

2024–2025 CN Grain Plan









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Message from Tracy Robinson

As the President & CEO of CN, it is my privilege to provide you our 2024–2025 Grain Plan.

I am proud of the team of CN railroaders that contribute to the ongoing success of the Canadian agricultural sector. Each year inevitably brings a new set of challenges for the Canadian farmers that grow and harvest the grain crop, and for the supply chain that transports it to destinations within North America and for export around the world. Although grain production volumes vary in any given year, the long term trendline for Canadian grain

Adolphe, MB



production is increasing. This requires CN and all supply chain partners to be planning for the future and taking actions today to ensure the capacity and fluidity required to efficiently transport future crops. CN continues to make strategic investments in our hopper car fleet and on our Western Canadian network to position ourselves to be able to respond to this reality.

CN has been running a scheduled railroad operating model for over two years. This disciplined approach continues to yield positive, sustained results according to a variety of operational performance metrics which in turn has enabled us to deliver strong performance to the grain sector. Responding to shipper demand, CN set an all-time company record for grain movement in February 2024 and a near-record for the month of April 2024. We will continue to strive to improve our performance and work with our grain customers and supply chain partners to find efficiencies. CN and all supply chain partners need to be planning for the future and taking actions today to ensure the capacity and fluidity required to efficiently transport future crops.

As we look to the new crop year, one real challenge for CN is the availability of labour, specifically the operating crews that run our trains. This is a result of overall Canadian labour market conditions and low unemployment rates coupled with the real impact of federal labour regulations that came into effect in May 2023 that requires approximately 15% more people to move the same amount of freight. We have increased our focus and efforts on employee recruitment and retention as we strive to build and maintain a strong workforce that can reliably support growth of the Canadian agricultural sector and the overall economy.

The Canadian government has a role to play in supporting the Canadian grain supply chain. Through policy, it can address the above labour issue and it should bring quick resolution to the long-standing issue of loading grain in the rain at port which has a negative effect on productivity at the critical West Coast ports. Additionally, there is a leadership role for government to encourage and enable significant investment in the supply chain through tax measures that will allow parties to address major infrastructure requirements and build a resilient and reliable supply chain to support economic growth. Working together with government in the coming year, I believe we can begin to address some of the significant challenges around labour, port operations and investment that pose risks to our future success.

I extend my thanks to all our stakeholders who have contributed to the 2024–2025 Grain Plan, including the farmers and industry leaders on our CN Agricultural Stakeholder Council. With the collaboration of all our partners in the supply chain, we can confidently and efficiently move this year's Canadian grain crop and more broadly continue to build an end-to-end grain supply chain that supports the success and prosperity of the Canadian agricultural sector now and into the future.

Tracy Robinson President and CEO





Introduction

CN's 2024–25 Grain Plan has been prepared in accordance with Canada's *Transportation Modernization Act* and has two main objectives:

- > First, the Grain Plan sets out CN's assessment of how much grain and processed grain products we expect to move during the 2024–25 crop year (August 1, 2024 to July 31, 2025) based on the expected size of the crop and other supply and demand-related estimates.
- > Second, the Grain Plan identifies the steps that CN is taking to move this anticipated volume of grain over the course of the crop year based on demand forecasts and the resources we expect to be available.

During spring and early summer, CN consulted with our grain customers and other stakeholders concerning the 2024–25 Grain Plan. CN also engaged with our **Agricultural Advisory Council**, which involves a cross-section of industry leaders to provide ongoing advice and feedback on grain transportation and CN's interaction with producers. We would like to express our thanks to the stakeholders who provided their input and engagement for this year's Grain Plan.

Previous year's Grain Plans and comprehensive monthly updates on CN's grain movement in 2023–24 (and prior years) are available <u>here</u>.

New Actions and Initiatives for 2024–25

1 Developing and preparing our people -

CN labour priorities for the year ahead remain squarely focused on robust employee recruitment, training and retention in this very tight labour environment as well as increasing cross-functional collaboration across CN teams. The CN Claude Mongeau National Training Centre campus in Winnipeg MB is best-in-class, running at capacity and is at the center of developing CN's future field force.

2 Scheduled Railroading – Adherence to the operating plan – In follow-up to the operational improvements implemented in 2022–23, CN will continue to focus on trip plan compliance and on-time performance. We will continue to improve coordination and execution between CN network operations and field operations. This approach has produced demonstrated success.



3 Rolling stock acquisition – CN expects to take delivery of a total of 750 new high-efficiency grain hopper cars in 2024–2025, building on our investment in hopper car fleet renewal of 3,500 new cars delivered since 2018.

Implementation of new fire fighting equipment – In May 2024, CN announced the addition of two new specialized firefighting trains to help combat wildfires along CN's right-of-way. The three trains (Neptune (2024), Trident (2024) and Poseidon (2023)) will help protect the supply chain, bringing a significant amount of water and fire suppression capacity to isolated areas, and help ensure the fluidity, safety and security of goods on CN's network.

Implementation of new technologies – CN

continues to explore ways to use technology to improve safety. We are currently testing new mobile fire detection technology in areas along the network prone to wildfires. Early detection can speed up response times to ensure critical infrastructure is maintained and allow for improved contingency planning. CN continues to deploy its Autonomous Track Inspection Program, using a fleet of 11 specialized cars containing state of the art sensing technologies and advanced analytics to inspect track at normal train speeds, without interrupting network operations and without introducing additional safety exposure to on-track employees.

Factors Affecting Overall Rail Capacity

- > Demand forecast accuracy determines shortand long-term resource planning.
- Resource planning includes crews, locomotives, rolling stock and infrastructure.
- > Weather events can impact planning and trade flows.
- Corridor balance and increased activity in the Port of Vancouver.

