field crops.<sup>4</sup>

For the 2020–2021 crop year, China is on pace to import more grain and oilseed than it has during any single year in history. China's total wheat imports are forecasted at 10 MMT this year, up from 5.38 MMT last year, and soybean imports are projected to reach 100 MT this year, up substantially from the 88 MT imported during the 2019–2020 crop year.<sup>5</sup> China's demand for wheat and soybeans is being driven by the replenishment of domestic grain stockpiles and the re-establishment of hog herds. Hogs were culled from 2017 to 2019 due to the African swine flu that swept across China.

CP responded to increased Asian demand by transporting record volumes of grain and grain products through Vancouver, Canada's primary gateway for Canadian-Asian trade.

**"Stocks of wheat, canola, barley, soybeans, dry peas, oats and lentils were all down on March 31 compared with the same day a year earlier, on record exports. Canadian railways continued to move grain at record levels..."**

**Statistics Canada**

*"Stocks of principal field crops, March 31, 2021."*

CP's business model drives capacity by leveraging operational efficiency and velocity. We can quickly adjust to changing corridor demand, but not overall volumes because this requires deploying assets and human resources.

**According to the Ag Transport Coalition, CP has 56 percent of the elevator network market share, as measured by share of carloads moved by crop year to date. The Ag Transport Coalition covers 90 percent of the grain movement.**

Within reason, CP is well-positioned to accommodate unexpected surges in volumes caused by challenges experienced by other rail carriers, non-rail participants in the supply chain or adverse weather. While CP does not currently expect any particular supply chain challenges, we note that network service disruptions do not occur in a vacuum. Rather, they are the product of multiple factors throughout the supply chain. As a result, CP will continue to work with our interchange carriers and other participants in the supply chain to maintain interchange fluidity, optimize loading and billing and balance car cycle flows. An extraordinarily complex, interdependent supply chain requires collaboration and cooperation from all participants. We urge the government to seek and provide greater visibility on the entire supply chain, not just rail.

Several other external factors such as currency fluctuations and interest rate decisions can influence global demand for grain and grain products.

<sup>4</sup>Statistics Canada. *Stocks of principal field crops, March 31, 2021.*

<sup>5</sup>Farmers Forum. *World's biggest grain buyer buys even more. What's China Up To? April 16, 2021.*

