



# Delivering Responsibly

2016 SUSTAINABILITY REPORT



# Innovating for Sustainability

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PICTURED (ABOVE):  
Newest fuel-efficient locomotive hauling  
intermodal train, Jasper, AB  
Photo by CN employee, Tim Stevens

PICTURED (COVER):  
Alphonso Bounds,  
Safety and Compliance Officer, Gary, IN  
Natalie McDonald,  
Manager, Motive Power, Edmonton, AB



# Strengthening Our Performance

## MESSAGE FROM THE CHAIR

I am pleased to report that 2016 was another great year for CN and its shareholders. Our unwavering focus on operational efficiency and unparalleled customer service enabled us to deliver solid financial results, while strengthening our performance as a safe and sustainable business for the long term.

### Leading in Sustainability

Our sustainability performance has continued to earn us a place among the world's best for several years running.

For example, we are consistently listed on the Dow Jones Sustainability World Index and recognized for climate change transparency, earning a position on CDP's exclusive A List in 2016. Additionally, we were ranked as one of the Best 50 Corporate Citizens in Canada by Corporate Knights, and are a proud member of the

FTSE4Good Index, Global Challenges Index and the Jantzi Social Index.

### Strong Corporate Governance

The CN Board has always taken great pride in our commitment to being a good corporate citizen, which touches nearly every aspect of what we do, from governance and business ethics to diversity and inclusion. In mid-2017, CN was pleased to welcome two new women to its Board. Today, five out of 13 (38%) of our directors are women, meeting our target to have at least one-third representation by women by 2017.

We have received many accolades for our performance in corporate governance, including the IR Magazine Global Top 50 Silver Award, ranking first in the industrials group on the *Globe and Mail's*

annual review of corporate governance practices and receiving the award for Best Overall Corporate Governance from the Governance Professionals of Canada.

I am proud of all that CN has accomplished over the past year, positioning us well to be a sustainable business of the future. We look forward to our continued success in 2017 and beyond.



**Robert Pace**  
Chair of the Board



**ROBERT PACE**  
Chair of the Board

## SELECTED HIGHLIGHTS

# 37%

INCREASE IN FUEL EFFICIENCY SINCE 1996  
WHILE GROWING REVENUES AND VOLUME

# \$18.2M

INVESTED IN COMMUNITIES IN 2016

# 38%

WOMEN ON BOARD OF DIRECTORS IN 2017

# Awards and Recognition



Member of the World Index  
(2012–2016)



Sustainability Yearbook,  
Silver Class distinction  
(2015–2016)



Climate Change Action Leader –  
Climate A List, Supplier  
Climate A List (2016)



One of Canada's  
Top 100 Employers  
(2014–2016)



One of Canada's  
Most Attractive Employers  
(2016)



Global Top 50 Silver Award (2016)  
and Best Investors Relations in  
the Industrials Sector (2013–2017)



Listed member  
(2009–2016)



Listed member  
(2010–2016)



Listed member  
(2009–2016)



One of the Best 50 Corporate  
Citizens in Canada  
(2009–2016)



Best Overall  
Corporate Governance  
(2016)



Progressive Aboriginal  
Relations (PAR) Program  
Certified Companies (2016)



Exceptional workplace  
diversity and inclusiveness  
programs (2017)



Outstanding commitment  
to employment equity  
(2017)



One of the Ten Best  
Companies to Work For  
(2015–2016)



Military Friendly Employer  
Canada (2016)



Military Friendly Employer  
U.S. (2015–2016)

THE GLOBE AND MAIL\*

Ranked first in the industrials  
group annual review of  
corporate governance practices  
in Canada (2016)

ORGANIZATION	AWARD/RECOGNITION	RECOGNIZED FOR
American Chemistry Council	2015 and 2016 TransCAER® National Achievement Award	Helping communities prepare for dangerous goods incidents
Call2Recycle	2015 Leader in the Industry	Reclaiming and recycling batteries and cell phones
Canadian Institute of Forestry	2016 Canadian Forest Management Group Achievement	Outstanding achievement in the field of forest resource-related activities (reforestation)
Canadian Nursery Landscape Association	2015 Green for Life Industry Awards	Significant contribution to the industry, environment and community
Evergreen Shipping Agency (America) Corporation	2015 Railroad Company of the Year	Consistent high level of performance
ECPI	2015 and 2016 Listed on ECPI Indices	Constituent of ECPI indices
Investor Relations (IR) Magazine	2016 Best Overall Investor Relations (large cap)	Best overall investor relations
Newsweek	2016 Newsweek Green Rankings (world)	One of the top 100 green companies in the world
Railway Association of Canada (RAC)	2015 and 2016 Safety Award	Outstanding contributions to rail safety

# Innovating for Sustainability

## MESSAGE FROM THE PRESIDENT AND CEO

At CN, running a safe and sustainable railroad is at the core of our business culture and community spirit. It touches every aspect of what we do, enabling us to build a strong future for our customers, employees and the communities in which we operate.

### Inspiring Our Safety Values

Over the past year, we made progress on our goal to be the safest railroad in North America with marked improvements in both our key accident ratios. In 2017, we have earmarked a capital envelope of \$2.6 billion, out of which we plan to allocate \$1.6 billion to track infrastructure supporting our safety agenda.

We also prioritized community engagement on safety along our rail lines. Together with the rail industry, we launched the AskRail mobile app, which has now been downloaded by over 2,600 first responders giving

them access to real-time information on the contents of railcars in their respective communities.

### Accelerating the Pace of Innovation

Thanks to innovations in fuel-efficient locomotives, technology and data analytics, we continued to lead the North American rail industry in fuel efficiency.

We also worked with many of our customers to offer the environmental benefits of rail, providing solutions to reduce their transportation supply chain GHG emissions, while playing our role as a backbone of the economy.

Great strides have been made over the years engaging our employees, customers and communities through our EcoConnexions program to conserve energy, reduce waste and improve biodiversity through reforestation.

In recent years, we have been responsible for planting 1.6 million trees and shrubs in Canada and the U.S., making us the leading private non-forestry company tree planter in Canada.

Looking back over the past year, we have a deep sense of pride and accomplishment in all that has been achieved in making CN a sustainable company for generations to come.

I want to thank our 23,000 employees who make up CN's great team of railroaders. With everyone pulling together through teamwork and innovation, we can shape our sustainable future together and continue to make it bright for CN, our customers and our shareholders.



**Luc Jobin**  
President and CEO



**LUC JOBIN**  
President and CEO



### ALIGNING OUR PRIORITIES WITH THE UN'S GLOBAL GOALS

We are pleased to support the Sustainable Development Goals (SDGs), which we believe align well with our vision for a sustainable world. To formalize our commitment, we evaluated and aligned our five sustainability pillars with the SDGs where we have the potential to make the greatest contribution. We will report our progress on these goals as we continue to evolve, transform and innovate our business.



#### FURTHER READING

▶ [Contributing to the Global Goals, p. 10](#)

# World-Class Transportation and Logistics

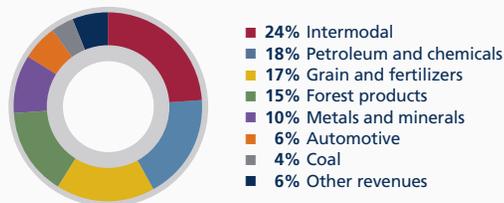
CN is a leading North American transportation and logistics company, and our 19,600-mile network spans Canada and Mid-America, connecting ports on three coasts. Our resource-rich, manufacturing-intensive network, along with our co-production agreements, routing protocols, marketing alliances and interline agreements, provide connections to consumers across North America.

We offer fully integrated rail and other transportation services, including intermodal, trucking, freight forwarding, warehousing and distribution. Serving exporters, importers, retailers and manufacturers, we move raw materials, intermediate goods and finished products to market, fostering the prosperity of the markets we serve.