Forecasting is key

Timely and reliable demand forecasts across all segments of CN's rail traffic is critical to resource and operational planning. In the absence of accurate customer forecasts, CN is required to make assumptions, often relying upon historical data. Significant changes in demand levels or traffic flows that we are not made aware of hinder our ability to respond quickly to new circumstances. Long lead times are required to recruit and train crews (~9 months), acquire locomotives or rolling stock (12+ months), and invest in rail-related infrastructure (18+ months). The result is potential gaps in resource levels that could have been avoided with better forecasting and communication. Improved short- and long-term customer demand forecasts support the supply chain's ability to plan for growth.

Unfortunately, the quality and timeliness of hopper car demand forecasts vary significantly among CN's grain customers — some customers take the initiative to provide detailed and accurate eight-week forecasts. Other customers provide forecasts lacking detail and rigour around accuracy, provide forecasts sporadically, or do not provide forecasts at all. Lack of forward planning and collaboration negatively impacts the rest of the grain supply chain, as other players, including railways, lose opportunities to more efficiently allocate their resources to meet customer needs and to maximize overall system capacity.

Labour availability and resource planning at CN

Typically, demand planning less than 12 months out is focused heavily on operating crew base and locomotive fleet size. Demand is converted into train counts, which in turn is converted into crew and locomotive demand. Longer-term forecasts focus on rail infrastructure and network capacity. CN monitors traffic levels on individual sections of track and individual traffic corridors to help assess what additional track infrastructure is required. From initial planning to completion, infrastructure investments can take months or years, depending on the scale. In addition, engineering and permitting processes can extend the time required for individual projects.

The Teamsters Canada Rail Conference (TCRC) represents approximately 6,000 conductors, conductor trainees, yard coordinators and locomotive engineers across CN's network in Canada. Negotiations between the union and CN began in November 2023, with the collective agreement expiring on December 31, 2023 (which is extended under Canadian law until the parties reach an agreement). The introduction of Transport Canada duty and rest period rules (DRPR), as well as paid sick and personal leave days has negatively impacted employee availability. As a result, CN's proposals have remained focused on reaching an agreement that avoids supply chain disruptions and addresses crew availability challenges, while maintaining the safety of its employees.

At the time of the writing of CN's 2024–2025 Grain Plan, CN and the TCRC are awaiting a decision from the Canadian Industrial Relations Board (CIRB) regarding the Minister of Labour's request for clarity on the continuation of activities during a work stoppage. The CIRB has advised CN that they intend to make that decision by August 9, 2024. Prolonged negotiations create uncertainty across all supply chains, including grain. CN will continue to strive for predictability for our customers and supply chain partners. As per Canada's Labour Code, no work stoppage can occur until either party files the required 72-hour notice after the CIRB issues its decision, subject to any extension of the cooling off period that may be ordered by the CIRB.

Impact of weather and other factors on rail operations

External factors beyond anyone's control, particularly weather-related factors, also have a real impact on supply chain capacity. Winter occurs every year, but the duration and severity of winter conditions are not predictable — every year is different — and all points in the grain supply chain are affected in different ways. For example, extreme cold not only affects rail infrastructure, rolling stock, locomotive power, and people operating the railroad, it also affects operations at Prairie grain handling facilities and export terminals, and grain movement into the primary elevator system from farms.

When triggered during periods of cold weather, specific winter operating protocols and actions are put into effect by CN. The major impact of these 'tier restrictions' is the reduction in the length of trains and these protocols are described in detail in CN's annual Winter Plan.¹ Additionally, trains carrying certain commodities (such as liquid fuel products) are subject to speed restrictions triggered by cold temperatures and geographic location. This safety rule for 'key trains' is important but also has a material impact on network fluidity in the winter, due to the mandatory speed reduction of certain trains in specific areas. The key to success is for supply chain partners to avoid working in isolation and to collaborate across sectors to support long-term demand.

The extreme cold of a Canadian winter isn't the only thing we can count on. Heavy, persistent rainfall occurs at Canada's West Coast ports every year. Like clockwork, every time it rains, grain movement slows down at terminals. However, rain is a solvable problem and **wet weather should not impact modern grain terminal operations on the West Coast of Canada.** Operational and infrastructure solutions to this problem are in place in the U.S. Pacific Northwest, which is an area with the exact same issue. Rain should not reduce supply chain capacity, especially in Vancouver where capacity is limited, and inefficient operations have a negative effect on the entire supply chain.

The longer and more frequently conditions such as extreme cold or persistent rainfall occur, the more the supply chain's ability to recover is reduced. CN continues to innovate and find ways to improve our ability to deal with severe weather events.

¹Available at https://www.cn.ca/en/your-industry/customer-reports/winter-plan

The supply chain is inter-connected

The key to success is for supply chain partners to avoid working in isolation and to collaborate across sectors to support long-term demand. In other words, we need to look at the entire system of interconnected supply chains, of which CN is only one component, to support economic growth.

With respect to rail, **locomotives**, **crew base**, and **rail infrastructure** are resources shared across all rail traffic moving on CN's network — not just grain. For this reason, **demand for the movement of grain and processed grain products cannot be considered in isolation.** This is also why it is so critical to have accurate demand forecasts across all business segments to ensure effective long-term resource planning. Recognizing that capacity is finite, rail traffic increases associated with sudden demand shocks in any one sector due to significant global events or sharp changes in market conditions are not easily absorbed.

While assets such as locomotives can be readily re-deployed to other areas of the rail network when demand shifts, resources such as crews cannot. Just like any other employee in Canada's economy, railroaders typically work and make their home within a specific region. Even when employees can take short-term assignments to support a high-demand area, it still takes time to train and familiarize them with their new region. It is better to plan together and build the long-term capacity customers need in advance. When considering capacity to move traffic, it is also important to note that CN is only one part of a complex supply chain, with other factors affecting the overall efficiency and capacity of the system. For example, in the end-to-end grain supply chain, activities at the origin, as well as the destination, need to be considered. If an export terminal is congested and lacks space to unload rail cars, trains directed to that terminal must be held back to avoid creating more congestion.