FIGURE 8: CP'S GRAIN ELEVATOR NETWORK

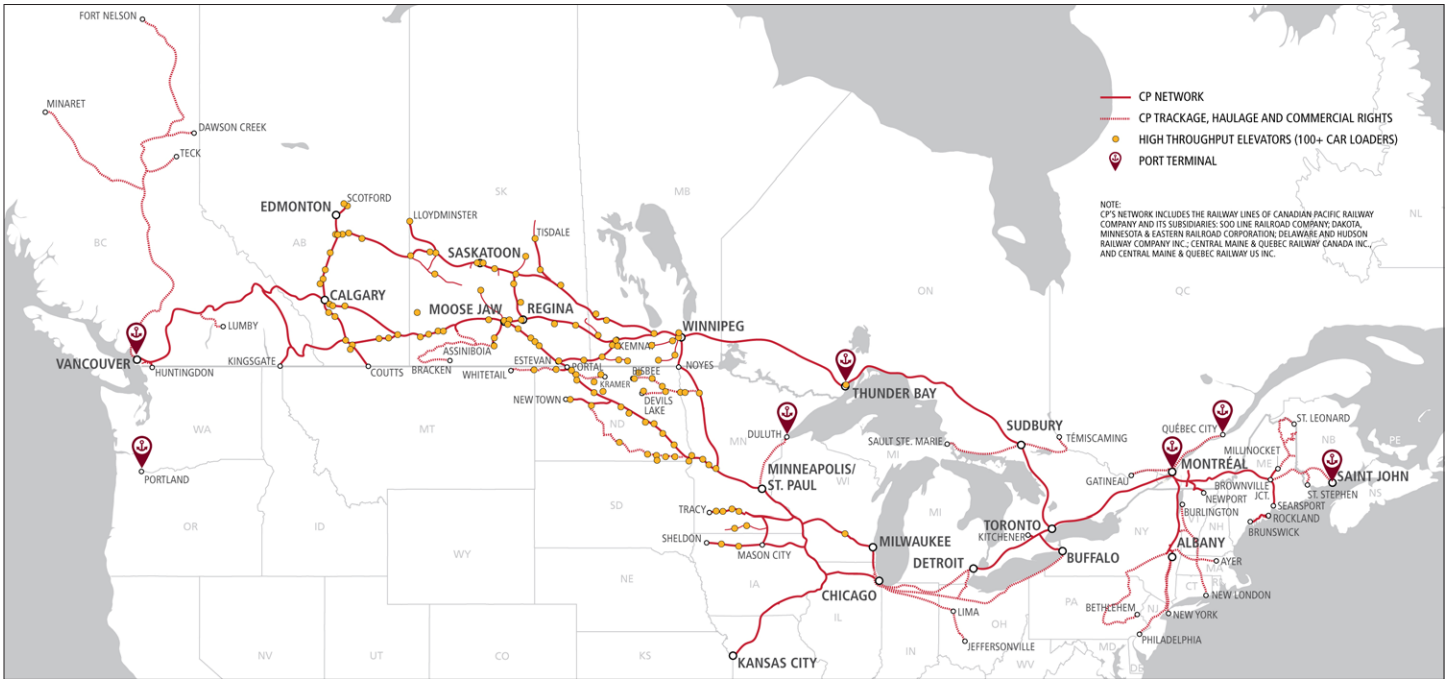
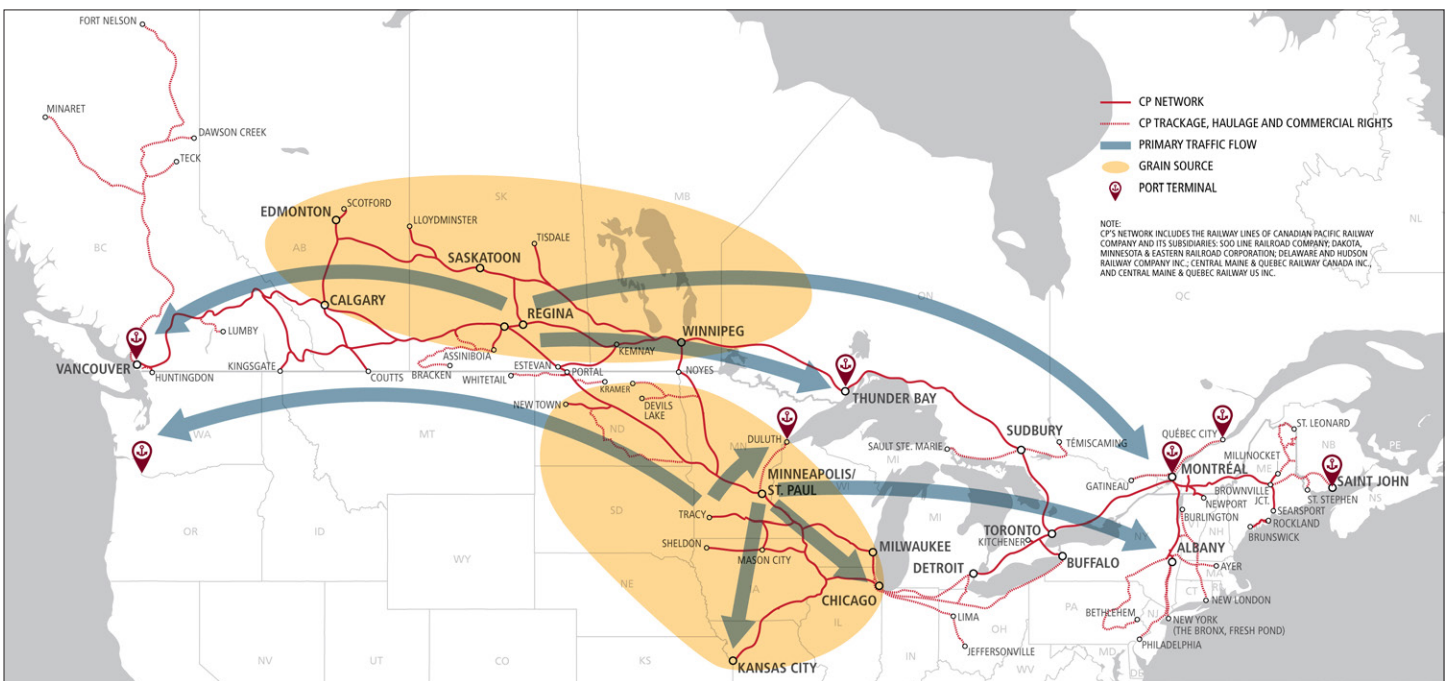


FIGURE 9: PRIMARY GRAIN TRAFFIC FLOWS ACROSS CANADA AND U.S.