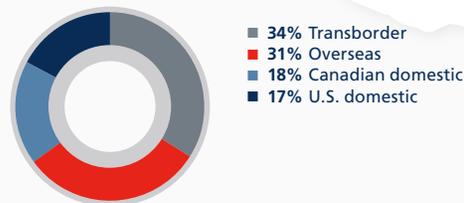
## Balanced and Diverse Portfolio

2016 REVENUES BY COMMODITY GROUP  
(% of total revenues)



## Broad Geographic Exposure

2016 REVENUES BY GEOGRAPHIC FLOW  
(% of freight revenues)



## 2016 Key Statistics

ROUTE MILES	CARLOADS	VALUE OF GOODS HANDLED
19,600	5.2M	\$250B+
CAPITAL INVESTMENTS	LOCAL SPENDING (excluding payroll, benefits and pension)	EMPLOYEES (as at December 31)
\$2.75B	\$8.4B	22,249

**PICTURED:**

The Port of Prince Rupert's shorter marine distances to Asian markets, and direct connection to CN's efficient North American rail network provide shippers with the lowest carbon footprint per container on the west coast.

# Transitioning to a Low-Carbon World

As we prepare for the future, our connections with our customers, supply chain partners and governments are enabling us to deliver sustainable and profitable business that drives economic prosperity in a low carbon environment.

## Providing an Environmentally Friendly Way to Move Goods



GHG REDUCTION MOVING FREIGHT BY RAIL INSTEAD OF TRUCK<sup>(2)</sup>



RAILROADS ARE APPROXIMATELY FOUR TIMES MORE FUEL-EFFICIENT THAN TRUCKS<sup>(2)</sup>



ONE TRAIN CAN MOVE ON AVERAGE A TON OF FREIGHT 468 MILES ON A SINGLE GALLON OF FUEL<sup>(2)</sup>



A SINGLE FREIGHT TRAIN CAN REPLACE OVER 300 BIG TRUCKS<sup>(1)</sup>

(1) The Railway Association of Canada (2) The Association of American Railroads

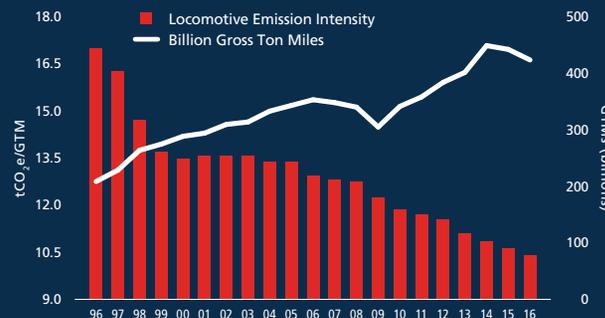
## Decoupling Growth from Carbon Emissions



LOCOMOTIVE GHG REDUCTION SINCE 1996

Over the past 20 years, we have reduced our locomotive emission intensity by 39% while achieving record growth in the volume of freight we move. Our approach is to reduce the carbon intensity of our business progressively over time and at a pace that's consistent with the objective of stabilizing global temperature.

LOCOMOTIVE CARBON EMISSION INTENSITY vs. GROSS TON MILES (GTMs)  
(tCO<sub>2</sub>e/GTM vs. Traffic Billion GTM)



## Using Renewable Fuels

Over

**60,000 tonnes**

OF CARBON AVOIDED BY USING RENEWABLE FUELS IN OUR LOCOMOTIVES

Renewable fuels have presented an important opportunity for us to further reduce our emissions by using biodiesel blends in our locomotive fleet. In 2016, the use of renewable fuels saved over 60,000 tonnes of CO<sub>2</sub>e.

## Moving the Clean Economy

By moving sustainable products, including cleaner energy sources, we are playing an important role as a backbone of the clean economy and the lifeblood of healthier communities.



# Moving the Clean Economy

As a true backbone of the economy, CN is committed to playing a key role in the transition to a lower carbon economy.

## Promoting Efficient Transportation Supply Chain Services

We are working with many of our customers to measure and help them reduce their transportation supply chain GHG emissions by leveraging rail for the long haul and trucking over shorter distances. The greater use of combined transport helps lower transportation costs by allowing each mode to be used for the portion of the trip to which it is best suited and also helps reduce emissions, traffic congestion, accidents and the burden on overstressed transportation infrastructure.

## Moving More Sustainable Products

Every year, we handle over 300 million tonnes of cargo from the food we eat, the wood to build our homes, the cars we drive, the appliances that make our lives

easier, the products that improve our quality of life, and the energy to power our activities. Many of these goods are being transformed into more sustainable products, enabling us to play a key role as the backbone of the clean economy and the lifeblood of healthier communities.

## Supporting Growth in the Cleaner Energy Sector

In addition to providing one of the most environmentally friendly ways to move goods, we also continue to engage with our customers to strengthen our position within cleaner energy markets.

Thanks to innovation by our customers, we are now moving cleaner energy products like wood pellets, wood chips, wind turbine components, solar panels, as well as biofuel.



Intermodal



Wind turbine blades



Biofuels



Woodchips

## INNOVATION AT WORK



## Helping Customers Gain Efficiency and Environmental Advantages from Modal Shift



Our innovative intermodal fleet shipping solutions are helping customers support sustainable initiatives. In 2016, David Friedlein and Sarah Slazinski, part of our

Auto Sales team, worked collaboratively with Fiat Chrysler Automobile (FCA) to increase the number of vehicles it can ship by rail versus truck. Building a rail spur to serve the customer's assembly plant in Brampton enabled direct service to the plant.

"The environmental advantages and efficiency gains of modal shift were undeniable," recalls Sarah. "I think the differentiator was CN's transportation supply chain solutions, automotive industry expertise and shared commitment to sustainability that helped grow CN's existing business with FCA US."

The partnership helped improve the transportation supply chain efficiency of FCA, and reduce traffic congestion and carbon emissions. Transporting the vehicles by rail takes approximately 40 trucks off the road a day, while saving 1–2 days in transit time and avoiding cross-border delays.



PICTURED:  
(From left) Sarah Slazinski, Director of Sales, Automotive, CN; contractor Kevin Metcalfe, Transdevelopment Group; and Matt Michielutti, FCA US, with the tri-level auto carriers at the Brampton plant.

## SPOTLIGHT

# EcoConnexions – Partnership Program Growing a Sustainable Future with Our Customers

Partnering with our customers to reduce carbon, increase energy efficiency, and make a modal shift from truck to rail.

*“CN is proud to partner with these companies who have signed up for our partnership program. We want to deepen our customer relationships, collaborate and learn from each other as we move towards a sustainable future together.”*

**JEAN-JACQUES RUEST**  
Executive Vice-President and  
Chief Marketing Officer

Launched in partnership with Tree Canada in 2014, CN's EcoConnexions partnership program aims to both partner with and recognize customers who are committed to building an efficient and more sustainable future.

Each year, customers are invited to partake in the program and submissions are evaluated based on sustainable policies, energy efficiency, reporting to the CDP, and modal shift.

In 2016, we planted 100,000 trees to recognize 22 of our customers for their sustainable business practices.

CN's Calgary Logistics Park is one of the locations where 30,000 trees were planted, offering wind barriers and facilitating soil mitigation. In Kazabazua, QC, 20,000 trees helped rebuild forests devastated by pine-pine gall rust, a fungal disease. In Lake County, MI, 20,000 seedlings were planted to aid the county's fire rehabilitation efforts. In Oshawa, 20,000 trees helped rehabilitate agricultural land in the Central Lakes Conservation Area.



EcoConnexions Partnership program Ceremonial Tree Planting, Calgary 2016



*“Mondelez Canada is proud to be receiving this prestigious award for the second year in a row. We've been able to collaborate with CN over the years to drive significant improvements for our business and the environment.”*

**JOE TUTURICE**  
Associate Director, North America  
Transportation, Mondelez International

## 210,000

TREES PLANTED SINCE 2014  
THROUGH CN'S ECOCONNECTIONS  
PARTNERSHIP PROGRAM

**CN**  
**EcoCONNECTIONS**  
PARTNERSHIP PROGRAM



TreeCanada

# Contributing to the Global Goals



**JANET DRYSDALE**  
Vice-President, Corporate Development and Sustainability

## FOCUSING ON WHERE WE CAN MAKE A DIFFERENCE

The 2030 Sustainable Development Goals (SDGs) were launched by the United Nations to mobilize efforts to end poverty, protect the planet, and ensure people enjoy peace and prosperity.