Those delays have a spin-off effect. Considering that most of the hopper car fleet moving grain is a shared asset among customers, fleet efficiency utilization is impacted in this scenario — cars returned more slowly to the interior for the next load mean delays for other players. CN, our supply chain partners, and our customers need to work together and closely coordinate our activities to maximize the efficiency of the entire supply chain.



Corridor Balance and Increased Activity in Port of Vancouver

The key to fully utilizing the maximum end-to-end grain supply chain capacity is corridor balance, and this is further discussed below. Beginning in spring 2024, this became more important as a major national infrastructure project, the expansion of the Trans Mountain (TMX) pipeline, was completed and began operation.

The marine-based export of petroleum products will create increased levels of commercial vessel traffic in the Port of Vancouver, specifically in the Burrard Inlet where vessels (inbound and outbound) cross beneath the CN Second Narrows rail bridge. This railway lift bridge is a critical component of Canada's supply chain, as it provides access into, and out of, the export facilities on the north shore. Under current rules, marine traffic has the right of way, which necessitates raising the rail bridge to allow for vessel passage even if this involves recreational vessels. Lifting the bridge more often reduces the amount of time rail traffic can use the bridge. This negatively impacts rail capacity to north shore export facilities and increases the overall transit times for rail cars. CN is monitoring TMX vessel traffic impacts and working closely with customers to maintain supply chain fluidity and maximize capacity. CN is engaged with the Port of Vancouver and the Government of Canada on this issue. Our goal is to reduce the unpredictability of the impact to bridge operations and ensure that both rail and marine traffic can maximize their volumes.

It is expected that the marine-based export of petroleum products will be maximized as a result of the pipeline capacity now available, which is likely to exacerbate this issue. This increased activity in the Port of Vancouver highlights the importance of shippers utilizing all available capacity across all corridors.

CN's expectations for 2024-25

Based on current demand forecasts and the best economic and market information available, CN expects the total demand for rail service between Edmonton and Jasper AB, and between Jasper AB and Vancouver BC, to exceed capacity at times during the fall of 2024 and into early 2025. CN expects total demand for rail service to be at or below capacity for the same period on the BC North corridor between Jasper AB and Prince Rupert BC.

The expectation that the railway has extra capacity available and ready, wherever and whenever required, stands apart from the practices of other players in the supply chain and recent experience. That expectation must be balanced against the fact that there will always be limited capacity to respond to demand shocks driven by sudden changes in market conditions or significant global events. Recent years have shown that **capacity is finite throughout** the supply chain, and CN and our customers must plan together and prepare for the future to the best of our respective abilities. Customers across all CN business segments have knowledge critical to CN's resource planning and it is important that this information be shared. The more information is shared with CN about forecasts and resource updates, the more CN can adjust to the uncertainties that impact markets and demand.

Making the most efficient use of the capacity available in **all** rail corridors throughout the year means more farmers' grain getting to market in a timely fashion. That supports farmers' cash flow and marketing activities. For example, CN's Eastern Canadian transportation network is significantly under-utilized and represents an opportunity to increase shipment volumes of grain and other commodities, especially during peak demand for grain movement. **Corridor balance is required to maximize supply chain capacity and throughput.**

Estimating 2024–25 Western Canada Grain Supplies

- Crop production volumes in Western Canada are generally trending higher.
- CN relies on feedback from external sources, including grain companies, private market analysts, and government agencies to project yearly grain volumes.
- Yearly acreage and yield forecasts can change dramatically due to weather and other factors over the course of the growing season.

Crop production volumes in Western Canada have trended upward over the past ten years. We have invested in our network infrastructure, purchased new locomotives and high-capacity hopper cars, and worked with grain customers to extend sidings and build loop tracks that support continued sector growth. CN's capital investments over the past five years total more than \$15 billion.

Forecasting the volume of grain and processed products to be moved during the crop year requires the consideration of three key factors:

Grain production, the largest factor affecting the overall volumes to be moved.

2 Carry-in from the previous crop year, which, combined with grain production, represents **total available supplies**.

Domestic use and exports, leaving the balance as carry-out.



In projecting volumes, CN relies on feedback from external sources, including grain companies, private market analysts, and government agencies such as Agriculture and Agri-Food Canada (AAFC). It is also important to emphasize that crop production forecasts are subject to significant variability during the growing season given the impact of weather on crop development and yield potential.

The grain industry uses trendline yield forecasts and estimates of seeded and harvested area to determine crop production forecasts. These estimates are modified throughout the growing season to reflect changes in harvested acreage and yield potential driven by weather and other factors. The first official producer survey of crop production is carried out by Statistics Canada in July, with the survey results released at the end of August. AAFC projects the following for the 2024–2025 crop year²:

- **Carry-in** supplies of the six major grains³, peas and lentils to be 5.9 MMT, below the three-year average of 8.0 MMT.
- **Production** of the six major grains, peas, and lentils to be 72.3 MMT versus 66.7 MMT in 2023–24 and the three-year average of 64.1 MMT.
- Total available supplies to be 78.2 MMT compared to 74.7 MMT in 2023–24 and the three-year average of 72.1 MMT.
- Exports are to be 42.4 MMT compared to 40.7 MMT in 2023–24 and the three-year average of 38.4 MMT.
- **Carry-out** for 2024–25 to be slightly above the three-year average at 7.3 MMT.



