CN: Investing for Growth and Safe, Efficient Supply Chains

RAC – Canada Moves by Rail
SEPTEMBER 5, 2019

Fiona Murray, Vice President Public and Government Affairs, CN

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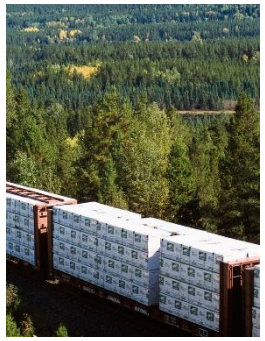
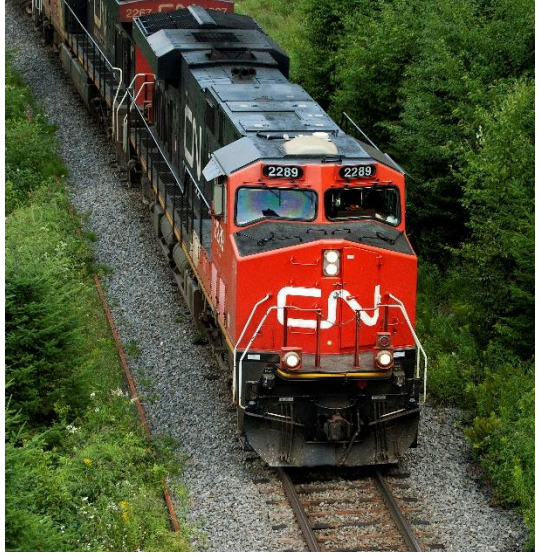
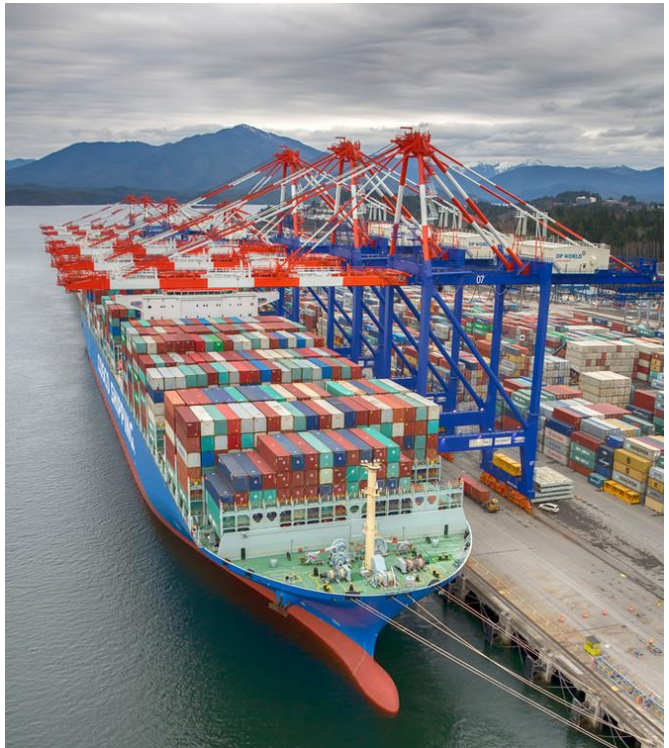
OUTLINE

- CN - Who We Are
- Investing for Safety
- Investing for Growth
- Delivering on our Commitments



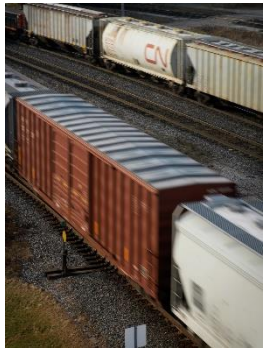
CN is a **service** company





Multi-faceted **supply chain** enabler

Helping our **customers win** in their markets

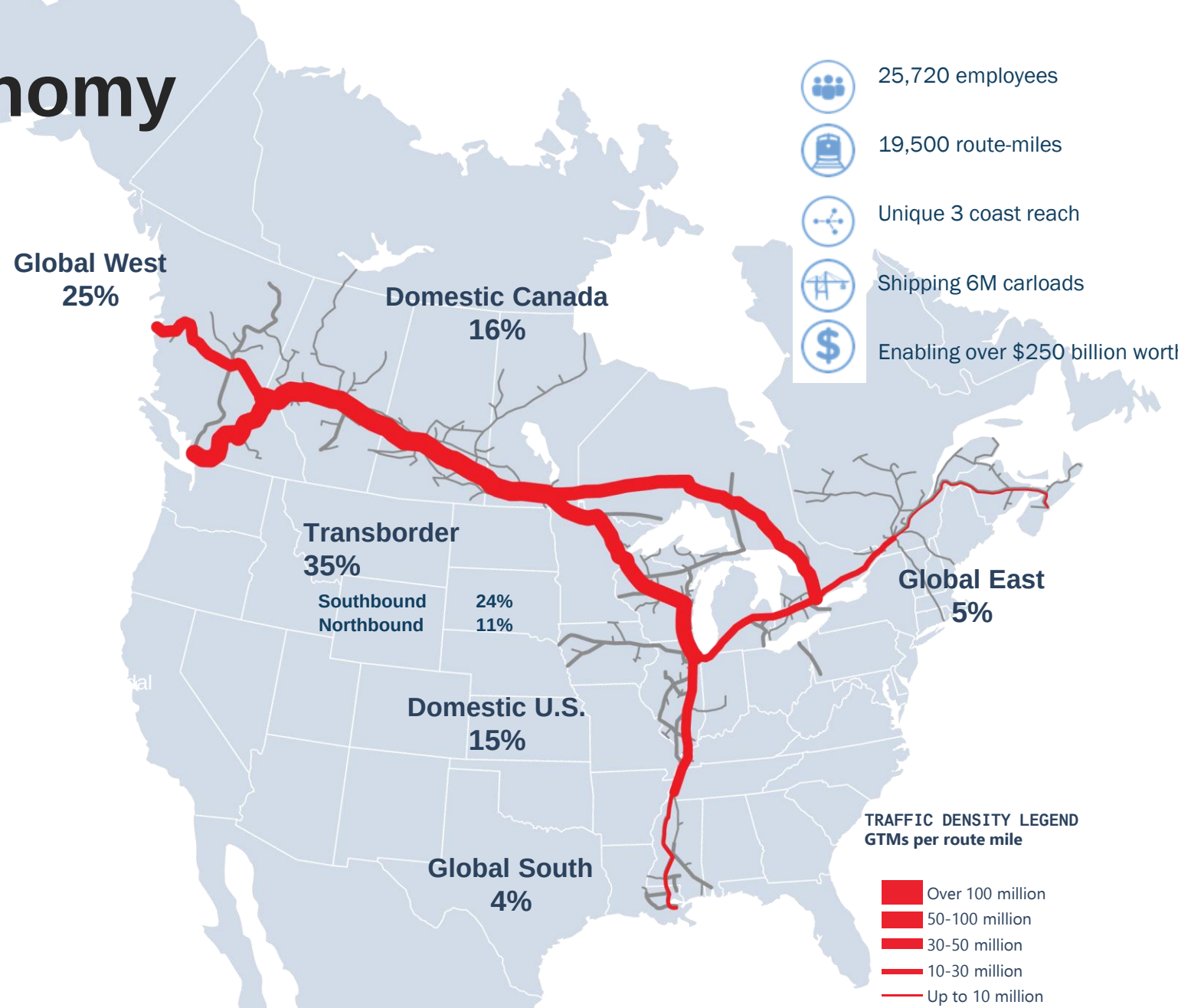


Moving the Economy

100 Years of Forward Progress

Well Diversified Portfolio	
Intermodal	24%
Petroleum and Chemicals	19%
Grain and Fertilizers	16%
Forest Products	13%
Metals and Minerals	12%
Automotive	6%
Coal	5%
Other Revenues	5%

Based on H1 2019 revenues



25,720 employees

19,500 route-miles

Unique 3 coast reach

Shipping 6M carloads

Enabling over $250 billion worth of trade annually

The map refers to traffic density based on annualized rates of Q2 2019 gross ton mile (GTM) production (million GTMs per route mile).