## Locomotives and operating crews

CP has undertaken a robust locomotive modernization program, and has modernized 386 high-horsepower main line locomotives in the fleet since 2012. Equipped with the latest technology, these locomotives are significantly improving reliability and performance.

To further meet the needs of North American customers, CP is hiring 850 T&E employees in Canada during 2021. Currently, we have 590 new operations employees in various stages of training in Canada.

For the upcoming crop year, CP plans to make available approximately 1,050 to 1,150 locomotives in service, up to 15,500 grain hopper cars and 3,950 to 4,050 T&E employees.

Crews, locomotives and rolling stock are needed to move commodities across our North American network. Of particular note, CP's grain hopper cars are interoperable between Canada and the U.S. This flexibility enables CP to maximize empty spotting at all grain elevators.

**For the upcoming crop year, CP plans to make available approximately 1,050 to 1,150 locomotives, up to 15,500 grain hopper cars and 3,950 to 4,050 T&E employees.**



## Part 3: Unparalleled innovation and investment

### High Efficiency Product (HEP) train



To effectively compete and grow, the Canadian grain supply chain must continually generate new efficiencies and drive innovation. CP is answering that call with our 8,500-foot HEP train model. In collaboration with customers, the 8,500-foot HEP train model is changing the Canadian grain landscape for years to come. Origin high-throughput (HTP) elevators earn economic incentives to load 8,500-foot trains clear of the main track in 16 hours or less.

CP is excited about the enhanced capacity of the 8,500-foot HEP train, particularly when used in conjunction with our new high-capacity grain hopper cars. The significant investment in new grain hoppers is detailed later in this report. The new hopper cars carry 15 percent more volume and 10 percent more weight compared to the cars they are replacing. Combined, these two changes significantly increase the capacity of the grain supply chain. An 8,500-foot HEP train carries in excess of 40 percent more grain than the 7,000-foot train model when combined with the additional capacity of the new hopper cars.

**CP's 8,500-foot HEP train, combined with new high-capacity hoppers, increases grain volume per train by more than 40 percent**

An HTP facility capable of loading an 8,500-foot HEP train clear of CP's main track in 16 hours or less, using a loop track, is an extremely efficient model. The train's composition remains intact with both the locomotives and hopper cars throughout the loading process. The customer uses CP's locomotives to move the train through the loop track to



facilitate the loading of hoppers with grain, which takes 16 hours or less. Once the train is loaded, our crew pulls the train from the customer's facility onto CP's main line track for transport to destinations across North America. All new greenfield 8,500-foot-capable HTP elevators built on CP's network will incorporate a loop track design.

**Increased capacity to drive efficiency and better year-round reliability.**

There are efficiency benefits to using this new model, including reduced loaded dwell time since the locomotives remain with the hopper cars, and increased reliability as locomotives maintain train air brake pressure during the loading process. In turn, this expands elevator capacity, thereby allowing grain companies to buy more grain from producers.

CP is excited for the continued expansion of capacity throughout the grain supply chain. We are working with our customers to upgrade the balance of the existing network infrastructure to the 8,500-foot HEP model, and to add new 8,500-foot-capable loop track elevators at strategic locations. By the end of 2021, CP expects that more than 40 percent of the elevators we serve will be loading 8,500-foot HEP trains.

Through strong collaboration with customers, CP is creating significant new capacity levels and is driving strong efficiencies in the grain supply chain.