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FIGURE 4 All Canada Carry-out Six major grains, peas, lentils 000 metric tonnes



²Based on the AAFC July 2024 Outlook for Principal Field Crops:

https://agriculture.canada.ca/en/canadas-agriculture-sectors/crops/reports-and-statistics-data-canadian-principal-field-crops

Timely feedback on crop production prospects from customers, market analysts and other grain industry participants is key to supporting CN's operational planning activities. This information is used to estimate the overall grain movement demand for the crop year and measured against CN's market share for rail transportation services. At the time of this document's writing, large areas of the Western Prairies were still experiencing long-term precipitation deficits, while some areas of the Eastern Prairies were struggling to complete spring planting operations amid excessive short-term moisture conditions.

Long-term soil moisture deficits in the Prairies remain the most important factor to watch with respect to overall Prairie crop prospects for 2024. While precipitation was above normal for most areas of the Prairies from April to mid-June 2024, large areas of the Western Prairies were still considered to be suffering anywhere from abnormally dry conditions to extreme drought per the Canadian Drought Monitor.⁴

Grain Shipment Forecasts

This Grain Plan assesses CN's ability to move the volumes of grain we expect our customers to offer for movement during the crop year. CN has moved the following volumes of grain and processed grain products over each of the past five crop years in hopper cars, tank cars, and boxcars. Grain volumes moved directly from western Canada using intermodal equipment are in addition to these volumes.



Based on current estimates, projected movement of grain and processed grain products via carload on CN over the course of the 2024–25 crop year is projected to be 28.5 to 31.0 MMT, with grain shipped via container direct from Western Canada in addition to these volumes. As forecasts inevitably change during the Western Canadian growing season, we will refine our assessment based on overall crop production and other market factors sourced in part from information collected by grain customers and other industry stakeholders.

Containerized grain shipments direct from Western Canada are an important means of getting grain from the Prairies to domestic and overseas markets. Containers moving back to port empty represents an opportunity to take advantage of under-utilized capacity, and CN has worked hard with its steamship line partners to develop a robust Prairie-direct containerized grain shipment program over the years. Containerized grain exports from Canada decreased during the global supply chain disruptions in 2020-2023 due to lack of available containers, but as imports gradually increase, there is an opportunity for the percentage of Canadian grain exported by containers to increase as well. For example, in crop year 2019–2020, 7.5% of the total volume of grain exported through the Port of Vancouver was in containers. This fell to less than 2.5% in 2022-23.

CN moved over 750,000 MT of grain direct from the Prairies via container during the 2023–24 crop year. CN expects that containerized grain shipments will continue to represent a significant volume of grain shipments in the upcoming crop year.

⁴ https://agriculture.canada.ca/en/agricultural-production/weather/canadian-drought-monitor/current-drought-conditions

Establishing Maximum End-to-End Grain Supply Chain Capacity

- Maximum sustainable grain supply chain capacity is a function of the capacity and operational efficiency of the individual pieces of that supply chain, from origin to destination.
- CN has invested billions in rolling stock, locomotives, rail infrastructure, technology, and labour recruitment initiatives to help improve overall supply chain capacity.
- All parts of the supply chain must work together to ensure the use of available rail corridors is balanced.
- Regulatory measures can directly impact supply chain capacity and throughput.



The maximum sustainable capacity of the grain supply chain is a function of the capacity and operational efficiency of the individual pieces of that supply chain. All components of the supply chain need to be in sync and operating at peak efficiency to achieve maximum capacity on a sustainable basis. The supply chain stretches all the way back to the farm and from country elevators to destination. The grain supply chain doesn't simply end with the unloading of a railcar at an export terminal — it encompasses the ocean vessel hauling bulk grain cargo to an end user halfway around the world, or the container ship carrying containerized grain and other cargo.

The capacity of Canada's grain supply chain also varies through the crop year, and multiple factors place real limits on the volume of grain that can move through the end-to-end supply chain at any point in time. While most rail-served industries generate a relatively steady flow of traffic, the pattern of demand for grain movement creates a unique transportation situation. The harvest occurs over a short period of time, generating very large volumes of inventory that cannot all be moved immediately.

The amount of commercial grain storage in Canada is limited in relation to total grain production. As a result, grain companies rely on farmers to store most of the grain crop on-farm. This differs from competing countries where grain companies store most of the grain. The peak demand in the fall typically corresponds to the period reflecting the most profitable grain handling and trading margins, along with peak farmer grain delivery pressure. **The challenge is how best to align demand with end-to-end grain supply chain capacity and total rail capacity, as all grain cannot move into the supply chain at once — a fact that is true in every major grain-producing country in the world.** Making the most of grain handling capacity in the eastern Canada grain supply chain is critical to corridor balance and to maximizing total grain shipment volumes.

Great Lakes-St. Lawrence Seaway system

The Port of Thunder Bay represents significant grain throughput capacity when the Great Lakes-St. Lawrence Seaway system is open outside of winter and presents a key opportunity to optimize corridor demand balance. There are six major terminals focused on bulk grain exports plus a loop track facility that handles unit train shipments of grain and other bulk commodities. CN also accesses multiple grain handling facilities in the Port of Duluth. The grain from these ports can be shipped directly overseas via ocean-going vessels or grain may be shipped by laker to facilities along the Great Lakes for domestic consumption. Grain can also be shipped to one of six major transfer elevators along the St. Lawrence River where it is subsequently re-loaded to ocean-going vessels. Corridor balance is critical. Making the most of grain handling capacity in the eastern Canada grain supply chain is critical to corridor balance and to maximizing total grain shipment volumes.

Loading grain in inclement weather at the Port of Vancouver

The ability to load grain during inclement weather in the Port of Vancouver has been an on-again, off-again issue over time but remains unaddressed. An arbitration ruling by the Canada Industrial Relations Board (CIRB) in February 2018 terminated the loading of grain during inclement weather in the Port of Vancouver via tarping of cargo holds, while grain loading via feeder holes was halted until additional safety measures could be implemented. Since then, the practice of loading grain via feeder holes has been re-instated with new safety protocols.