Building an Unparalleled Network and Expanding our Reach

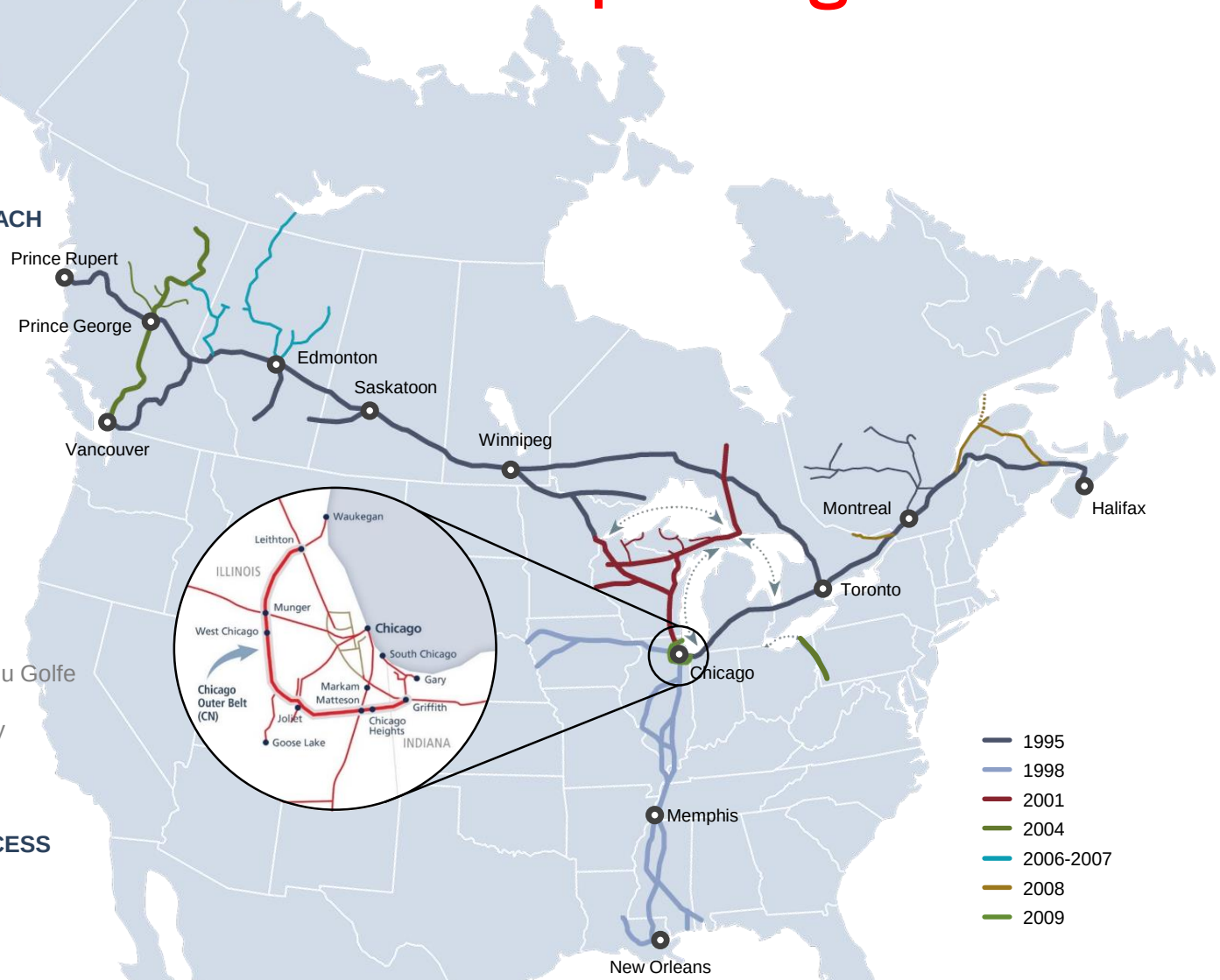
2019
FURTHER EXPANDING OUR REACH
TransX
H&R (pending closing)

2009
STRUCTURAL ADVANTAGE IN CHICAGO
Elgin, Joliet and Eastern Railway

2006–2008
SOLIDIFYING OUR REACH
Savage Alberta Railway
Mackenzie Northern Railway
Lakeland & Waterways Railway
Central Western Railway
Athabasca Northern Railway
Chemin de fer de la Matapédia et du Golfe
Ottawa Central Railway
New Brunswick East Coast Railway
Compagnie de Gestion de Matane

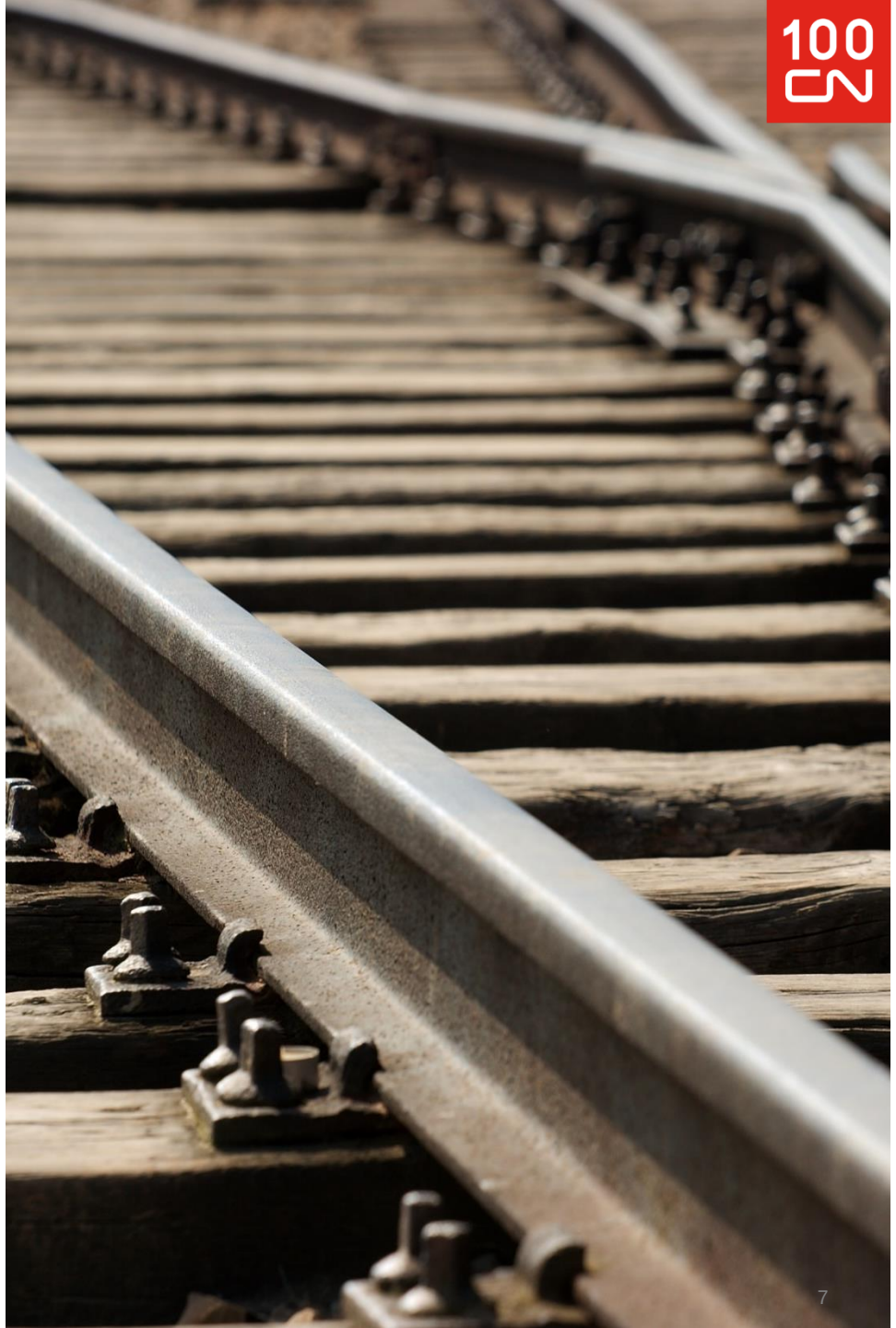
1998–2004
BUILDING A THREE COAST ACCESS
Illinois Central Railway
Wisconsin Central Railway
British Columbia Railway
Great Lakes Transportation

