2020–2021

CN Winter Plan

UNITED FOR RECOVERY


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PHOTO ABOVE:
Halifax, NS

COVER PHOTO:
Obed, AB

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Park Gate, AB

1 Message from JJ Ruest

CN is pleased to submit its 2020–2021 Winter Plan – *United for Recovery.*

The Minister introduced new legislation in 2018 whereby Class I railways in Canada are required to submit annual winter plans on how they will move commodities during the cold season.

CN recognizes that this initiative has been helpful to keep all the members of the supply chain focused on moving freight under winter conditions, improve the supply chain's performance and increase awareness of the measures CN is taking to operate as effectively and safely as possible during winter. This legislation, combined with the revised Ministerial Order of April 3, 2020, imposing speed limits on key trains, is testimony to the Minister's leadership on improving rail safety. Although we join the Minister in his safety imperative by implementing operating best practices and investing in infrastructure and equipment, we have deep concerns that the Order has unintended consequences that will hamper our ability to use our network and equipment attributes this winter to the full benefit of our customers and supply chain partners.

This Winter Plan's **objective** is to ensure we take all necessary actions to reduce the effects of winter 2020–2021 for our customers, while ensuring we can recover and our operations are safe for our employees and communities we serve. Our **long-term goal** is to lead as the most innovative railway in North America, resulting in efficient and effective rail operations, including during severe winter conditions.

The 2019–2020 winter was tumultuous. It came just after a conductor work stoppage and included extreme cold weather in large areas of Canada, rain and landslides in Southern B.C., 22 days of illegal blockades, and the emergence of a pandemic — in the last days of winter — that plunged the economy into uncharted territory.

"This coming winter, as is the case throughout the year, CN will continue to play its essential leadership role in aligning all components of the supply chain, from manufacturers to ports and yards, for the benefit of the Canadian economy."

Clover Bar, AB

Winter is known to be harsh, but where and when it will impact our operations is unknown. We therefore diligently prepare for it by implementing specific measures to meet with its inevitable extreme conditions. Again this year, we are applying the learnings from the past. There is no doubt in my mind that our ability to perform in these challenging times is largely a result of the record-high strategic capital investments we are making in our infrastructure. It is also a result of our resourceful team of railroaders. We also welcome the investments made by our customers and supply chain partners to increase their own capacity, resilience and ability to perform during the cold season.

Improvements in our network fluidity are an ongoing endeavour for which new investments and work measures are planned to further optimize our operations while enhancing the safety of our people. This year, we are all facing the additional challenge to our people of operating during a pandemic. We are hopeful that the current recovery trend continues and certainty returns to our customer business volume.

We already responded to the upward trend by recalling furloughed employees and taking rolling stock out of storage. We know, at CN, that we are well positioned to meet the demand for the 2020–2021 winter. CN is built strong and so are our customers; together, we are *United for Recovery*.

JJ Ruest
President and CEO

Hillsport, ON

2 Executive Summary

CN has prepared this 2020–2021 Winter Plan in accordance with the requirements of Canada's *Transportation Modernization Act* and with the input of key stakeholders. It sets out the priorities, investments and measures CN has undertaken, and will make, to ensure it is ready to face the coming winter and meet the demand for the transportation of goods from its customers.

During winter 2019–2020, CN faced unique challenges, which tested and demonstrated its resilience and flexibility. They ranged from service interruptions due to a labour dispute, illegal blockades, extreme cold and landslides that incapacitated portions of CN's mainline. Then, in late winter, came the pandemic. Although its advent only affected the tail end of CN's winter operations, its scale and reach were such that its impact is likely to be felt through winter 2020–2021.

In spite of these issues, **CN reports a 2019–2020 winter performance of 155 billion Gross Tonne Miles (GTM) of goods moved,** representing its second-best performance behind the 159 billion GTM of goods moved in 2018–2019. It came as a result of three key factors: the dedication and can-do attitude of CN's people; the implementation of innovative practices; and, the injection of $7.4 billion in capital investments over the last two years that created capacity and resilience.

The ongoing capital campaign included the acquisition and implementation of cutting-edge technology and modern equipment, such as automated car inspection portals and new alternating current locomotives, along with the addition and lengthening of passing siding tracks. These strategic investments were supplemented with innovative practices such as maintaining train length through better air distribution along the braking system.

CN understands its key role in the Canadian economy. As such, and in spite of the financial impact of the pandemic, it plans to invest another $2.9 billion in 2020. The investments focus on double tracking key parts of CN's mainline, extending sidings, increasing yard tracks and building more infrastructure in both Port of Vancouver and Port of Prince Rupert areas. Through part of these investments in 2020, and combined with additional ones in 2021, CN will acquire 1,500 new grain hopper railcars, built in Hamilton, Ontario, to be delivered during the 2020–2021 crop year.

To ensure a smooth and responsive system, CN will maintain frequent communications with its customers. It will use the ongoing feedback and information to adjust its plan and operations accordingly, especially as business levels fluctuate and as speed restrictions are implemented during these uncertain times. It will maintain its four-tier system to reduce train length as temperature drops and will adjust its fleet and crew sizes in a timely fashion as demand picks up. In short, it will overcome challenges and safely move goods in winter 2020–2021.