CN is pleased to support the UN's SDGs. As a leading transportation company in North America, we can play our part on the 2030 sustainability agenda to drive positive change within our operations, across our supply chain and in the many communities where we operate.

This year, following feedback from our stakeholders and in-depth discussions with our executive team, we focused our sustainability pillars around the SDGs where we can make an impact. Throughout this report, we feature examples of our contribution to these SDGs and our ongoing commitment to playing an active part in their success.



## ALIGNING OUR SUSTAINABILITY PILLARS TO THE SUSTAINABLE DEVELOPMENT GOALS

### Environment



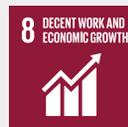
Take urgent action to combat climate change and its impacts

### Safety



Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

### People



Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

### Community



Make cities and human settlements inclusive, safe, resilient and sustainable

### Governance



Achieve gender equality and empower all women and girls

# Innovating for a Sustainable Future



## People

BECOMING A TOP EMPLOYER AND DEVELOPING THE BEST RAILROADERS

## Environment

TAKING ACTION TO PROTECT THE ENVIRONMENT

## Community

INVESTING IN STRONGER, SAFER COMMUNITIES

## Safety

REINFORCING SAFETY AS A DEEPLY HELD CORE VALUE

## Governance

DOING THE RIGHT THING

# Environment

*“Our goal is to conduct our operations with minimal environmental impact, while providing cleaner, more sustainable transportation services to our customers.”*

**NORMAND PELLERIN**

Assistant Vice-President, Environment

PICTURED:  
Distributed power train  
Northern Quebec

# Taking Action to Protect the Environment



As rail is one of the most environmentally friendly ways to move goods, we recognize our responsibility to provide a more sustainable transportation service to our customers while minimizing the impacts of our operations.

## ACTING ON THE GLOBAL GOALS



- Offering our customers an efficient and environmentally friendly way to move goods
- Running the most carbon-efficient North American railroad, consuming 15% less fuel per gross ton mile than the industry average
- Supporting growth in the clean energy sector and moving cleaner energy products like wood pellets, wind turbines, solar panels etc.
- Sequestering carbon through our EcoConnexions From the Ground Up and Mass Reforestation program

## Driving Emissions and Energy Efficiency

With approximately 84% of our carbon emissions generated from rail operations, our focus is to continuously improve locomotive fuel efficiency. Over the past 20 years, our innovative fuel efficiency programs have paid off. Since 1996, our rail fuel efficiency has improved by 37%. We continue to lead the North American rail industry, consuming approximately 15% less fuel per gross ton mile than the industry average.

## Conserving Resources

We support the circular economy, and we work collaboratively with our suppliers to reduce waste at source by procuring more sustainable product options. We engage our employees on waste management at our facilities across our network, including various reuse and recycling programs. In 2016, we diverted approximately 90% of our waste from landfills by reusing or recycling more resources.

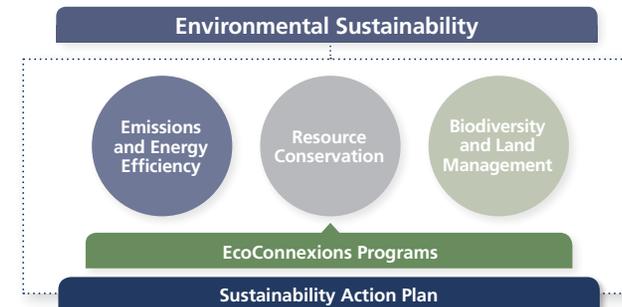
## Protecting Biodiversity and Managing Land

Our network passes through various habitats, including national parks, forests, prairies, and wetlands. These habitats are home to rich and diverse species that provide essential ecosystem and social benefits to surrounding communities. Minimizing our disturbance of these ecosystems is an important priority for us.

## EcoConnexions – Living our Environmental Values

Our EcoConnexions programs are the core platform that engages our employees, communities, and customers to help us make a difference and achieve our goals of reducing emissions, conserving resources, and increasing biodiversity.

## ENVIRONMENTAL SUSTAINABILITY STRATEGY



Our environmental sustainability strategy is focused on emissions and energy efficiency, resource conservation, and biodiversity and land management. Our EcoConnexions programs support our environmental values and initiatives with key stakeholders. Our Sustainability Action Plan, comprising multiple projects across our organization, is supported by our Sustainability Committee.



PICTURED:  
Intermodal train, Wainwright, AB  
We are promoting our intermodal freight shipping service, which allows different transportation modes such as trucking and rail to be used for the most efficient and low carbon transportation service.  
Photo by CN retiree Moe Roy

## SPOTLIGHT

# EcoConnexions – Employee Engagement Program

Supporting our environmental values, the EcoConnexions program engages our 23,000 employees to conserve energy, reduce waste and improve housekeeping at CN yards and offices across North America.



*“Through the EcoConnexions program, our employees are actively engaged to make a difference. With the help of dedicated EcoChampions across our network, and our partner Earth Day Canada, we are working collaboratively to share best practices and reduce our environmental impact.”*

**SERITA WHITE**  
Sustainability Officer

Our EcoConnexions employee engagement program, launched in 2011, is focused on embedding environmental sustainability into our culture. It includes targeted initiatives to reduce energy consumption, reduce waste and improve housekeeping practices at our yards and offices.

Since 2011 we've:

- reduced energy consumption by 22% at key yards and facilities, avoiding 65,000 tonnes of carbon;
- diverted over 90,000 metric tonnes of CN's operational waste from landfill;
- completed over 1,000 housekeeping projects leading to a cleaner, more efficient and safer work environment; and
- completed over 465,000 acts of green at work and at home, avoiding over 13 million kg of carbon.

Today, over 700 EcoChampions have been trained and are delivering results across our entire rail network.



Brian Tracy, Assistant Manager,  
Locomotive Repair Centre, Woodcrest, IL



Taschereau Yard Mechanical Diesel Shop:  
Dave Huard Boudreault, Viorel Vilcou, Stephane Kluka,  
Pascal Lemelin, Maxime Provencher



### 1 Reusing Shop Towels at U.S. Locomotive Shops

The replacement of single use paper towels with more absorbent launderable shop towels at our Kirk, Woodcrest and Memphis locomotive shops enabled us to reduce waste by 18 metric tonnes annually.

### 2 Good Housekeeping at Taschereau Yard

Major clean-up at the Mechanical Shop in Taschereau Yard resulted in 6.5 metric tonnes of archived documents being recycled, which made space for a new energy efficient natural gas heating system.

### 3 Energy-Efficient Lighting and Heating at Mont-Joli Yard

New propane radiant heating system, electric baseboard heaters with programmable thermostats and high-efficiency, better quality lighting resulted in a reduction of 103.7 tonnes of carbon per year.

Over  
**90,000**

METRIC TONNES OF CN'S  
OPERATIONAL WASTE DIVERTED  
FROM LANDFILL SINCE 2011

**EcoCONNEXIONS**



# Driving Emissions and Energy Efficiency

Operating efficiently has been the hallmark of our success. We continue to lead the North American rail industry, consuming 15% less fuel per gross ton mile overall than the industry average, and our rail fuel efficiency innovative mindset extends to all aspects of our business.

## Reducing Our Rail Carbon Footprint

With approximately 84% of our GHG emissions generated from rail operations, we believe the single best way we can positively impact the environment is by continuously improving our locomotive operating efficiency.

Over the years, the pursuit of efficiency has been the hallmark of our success. Today, we are using fewer railcars and locomotives to ship more freight in a tight, reliable and efficient operation for our customers. As part of our ongoing strategy to operate a productive and

fluid railroad, further improvements have been made through our Fuel Management Excellence program.