## Grain hopper car investment

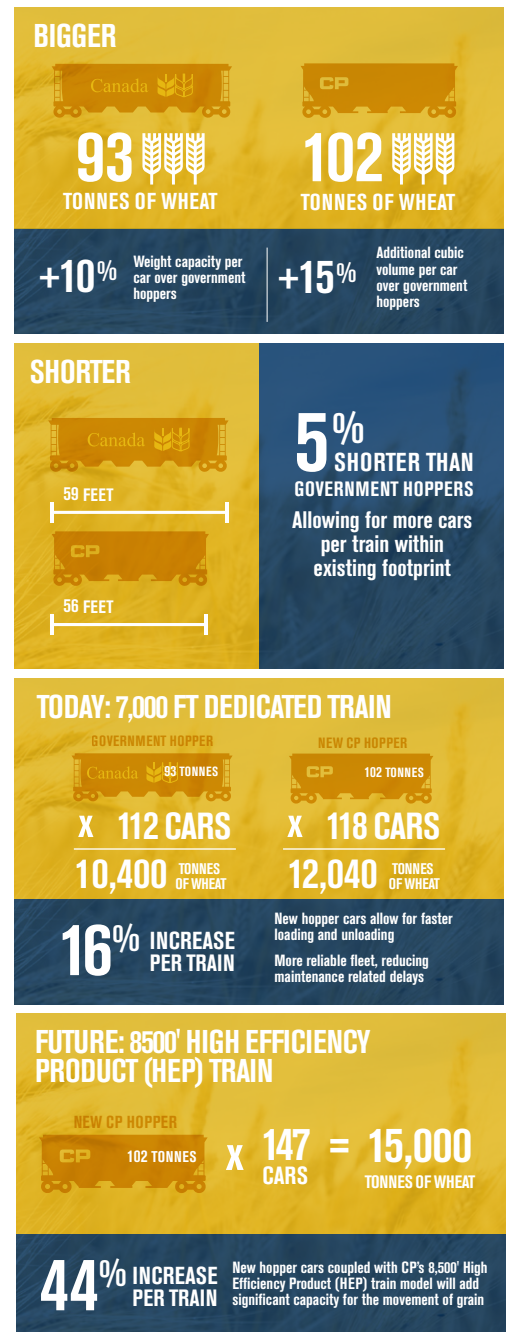
On June 7, 2018, CP announced plans to invest more than \$500 million over four years to acquire 5,900 new high-capacity grain hopper cars as part of our commitment to the agriculture sector. Our grain customers can expect to see 6,190 new hoppers (4,700 CP-owned and 1,490 leased) in active service by the end of 2021, enabling us to transport more grain in each train. By the end of June 2021, we had more than 4,600 owned and leased new high-capacity grain hopper cars in our fleet.

The new hopper cars are designed to be shorter, wider and lighter, and will carry more grain than the hoppers being retired from CP's fleet. The hoppers feature a three-pocket design that can be loaded and unloaded more efficiently than the four-pocket Government of Canada cars. They can handle more than 15 percent greater volume and 10 percent greater load weight than traditional cars, while featuring a shorter frame that enables more cars to be used on a train of the same length. The hoppers feature newly manufactured components that are more reliable, significantly reducing maintenance-related delays.

Inclement weather in Vancouver negatively impacts the movement of grain and grain products, and the overall supply chain performance. Delays in grain vessel loading causes backups in the grain supply chain as Vancouver-bound grain unit trains must be held at the inland terminal or elsewhere on CP's network. This constrains overall network capacity. CP encourages all grain supply chain participants, including unions, to develop practical measures to improve grain-loading in Vancouver during periods of inclement weather while maintaining the highest safety standards.

CP plans to have 7,400 owned and leased new high-capacity hoppers in service by the end of 2022, enabling the complete removal of all low-capacity hoppers from the fleet, including all hopper cars owned by the Government of Canada.

FIGURE 10: BENEFITS OF CP'S NEW GRAIN HOPPER CAR INVESTMENT



## Dedicated Train Program

CP's Dedicated Train (DT) program has been in place since the 2014–2015 crop year. This commercial program for car supply gives shippers the ability to lock in capacity for a 12-month period, providing flexibility and control over their supply chain during the crop year. Customers choose the corridors where they will ship and how many trains they require to fulfill their shipping needs. They choose where trains are to be loaded and, when presented with multiple options, they determine the order in which these trains are placed.

The strength of the DT program is that it is reciprocal. It commits CP to provide capacity to a customer, and in return, the customer commits to use that capacity. If CP fails to provide the agreed capacity to a customer or the customer fails to use the allocated capacity, there are reciprocal penalties.

The success of the DT program benefits both supply chain participants. The shipper and CP customers are incentivized to load and unload trains as quickly as possible since the overall tonnage they can sell in the marketplace is a function of the overall cycle time of the capacity they have purchased. Customers are committed to cycling grain assets as efficiently as possible and forecasting demand at a level that promotes sustainable resource planning. At a macro level, this drives a virtuous cycle of continuous and consistent grain movements that increase the overall grain volume transported. It also motivates increased investment in the supply chain by customers. The DT program is available to any customer with the capacity to load a unit train.