Some industry observers have noted that the additional time and effort associated with the new protocols means that in most circumstances a grain company will elect not to load grain through feeder holes. Ultimately, individual grain companies make the commercial decision on how to load grain onto ships. Alternatives to loading through feeder holes do exist. Some grain handling facilities in the U.S. Pacific Northwest have invested in rain roof infrastructure. This technology offers promise for Canada as well.

This issue has a material impact on grain supply chain capacity. If grain terminal space isn't available to unload grain from railcars, then loaded grain trains can't be moved forward. CN is forced to hold back trains enroute to port as well as at origin in the country until the situation improves. Ultimately, the end-to-end supply chain is negatively affected as the delayed returns of empty hopper cars back to the Prairies impact CN's overall spotting program for the following week. At the time of the writing of this document, there has been no change in the situation in the Port of Vancouver concerning protocols for loading grain in inclement weather.



Extended Interswitching and its Impact on Supply Chain Capacity

In 2023, Bill C-47 re-introduced extended interswitching in the Prairie provinces for 18 months (until March 2025). Extended interswitching reduces capacity and efficiency — the exact opposite of what Canadian supply chains need. When the provision sunsets in March 2025, it should not be reinstated. Expanding regulated interswitching distances to a 160 km radius around defined interswitching points creates a different pattern of regulated service because this longer distance forces railways to dedicate resources to inefficient movements. In many instances, when compared to a direct linehaul move by the rail carrier serving an origin, an extended interswitching move would frequently result in a longer route, adding to equipment cycle times.

When car cycle times are elongated, the fleet utilization efficiency is also reduced, which in turn effectively reduces fleet size as more cars are required to move the same amount of volume. For example, for each day that average cycle times are extended for hopper cars, grain supply chain capacity is reduced by the equivalent of 400–500 cars per week, or 40,000 to 50,000 metric tonnes per week.

CN's 2024–25 Grain Marketing Programs

EFFICIENT GRAIN HANDLING INFRASTRUCTURE

Consistent with the evolution in grain handling infrastructure in Western Canada, **CN's rail** efficiency incentives have also evolved to encourage more efficient grain handling infrastructure. CN's programs include rate incentives that encourage high-efficiency unit train facilities with a hook-and-haul model for grain trains that can be loaded in 15 hours or less. This model keeps trains from occupying the mainline while spotting empties or pulling loads, which improves mainline efficiency. Most of the new grain handling facilities built in Western Canada are hook-and-haul facilities, and many have loop tracks that allow more cars to be spotted in a single placement (which means improved capacity utilization).

Starting in 2014, CN and our customers have coordinated investments in grain facility infrastructure to allow loaded grain trains to be fully charged with air to reduce the time required for CN crews to depart from origin with a loaded train. Otherwise, in times of extreme cold, it can take 8–12 hours (or more) for a train to be fully charged with air by locomotives. Reducing this time also reduces end-to-end train cycle times and improves car velocity. Over 95 per cent of CN-served facilities capable of loading grain unit trains have participated in this program, representing a win-win situation for CN and our customers.

HOPPER CAR SUPPLY

CN prioritizes a large segment of its shared pool of hopper cars for customers interested in year-round car supply. These commercial car supply products also include reciprocal penalties for both CN and customers. CN anticipates that, for the 2024–25 crop year, over 90% of CN-supplied grain cars will be committed to customers in advance of harvest through commercial car supply agreements and other commercial car supply products. CN makes these products available to the market to ensure their widest possible application, with car block sizes of as few as 10 cars.

CN's commercial and export fleet integration programs allow customers to integrate high-quality jumbo capacity hopper cars into CN's common pool, in turn receiving priority car supply based upon the type of lane that the traffic is moving in (i.e., shorter distance traffic to Thunder Bay / Prince Rupert / Vancouver compared to longer distance traffic moving primarily to Eastern Canada and the United States) and the number of cars supplied by the customer. This program started in western Canada in the 2014–15 crop year and has been very popular with customers of varying sizes.

Extended interswitching reduces capacity and efficiency — the exact opposite of what Canadian supply chains need. When the provision sunsets in March 2025, it should not be reinstated. CN also makes a segment of car supply available from our general pool of equipment, and customers can signal their demand up to 16 weeks forward in CN's grain car ordering system. In reviewing car orders on a weekly basis, and once car orders without terminal authorization are removed from the car order book, CN first allocates cars against valid customer orders that are tied to commercial car supply products. The remainder of the available car supply for a given week is allocated across the remaining orders.

MAXIMUM GRAIN SUPPLY CHAIN GUIDANCE

It is CN's view that on a sustained basis, with corridor balance, the end-to-end grain supply chain can accommodate up to 7,800 cars per week (up to 744,000 metric tonnes per week) of bulk grain and processed grain products outside of winter, and up to 6,250 cars per week (up to 595,000 metric tonnes per week) of bulk grain and processed grain products during winter. On an annualized basis, the end-to-end maximum sustainable supply chain capacity on CN represents a grain supply chain shipment capacity of up to 36 MMT, which is significantly higher than anticipated grain shipment volumes on CN for the 2024–25 crop year.



These maximum end-to-end grain supply chain capacity levels on CN assume that multiple conditions will be in place to achieve these levels. These conditions must include, but are not limited to:

- grain supply chain fluidity, capacity utilization and corridor balance.
- sufficient customer demand to meet these levels.
- seven-day continuous operations at all major grain export facilities.
- grain railcar unloading and vessel loading during inclement weather at all grain facilities.
- normal winter rail operating conditions (issues related to winter operating conditions and measures CN has taken to address the impact of winter on rail capacity will be addressed in our Winter Plan).
- the extent to which extended interswitching is utilized by customers across all rail traffic segments, which in turn will determine the relative impact of extended interswitching on network fluidity and capacity.
- no significant labour disruptions.
- no mainline or other major supply chain disruptions.
- a stable global trade environment.