Saint-Isidore, QC

NEAR-RECORD GRAIN MOVEMENT DURING WINTER 2019–20 IN SPITE OF UNIQUE CHALLENGES

CONTINUING NEW INVESTMENTS OF $2.9 BILLION

BEST PRACTICES AND MODERN EQUIPMENT TO MAINTAIN TRAIN LENGTH IN COLD WEATHER

CLOSE COMMUNICATION WITH CUSTOMERS TO ENSURE ACCURATE DEMAND INFORMATION


CN
CN

Vegreville, AB

3 2019–2020 Review

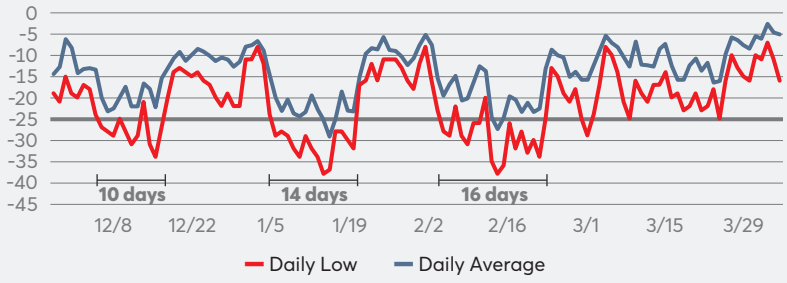
When planning to meet the needs of its customers for winter 2020–2021, CN closely examined its performance for 2019–2020, using lessons learned from the year's results to help position CN to meet the inevitable challenges of the coming winter.

a. Results Achieved and Related Challenges

Overall, **CN moved more than 155 billion Gross Tonne Miles (GTM) of commodities** during winter[1] 2019–2020, down 2.5% in comparison to the 2018–2019 winter, during which CN moved a record traffic of 159 billion GTMs. These results were achieved despite the following challenges:

- **Movement disruptions.** CN experienced interruptions of movement through an eight-day strike by the Teamsters Union in November 2019, close to one month of illegal blockades on its mainlines in February 2020, track washouts and extreme cold weather periods (under -25°C). Each of these events slowed traffic movements to varying degrees, further slowed by the speed restrictions of the earlier Ministerial Order, creating unprecedented backlogs that needed to be subsequently caught up once CN was able to operate at normal levels.

Winter Temperatures, CN Mainline (2019–2020)