1995
SOLID CANADIAN FOOTPRINT
CN Network at privatization



Scheduled Railroading is Our Foundation

- CN pioneered Scheduled Railroading over 15 years ago
  - Optimizing the rail network to transport more freight with the same amount of railcars and locomotives
  - Moving customer goods more efficiently by increasing train lengths, speed and reducing dwell time at yards
- Driving safety, service, productivity, asset utilization and cost control
- Deploying technology – next strategic driver of value
  - Continuing to further advance our operational model to the next level
- Continuing to be nimble on resource allocation
  - Growing and rightsizing the railcars, locomotives and crews according to the customer demand
  - Quickly adjusted resources in last freight recession



CN by the numbers

6,000,000 carloads per year
450 trains starts per day
16,500 shipments per day
1,500 high horse power locomotives
120,000 railcars on line at any time
10 port connections
10 major switching yards
17 automotive compounds,
23 intermodal terminals
58 transload centres
8,000 CN chassis and domestic containers
9 great lakers, 4 great lake docks
25,000 employees
35,000 route kilometres (22,000 route miles)
4,000 active customers
11,000 origin – destination pairs

Committed to Delivering Responsibly

Delivering responsibly is at the heart of how CN is building for a sustainable future. It means moving customers' goods safely, being environmentally responsible, attracting and developing the best railroaders, helping build stronger communities and adhering to the highest governance standards

Environmental Protection	Social Responsibility	Strong Governance
• Reduced Greenhouse Gas (GHG) emission intensity by 40% over the past 25 years • Leading the North American rail industry, consuming approximately 15% less fuel per Gross Ton Mile (GTM) (1) • Rail is 4X more fuel efficient than truck – recognizing our role in the transition to lower carbon economy	• Run a safe operation with an uncompromising safety culture • Provide a safe, supportive and diverse work environment where our people can grow to their full potential • Build stronger communities across our network	• Continuously improving our culture of integrity and ethical business conduct • Executive compensation aligned with shareholders • Committed to diversity; signatory to the Catalyst Accord; member of 30% Club

Recent recognitions

CDP A LIST 2018 CLIMATE CHANGE

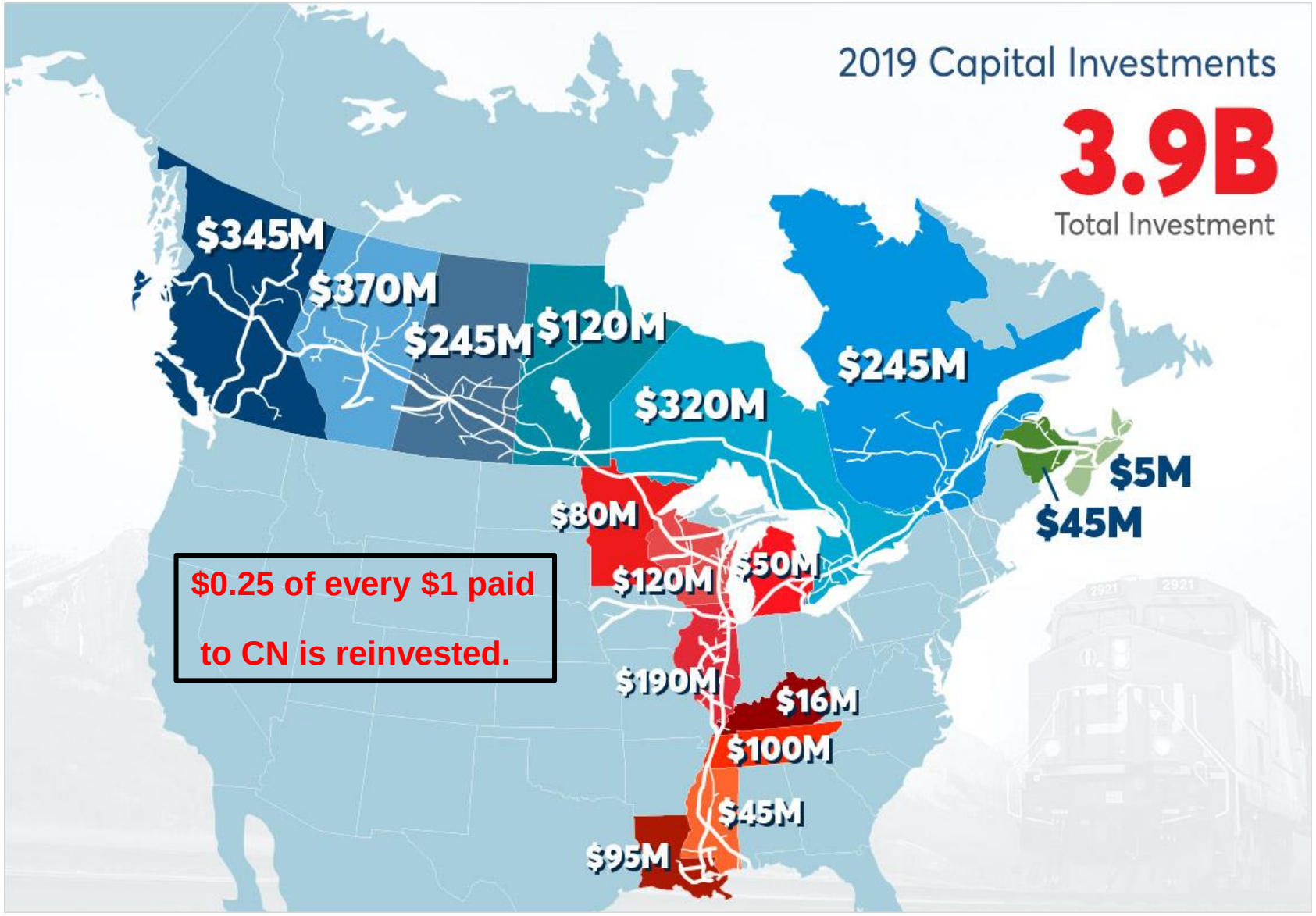
Progressive Aboriginal RELATIONS COMMITTED Canadian Council for Aboriginal Business

MEMBER OF Dow Jones Sustainability Indices In Collaboration with RobecoSAM

BEST 50 CORPORATE CITIZENS

(1) Based on 2018 data.

CN's Commitment to safety, innovation, resiliency, and enabling growth



Over **$22B** capital investments over the last **10 years**

$3.4 B in 2018

+

$3.9 B in 2019

=

$7.4B

in two years

Investing for Safe and Efficient Supply Chains

Leveraging advanced technology to improve safety, efficiency and productivity

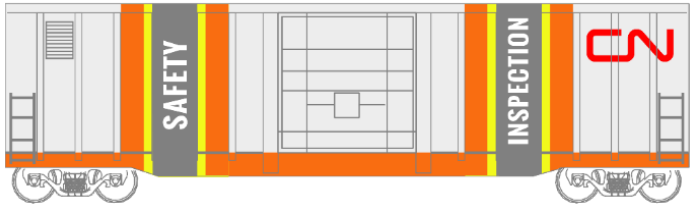
Focused on key projects – from pilot to implementation

- Autonomous track inspection program
- Automated inspection portals
- Handheld devices for mechanics and crew
- Enterprise automation
- Smart network (digital twin)

Autonomous Track Inspection Program

Specially equipped railcars in regular train service at track speed with the latest sensor and AI technology to fully automate track inspections

- Avoids slow speed hi-rail vehicles on the tracks performing manual/automated inspections
- Increases inspection frequency, quality and more accurate preventative maintenance to support our safety agenda
- Unlocks capacity and improves service reliability by reducing track disruptions



Automated Inspection Portals

High resolution imaging hardware coupled with powerful machine learning software is changing how we inspect our fleet