Customers who choose to not participate in the DT program can order hopper cars through the open distribution program, which allows customers to request shipment from CP with two weeks' notice.

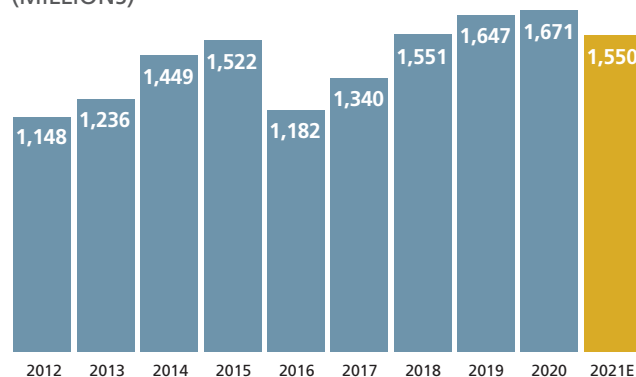
## Capital expenditure

CP expects the total 2021 system-wide capital investment to be approximately \$1.55 billion. This significant investment builds on our record 2020 \$1.67 billion capital program.

To meet the demands of customers and improve safety and efficiency, CP has invested more than \$12.7 billion between 2012 and 2020. This significant investment has allowed CP to expand capacity, increase efficiency and improve safety performance. Additional network upgrades will drive even more capacity, efficiency and safety improvements.

**We expect our total 2021 system-wide capital investment to be approximately \$1.55 billion.**

FIGURE 11: CP'S ANNUAL CAPITAL INVESTMENT (MILLIONS)



## Capacity-enhancing projects

For 2021, the following eight projects are currently underway, each of which will enhance the capacity of the grain supply chain.

Our 2021 capital investments are enhancing the safety, fluidity, capacity and resiliency of the railway. The projects listed below represent CP's current plans. Individual projects are subject to change because the health of the network demands flexibility to adjust capital investment in response to changes in market demand and operational requirements.

Location	Subdivision	Project description/notes
Calgary Terminal	Brooks	Extend two tracks (depots 3 and 4) over the Elbow River into Alyth Yard.
Crowfoot	Brooks	Extend siding to 12,000 feet, which supports long trains and bulk growth (grading 2020, track construction 2021).
Piapot	Maple Creek	Extend siding by 3,989 feet, from 8,211 feet to 12,200 feet.
Irvine	Maple Creek	Extend siding by 4,202 feet, from 7,998 feet to 12,200 feet (grading 2020, track construction 2021).
Red Jacket	Broadview	Extend siding by 4,756 feet, from 7,444 feet to 12,200 feet.
Banff	Laggan	Extend siding by 6,388 feet, from 7,312 feet to 13,700 feet.
Red Deer to Wolf Creek	Red Deer	Install 18 miles of Centralized Traffic Control (CTC) from Red Deer to Wolf Creek.
Airdrie North to Red Deer	Red Deer	Install CTC from Airdrie North to Red Deer. This is the second year of a two-year installation plan.



## Technology and innovation

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CP is at the forefront of predictive analytics in the rail industry. Using our patented technology, we accumulate big data on locomotives, railcars and track infrastructure. Through a variety of wayside and rolling stock sensors strategically located across our network, we can process massive amounts of data into in-memory data management technology with unparalleled analytical capabilities. This enables us to better anticipate issues and take preventative measures before an incident occurs.

CP's innovative data analytics work is replacing manual processes with automation, and gives us the ability to optimize our service offering without compromising our commitment to safety. Customers continue to see service improvements due to this work, including:

- Reduced terminal dwell as a result of automated inspections
- Increased reliability and predictability of shipments
- Decreased service interruptions
- Reduced cycle times and greater overall efficiency

Data analytics and machine learning are utilized across the rail industry; however, automated analysis alone rarely drives the desired efficiencies. CP's focus is to solve operating complications by gathering data from every railcar with powerful back office architecture. This enables us to identify and action low-level trends, which in turn improves service reliability and predictability for customers.

Combining industry-leading data analytics and detection technologies allows CP to run one of the most efficient and safest railways in the industry. Using above-the-rail and below-the-rail technologies, CP captures a holistic view of our operations to make rapid adjustments and enhance service in real time.