### Innovative Rail Technologies and Renewable Fuels

We continue to purchase tier-compliant locomotives as part of our strategy to acquire, retire and upgrade our fleet, and in 2016, we acquired 90 new high-horsepower locomotives. Furthermore, the installation of fuel-efficient technologies, such as locomotive telemetry systems and Trip Optimizer,

in addition to distributed power and the use of renewable fuels, helped us further reduce emissions. In 2016, the use of renewable fuels saved more than 60,000 tonnes of carbon, representing 1.2% of our total emissions.

### Routing Protocols and Port Agreements

Routing protocol agreements with all the Class I railroads continue to facilitate the movement of customer shipments in the most efficient way regardless of track ownership. We also collaborate with ports and terminal operators to improve dwell times and further drive efficiency.

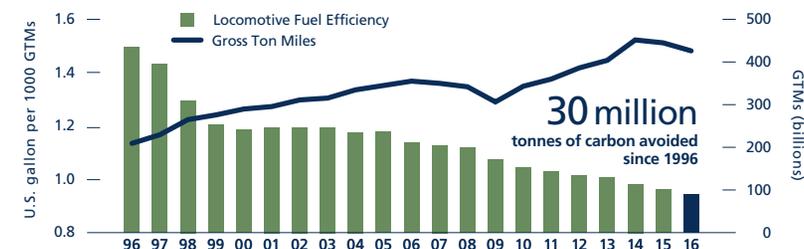
### Fuel Conservation Practices

Our train crews and rail traffic controllers are continuously being trained on best practices for fuel conservation, including locomotive shutdowns in our yards, streamlined railcar handling, train pacing, coasting and braking strategies. In 2016, we decreased train idling by 14%.

**37%** improvement in fuel efficiency since 1996

#### LOCOMOTIVE FUEL EFFICIENCY

vs. Gross Ton Miles (GTMs)



SPEAKER'S CORNER

## Using Renewable Fuels for Our Fleet

*“Driven by regulatory requirements, the growth of the renewable fuel market has presented an important opportunity for us to further reduce our emissions by using biodiesel blends in our locomotive fleet. In 2016, the use of renewable fuels saved over 60,000 tonnes of carbon.*

*In the coming years, we look forward to working with our suppliers to explore the use of renewable fuels, ensuring we meet our efficiency objectives and compliance obligations.”*

**CARMEN TANABE**  
Director, Supply Management

Over  
**60,000 tonnes**

OF CARBON AVOIDED BY USING RENEWABLE FUELS IN OUR LOCOMOTIVES

**PICTURED:**

Our new Tier 4 locomotives are designed to meet regulatory standards producing less criteria air contaminants, while being much more fuel-efficient than the locomotives they replace.

Photo by CN employee  
Tim Stevens

## SPOTLIGHT

# Improving Fuel Efficiency through Analytics and Big Data Management



Our innovative rail technology applications and analytics capabilities are helping us continuously improve our carbon footprint.

*“Our significant investments in innovative fuel-efficient technologies and data analytics capabilities are really paying off. Between 2008 and 2016, fuel efficiency gains have translated into more than 4 million tonnes of carbon saved.”*

**CARLO PAGANO**  
Director, Asset Planning and Technical Development

These technologies include:

- **Trip Optimizer** – Regulates the speed of a train by controlling the locomotive throttle and dynamic brake, and computes the most efficient manner to handle the train. At the end of 2016, Trip Optimizer became operational on almost 490 GE EVO locomotives.
- **Locomotive Telemetry System** – Collects data to drive improved locomotive and train performance, including fuel conservation. Our Horsepower Tonnage Analyzer (HPTA) also uses the data from the system to optimize a locomotive’s horsepower-to-tonnage ratio.
- **Distributed Power (DP)** – Allows for remote control of the locomotives and improves braking performance, train handling and fuel efficiency. In 2016, we added 90 AC locomotives with DP to our fleet, bringing the total to nearly 770 locomotives.

We ensure our locomotive engineers receive on-the-job training on technologies to optimize fuel consumption. Regional managers are also provided with information to track performance. Our future focus will be on excess idling reduction and continued horsepower optimization.



## 1 Increasing Fuel Efficiency with Distributed Power

In addition to improved safety from reduced sticking brakes and damaged wheels, we are improving braking performance, train handling and fuel efficiency.

## 2 Regulating Speed with Trip Optimizer

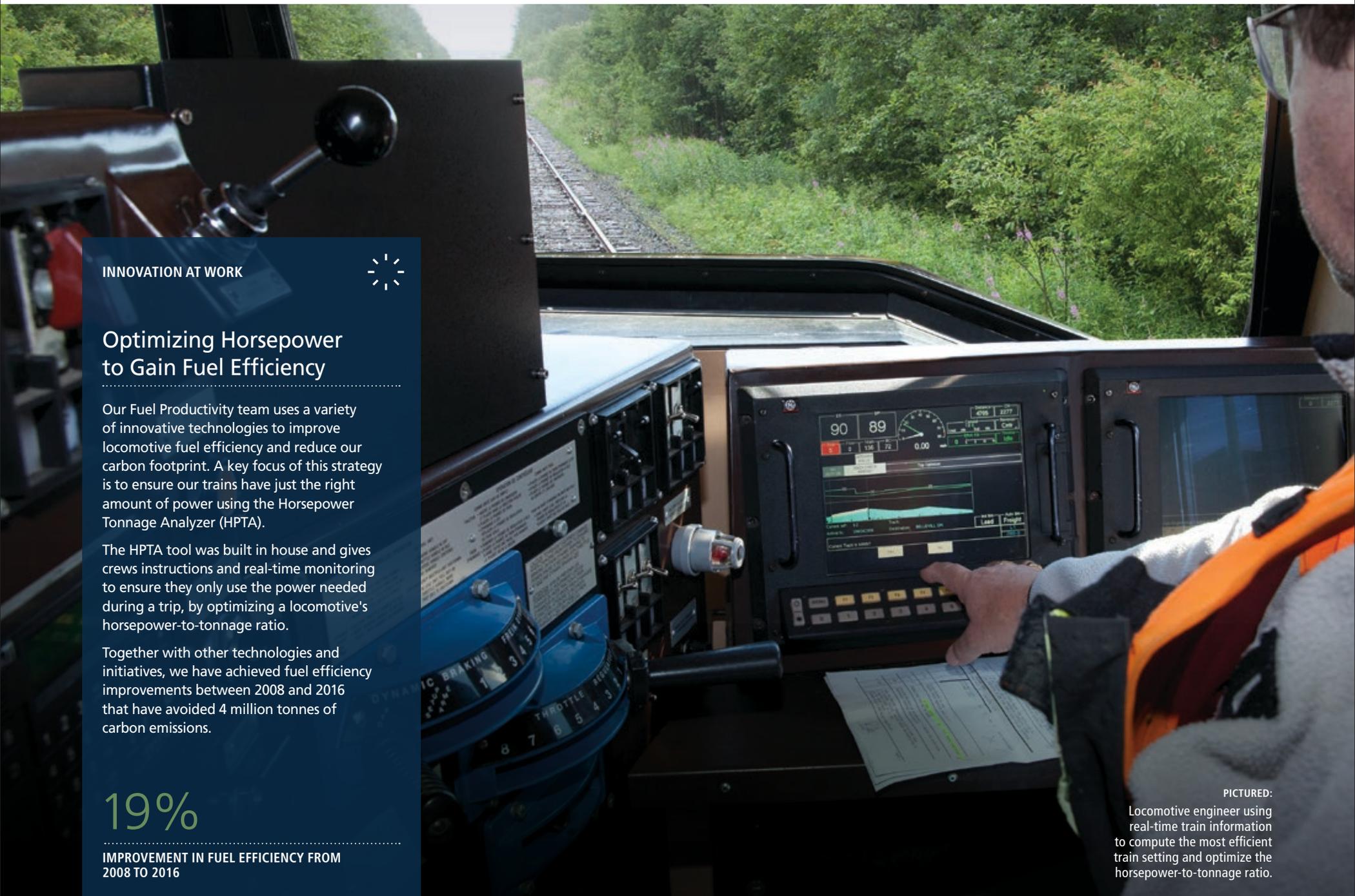
Locomotive Engineer Raymond Phinney receiving real-time information on train characteristics, performance and terrain, helping to continuously compute the most efficient train settings.