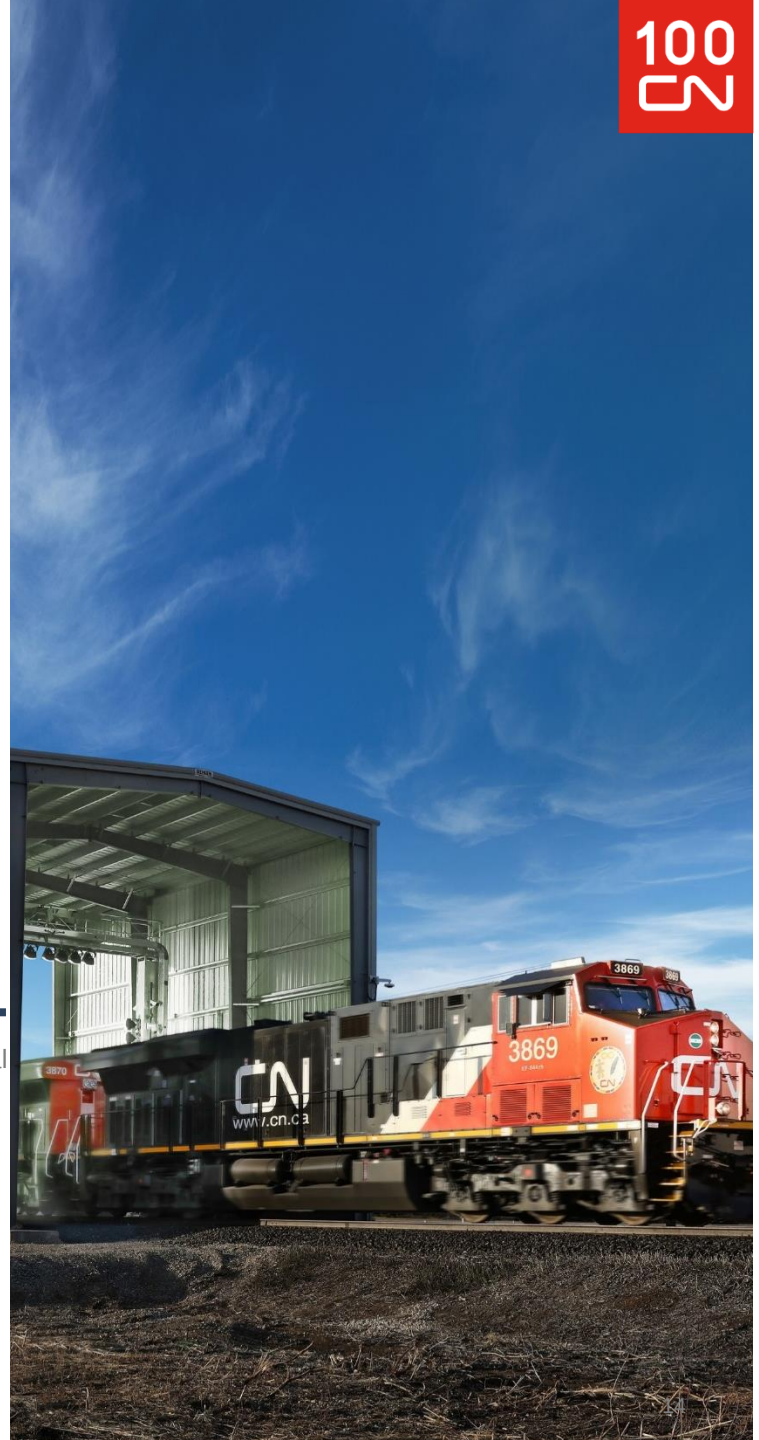
- Immediate benefits from reduction of mechanical manual roll-by inspections at train departure from the yard, significantly reducing initial train start delays and improving yard capacity
- Significant future benefits from elimination of time consuming manual Certified Car Inspections (CCI)
- Contributing to improved border fluidity for intermodal trains by ensuring manifest accuracy ahead of border crossing
- Increased frequency and improved quality of inspections, especially on difficult parts of the railcar, including the undercarriage, supporting our safety agenda

Q2 2019
5 portals built in Canada
17 algorithms developed

Q3 2019
2 portals installed in the U.S.

2021
Full network buildout
(additional ~10 portals)
~100 algorithms developed

2022
Gain regulatory approval for elimination of CCI



Handheld Technology

A mobile foundation starting with 3 applications

Mobile Device for Mechanics

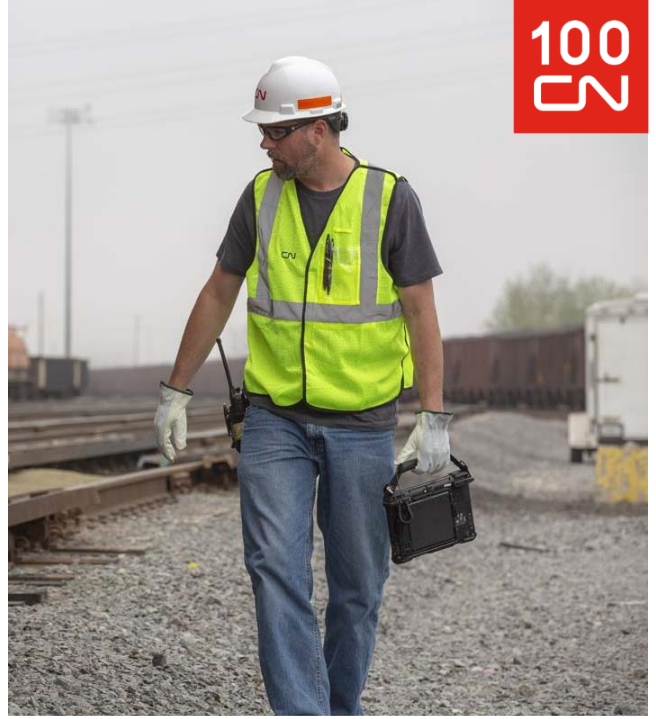
- Increase data accuracy and scope of work billed
- Improve supervisors' visibility of work progression and efficiency with remote communication of instructions

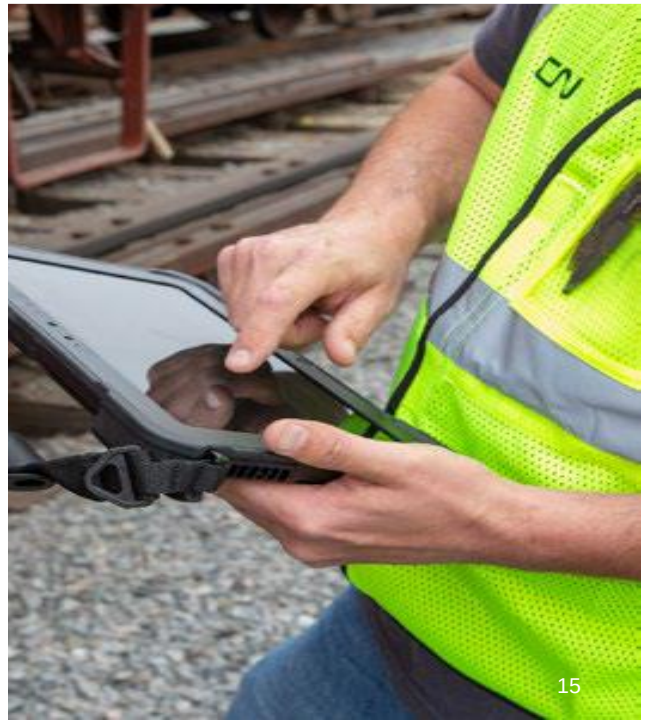
Mobile Device for Train Crews

- Speed up information flow to customers and increase accuracy and completeness in reporting work performed
- Enable dynamic planning and work assignment, staying current on progress

Documentation on Mobile Devices

- Improve safety and productivity with easier navigation and access to operating rules, customization of content and more robust update process





Full deployment of Car Repair Billing application — Q3 2019

Q4 2019 — Full deployment of Electronic Operating Manual and the first phase of Mobile Reporting Services

Enable digital reporting on services to customers — 2020

Digitization of manual processes driving standardization, improved productivity, more reliable data and timely communications