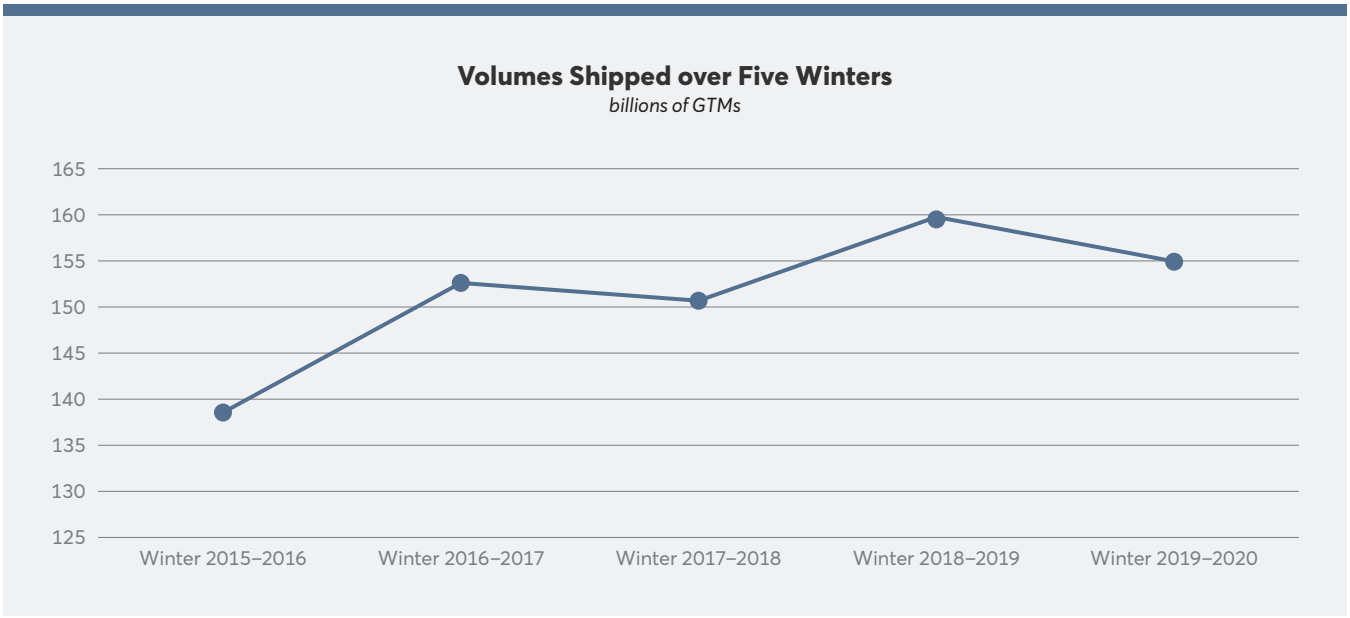


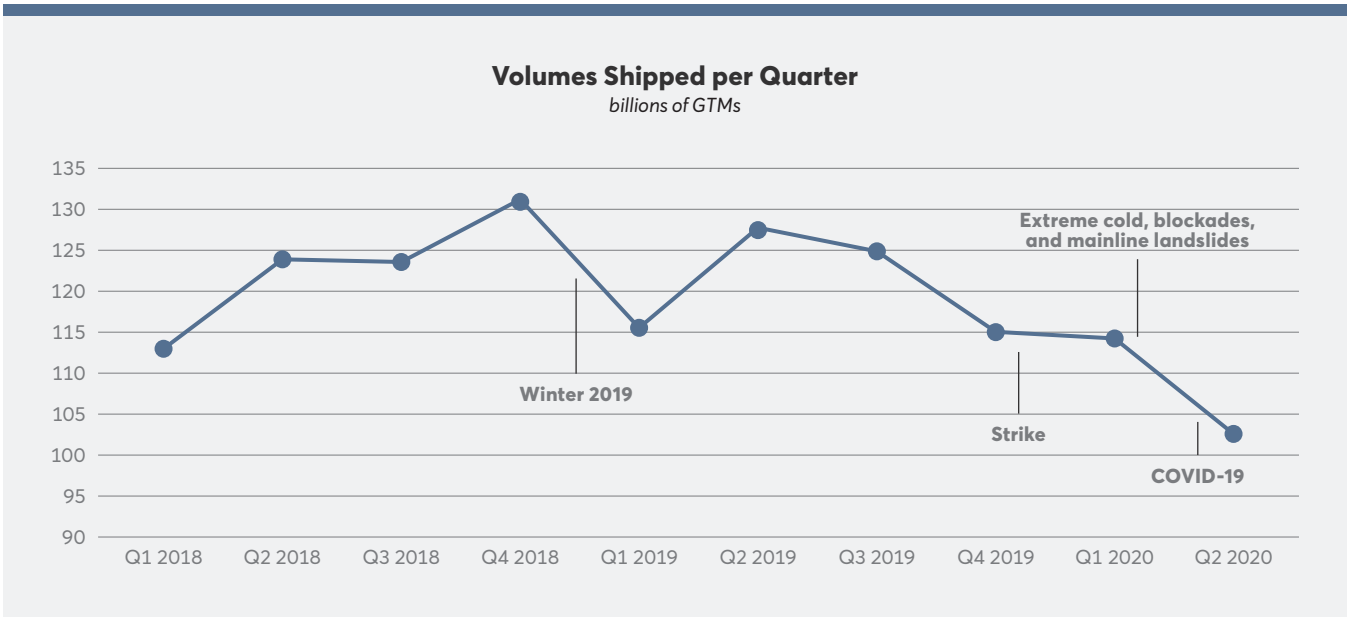
[1] From a CN data collection point of view, winter runs from December 1 to March 31. However, from a CN operational standpoint, winter conditions often start in November (or as early as October in certain regions) and sometimes last well into April.

- **COVID-19.** In March 2020, North America's economy was severely hit by the pandemic.[2] Market volatility, price fluctuations and economic upheavals have settled in. Except for agri-food and consumer goods, movement of almost all commodities plummeted.

Despite these challenges that provoked a drop in volumes shipped during the 2019–2020 winter, CN is proud of its service to the economy and to its customers getting caught up. Going forward, as customers' businesses recover from the pandemic, getting reliable forecasts from them will be key to rightsizing resources appropriately.

The graphs below show CN's traffic volumes over time.





[2] Refer to Section 5b and Annex A for more information on the effects of COVID-19 on rail traffic.

b. Lessons Learned

Important lessons were drawn or confirmed from past winters and provided input in helping develop this year's Winter Plan.

- **The importance of investment to resilience.** The investments in infrastructure over the last two years have been instrumental in delivering greater resilience, better results and in overcoming the challenges faced during the past 12 months. These proven benefits are leading CN planning to invest $2.9 billion this year.
- **Dealing with blockades.** Despite CN's strong relationships with the communities in which it operates, rail, much like highways, bridges and pipelines, will always be vulnerable to activism, even when the protest is unrelated to railways. CN continues to work with neighbouring communities and, when necessary, take action to protect its critical infrastructure, including legal action. In February 2020, such action allowed CN to obtain injunction orders, many of which were enforced several weeks after their issuance.
- **A well-functioning supply chain.** Experience has also shown that CN's success in moving grain in the 2019–2020 crop year, despite the pandemic and the disruption to container traffic, was in large part due to the alignment of all components of the supply chain, from country elevators to vessels in ports. CN will therefore keep exercising its leadership for such industry alignment to continue during winter 2020–2021, in all sectors it serves.

After last winter's extreme cold, CN did a review of its operations, with a focus on the best practices for management of equipment in severe weather conditions. Here are highlights of some lessons drawn:

- CN continues to refine its use of **air distribution cars** on trains to drive maximum benefit. Their availability being critical, CN monitors their location to ensure they are positioned along the network for best use during cold snaps.
- Strict adherence to the **four-tier restriction system**, which calls for specific train length reductions in cold weather, is very effective in keeping the network fluid and safe.
- Representatives from support sections are temporarily located in operation centres to **work in unison** and assist chief dispatchers with troubleshooting. Such arrangement allows various expertise to come together with solutions as challenges arise and supports the flow of information to and from the operation centres.


Camrose, AB

Leyland, AB

4 Key Factors Affecting Planning

In addition to analyzing past results, integrating key factors is crucial in developing any realistic plan, such as the intrinsic realities of rail transportation, the prevailing commercial domestic and export market conditions and customers' realities and input.

a. Rail's Intrinsic Realities and Safety Imperatives

Outdoor operations of the magnitude involved in the running of a rail business include intrinsic challenges and safety imperatives that must constantly be met. They include:

- **Extreme cold.** Severe cold, due to its detrimental effects on the physical characteristics of steel against steel,[3] presents unique challenges for railways that can negatively impact volumes moved, no matter the investments and practices to strengthen the network and optimize the service. At -25°C and below, long compressed air brake systems also become more vulnerable to malfunction.[4]
- **Snow.** Although its impact is generally secondary to the effect of cold, snow can still disrupt rail operations through forcing trains to slow down, increasing the risk of congestion on the network. Snow clearing in rail yards requires extra switching and mobilizes resources.

[3] Welded rails become less flexible and ice crystals wear down wheel treads, amongst other things. This leads to more frequent rail breaks and associated delays.

[4] Frozen gaskets leak air at brake hose couplings, air hoses freeze and air cannot move consistently through the full length of the compressed air system.

- **Terminal operations.** Customers' operations at terminals — or that of their agents — are also affected by winter. When the destination terminal cannot accommodate rail traffic, CN must occasionally hold trains at origin or along the route, provoking delays in the supply chain upstream.

  Persistent heavy rainfall also affects terminal operations in the Port of Vancouver where some terminals are unable to load grain vessels during periods of inclement weather. Consequently, CN must sometimes split trains to suit railcar unloading operations at export terminals. This constraint deserves consideration from all concerned, including government officials.

- **Closure of the Port of Thunder Bay and the locks of the St. Lawrence Seaway.** These closures during winter remove up to 1,250 CN unloads per week at peak demand for grain, significantly affecting the overall capacity of the entire system.