## 3 Collecting Data with Locomotive Telemetry System

We are wirelessly communicating operational data from locomotives to a central system, allowing Horsepower Tonnage Analyzer to optimize a locomotive’s horsepower-to-tonnage ratio.

# 4 million tonnes

OF CARBON AVOIDED FROM  
2008 TO 2016 THROUGH  
FUEL EFFICIENCY IMPROVEMENTS



INNOVATION AT WORK



## Optimizing Horsepower to Gain Fuel Efficiency

Our Fuel Productivity team uses a variety of innovative technologies to improve locomotive fuel efficiency and reduce our carbon footprint. A key focus of this strategy is to ensure our trains have just the right amount of power using the Horsepower Tonnage Analyzer (HPTA).

The HPTA tool was built in house and gives crews instructions and real-time monitoring to ensure they only use the power needed during a trip, by optimizing a locomotive's horsepower-to-tonnage ratio.

Together with other technologies and initiatives, we have achieved fuel efficiency improvements between 2008 and 2016 that have avoided 4 million tonnes of carbon emissions.

# 19%

IMPROVEMENT IN FUEL EFFICIENCY FROM 2008 TO 2016

PICTURED: Locomotive engineer using real-time train information to compute the most efficient train setting and optimize the horsepower-to-tonnage ratio.

## Reducing Our Non-Rail Carbon Footprint



New low voltage LED lights that were installed recently at CN's Scotford Distribution Centre Yard outside of Edmonton provide more light using less energy.

### Non-Rail Fleet

Our non-rail fleet represents approximately 9% of our Scope 1 and 2 emissions, including intermodal equipment, trucking, On Company Service (OCS) vehicles, and our fleet of eight Great Lakes shipping vessels. Improvements in fuel efficiency continue to be driven by several projects.

Working with our owner-operated CNTL trucking fleet, we developed fuel efficiency standards and continued to provide training on various fuel-efficient initiatives, including aerodynamic

components and trucks, and routing optimization initiatives. We also trained our OCS drivers and ship operators on better fuel handling practices that reduce speed, engine running and idling time.

This year we plan to convert one of our steam boiler/turbine-powered vessels to an EPA emission compliant diesel engine to reduce emissions and burn less fuel. For one vessel conversion, we expect to reduce our carbon emissions by 41%, equivalent to saving over 12,000 tonnes of carbon annually.

# 22%



**CARBON REDUCTION FROM ELECTRICITY SAVINGS AT KEY YARDS SINCE 2011, AVOIDING 65,000 TONNES OF CARBON**

Transitioning our existing intermodal equipment shunt trucks from diesel to compressed natural gas (CNG) has been ongoing. We are also currently working with a new manufacturer to design and build state-of-the-art CNG shunt trucks that are more customized to our needs.

### Buildings and Yards

Buildings and yards account for approximately 7% of our carbon emissions, comprising electricity, natural gas and miscellaneous fuel consumption. Over the past few years, we undertook various energy efficiency projects through our EcoConnexions employee engagement program in collaboration with Facilities Management that included upgrades to air compressors, boilers, HVAC systems, and lighting.

For example, at the Chappell Yard in Saskatchewan and the Battle Creek Yard in Michigan, we expect to save up to 884,000 kWh of energy and avoid over 600 tonnes of carbon annually by upgrading to the yard air compressor systems. Since 2011, we have achieved reductions of 16% in energy consumption and 22% in carbon emissions at the yards where we implemented energy efficiency projects and engaged employees.



**SPEAKER'S CORNER**

### Conserving Energy at our Transload Facilities

*“Through the EcoConnexions program, we extended our energy conservation values to our transloading operations. A lot of work went into initial planning to determine the best employee engagement strategy. Today, the program has been rolled out to 28 transload facilities.*

*Two of the facilities – Concord, ON, and Scotford, AB – recently received funding for large lighting projects, resulting in 54 tonnes of carbon saved annually – equivalent to heating six homes a year.*

*I am so proud of the difference the EcoConnexions program is making to create an eco-efficient, cleaner and safer work environment.”*

**DINA MARTIN**  
Market Manager, Distribution Services  
Montreal, QC



PICTURED:  
Joe Farias, Foreman at MacMillan Yard, next to a new CN On Company Service vehicle with EcoConnexions anti-idling and speed limit decals applied to help improve safety and performance of the fleet.

INNOVATION AT WORK



### Using Technology to Drive Better Fleet Performance



Through next-generation telematics – GPS, wireless communications, and computing – we are capturing important data on our On Company Service (OCS) fleet, including speed, location, engine running time and idling times.

Last year, EcoConnexions created an anti-idling decal to remind drivers to turn off their engines during non-essential activities, as well as a rear bumper sticker advising the public that CN vehicles obey speed limits.

J-J Dratva, Director, Supply Management – Fleet Services, notices the impact. “The combination of technology and behaviour changes really makes a difference. Since 2015, we have decreased speeding by 37%, helping us be safer, while reducing fuel consumption and carbon emissions.”

# Conserving Resources

Contributing to the circular economy is an important part of our environmental stewardship responsibilities. Our focus is on minimizing material consumption by doing more with less, maximizing the useful life of materials, and minimizing waste generation.

Reducing resource consumption enables us to minimize our environmental impacts, improve cost efficiencies, and engage our suppliers and employees on our environmental stewardship responsibilities.

## Reducing Materials at Source

We work collaboratively with suppliers to encourage the design and use of sustainable materials and to reduce impacts across the entire lifecycle of the products we use from cradle to grave. For example, in 2016,

we continued to purchase innovative environmental products such as bio-renewable cleaners and degreasers, and collaborated on packaging optimization opportunities.

## Maximizing the Life of Materials

Particular to the rail industry, many of the capital assets we use to run the railroad are inherently sustainable. For example, most of our steel rail tracks, locomotives, railcars, ballasts, and rail ties have

lifespans that extend beyond 25 years and we further extend their useful life through reuse and recycling programs.

Recycling programs include used oil, concrete and wood ties, engine coolants, and waste water from treatment plants that was used to wash locomotives.

## Minimizing Waste Generation

Over the past few years, we've strengthened our waste management culture by setting diversion targets. In collaboration with our waste contractor, Heritage Interactive, and our EcoChampions, we continuously identify innovative solutions to reduce our operational waste. For example, we've improved how rail tie debris is processed at our tie disposal hub in L'Anse, MI. We've also continued to engage our employees through EcoConnexions and recycle scrap metals, rail, and railcars, as well as electronic waste, batteries, plastics, and cardboard.



### REBUILDING LOCOMOTIVES TO EXTEND THEIR LIFE

CN locomotives are overhauled by our mechanics at the Transcona Shops in Winnipeg, MB, and reused on secondary lines and then in yards, to extend their use up to 25 years.



### SPEAKER'S CORNER

## Working Collaboratively with Our Suppliers

*"We are committed to integrating environmental, social and governance considerations into the selection of critical suppliers. Over the past three years, we've conducted sustainability risk assessments of our critical suppliers and, where high risks were identified, we worked with these suppliers on risk mitigation measures.*

*We also require our suppliers to conduct their business in accordance with our Code of Business Conduct, environment, health and safety policies, and other relevant corporate standards. In 2016, all our major suppliers had signed agreements with us, which included their commitment to comply with our Code of Business Conduct."*

**LEN PODGURNY**  
Senior Agent, Supply Management

## SPOTLIGHT

# Contributing to the Circular Economy

As a leading North American railroad, resilience is an inherent part of our business, enabling us to maximize the value of materials and minimize waste.