Enterprise Automation

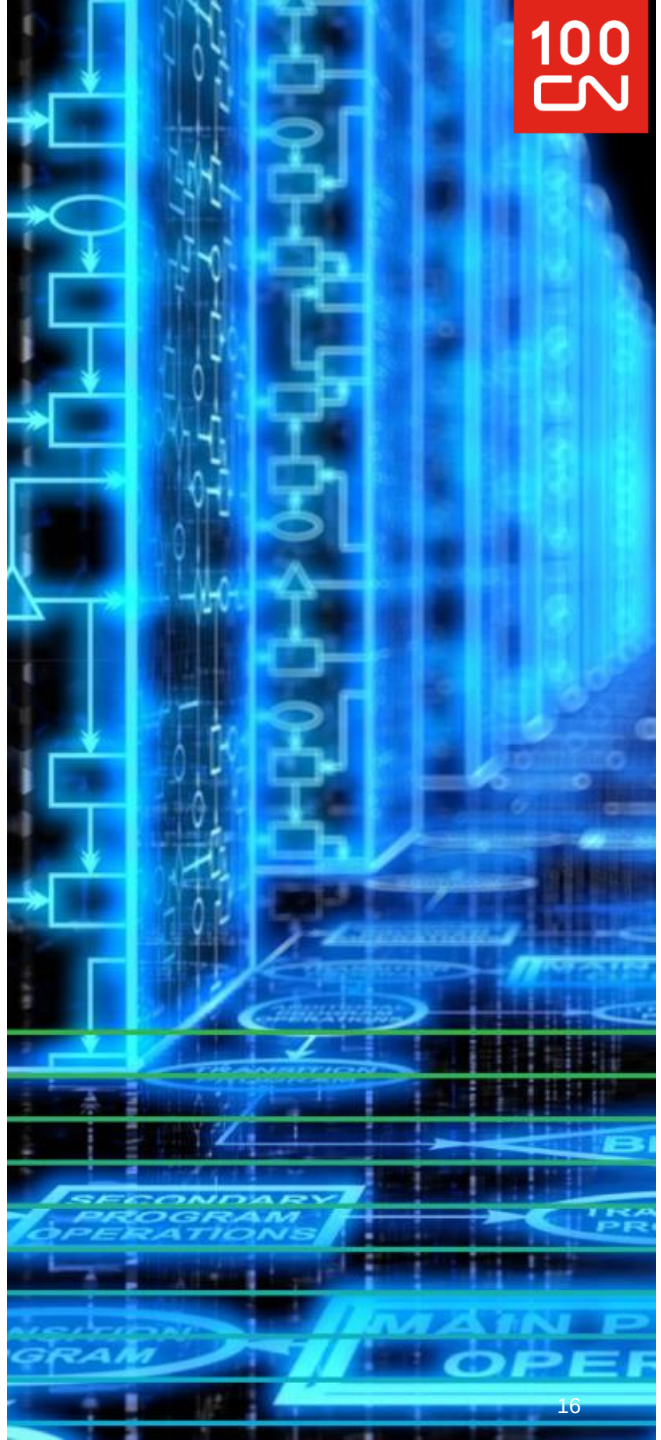
Using technology to automate and eliminate manual and time consuming tasks

- Leveraging a variety of tools, such as Robotic Process Automation (RPA), smart data capture, conversational interfaces (chatbots), cognitive automation and agile orchestration technologies
- Scalability at low incremental cost
- Enables employees to focus on value added tasks

Q2 2019
Assessing enterprise-wide opportunities and prioritizing use cases

Q3 2019
Deploying RPA in Service Delivery

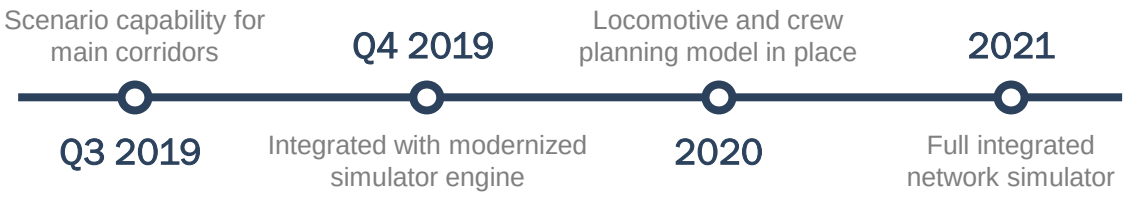
Q4 2019
Automating 10-15 processes across the network through a variety of automation tools



Smart Network (Digital Twin)

An integrated digital scenario analysis and simulation tool to improve insight and enhance capacity planning relative to changing demand

- Simulates train movements on the network to gain insight on capacity, cost and operational fluidity
- Anchored on simulation and a holistic view of network operations
- Stress testing scenario analysis will help identify options/trade-offs to handle forecasted volume, including identification of specific pinch points, on a more timely basis
  - Particularly important given long lead times to bring new capacity online, such as infrastructure construction, crews, and locomotives



Investing for Growth

Developing the Best Railroaders

Continuous learning and development

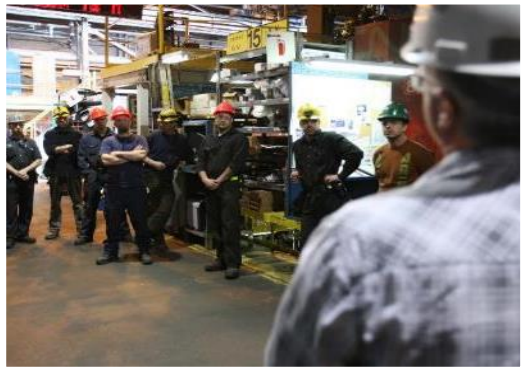
1.9 million hours in 2018, covering skills, re-certification, and various leadership development programs as well as entry-level training

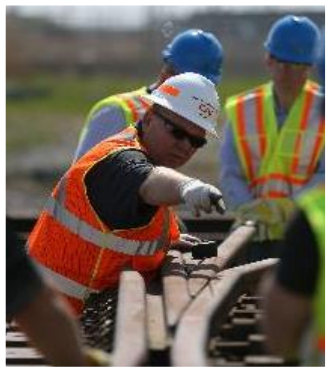
Ensuring continuous learning for our employees is critical to having a skilled, safe and engaged labor force

Labour stability

Canadian unionized workforce

Position	Number of employees (1)	Expiration
Conductors and yard coordinators	3,630	July 22, 2019 (2)
Track forces	2,772	December 31, 2023
Shopcraft	2,043	December 31, 2022
Locomotive engineers	2,094	December 31, 2022
Clerical and Intermodal	1,789	December 31, 2022
Signals and communications	733	December 31, 2021






(1) As at December 31, 2018. Excludes rail traffic controllers, special agents and other.
(2) Currently in negotiations, agreement still effective until it is renewed and is following usual process.

Capacity Investments (2018-2019)

1,000 New generation **grain hopper cars** in 2019-2020, built by a Canadian company.

1,000 + **centerbeams** for a lumber producers

1,000 **boxcars** for industrial products producers

260 New GE **locomotives** from 2018 – 2020, representing an investment of $750M.

7 **Automated train inspection portals** in 2019

100 air repeater cars to ensure more reliable flow of air to braking system during cold temperatures.