McCall, BC

b. Prevailing Commercial Conditions

Commercial conditions can come in many forms, such as ongoing trade disputes and import restrictions, global competition, duties for certain commodities, diplomatic tensions and the uncharted economic repercussions of COVID-19. These conditions can affect rail traffic volumes in different ways; hence, making them a necessary part of the planning and frequent adjusting that continues once the plan is in place.

- **COVID-19.** At the end of winter 2019–2020, the world economy had been severely hit by the pandemic. Market volatility, price fluctuations and economic uncertainty are now a reality. But the effects are not always negative. Specific to grain movement, there had been a spike in demand in the summer of 2020 as certain countries increased their inventories to ward off food insecurity. Most other commodities have suffered, to varying degrees. The economic conditions that appeared in March 2020 may prevail throughout the upcoming 2020–2021 winter season.[5]

- **Unsettled trade and tariff barriers.** Such issues will unpredictably impact volume traffic during winter 2020–2021. These include softwood lumber, the Chinese import restrictions on Canadian canola, Indian tariffs on peas and lentils, tariffs between the United States and China and the volatility of oil and frac sand movements due to pipeline capacity.

[5] Refer to Section 5b and Annex A for more information of the pandemic's impacts.

c. Customers' Role

Winter does not discriminate. It affects rail operations, as described above, but impacts CN's customers who must also face its challenges.

This is why CN keeps close contact with customers to facilitate winter readiness for all parties. For example, on the safety front, CN meets with customers prior to the onset of winter to explain how to maintain their sites for safe winter operation. Switch, flangeway and crossing clearing, and walking conditions in order to prevent incidents and accidents are reviewed. CN also maintains a website (www.cn.ca/winter), which is advertised to all customers via an email sent around mid-September. It includes videos, winter checklists, a track inspection guide and a customer safety handbook. Additionally, a webinar is held in early October to review CN's Winter Plan and winter safety best practices. CN also proactively communicates to its customers, on a daily basis, winter weather conditions and their impact on the network, corridor by corridor.

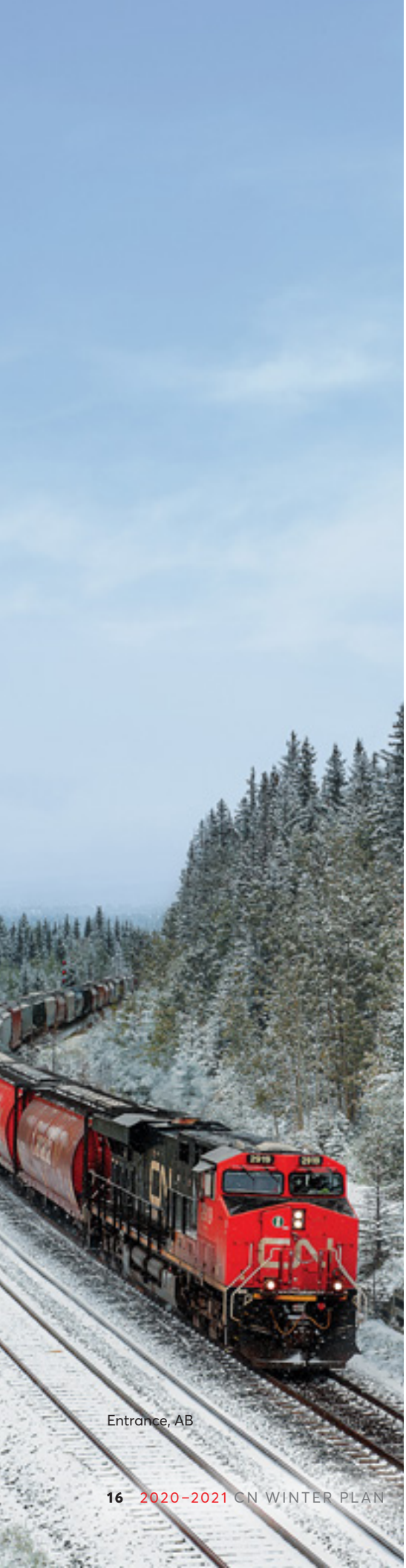
CN also continues to work with its supply chain partners to ensure their infrastructure is ready for winter. As a result, 51 terminals have equipped their sites with a ground air source so that their loaded freight cars can be released with air hoses already attached. This allows trains to depart more quickly from origin, which improves network fluidity. Finally, CN also welcomes the investments made by customers and supply chain partners to increase their own capacity.

Obtaining timely forecasts from customers is necessary to deploy responsive operations. This year's uncertainties make these forecasts more difficult, yet even more so essential.

Above all, CN needs to obtain from its customers their demand for the coming winter along with their requirement for frequency of service in order to adjust its plan accordingly, especially as business levels fluctuate during the course of the season. CN cannot stress enough that this information is paramount to rightsize resources and service levels to meet those requirements.

This year, the intrinsic difficulty for CN's customers to provide reliable forecasts is exacerbated by the unique uncertainty brought about by the pandemic. Many of its customers and industry associations have communicated that it is extremely difficult and speculative for their members to forecast at this time. Suddenly, their markets are uncertain and their business data from past years is not necessarily reliable to make projections for the coming winter. For CN, this uncertainty translates into unpredictable needs from its customers and an additional difficulty to rightsize its resources, hence the utmost importance to communicate all business developments and indicators on a regular basis.

CN understands the challenging circumstances and is working collaboratively with its customers to meet their needs.



Entrance, AB

5 The Plan for Winter 2020–2021

This section explains how CN is getting ready for winter through various investments and best practices and how it is pivoting towards recovery and eventual growth, as much as it is possible to do so during a pandemic.

a. How CN is Getting Ready

Winter comes back every year. Yet, its severity is always unknown. Despite record investment on infrastructure hardening, there will always exist intrinsic physical properties of steel wheels and rails that are affected by extreme cold temperatures.[6] Most importantly, CN will not jeopardize the safety of its employees and the communities in which it operates, while doing everything it can to move its customers' traffic as efficiently as possible during difficult operating procedures. Here is an overview.