*“Our focus on minimizing the use of new materials, maximizing the useful life of materials, and reducing waste generation at the end of their life, is an important part of our material stewardship responsibilities. It enables us to do our part to contribute to the circular economy, while saving costs and generating additional revenues.”*

**FELISMINA DEOLIVEIRA**  
Director, Supply Management

Many of the assets and materials we use to operate our rail network have a lifespan exceeding 25 years. At the end of their lifespan, we are piloting projects to further extend the life of these assets through reuse and recycling. For example:

- **Steel rail tracks** are re-used from the main lines to our secondary lines and then at our yards, and finally sold to be recycled into new steel products.
- **Concrete rail ties** have been successfully pilot-tested for reuse or crushed for sub-grading in yards and roadways.
- **Wooden rail ties** up to 97% are sent for co-generation of electricity.
- **Railcars** continue to be reused until they reach the end of their life and are finally sent for recycling.
- **Locomotives** are reused from our mainline to secondary lines, and then in our yards. At the end of their life, they are recycled for steel.

Our EcoConnexions employee program continues to increase awareness and engage employees on reduce, reuse and recycle opportunities, including cardboard, plastics, packaging materials, batteries, electronics, shop towels, and gloves.



Reid Bodley, Manager, Waste and Conservation, with gloves for reuse



## 1 Reusing Gloves through the Material Marketplace

Working with Toronto and Region Conservation Authority Partners in Project Green, we completed a pilot program at our MacMillan Yard to launder and reuse gloves.

## 2 Repairing and Reusing Concrete Ties

We undertook a pilot project to repair and reuse concrete ties, and crushed the end-of-life ties for sub-grading in our yards.

## 3 Extending the Life of Locomotive Batteries

A pilot project was successfully implemented with our primary supplier of locomotive lead acid batteries to re-qualify them and put them back into service.

~90%

WASTE DIVERTED FROM  
LANDFILL IN 2016 AND SENT  
INSTEAD FOR REUSE  
OR RECYCLING

# Biodiversity and Land Management

Our rail network passes through a wide range of habitats, including national parks, forests, prairies and wetlands. Protecting these rich and diverse ecosystems is an important priority for us.

We are committed to proactively protecting the environment where we operate and conducting our activities and operations in a way that minimizes our disturbance of the rich and diverse ecosystems that provide essential ecosystem and social benefits to the surrounding communities.

## Conducting Impact Assessments

We recognize the important responsibility we have to manage the environmental and social impacts of our day-to-day operations in a systematic manner. As part of our project approval process, we undertake comprehensive environmental and social impact assessments to understand potential risks and to establish mitigation measures.

## Preserving and Restoring Ecosystems

We have a broad range of programs in place to preserve and restore habitat and ecosystems, including programs that involve building fish culverts close to railway tracks, wildlife management programs, and other sensitive habitat protection programs.

Over the past few years, our environmental management teams have proactively protected various endangered species within close proximity to our projects, including the endangered turtle habitat at Carroll's Bay, Hamilton Harbour, and bighorn sheep in Alberta's Jasper National Park.

Through our EcoConnexions programs, we are playing a significant role in

promoting biodiversity through tree planting programs along our network. Today, we have become the leading private non-forestry tree planter company in Canada, and have planted over 1.6 million trees across North America.

## Cleaning Up and Remediating Sites

We are committed to conducting our operations in a manner that protects and minimizes our disturbance to the surrounding natural ecosystems. When spills and releases do occur, we have robust emergency response plans to clean up and remediate sites, and to restore them back to pre-existing conditions. For example, over the past few years, we have focused efforts and made important progress in cleaning up the ore spills on tracks in Bathurst, New Brunswick.

168



COMMUNITIES ENGAGED WITH ECOCONNEXIONS – FROM THE GROUND UP  
TREE PLANTING INITIATIVES ACROSS NORTH AMERICA SINCE 2012



## FURTHER READING

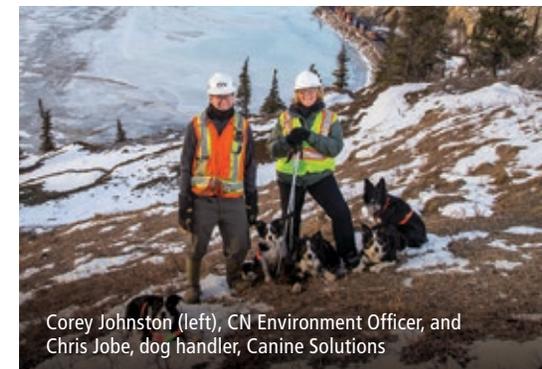
- + [EcoConnexions section of our website](#)
- + [CN From the Ground Up website](#)



CN Senior Design and Construction Officer Robert Versteegen examines newly hatched turtles

## PROTECTING ENDANGERED TURTLE HABITAT

To protect the nesting habitat of endangered turtles from a major transportation expansion project, our teams built a new retaining wall that kept most of the turtles out of the construction site. "This is a vital turtle habitat, and we take our responsibility to protect it seriously," says Robert.



Corey Johnston (left), CN Environment Officer, and Chris Jobe, dog handler, Canine Solutions

## HERDING SHEEP OUT OF HARM'S WAY

Our innovative wildlife management strategy used specially trained working border collies to herd bighorn sheep out of harm's way from a derailed grain railcar in Alberta's Jasper National Park earlier this year. "We came up with the idea of using border collies, known for their herding talents, during a brainstorming session – it was a natural solution that was 100 per cent effective," says Corey.

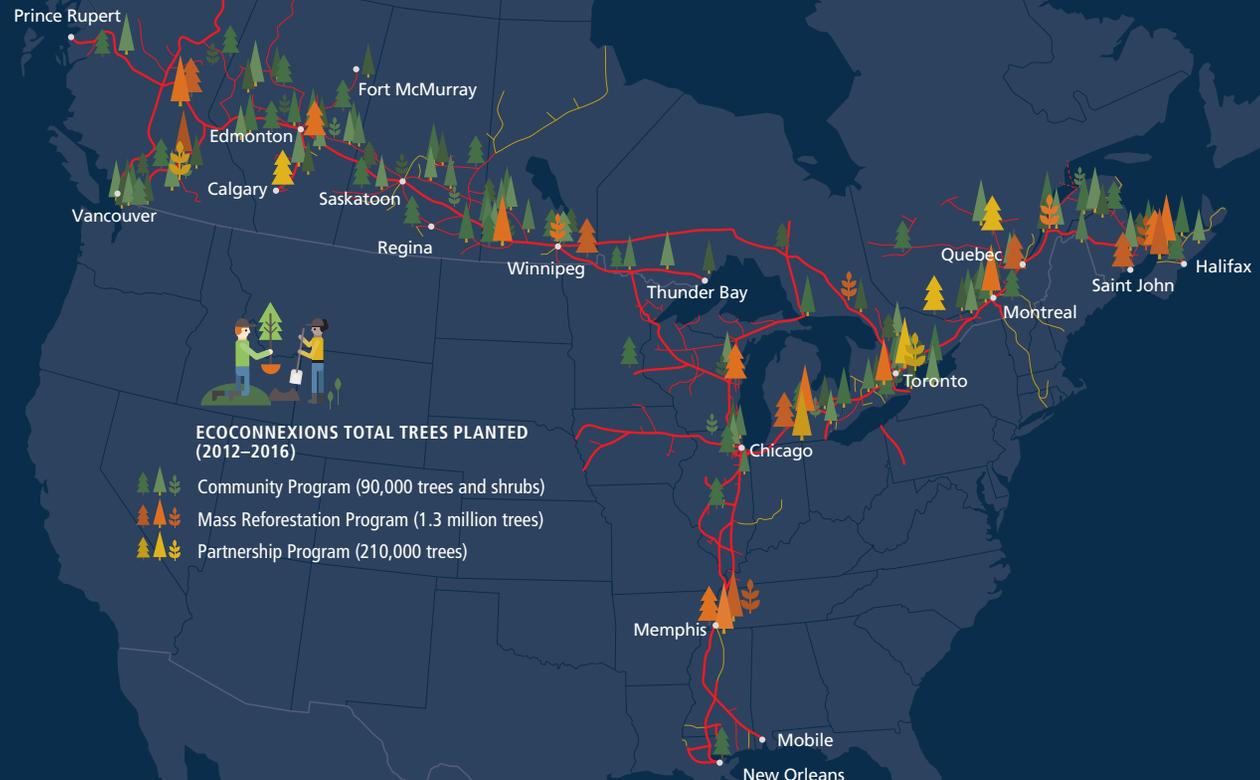
# Greening Communities Across Our Network

## EcoCONNECTIONS



Our EcoConnexions From the Ground Up and Mass Reforestation program was launched in 2012 to promote environmental sustainability through the greening of communities and First Nations situated along our rail network. Working together with our partners, Tree Canada, Communities in Bloom, and America in Bloom, we have assisted community groups to establish green spaces, tree plantings and mass reforestation projects in a sustainable, environmentally responsible manner. In 2014, EcoConnexions was expanded to partner with and recognize our customers for their sustainability practices, and we are now planting trees in honour of their efforts.