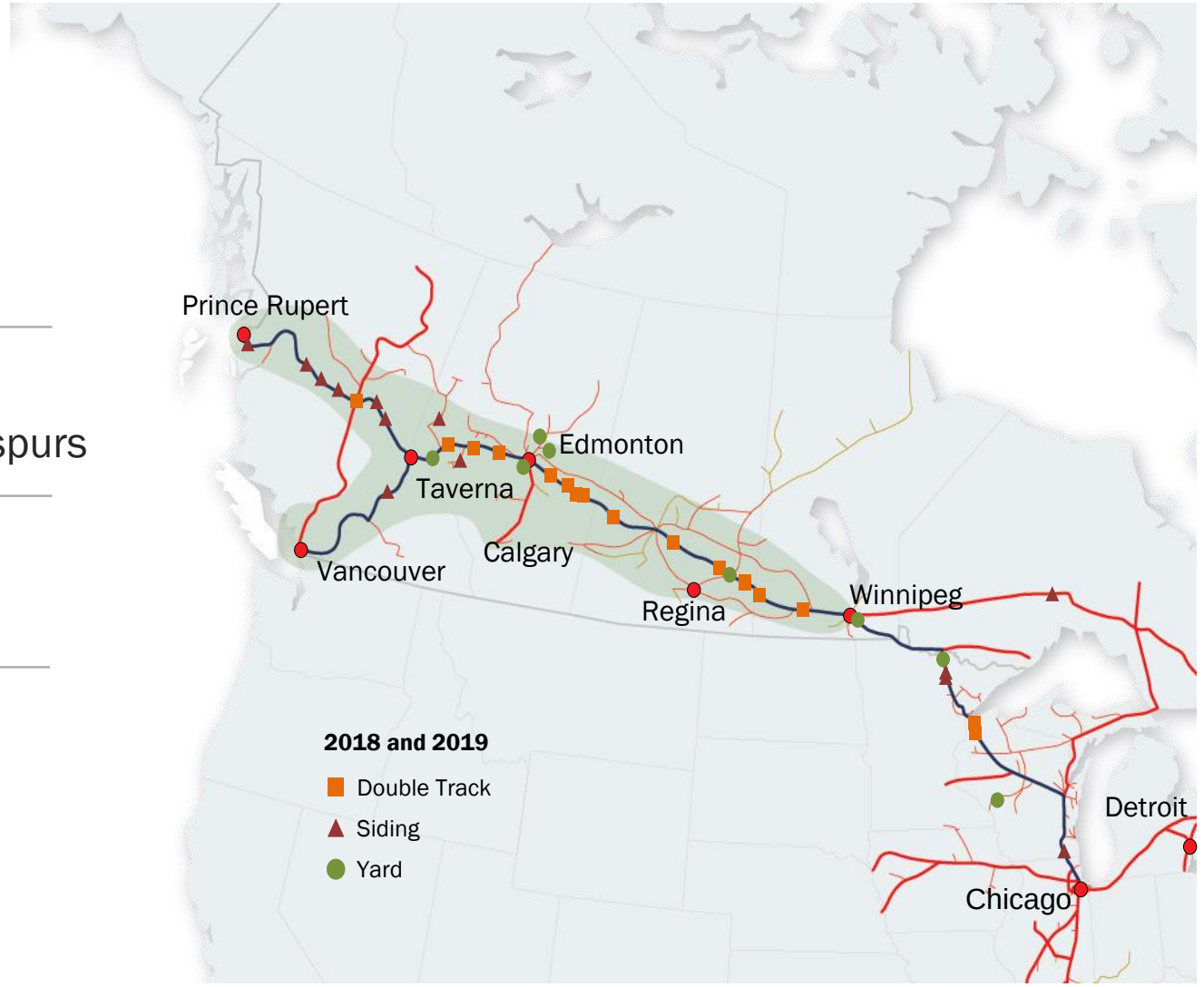
$800M **in track capacity** in Western Canada (2018, 2019)

Adding Capacity in Western Canada

Close to
140 miles
of double track

14
new sidings, extensions, spurs

Investments at
8 yards



An Innovative Transportation Solution

CANAPUX

- An innovative new method of rail transport which allows Western Canadian extra-heavy crude oil to cross tidewater and access global markets
- The technology was developed with the help of InnoTech Alberta
- To use the dry bulk supply chain, CanaPux are:
  - Solid
  - Able to handle 50m of compression and 30m drops
  - Abrasion-proof
  - Weatherproof – able to be ground piled

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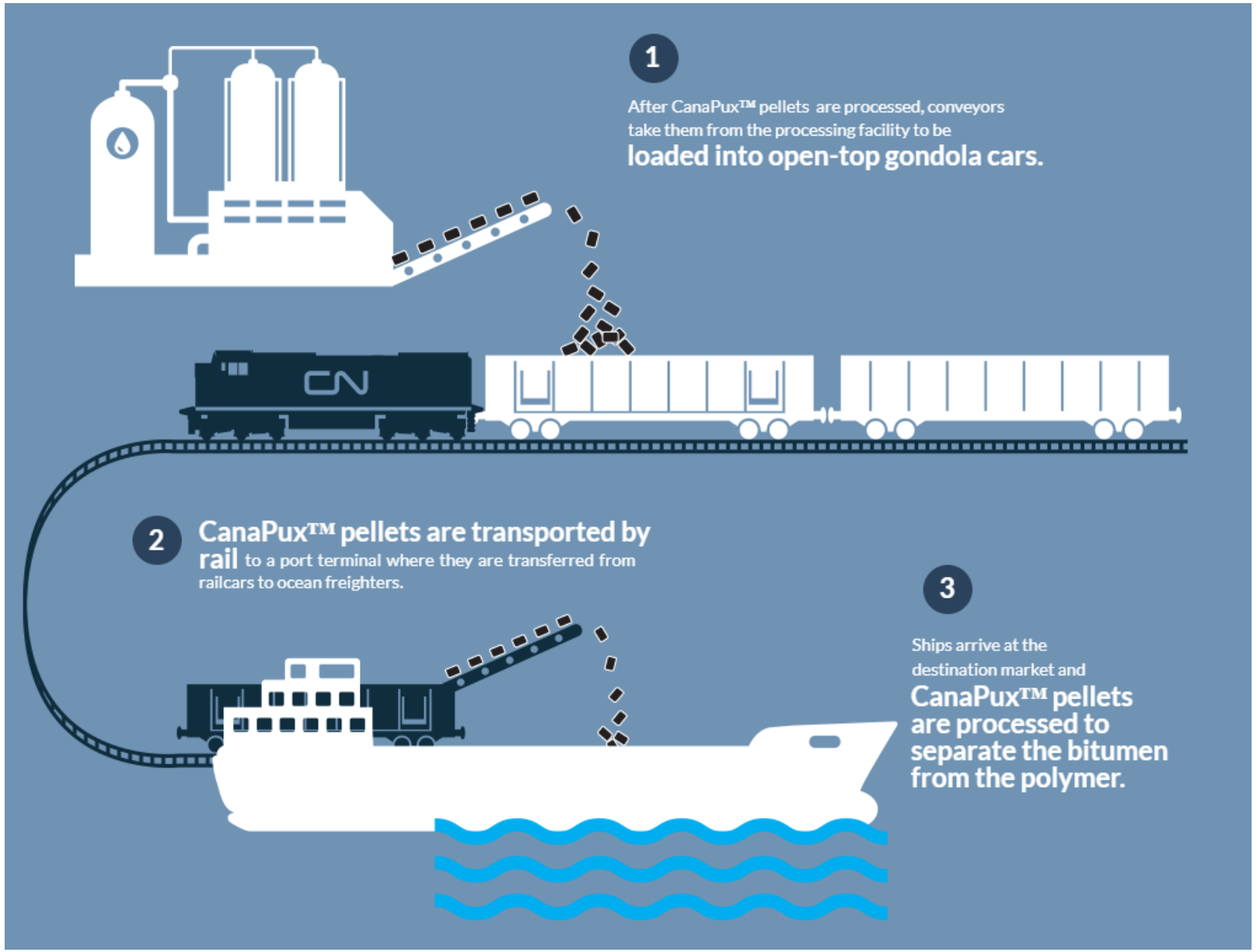
CANAPUX Supply Chain



CanaPux is Capable of Reaching World Markets

Logistics Benefits:

- New supply / transport alternative
- Leverages existing dry bulk handling infrastructure
- Lower amount / cost of additives used

Environmental Benefits:

- Floats in water
- Self-contained / no leaching
- No diluent required
- Not volatile / Doesn't burn (under 148° C)
- Weatherproof
- Polymer can be recycled or reused

Spill response:

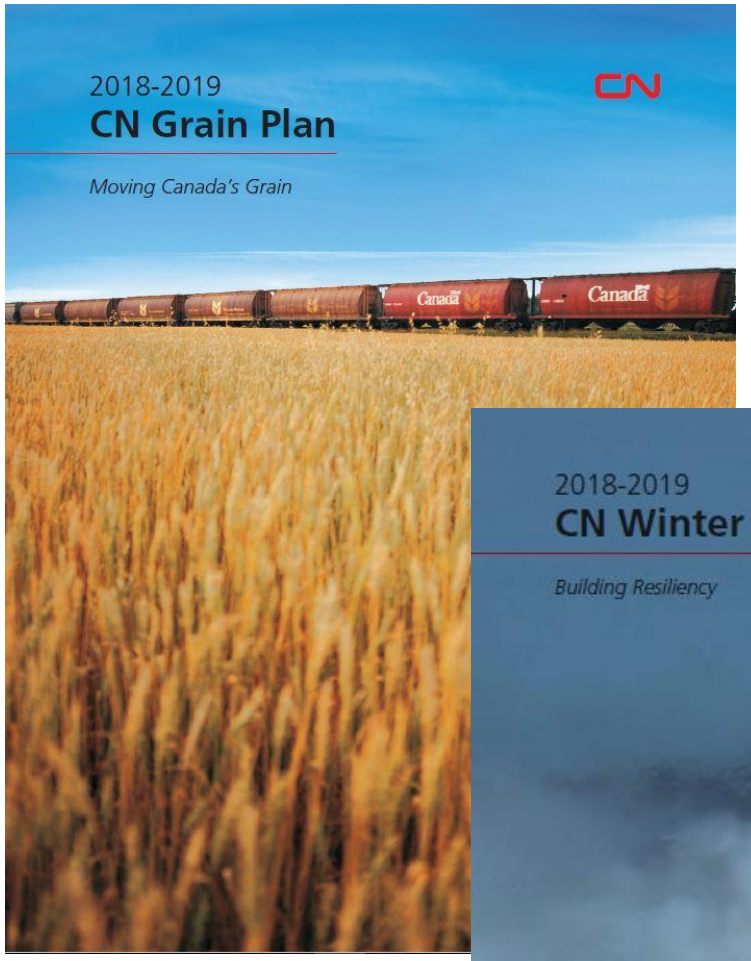
- On land, pellets can simply be picked up
- In water, booms deployed and pellets removed
- Accidental releases of CanaPux, not harmful to environment

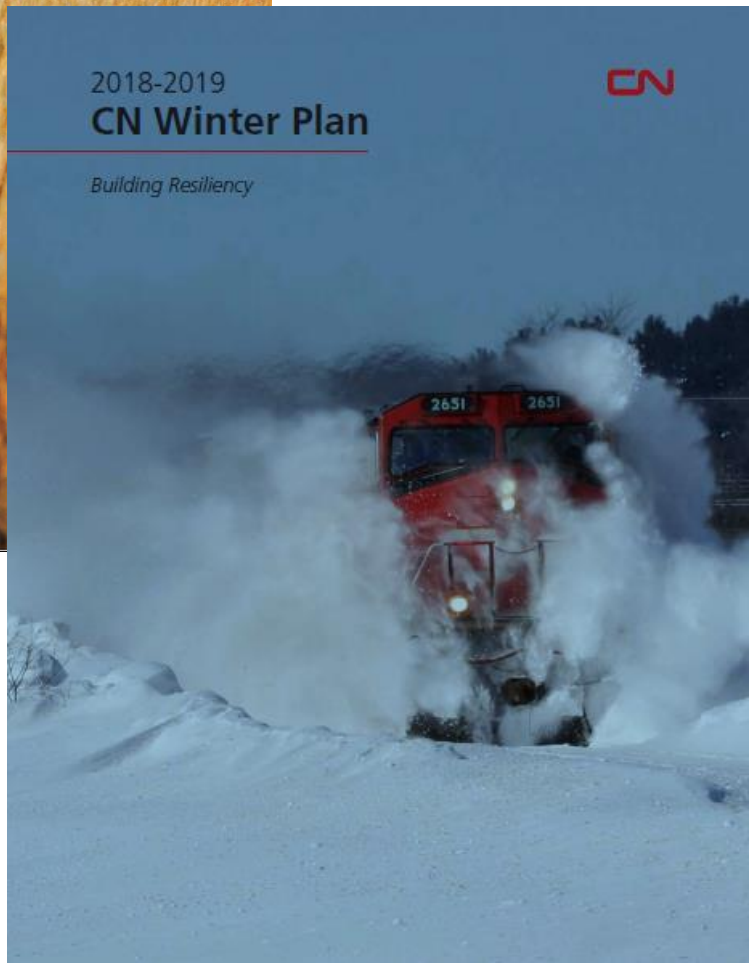
CN in early stages of commercial pilot facilities

Building and Maintaining Relationships

- Consulting with Stakeholders in drafting the annual Grain Plan and Winter Plan
  - Annual Grain Plan filed on August 1st and a monthly update is also published
  - Annual Winter Plan to be published by October 1st

- Proactive outreach with stakeholders





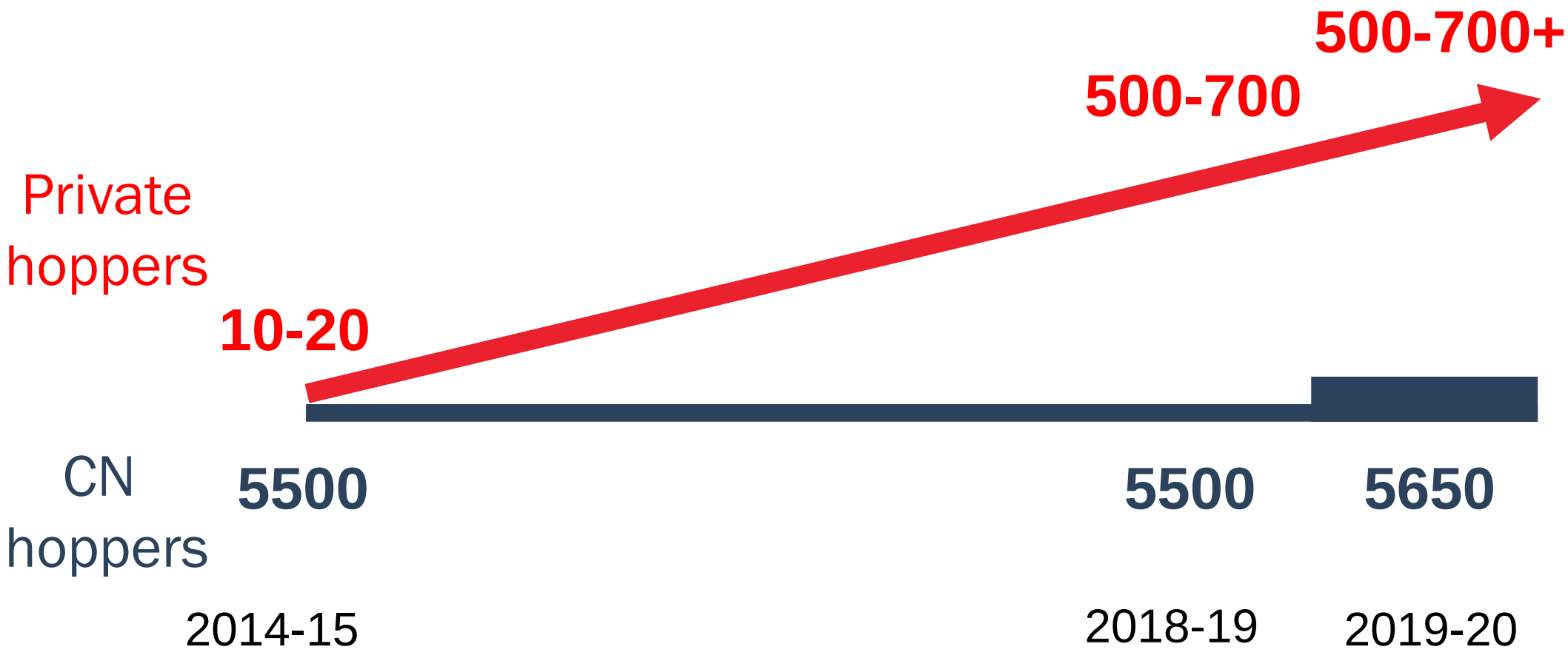
CN Maximum Sustainable Supply Chain Capacity – CN Hoppers