I. CURRENT CAPACITY AND OPERATING MEASURES

CN has completed a record $7.4 billion of capital investments in the past two years. In doing so, it has significantly enhanced safety and increased its resilience in dealing with and recovering from severe weather, network disruptions and other events that can alter network fluidity. Those investments included:

- **260 new locomotives**, for a total of over 2,200 winter-prepped locomotives. Locomotives tend to lose traction due to ice, snow and water, resulting in wheel slippage and less efficient operations. To deal with that issue, the new locomotives are 100% alternating current compared to direct current, which improves traction.[7]

  Placing a locomotive in the middle or at the end of the train also assists in offsetting the impact of temperature on air flow reduction along the full length of the train.

[6] CN has produced a video (https://www.cn.ca/en/media/video-gallery/), "The Tipping Point," which explains the impact of winter on rail operations.

[7] These locomotives are able to maintain greater horsepower by disabling the wheel that senses slippage and rebalancing the horsepower among the remaining traction motors.

CN's investments of $7.4B have significantly enhanced safety and increased its resilience in dealing with and recovering from severe weather, network disruptions and other events that can alter network fluidity.

- **41 more air distribution cars**,[8] for a total of 101. These are positioned in the train to assist in supplying a consistent flow of air through the brake lines all the way to the end of the train. In cold temperature, this enables CN to maintain longer trains, ensuring network fluidity. CN had 20 of these cars available during the 2017–2018 winter, and in recognition of their significant benefit, CN has consistently increased its fleet of these innovative assets.
- **1,000 new hopper cars**.[9]
- **Addition and lengthening sidings**, where two trains can meet and pass safely without impacting network fluidity.
- Close to **140 miles of double track sections on CN's mainline**, primarily in Western Canada, building capacity to move CN customer traffic, in particular traffic moving to and from the ports of Prince Rupert and Vancouver.
- **Increased yard track capacity** in Winnipeg, Melville and Edmonton.
- **Eight automated track inspection cars**,[10] which can move in regular train service at track speed. This creates network capacity because track time is no longer consumed in carrying out inspections as was the case with earlier generation inspection vehicles. Engineering employees that were previously involved in inspections now have more time for repairs.
- **Seven automated inspection portals**,[11] allowing for the full inspection of a train at track speed versus a roll-by inspection at train departure from a yard, significantly reducing initial train start delays and improving yard capacity. Mechanical employees that were previously involved in inspections now have more time for repairs.

[8] Air distribution cars are conventional boxcars equipped with large air compressors and associated equipment.

[9] Refer to Section 5.a.ii for details on the additional purchase of new railcars in 2020–2021.

[10] These cars are equipped with the latest sensor and artificial intelligence technology, allowing CN to assess, as trains go by, track gauge, geometry, and alignment in order to identify defects before they become an issue. Two more will be received in 2020 for a total of 10.

[11] The portals have high-resolution imaging hardware coupled with powerful machine learning software.

- **Train speeds** have been limited by a Ministerial Order issued in February 2020 and subsequently revised. The new Order is in force since April 3, 2020. The speed of certain crude oil and liquid petroleum gas (LPG) trains is limited to 50 mph from March to November, down to 40 mph from November to March. When temperature hits -25°C, speed is further reduced to 30 mph in certain areas.[12] While being fully supportive of the need for safe operations, CN is concerned about the unintended consequences this Order will have on the overall supply chain for all commodities. **The slowing of these trains will have the effect of slowing all subsequent trains on the network**, which in turn reduces capacity and risks congestion at the time of year when CN already faces difficult operating conditions.

The Order targets crude oil and LPG trains moving 20 cars as a block or 35 cars dispersed through the train. Its intent is to bring greater safety to trains carrying flammable liquids, a goal which CN entirely upholds.

Crude oil and LPG trains operate on the same network as those moving other commodities, including grain. By reducing the speeds of crude oil and LPG trains, the Order will also reduce the velocity of the entire fleet moving in the same corridors because the low speed of any given train creates the cumulative impact of limiting the speed of all trains behind it. **Just as cars stuck behind a snowplough on the highway are forced to slow down to the speed of the snowplough, so too will trains stuck behind the crude oil and LPG traffic.** The restrictions represent a speed reduction of up to 40% in key corridors for trains subject to the Order. This creates a domino effect that further reduces total throughput on these key corridors, resulting in a negative impact to all traffic regardless of the commodity. At -25°C this results in a greater reduction because more crews and more time are required to move the same amount of traffic. This further compounds the challenges of winter operations and inhibits the capacity of the entire network.

The Order, by selecting the November–March period for reduced speeds, attempts to mitigate the risks created by cold temperatures. However, during these four months, temperatures are not consistently cold to the point of presenting additional risks to safety. CN believes that there are alternative options to these calendar-based blanket speed limitations.

CN continues to favour and to seek data-driven, technology supported solutions, in the interest of safety, its customers' service levels and the effectiveness of the entire supply chain. CN already self-imposes speed restriction through its Cold Weather Slow Policy, a standing operating procedure that includes mandatory slow orders for train movement at specific temperatures. CN could easily apply the guiding principles and procedures associated with this policy to a Ministerial Order that prescribes revised speed limits based on predetermined temperature thresholds, instead of calendar dates.

In addition, CN has taken other measures to fortify its defences against temperature-based rail failure risks. These include a standard company wide protocol of temperature based slow orders bulletins to crews, significant investments in the train control system (CTC) enabling 99% of CN's main route to be protected under this method of control, and ongoing elimination of joints on continuous welded rail. CN has eliminated 29,369 of these joints since February 2019.

CN will continue to seek science-based alternatives with Transport Canada and its customers, supply chain partners and stakeholders to develop acceptable alternatives to these rules.

[12] For details, refer to https://www.canada.ca/en/transport-canada/news/2020/04/minister-of-transport-issues-orders-to-reduce-derailments-and-improve-rail-safety.html.