Through these EcoConnexions programs, over 1.6 million trees have been planted since 2012 – making CN the leading private non-forestry company tree planter in Canada.



### ECOCONNECTIONS TOTAL TREES PLANTED (2012–2016)

- Community Program (90,000 trees and shrubs)
- Mass Reforestation Program (1.3 million trees)
- Partnership Program (210,000 trees)

### OUR RESULTS

# 1,600,000+

TREES PLANTED ACROSS NORTH AMERICA SINCE 2012

# Awarded

TREE CANADA'S "ULTIMATE AWARD" FOR CN'S COMMITMENT TO TREE PLANTING

### OUR PARTNERS





# Safety

*“We strive to be the safest railroad in North America by establishing an uncompromising safety culture and implementing a management system designed to minimize risk and drive continuous improvement.”*

**MITCH BEEKMAN**  
Vice-President, Safety and Environment

PICTURED:  
Justin Babcock, Heavy Duty  
Mechanic, keeping railcars  
and locomotives safe for  
18 years.

# Reinforcing Safety as a Deeply Held Core Value



Safety is a fundamental value that guides our actions at all times on our journey to becoming the safest railroad in North America. Our goals are simple: Nobody gets hurt, and there are no accidents that negatively impact our communities, our customers or the environment.

## ACTING ON THE GLOBAL GOALS



- Investing in predictive analytics, technologies and track infrastructure to proactively minimize safety risks
- Educating employees and customers at our CN training centres on safety using hands-on state-of-the-art rail safety equipment
- Engaging communities on dangerous goods and emergency response through our Structured Community Engagement Program

## Safety Culture

We invest significantly in training, coaching, and employee engagement to strengthen our safety culture. Over the past year, we improved the quality of employee interactions in the field, with a focus on moving our people from “compliance with the rules” to an unwavering commitment to safe behaviour for themselves and those around them.

## Safety Management

Our Safety Management System (SMS) formalizes how we integrate safety into all railroad activities. This year we’ve implemented a science-based approach to our fatigue management process and we recently added a 13th SMS component entitled “Outreach” – a process for meeting with regulators, customers, and municipalities to review rail safety and discuss concerns.

We also work closely with municipal officials and emergency responders to review our safety programs and share information on dangerous goods traffic moving through their communities. In 2016, we earned a National Achievement Award from Transportation Community Awareness and Emergency Response (TransCAER®) for helping communities understand the movement of dangerous goods.

## Infrastructure and Technology

Every year, we make significant investments in infrastructure and technology, including U.S.-mandated Positive Train Control technologies, and early detection and predictive analytics technologies to run a safe and fluid network. In 2016, approximately \$1.6 billion alone was invested in track infrastructure.

## SAFETY MANAGEMENT SYSTEM



Our Safety Management System (SMS) is a proactive, comprehensive program designed to minimize risk and drive continuous improvement in our day-to-day operations, focusing on People, Process, Technology and Investment.



PICTURED:  
Mike Mabbett, Senior Manager,  
Engineering (left), oversees new  
hire Ryan Brindley, Assistant Track  
Supervisor, focusing on safety and  
the importance of looking out for  
each other.

# Safety Culture

We believe providing a workplace that fosters a culture of safety awareness is key to achieving our goal to be the safest railroad in North America. Our uncompromising safety culture is based on trust, teamwork and innovation, in which everyone has a role as a safety leader.

To strengthen our safety culture, we are making significant investments in coaching, training and employee programs.

## Onboarding and Engaging Employees

Our Onboarding program ensures new employees are equipped with the resources and knowledge to work safely and efficiently. We also rely on the work of over 100 union–management health and safety committees, safety summits, and other employee engagement initiatives to instill our safety culture in our employees on an ongoing basis. In 2016, we led 63 safety summits promoting effective two-way communications and sharing safety best practices.

## Providing Intensive Field Training

Training is at the heart of our safety culture. With major investments in two training facilities in Winnipeg, MB and Homewood, IL, we’ve revitalized the way we teach and reinforce strong safety behaviours. All our employees undergo job-specific safety training on our procedures and awareness sessions to improve the quality of employee interactions in the field.

## Looking Out for Each Other

With the support of our joint union–management policy health and safety committees, in 2016 we rolled out Phase 3 of our peer-to-peer program – “Looking Out for Each Other” – a safety

mindset that teaches us how to reinforce safe behaviours and how to speak up in a constructive way if we spot unsafe behaviour.

More than 15,000 Engineering, Transportation and Intermodal employees received specialized training on the importance of safety to family life, being hyper vigilant of work surroundings and effectively communicating with co-workers when observing and responding to unsafe situations. In 2016, we received an award from the Railway Association of Canada for our “Looking Out for Each Other” training program.

# 15,000



EMPLOYEES RECEIVED ENHANCED TRAINING ON OUR “LOOKING OUT FOR EACH OTHER” INITIATIVE



## FURTHER READING

- + [2017 Leadership and Safety](#)
- + [Safety Policy](#)



## SPEAKER'S CORNER

### Making Safety a First Instinct

*“We work in an environment that can be unforgiving. It is imperative that we understand and follow our rules and procedures, ensuring all hazards are top-of-mind. One of the best opportunities to enhance our safety culture at CN is the use of peer-to-peer communication and engagement.”*

*Our “Looking Out for Each Other” initiative brings all of us together with the intent of ensuring those hazards are known and understood between teammates and appropriate actions are in place to prevent injury or incident. The goal is to work together to ensure we all go home safe to our families at the end of the day.”*

**MIKE CORY**  
Executive Vice-President and  
Chief Operating Officer

## SPOTLIGHT

# Embedding a Strong Safety Mindset

Key to achieving our vision to become the safest railway in North America is our unwavering commitment to having a skilled, safe and engaged workforce.



*“We encourage people to share what’s on their minds, including personal issues that may be distracting them. We then head out to the field in groups of three or four to talk to people about the trends, how to become more safety conscious, how their decisions can ultimately impact their families, and see if there is anything we can do for them.”*

**JIM FUCHS**

Assistant Superintendent –  
Chicago Zone

We are focused on connecting our employees to our safety core value by fostering a strong safety culture across the network.

We invest significantly in training and employee engagement initiatives to strengthen our safety culture. For example, we are taking a systematic approach to employee training and development at our national training centres in Winnipeg, MB, and Homewood, IL. Among other things, employees learn about the valuable role of peer-to-peer communications, coaching and mentoring, which are central to safe railroading.

We also continued to rely on the good work of over 100 union–management health and safety committees, safety summits and other employee engagement initiatives to promote a strong safety mindset and ensure our plans are focused on addressing the top causes of accidents and injuries.



## 63

**SAFETY SUMMITS IN 2016**

Our opportunity to engage employees in strengthening safety, promoting two-way communications and sharing best safety practices.

### 1 Emphasizing the Importance of Staying Safe

One of the many leaders in training, Jeff Quick, Locomotive Engineer in Battle Creek, MI, emphasizes the importance of safety and being hyper-vigilant.