### Above-the-rail technologies

Cold Wheel Technology Automated Train Brake Effectiveness

- Measures wheel temperature following a grade where brake application was required.
- Identifies cars with wheels below a temperature threshold to undertake further inspection and repair as necessary.
- Reduces terminal dwell time while increasing safety.

Wheel Life Forecasting

- Predicts wheel life using detector data.
- Uses car repair data and trending detector sources to narrow wheel wear limits down to a month.
- Allows private car owners to subscribe to reports so they can perform proactive maintenance.

Cracked Wheel Detection

- Detects wheels that have the potential to break when hauling heavy axle load commodities.
- Aims to identify metallurgical defects below the surface of railcar wheels. Enables defects to be detected before they lead to wheel failure.

Wheel Impact Load Detectors

- Precisely measures and produces alerts for overweight or severely imbalanced railcars.
- Enables CP to forecast individual freight car wheel life and proactively avoid service interruptions.

Predictive Bearing Failure Using Acoustic Sensors

- Using acoustic detector data, algorithms predict wheel bearing failure three months in advance.
- Enables CP to pull and repair assets as soon as issues are detected, reducing online bearing-related failures by 95 percent.

Train Airflow Monitoring

- Monitors locomotive event recorder data in real time to identify trains that cannot maintain a state of air system charge in extreme cold network regions.
- Reduces airflow-related service interruptions. As a result, service interruptions have been reduced by more than 50 percent.

### Below-the-wheel technologies

Broken Rail Detection in Dark Territory (non-signalled track)

- New technology that automatically detects broken rails in non-signalled territory has similar safety benefits to CTC.
- Aims to prevent derailments by identifying broken rails and halting train movement on that section of track.

### Enhanced Rail Flaw Detection

- Enables rolling contact fatigue to be proactively identified and managed through grinding or rail replacement.

### Autonomous Track Geometry Measurement System

- Uses a non-contact, laser-based optical measuring system that is attached beneath a boxcar, for near real-time defect detection to predict track deterioration.
- Improves service by reducing derailments and unplanned work outages.
- Identifies possible track defects by measuring vertical and horizontal acceleration, and identifies unusual movements.
- Enables CP to analyze more than 600,000 miles of data annually.

### Remote safety inspection portal system

Located on our Maple Creek Subdivision in Saskatchewan, this system is equipped with more than 35 cameras and will scan a train in real time at track speed. CP's remote safety inspection portal generates 72 high-resolution images per car and 100 GB of data per train. An undercarriage imaging system inspects the underside of passing railcars and locomotives, enabling CP to identify missing bolts, bent or broken brake rigging, open bottom gates, broken coupler systems and draft arrangements.

The application of data analytics and technology allows CP to predict and prevent issues before they occur on the main line. As a result, we have approximately 1,500 fewer over-the-road delays per year, and have reduced wheel bearing failure by approximately 95 percent and all service interruptions by approximately 50 percent. These results have improved reliability, increased train speed and reduced asset and terminal dwell times, and have ultimately increased capacity for the movement of goods.<sup>6</sup>

By investing in technology and championing innovation, CP is solidifying our position as a leader in moving the economy safely and efficiently. Explore how CP stays up-to-date with industry advances in every segment of our business at <https://innovation.cpr.ca>.



*CP's Train Inspection Portal System*

<sup>6</sup><https://www.cpr.ca/en/about-cp-site/Documents/Data-Analytics-Fact-Sheet.pdf>

## Hydrogen locomotive program

In December 2020, CP launched the development of North America's first line-haul hydrogen-powered locomotive. CP's Hydrogen Locomotive program involves retrofitting a line-haul locomotive with hydrogen fuel cells and battery technology to drive the locomotive's electric traction motors. Once operational (expected for Q1 2022), CP will conduct rail service trials and qualification testing to evaluate the technology's readiness for the freight-rail sector.

This is a globally significant project that positions CP at the leading edge of decarbonizing the freight transportation sector. CP will continue to focus on finding innovative solutions to transform train operations and adapt the business, positioning our business and the industry as leaders for a sustainable future.

The work builds on our prior experience with testing low-emitting locomotive technologies, including biofuels, compressed natural gas and battery-powered solutions. Nearly the entire freight locomotive fleet of all railway operators in North America consists of diesel-powered units, representing the industry's most significant source of GHG emissions.