In order to ensure safe operations during extreme cold temperatures, CN has implemented other operational procedures — or best practices — which also increase capacity and maximize fluidity of the network:

- **Adopting a four-tier system**, for addressing the impact of severe winter temperatures and ensuring safe operations under these conditions. The following chart shows CN's train length safety-driven policy for cold-weather operations. Reductions in train length are required once temperatures are -25°C or below, and were updated from previous years for greater safety.

Maximum Train Length (in feet) Allowed at Specific Temperatures

					DP (1×1×0)		DP (1×0×1)	ADDITIONAL AIR SOURCES ADDED
	TIER LEVEL	TEMPERATURE °C	TEMPERATURE °F	CONVEN-TIONAL	HEAD TO MID	MID TO END	HEAD TO END	3RD, 4TH AND 5TH AIR SOURCE
Non-Intermodal Trains	Tier 1	-25	-13	7,000	6,667	3,333	10,000	For each additional air source added beyond the 1×1×0 or 1×0×1 configuration, permissible train length can be increased by 1500'/ additional air source, up to a max train length of 12,000'. Maximum of 5 air sources are to be used on a train. This operating method DOES NOT apply to 'KEY' trains.
	Tier 2	-31	-24	5,000	5,000	2,500	7,500	
	Tier 3	-36	-33	4,000	4,000	2,000	6,000	
	Tier 4	-40	-40	Tier-3 length restrictions in force. Operations limited to daytime only.				
Intermodal Trains	Tier 1	-25	-13	8,000	8,000	4,000	12,000	For each additional air source added beyond the 1×1×0 or 1×0×1 configuration, permissible train length can be increased by 2000'/ additional air source, up to a max train length of 12,000'. Maximum of 5 air sources are to be used on a train. This operating method DOES NOT apply to 'KEY' trains.
	Tier 2	-31	-24	6,000	5,667	2,833	8,500	
	Tier 3	-36	-33	4,500	4,500	2,200	6,700	
	Tier 4	-40	-40	Tier-3 length restrictions in force. Operations limited to daytime only				

Notes:

1. *For the purposes of this table, Distributed Power (DP) can be remote locomotives or distributed braking cars.*
2. *For manifest trains running DP 1×0×1, the maximum length allowed from head to DP remote is 7,500 feet.*
3. *Iron ore trains on the former DMIR territory are excluded from these restrictions.*
4. *The specified temperatures refer to the coldest forecasted temperatures between the train's origin and destination.*

- **Adapting the fleet (rightsizing)** through fully deploying cars at times of peak demand and placing some of them into storage when it declines to alleviate congestion.
- **Re-routing traffic when disruptions occur**, including over other railways at CN's expense in order to meet its commitments.
- **Managing the Vancouver Gateway**[13] through holding traffic outside of the Lower Mainland until space is available and through encouraging terminal owners to proactively manage the flow of their customers' railcars during the winter months, to avoid congesting the area and negatively affecting overall capacity.
- **Deploying generators** across the network to prevent electrical power failures of safety or track equipment, such as railway signals, due to cold weather.

Winnipeg, MB

- **Systematically changing the gaskets of air hose connectors** as part of normal car inspections to prevent air from escaping the brake system due to their wear caused by freezing temperatures.[14]
- **Detecting defects** on bearings, wheels and various components through advanced detector systems, which allow to take preventive action before they fail or before imperfections turn into problems that can lead to derailments or other incidents. Such early detection allows, for example, the replacement of suspect wheels in preparation for winter. The systems generate alarms when defects are detected, as trains are transiting on CN network and procedures are in place to address each alarm to ensure the safest possible transit.
- **Avalanche monitoring** of high-risk zones through avalanche rating notices. CN also performs active control of these zones with contained and safe blasting and has 84 individual slide fence activity sites, which indicate when debris or heavy snow enters the right-of-way and hits the knock-over posts.
- **Planning weather-related restrictions** through daily severe weather forecasts, with overnight updates. CN's weather condition forecaster also relates real-time notices for severe weather that are integrated into its rail traffic control system, allowing immediate response.

[13] CN filed "Vancouver Plan" with the Canadian Transportation Agency on August 1, 2020.

[14] CN continues research to identify and implement additional options and new materials that can increase the efficiency of gaskets in cold temperatures.

CN's mix of strategic investments, innovations and best practices allows to maintain safe winter operations and generates the capacity to respond to customers' needs.

Edmonton, AB

- **Preparing snow-clearing equipment** through inspections, maintenance, repairs, and prepositioning of critical equipment — in advance of winter — in terminals/areas where snow-clearing needs are most likely, based on historical data. CN also uses forced air engines that provide quick and thorough cleaning of switches, along with nearly 1,400 snow melters, switch heaters, and other devices meant to keep critical switches clear of snow and ice buildup.
- **Responding to uncontrolled events with contingencies** such as adding track patrols, deploying stand-by engineering crews to remove debris or snow from the track, and staging emergency ballast and track panels so that it can respond quickly in the event of a washout or other track damage. Also, forward-looking weather reports allow adjusting staff availability to ensure the snow removal equipment has operators available at appropriate times.