	Grain Weeks	2018-19 Maximum
August	1-4	5,650
September	5-8	5,650
October	9-13	5,650
November	14-17	5,650
December	18-22	4,150
January	23-26	4,150
February	27-30	4,150
March	31-34	4,150
April	35-39	5,650
May	40-43	5,650
June	44-47	5,650
July	48-52	5,650

- Monthly average of weekly hopper car spots for CN-supplied equipment on a sustained basis
- **Excludes private equipment**
- Assumes end-to-end grain supply chain fluidity across corridors
- Requires 7-day terminal and railcar unloading operations, normal winter operating conditions and no significant mainline disruptions

Capacity growth since 2014-15 has been consumed by growth in private equipment usage

Overall CN maximum sustainable capacity during fall – bulk grain



2019-2020 Winter Plan

- Filing by October 1st
- Movement of grain and other commodities
- Investments in track, people, rolling stock to drive improved performance
- Effective Winter Contingency Plan crucial to network resiliency
- Our Grain Plan and our Winter Contingency Plan will work in tandem

Working in the Interest of the Canadian economy

Carload Winter Operations

Train Length Guidelines*

* page 13 Winter Plan 2018-2019

- Average train length during regular operating conditions is ~ 12,000 feet
- Extreme weather conditions result in train length restrictions
- More trains must be deployed to handle same volume
  - Additional locomotives and train crews are required
- These temporary train length restrictions ensure safe train operations

Train Type	Temperature Range	Conventional	Distributed Power
Manifest Tier 1	-25 to -30C or -13 to -22F	2438 m / 8000 ft	10000 ft
Tier 2	-30 to -35C or -22 to -31F	1830 m / 6000 ft	8500 ft
Tier 3	Colder than -35C or -31F	1375 m / 4500 ft	7000 ft * *Can operate 1x0x1*

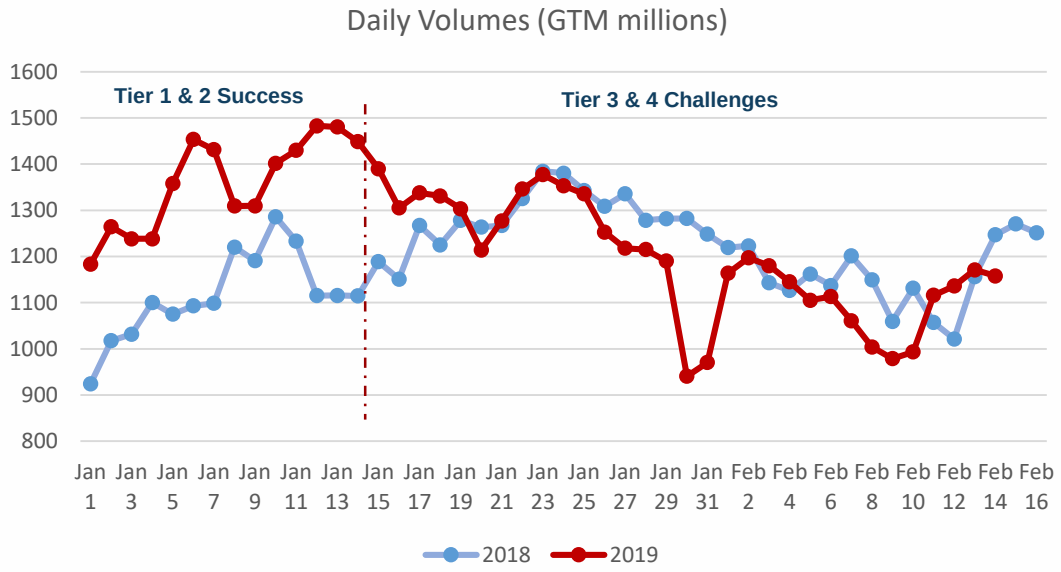
Tier 4 - No new train starts at night below -35

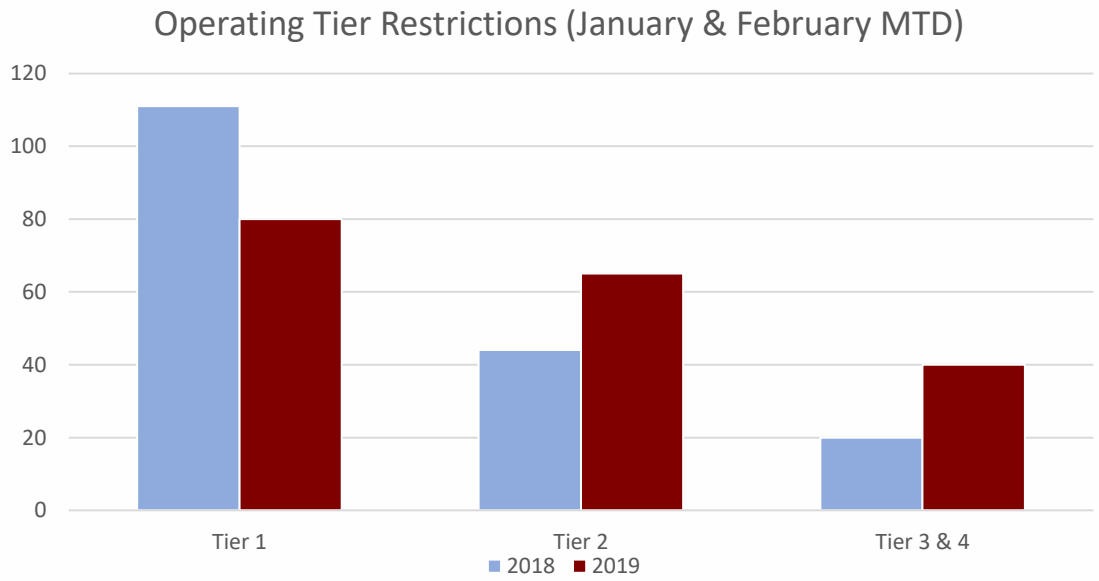
NB: The published lengths are intended to be maximums. If shorter lengths are required to qualify the train air brake system for Air Flow and/or Gradient, then the shorter lengths shall prevail.

Safety is a CORE VALUE at CN

Tier 3 & Tier 4 Temperature and Volumes Decrease in Lockstep

(The innovation of air repeater cars has proven a successful tool for Tier 1 & 2)





- At temperatures of -25 degrees or warmer, CN's higher deployment of assets this year (locomotives, track, crews) moved more volumes vs 2018.

- However, in 2019 we experienced more nights when the temperatures dropped well below -25 degree Celsius (Tier 3 and Tier 4)
  - 2019 saw more nights at -30°C, -35°C, -40°C
  - 2019 was significantly colder with about a 65% increase in nights below -30 degrees Celsius
  - CN's network had 16 nights where we experienced temperatures below -40 degrees Celsius on the railroad -- temperature were we stop operations during the nights to keep our employees safe and mitigate the risk of derailments (vs zero instances in 2018)
  - For 2020, we will increase our fleet of air repeater box cars from 60 to 100-120. They are a very effective innovation to better deal with cold

CN proactively communicates the impact of cold weather restrictions to our customers on our website and through our service delivery centres

Cold Weather Restrictions

- Tier 1 - Feb 3 (-26 Celsius)
- Tier 2 - Jan 29 (-33 Celsius)
- Tier 3 – Feb 6 (-43 Celsius)
- Tier 4 – stop operating at night

Celebrating 100 years

100 CN

A Moving — Celebration
1919 —— 2019

2019
TOUR DATES → Quebec City MAY 23–26 / Halifax JUNE 13–16 / Calgary JULY 4–10 / Edmonton JULY 18–23 / Vancouver AUGUST 20–25 / Winnipeg SEPTEMBER 19–22 / Regina NOVEMBER 25–30

2020
TOUR DATES → New Orleans APRIL / Memphis MAY / Chicago JUNE / Ottawa JULY / Moncton AUGUST / Toronto AUGUST / Montreal SEPTEMBER

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100 CN Celebrating 100 Years #CN100

Thank you for listening