CP has long focused on energy-saving initiatives as a core component of our sustainability practices. Since 1990, we have improved our locomotive fuel efficiency by more than 40 percent through a variety of programs and technology deployments. The application of leading practices, emerging technologies and relationship building across the value chain and industrial sector will remain critical as CP addresses the climate change challenge.



*Gary Wong, Senior Project Engineer and Veronika Kowalczyk, Engineer in Training are part of the CP team building the hydrogen locomotive.*

## Part 4: CP-KCS merger

FIGURE 12: CP-KCS GRAIN NETWORK



Should it succeed, CP's acquisition of KCS would offer efficient, single line-haul service from CP's origin-rich grain network to U.S. and Mexican outlets, including 12 additional Gulf and Pacific ports. The benefits of this unparalleled opportunity include:

**Seamless network:** a seamless network and single line-haul to improve the efficient flow of grain.

**Improved shipper options:** increased options for shippers by connecting valuable agriculture products with new ports and new markets.

**Expanded capacity:** capacity to move even more grain and grain products. Our combined network would leverage the HEP train model.

## Conclusion

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Moving grain is in CP's DNA, and has been for more than 100 years. We remain focused on growing our grain business by offering the most competitive transportation service for our customers and by driving next-level efficiency throughout the grain supply chain.

As outlined in this report, CP is well-positioned to respond to the anticipated market demand for grain transportation during the upcoming 2021–2022 crop year.

We will continue to build on record investments to improve safety, fluidity, capacity and resiliency across our transcontinental rail network. We are also deploying technology and innovation to improve safety and efficiency, while reducing GHG emissions, across the system.

CP remains committed to strong collaboration with customers in the supply chain to understand transportation demand forecasts and to ensure alignment and open communications throughout the supply chain. These factors are essential to maximizing the overall performance of Canada's grain supply chain.

We encourage customers and other interested stakeholders to monitor CP's grain performance during the 2021–2022 crop year by consulting our [supply chain scorecard](#).

As always, CP looks forward to delivering for our customers and the broader Canadian economy during the upcoming 2021–2022 crop year.





## Forward-looking statements

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The preceding material in this report contains certain forward-looking information within the meaning of applicable securities laws relating, but not limited to, Canadian Pacific's operations, priorities and plans, anticipated financial performance, including our 2021 full-year guidance, business prospects, planned capital expenditures, programs and strategies. This forward-looking information also includes, but is not limited to, statements concerning expectations, beliefs, plans, goals, objectives, assumptions and statements about possible future events, conditions, and results of operations or performance.

Forward-looking information may contain statements with words such as "anticipate", "believe", "expect", "plan", "financial expectations", "key assumptions", "outlook", "guidance", or similar words suggesting future outcomes.

Undue reliance should not be placed on forward-looking information as actual results may differ materially from the forward-looking information. Forward-looking information is not a guarantee of future performance.

By its nature, CP's forward-looking information involves numerous assumptions, inherent risks and uncertainties that could cause actual results to differ materially from the forward-looking information, including but not limited to the following factors: changes in business strategies; general North American and global economic, credit and business conditions; risks in agricultural production such as weather conditions and insect populations; the availability and price of energy commodities; the effects of competition and pricing pressures; industry capacity; shifts in market demand; inflation; changes in laws and regulations, including regulation of rates; changes in taxes and tax rates; potential increases in maintenance and operating costs; uncertainties of investigations, proceedings or other types of claims and litigation; labour disputes; risks and liabilities arising from derailments; transportation of dangerous goods; timing of completion of capital and maintenance projects; currency and interest rate fluctuations; effects of changes in market conditions and discount rates on the financial position of pension plans and including long-term floating rate notes; and investments, various events that could disrupt operations, including severe weather, droughts, floods, avalanches and earthquakes as well as security threats and governmental response to them, and technological changes.

The foregoing list of factors is not exhaustive. These and other factors are detailed from time to time in reports filed by CP with securities regulators in Canada and the United States. Reference should be made to "Management's Discussion and Analysis of Financial Condition and Results of Operations" in CP's annual and quarterly reports filed on Form 10-K and 10-Q, respectively.

Forward-looking information is based on current expectations, estimates and projections and it is possible that predictions, forecasts, projections, and other forms of forward-looking information will not be achieved by CP. Except as required by law, CP undertakes no obligation to update publicly or otherwise revise any forward-looking information, whether as a result of new information, future events or otherwise.