These conditions limit the amount of grain that can move through the supply chain at any point in time.

If these conditions are not all in place for a given timeframe, it can be expected that grain shipment volumes will not reach maximum sustainable levels. In the case of a lack of corridor balance, for example, these maximum sustainable supply chain capacity levels may be reduced by as much as eight or nine per cent.

In the case of inclement weather impacts in the Port of Vancouver on supply chain productivity, it is fair to say that persistent rainfall can reduce weekly port throughput by 20% or more.

CN Capacity

The following section outlines CN's expectations for hopper car fleet size, locomotive fleet size, and operating crew base over the course of the 2024–25 crop year, along with CN's rail infrastructure investment plans for 2024:

Hopper car fleet size and efficiency

Based on current overall demand forecasts, CN's assessment is that the grain hopper car fleet will be sufficient to move the anticipated volume of grain over the course of the 2024–25 crop year.

This fall, CN expects to have an owned/operated/ leased fleet of approximately 12,300 grain hopper cars focused on bulk grain service in Western Canada compared to approximately 11,800 grain hopper cars during the 2023–24 crop year. Once customer-supplied private hopper cars are taken into consideration, the effective size of the hopper car fleet on the CN network is expected to total approximately 14,000 cars.

Over the past seven crop years (2017–18 to 2023–24), due to the wide variety of fleet solutions customers can utilize, the average tonnage shipped per car on CN out of Western Canada has increased by almost five metric tonnes, or more than five per cent. Moving more tonnage per car means moving more tonnage during peak hopper car demand.

CN also continues our multi-year hopper car modernization program. CN expects to take delivery of 750 new hopper cars in 2024–2025 in time for fall peak demand for grain movement.



Locomotives

Based on CN's current overall rail traffic demand forecasts, our locomotive fleet will be sufficient to move the anticipated volumes of Western Canadian grain shipped during the 2024-25 crop year. Heading into fall 2024, CN's inventory of highand mid-horsepower locomotives is expected to total approximately 1,950 locomotives. The CN locomotive fleet will include 60 newly acquired Dash-9s that are undergoing DC to AC modernization. In addition, 33 SD75 locomotives are slated for a similar program, increasing the AC fleet mix by 93 locomotives before the end of the year. AC locomotives have significantly better adhesion, improved traction power effort and are less prone to traction motor failures compared to DC locomotives. The traction motors of AC locomotives are also less prone to mechanical issues due to snow compared to DC locomotives.



Operating crew base

Based on current overall demand forecasts, CN's assessment is that the active operating crew base will be sufficient to move the anticipated volume of grain over the course of the 2024–25 crop year, but recruitment and retention of employees is posing a challenge in some regions of Western Canada.

The impact of new federal regulations (May 25, 2023) on CN's rail operations are now clear and will continue to have a material influence on the 2024–25 crop year. CN is now experiencing the direct implications of the Duty and Rest Period Rules for Railway Operating Employees and the regulatory changes that came into effect December 1, 2022, concerning the number of paid sick days workers in all federally regulated private sector workplaces are entitled to, as well as the prior new government regulation for five leave days. The union has interpreted these new regulated days off as "stackable" to the existing terms of their collective agreement, meaning they believe their members are entitled to both.

The result is that operational adjustments are required to simply maintain existing customer service levels. **CN's experience to date is that hundreds of additional personnel (estimated to be 15% more) are required in Canada (mostly in the West) to move the same amount of traffic as was done prior to the implementation of the regulations.** The implementation of such polices works counter to the Government of Canada's goals of supply chain resiliency, efficiency, and economic growth. In an already challenging labour market with the lowest unemployment rate in decades, measures CN uses to attract potential new employees include:

- Hiring bonuses of up to \$10,000 to support placements in hard-to-recruit areas of the CN network.
- More targeted engagement with potential recruits in each region of Canada.
- Implementation of new technology and new hiring tools to assist CN recruitment efforts.



When considering the workforce available to move rail traffic, the focus is on conductors and engineers, referred to here as the operating crew base. In April 2023, Transport Canada supplemented the original suite of measures contained within the publicly available weekly rail performance indicators, to include mandatory reporting on the 'number of available railway operating employees' at the provincial/territorial level. This reporting indicates that between April 2023 and May 2024, CN's number of available operating employees grew by 8.8%.⁵

We assess our operating crew base down to the regional and individual terminal levels. Recognizing, for example, grain traffic moving from the Prairies to Vancouver or Prince Rupert must move across British Columbia, the operating crew base in each of the rail terminals the traffic will move through along the route must be sufficient to facilitate efficient rail movement. The ability to resource individual terminals is dependent on labour and economic dynamics in those individual regions, including proximity of the region to major population centers, cost of living, availability and affordability of housing, availability of education and other services. It is relatively more difficult to recruit and retain crews in remote areas compared to other parts of the CN network, with those regions also corresponding to some of the heaviest CN rail network traffic density and demand pressure across multiple rail traffic segments.

These labour market challenges are not unique to the rail transportation industry, considering unemployment levels are at their lowest levels in five decades and changes in population demographics are shrinking the potential size of the workforce. Furthermore, generational change is taking place in the workforce. Observers reference changes to workers' perspectives on work-life balance and shift work/weekend work.