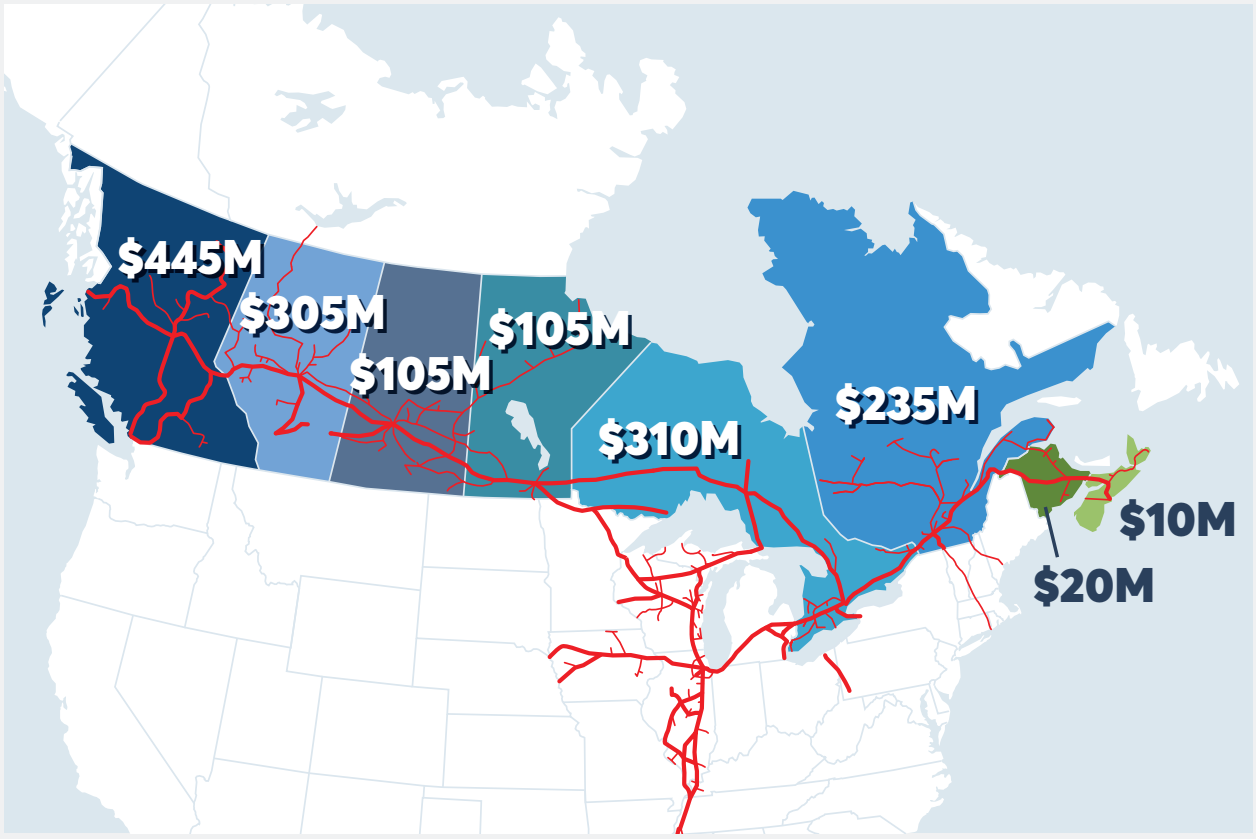
These investments and operational procedures result from successive planning exercises over the years. They stem from a careful analysis of past performances, lessons drawn from them and extensive consultations with stakeholders. New investments and innovation are always in order to constantly improve.

Despite the uncertainty caused by the pandemic, CN is planning capital investments of **$2.9 billion in 2020**, contributing to more network capacity, which improves fluidity and customer service. These investments represent ~20% of CN's recent annual revenues, making once more CN the company that has the highest investment ratio in the North American rail industry.

The investments focus on double tracking key parts of CN's mainline, extending sidings and increasing yard tracks. CN is also building more infrastructure in both Port of Vancouver and Port of Prince Rupert areas to support its customers' demand for more capacity and to match their investments at the waterfront and in the country. More precisely, CN's capital investments by province are as follows:[15] British Columbia – $445M, Alberta – $305M, Saskatchewan – $105M, Manitoba – $105M, Ontario – $310M, Quebec – $235M, New Brunswick – $20M, and Nova Scotia – $10M.

CN will also acquire **1,500 additional** new generation, high-capacity, grain **hopper cars**[16] with delivery during the 2020–2021 crop year. These will help CN continue to meet the growing needs of grain farmers and customers and, combined with the $2.9-billion capital investment program, will help expand CN's capacity through fleet renewal.

CN's Canadian Capital Investments by Province



[15] For details on all of CN's planned $2.9-billion capital investments, refer to www.cn.ca/capital-investments.

[16] See press release for details.

Concord, ON

b. How CN is Preparing for Recovery and Resilience

This year, preparing for winter takes on a special dimension brought about by the economic downfall caused by the pandemic and its current but challenging recovery.

COVID-19 quickly affected the economy and CN's customers. Demand for CN's service dropped dramatically, with volumes in the second quarter declining by 18%. With the exception of agri-food (bulk and processed grain and refrigerated groceries), all other commodities were negatively impacted to varying degrees.[17] These pandemic repercussions may continue throughout the 2020–2021 winter season, along with other unforeseen impacts.

During this downturn, CN has not remained idle. CN's COVID response first included measures to protect its workers. It instituted a 100% mask policy on property and physical distancing, and focused on aggressively cleaning workspaces and locomotives. Annex A provides more details on this front.

Canada and the United States announced in March that the border between both countries would be temporarily closed to non-essential travel. CN immediately worked with authorities on both sides to emphasize that rail is essential to the delivery of the goods that both societies require. CN is pleased that this temporary closure does not affect rail shipments between Canada and the United States. CN maintains seven secure border crossings.

This year, preparing for winter takes on a special dimension as it is confronted with the additional difficulty of the economic uncertainties caused by the pandemic.

[17] For example, carload volumes were down significantly across all North American railroads, ranging from 25% to 30% versus 2019 levels.

CN took advantage of the decline in its customers' demand during construction season to increase the number and average duration of its 2020 workblocks. These are specific periods reserved to carry out maintenance and other capacity-enhancing projects, during which time, for safety reasons, trains are prevented from moving through the work area. But with the greatly decreased customer shipments due to the pandemic, CN was successful in building and completing critical infrastructure projects that increased resilience and fluidity into the network.