⁵Available at https://tdih-cdit.tc.canada.ca/en/rail-2023

Rail infrastructure

CN invested over \$15 billion into the network between 2019 and 2023, with nearly two-thirds of that investment going into track infrastructure and railway assets. **For 2024, CN's capital expenditures are expected to increase slightly over previous years, to approximately \$3.5 billion.** These investments ensure the continued safe and efficient operation of our rail network as well as increase capacity, improve fluidity and accommodate growth. New major rail infrastructure capacity enhancement projects in Western Canada expected to be in service in 2024–2025 include:

British Columbia South	Siding extension (Jaleslie) to accommodate longer trains and improve throughput to Vancouver.
British Columbia Northeast	Siding extension (Septimus) to add capacity and improve throughput to Fort St. John.
Edmonton	Siding upgrade (Cloverbar) to improve throughput to Edmonton.
	Upgrades (Edson subdivision) to reduce corridor congestion and enhance network velocity.

Managing major infrastructure projects on busy rail corridors is a highly complex task. It requires significant planning and resources and involves some temporary disruptions of service to provide crews with the time they need to do their work.



Long-term investment to support future growth

CN expects significant growth in western region rail traffic volumes over the next decade.

Besides the growth expected in Western Canadian grain production from anticipated yield gains, other rail traffic segments such as potash, propane, intermodal, and forest products and others are also expected to increase in volume. CN is focused on **long-term investments in rail infrastructure that create capacity, especially in the Edmonton to Prince Rupert and Edmonton to Vancouver corridors.**

As part of our ongoing network capacity assessments, new projects for 2025 and beyond are well into the planning phase. The CN service design team works closely with CN's capacity planning group to turn traffic volume forecasts into workload forecasts for individual sections of the rail network. Those forecasts drive the planning process with respect to the addition of network infrastructure to support long-term growth, network fluidity, and network resiliency.

CN also has multi-year capital projects focused on removing bottlenecks and creating new capacity around the Port of Vancouver and the Port of Prince Rupert. Many of these projects are constructed in conjunction with the Port Authorities and the Government of Canada.

More investment is required from all parties in the Canadian supply chain in order to expand its capacity. This will require focus and coordination between governments, railways, shippers, private equity, and more to strategically invest. **To support immediate investment in capacity across the entire Canadian supply chain, the Government of Canada should implement supportive measures in the form of tax policies and accelerated depreciation measures. A supportive regulatory environment should allow all parties in the supply chain to benefit from these new measures associated with projects that expand the capacity of the Canadian supply chain.** This needs to occur now, to support Canada's future economic growth.



Operational planning and capacity

CN has taken a back-to-basics approach to our rail operations to improve rail service for CN's customers and increase efficiency. We will continue to refine our operational planning and communication, recognizing there is always room for improvement.

CN's Scheduled Grain Service model contributes to overall network efficiency. CN uses a hub-and-spoke model where we have major terminals in Winnipeg, Melville, Saskatoon, Edmonton, and Jasper. These major terminals allow CN to have a serving yard or consolidation point within a few hundred miles of all country elevators and grain processing facilities. CN can run as many as 200+ loaded or empty grain cars back and forth from these serving hubs to port, allowing CN to maximize train loads and network capacity. Individual grain elevators have a specific day of the week designated for service, with exceptions communicated by our operations and planning teams directly to customers. Our goal is to spot empty hopper cars by 0700 hrs on the scheduled service day, leaving locomotive power with the train in anticipation of timely railcar loading. It is key that grain is in position to be loaded to contribute towards improved hopper car velocity.

Two years ago, CN implemented scheduled slots for bulk unit trains in key corridors to increase rail capacity and velocity. CN also identified five rail traffic staging locations between Edmonton and Jasper, AB, to maximize the utilization of rail capacity. These staging locations put grain trains in the best position to take advantage of network capacity opportunities makes the best use of train slots in high-traffic areas. This approach to operations has been successful and will continue.



CN also takes steps to balance loaded traffic moving to destination and empty car supply returning to origin to ensure corridor fluidity. The CN pipeline management and port operations group are in daily contact with grain shippers and with other rail carriers to efficiently manage the flow of grain traffic to destination, recognizing that vessel arrival times, vessel readiness for loading, and weather impacts on terminal productivity continually change.

That said, there remain elements outside of CN control. A significant amount of traffic CN handles terminates at a destination served by another rail carrier. A good example of this is the grain traffic CN interchanges with CPKC in Vancouver for furtherance to South Shore grain terminals. CN and CPKC pipeline management and port operations groups coordinate the flow of traffic within the Port, but the arrival of railcar traffic at the destination can be delayed if plans change for any number of reasons. This can result in significant modification of the time slots available for the interchange of traffic.

Considering that most of our bulk grain traffic moves in CN-supplied equipment and recognizing that this is a shared pool of resources among customers, any delays in the unloading of railcars or the return of empty railcars to the interior for loading impacts all grain customers and limits end-to-end supply chain capacity.

CN also takes steps to balance loaded traffic moving to destination and empty car supply returning to origin to ensure corridor fluidity.

Grain-Specific Supply Chain Reporting

Beyond simply projecting and reporting on the total amount of grain and processed grain products shipped from western Canada over a specific period, CN also measures and reports on grain supply chain performance in other ways, including the quality of the service provided. This information is available in significant detail on a weekly basis through CN's Western Canadian Grain Report.⁶ This voluntary reporting captures 100% of grain shipments moving in CN-supplied hoppers and private hoppers along with 100% of the orders received for CN-supplied equipment.

CN reports the total grain tonnage moved on a weekly basis by corridor for bulk grain and processed grain products, along with crop year-to-date shipments, followed by detail concerning customer orders for CN-supplied hopper cars. Preliminary car orders received for the week are reported, and car orders with no authorization from the receiving facility are identified and removed from the car order list. What remains are valid orders. Customer-cancelled orders are also accounted for in CN reporting. The balance of car orders remaining is measured against the maximum sustainable supply chain capacity on CN. Sometimes orders far exceed what the end-to-end supply chain can realistically handle at any point in time, and these orders cannot be accepted.

CN also reports in detail how we executed the grain spotting plan. This reporting describes what happened to the CN-supplied hopper car spot plan after the plan was finalized (for example, accounting for subsequent customer-cancelled orders). It includes the number of cars spotted for the week they were ordered in, cars spotted that were associated with the previous week's plan, and car orders spotted in advance of the week that they were requested for. On a weekly basis, CN indicates what percentage of CN-supplied hopper cars were supplied against the current week's spot plan along with the percentage of orders that were supplied either in the week requested or within 24 to 72 hours of the end of the want week. CN also provides details on why any cars were not supplied within the timeframe requested.



⁶ Available at https://www.cn.ca/en/your-industry/grain/western-canadian-grain/

Additional detail specific to grain movement is reported to Transport Canada as part of federal reporting requirements.⁷ Grain car order placement and fulfilment data, for example, is reported on a province-by-province basis. There is also information on the number of grain cars loaded and billed moving in the system by province.

Scorecarding the end-to-end grain supply chain

The Government of Canada's 2023 Budget authorized the establishment of a Transportation Supply Chain Office which is now in its early days of operation.⁸ The Office is to "work in collaboration with industry to respond to disruptions and better coordinate action to increase the capacity, efficiency, and reliability of Canada's transportation supply chain infrastructure".⁹

In recent years, the government has focused almost exclusively on a single link in the entire end-to-end supply chain — rail transportation. If Canada hopes to improve how supply chains work, we need to change how we measure and report on data. **A balanced approach that considers all parts of the supply chain and improves supply chain visibility at the operational level will help increase understanding of what is going on when problems arise and why. We hope the**

Transportation Supply Chain Office and the adoption of real-time data regulations to assess the operation of the entire supply chain will support that purpose.

Canada also needs greater transparency within the supply chain. Grain terminal inventory/space is a great example of where today's supply chain reporting falls short. Unfortunately, publicly reported data on terminal stocks are aggregated for the Port of Vancouver as a whole. Aggregated data masks what is really going on in the supply chain. If data can be reported for the single grain export terminal at the Port of Prince Rupert, surely data can be reported for all the individual grain export terminals in the Port of Vancouver, Thunder Bay, and for terminals along the Great Lakes–St. Lawrence Seaway System.

CN's weekly Western Canadian Grain Report summarizes all the major events affecting the supply chain. Unlike industry and government data, these reports get into the "why" of what's going on in the supply chain.¹⁰ CN's reporting illustrates how the end-to-end supply chain is doing and ties it back to all the conditions required to achieve the maximum supply chain capacity described in CN's Grain Plan. Detail is also included as to the underlying cause of good or bad performance for each of the supply chain components.



⁷ Available at https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=2310027501

⁸National Supply Chain Office

¹⁰ CN Western Canadian Grain Report

⁹ Transport Canada News Release

Those looking for real, lasting solutions to supply chain problems must look beyond hopper car order fulfillment numbers and instead consider the activities of the whole supply chain. Looking at facts and including context, will help keep Canada's long-term economic growth as a common goal. We need to move past political rhetoric and finger-pointing if we hope to encourage badly needed private investment in our nation's transportation infrastructure.

Country elevator load times

For the supply chain to reach maximum efficiency, all the components of the supply chain need to operate at peak efficiency. Hopper car cycle times are a product of the time between placement and loading, between loading at origin to loaded release, the loaded transit time to destination, unloading time at destination, time from empty release to pull, and transit time back to the next loading origin. There is currently no public data available regarding primary elevator loading times, and many issues can affect the time it takes for a primary elevator to load hopper cars. Extreme cold creates workplace hazards for grain elevator employees. Mechanical breakdowns can occur, grain of the right quality may not be in place at the time of loading, not enough grain may be in the elevator to load the train, or holidays may prevent loading. Extreme winter weather can also impede the movement of loading crews and grain graders and result in unsafe conditions at grain handling facilities, including frozen switches and snow-covered tracks.

The chart below illustrates the average customer loading time for the past two crop years for CN-supplied hopper cars. There is clearly significant variability from week to week in the data, reflecting the impacts of the factors noted above on primary elevator loading performance.







Summary

Based on the information and assumptions outlined in this document, CN is confident that the resources are in place to move this year's harvest over the course of the 2024–25 crop year. However, CN remains concerned about the negative supply chain capacity consequences of federal labour regulations, extended interswitching, and continued rain delays in loading grain vessels at the Port of Vancouver.

The start of marine-based petroleum product export in the Port of Vancouver is also expected to negatively impact the capacity and fluidity of grain hopper car movement in the port. In anticipation of this change, CN is working with port officials to improve the coordination of commercial and recreational marine traffic that already limit rail bridge access to the North Shore. CN will monitor this situation in the year ahead and is actively engaged with our grain customers to find solutions.

Long-term infrastructure investment is required to support the expected Western Canadian economic growth over the next decade. CN encourages the Government of Canada to implement supportive new tax policies and accelerated depreciation measures, allowing all parties in the supply chain to deduct the full amount of capital expenditures associated with projects that expand national supply chain capacity. This is required now, to support the supply chain needs of tomorrow.

CN expects to deliver strong performance for the upcoming harvest and beyond. During the 2024–25 crop year, CN is well positioned to ship up to 7,800 cars per week (up to 744,000 metric tonnes per week) of grain and processed grain products outside of winter, and up to 6,250 cars per week (up to 595,000 metric tonnes per week) of grain and processed grain products during winter. These estimates assume all the conditions required to meet these levels across the end-to-end supply chain are in place, including corridor balance.

Based on the best forecasts available, CN is confident the 2024–25 Grain Plan will meet the needs of our grain customers.



www.cn.ca**/grain**