Alongside other railroads, other industries and many of its customers, CN also rightsized its resources to match the decline in volumes. At the peak of the pandemic, CN had ~4,000 employees on furlough (crews, mechanics, others), ~20,000 CN railcars and ~750 locomotives stored. CN removed its rolling stock from service by placing it into storage at strategic locations so it could recall them quickly.

Battle Creek, SK

Adjusting to large declines in volume during the pandemic meant consolidating traffic into fewer and longer trains. While this allowed CN to meet customer demand, it increased rail car dwell and decreased railcar velocity. As demand comes back and resources are adjusted accordingly, CN is focused on meeting customers' rising demand. In fact, at time of writing this Plan, CN had already called back 2,100 of the 2,800 furloughed Train and Engine employees and had brought back 15,000 cars and 600 locomotives to respond to those commodity sectors, which are seeing a recovery.

To continue on this recovery, and to remain resilient at all times, CN will maintain close contact with its customers in order to align strategically its rightsizing decisions across its network with customers' demand, based on their forecasts, as manufacturing picks up. Conductor trainees who were furloughed at the beginning of the pandemic are also being recalled and will continue their training. In some key areas of its network, CN is also recruiting for future needs.[18]

[18] In periods of growth, it can take up to six months for new hires to become fully operational while six to twelve months are required for new railcars and locomotives to reach the same state and six to eighteen months for new infrastructure.

To continue on its recovery, CN will align its rightsizing decisions with customers' demand, based on their forecasts.


Unity, SK

However, just as it was a huge effort to ramp down, so it is to ramp up. Returning to full operating levels does not happen instantly. Taking equipment out of storage requires inspections and switching, while recalling crews may require up to 30 days due to collective agreements. Crews also need railroad re-familiarization, typically lasting up to a week in order to ensure safe operations. In general, the lead-time for furloughed crews to be safely back to work is three to five weeks.

The perfect matchup of resources to demand, especially in this environment of uncertainty due to the pandemic, can be challenging for all. Therefore, CN needs the most up-to-date and frequent forecasts from customers in order to diminish as much as possible the time lag between demands and rightsizing.

CN understands that forecasting rail traffic demand is never an easy task. Even in regular times, experience shows that forecasts are often thwarted by the uncertainty of global trade and volatile markets as well as the rigours and hazards of winter. Therefore results do not always reflect what was forecasted. And these are anything but regular times. Consequently, CN will base its assessment of anticipated volumes — and adjust accordingly — on insights gained from establishing more frequent communications and consultations with its customers and supply chain partners, as they are weathering through these pandemic and post-pandemic periods.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Vegreville, AB

6 Conclusion

The extreme cold occurrences during winters is simply a fact of Canadian life. CN is up to the challenge. Its Winter Plan puts in place the strategic investments and specific measures to help alleviate the challenges that cold weather will inevitably bring to the rail system. It reflects CN's ongoing commitment to innovate and invest in a way that enables it to more effectively deal with the realities of difficult operating conditions.

As outlined in this Plan, CN's record level of investment in 2018–2019 enhanced its resilience and recoverability and the overall effectiveness of its winter operations. The added miles of double track, new and lengthened sidings and additional locomotives and air distribution cars turned out to be particularly valuable in this regard.

CN is building on these. In 2020, it is planning to invest another $2.9 billion of capital across its network, maintain its proven best practices as well as encourage and assist its customers and partners to adopt winter-ready infrastructure and to communicate frequently their latest business forecasts.

CN appreciates its customers' willingness to work closely with its employees to ensure it can constantly improve its ability to manage the challenges that inevitably come at this time of year. CN recognizes that they expect it to continue to meet their needs throughout the year, including when disruptions occur, and to be able to recover quickly while keeping them informed of the status of their shipments. It is CN's belief that this Winter Plan, combined with a review of the speed restrictions, provides the basis for it to meet those expectations.

CN welcomes ongoing consultation throughout the year. For that purpose, any input received is always considered, and customers' feedback confirms there is mutual benefit in continuing this way. All input can be sent to contact@cn.ca.


CN

Fitzwilliam, BC

ANNEX A

Tackling COVID-19 Head On

At the onset of COVID-19, CN immediately established a safe environment for its ~25,000 employees working to serve its customers and to keep the North American economy moving.

CN has taken concrete actions under the direction of its Occupational Health and Safety team to fight COVID-19 and avoid its propagation within its ranks as much as possible. In doing so, it focuses on the safety of employees and safeguard the flow of traffic. To support this, strict physical distancing restrictions are being followed. This takes the form of holding job and safety briefings over radio and spreading out and isolating work areas in buildings. CN has split staff at the Rail Traffic Control (RTC) centres in Edmonton and Chicago into separate physical locations and provided dedicated parking and building elevators to RTC staff. It has increased the cleaning and disinfecting of work areas, kitchens, restrooms, and common areas, making more hand-sanitizing products available as well and has also increased cleaning of locomotive cabs and bunkhouses. Those who could work from home were told to do so. Last but not least, CN has introduced a policy by which all employees, contractors and suppliers must wear a mask when working on CN property as well as maintain safe physical distancing and hygiene.

More recently, CN has embarked in the second phase of its pandemic plan: embracing its new normality. In the best interest of its customers, partners and stakeholders, CN has adopted new and innovative ways to conducting business safely and successfully. For instance, CN has implemented a modern reintegration policy, which forms part of a greater package of instructions, directives or policies, all captured in a master document: *New Normality – The How-To Playbook*. The latter introduces, in a clear and organized fashion, how to work in the office to ensure business success while preserving health and safety in this new pandemic reality.

The pandemic might have hit hard, but CN is built strong; it is built to last. It is also flexible enough to adapt to a new reality for the benefit of its employees and customers.

ANNEX B

Winter Impact on CN's Network


Saskatoon
Winnipeg
Duluth
Toronto
Detroit
Chicago
Memphis
Jackson
New Orleans
Quebec
Montreal
Moncton
Halifax
Normal winter conditions
More difficult conditions
Severe conditions


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CN
cn.ca/winterplan
09/2020