### 2 Actively Engaging Health and Safety Committees

The Transcona Complex Health and Safety (H&S) Committee, proactively identifies and addresses potential equipment repair risks before they become safety issues.

### 3 Encouraging Safety with Peer Engagement Teams

Chicago area Transportation, Mechanical and Engineering employees meet monthly to review safety issues or incidents to better understand trends.

# Safety Management

Our Safety Management System (SMS) is a formal way to make safety part of day-to-day operations. In addition to developing a strong safety culture, it includes safety goals and performance targets, risk assessments, rules and procedures, and evaluation processes.

Through our SMS, robust processes have been established to make safety a systematic part of all railroad activities.

## Ensuring Effective Safety Processes

Our SMS processes apply to all company employees, contractors and other stakeholders while on CN property. They include: accountability, safety policy, compliance, railway occurrences, safety concerns, risk assessments, remedial actions, targets and initiatives, reporting, knowledge management, continuous improvements and fatigue management.

**31%** reduction in FRA train accidents compared to 2015

### FRA TRAIN ACCIDENT RATIO

Accidents per million train miles



The 2017 target is based on a four-year trend. Our 2016 performance was impacted by a particularly mild winter.

In 2016, we implemented a science-based approach to fatigue management and added a 13th SMS component entitled “Outreach” – a process for meeting with regulators, customers, and municipalities to review rail safety and discuss concerns.

## Conducting Risk Assessments

Our multifunctional teams examine risks on key corridors of our network taking into consideration the proximity of communities along the CN right-of-way, environmentally sensitive areas and the volume of dangerous goods transported along those corridors. Assessments in 2016 used a new risk valuation methodology, developed in collaboration with the University of Alberta’s Canadian Rail Research Laboratory.

We also increased the sharing of safety information across our regions, including more than 200 risk assessments on the potential hazards of railroad activities and best practices to mitigate risk.

## Protecting Systems and Responding to Emergencies

Our Dangerous Goods team works collaboratively to enhance our emergency preparedness and system protection. Over the past year, we strengthened our incident response capabilities and delivered training courses, including a one-week CN-sponsored Tank Car Specialist training course for firefighters from across North America, a one-week course for emergency response contractors, and a three-day Crude-by-Rail course for firefighters.

In 2016, the Dangerous Goods team participated in over 400 TransCAER® events across the system, bringing critical training to over 8,400 participants. As a result of our efforts, we earned a National Achievement Award from TransCAER® for helping communities understand the movement of dangerous goods.



### FURTHER READING

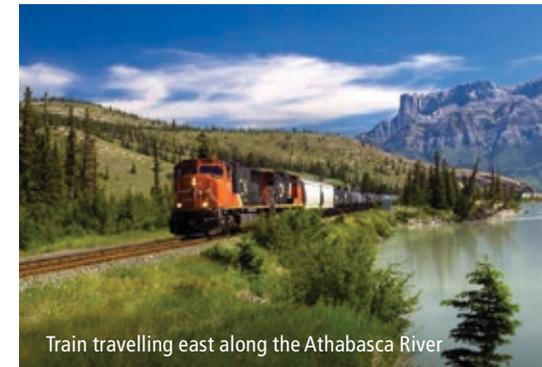
- + [2017 Leadership and Safety](#)
- + [Safety section of our website](#)



Kristina Shamber, CN Police, inspecting railcars

### CN POLICE PROTECTING AGAINST INCIDENTS

Our CN Police force members monitor our network to protect our people, property, resources, and assets, while ensuring the safety and security of the communities we serve.



Train travelling east along the Athabasca River

### PROACTIVELY REDUCING SAFETY RISKS

As part of our corridor risk assessments, we consider a broad range of risk factors, including the volume of dangerous goods transported along those corridors, proximity of communities along CN’s right-of-way, and environmentally sensitive areas. The assessments identify opportunities to further reduce the frequency and severity of potential derailments.

## SPOTLIGHT

# Engaging Communities on Emergency Response

We reach hundreds of communities along our rail network, regularly sharing information on crossing safety, corridor risk assessments, proximity guidelines, dangerous goods traffic, and emergency response training opportunities.



*“The simulation of a collision between two motor vehicles and a train at a railroad crossing in 2016 was a very effective exercise. It involved more than 90 participants and provided a low-stress environment to practise a coordinated approach to dangerous goods incidents, enabling us to review protocols, clarify roles and practise our response.”*

**JOHN DAY**  
Dangerous Goods Officer  
TransCAER® Training Event, Bartlett, IL



## TRANSCAER® EVENTS ACROSS THE SYSTEM IN 2016

bringing critical training to over 8,400 participants.

Our Corporate Services staff work with our Dangerous Goods team and other colleagues to play an integral role in keeping CN connected to the communities where we operate through CN's structured Community Engagement program across the network. Through this program, our representatives regularly share information on crossing safety, corridor risk assessments, proximity guidelines, dangerous goods traffic, and emergency response training opportunities. They also bring critical training to community emergency personnel located near rail lines through TransCAER® (Transportation Community Awareness and Emergency Response) events.

Over the past two years, the AskRail mobile application (App) was deployed, having been developed in conjunction with the Association of American Railroads (of which CN is a member) and other Class I railroads. Since its launch in 2015, more than 2,600 first responders in Canada and the U.S. have signed up for the App, which provides relevant information at the outset of an incident and informs decisions on how to respond effectively to a rail emergency.

### TRANSCAER® EMERGENCY RESPONSE TRAINING SIMULATION – BARTLETT, IL 2016



#### 1 AskRail Mobile App Tracks Tank Car Contents

During a collision simulation, community first responders use the App to view tank car contents and get other information.

#### 2 First Responders Getting Real Life Experience

Diverse stakeholders, including community emergency responders, local fire agencies, CN Dangerous Goods officers and Risk Mitigation officers, actively participate in our emergency response simulation.

#### 3 Involving and Engaging with Communities

To bring to life the impacts of an incident on site, we have people playing the role of injured motorists and have our CN 911 training tank car hooked up to a smoke machine.

# Infrastructure and Technology

Our long-term safety improvements are driven by continued significant investments in technology and infrastructure to operate a safe railway and to improve the productivity and fluidity of the network.

We are investing heavily in innovative approaches to deliver safety improvements on our network. The past year, our focus has been on investing in ongoing track infrastructure upgrades, deploying Positive Train Control, and leveraging predictive data analytics.

## Upgrading Track Infrastructure

We continue to work on improving track infrastructure to ensure the safety and fluidity of our network. In 2016, we invested approximately \$1.6 billion in track infrastructure, including replacing 2 million cross ties, installing over 600 miles of new rail, and performing bridge repairs, branch line upgrades and other general track maintenance. We use a wide range of technologies to monitor

the condition of track and rolling stock in order to proactively minimize risks and our industry-leading detection assets are driving opportunities to improve service, safety and reliability.

The ongoing deployment of Positive Train Control – a technology mandated by the U.S. government to monitor and control train movements – continues to be an important focus.

## Leveraging Predictive Data Analytics

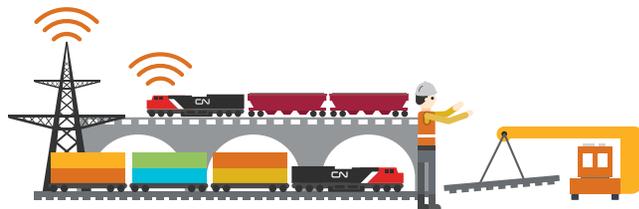
We are using innovative thinking to develop predictive analytics and data management to deliver safety improvements. The initiative involves using data from our industry-leading network of detectors and inspection

technologies to take safety to the next level. Two programs are central to this effort.

Our Mechanical Analytics for Rail Safety (MARS) program is using our car-related data combined with Wayside Detector readings, Car Repair Billings, and service disruptions to show trends and determine pre-emptive actions to prevent failures relating to railcars.

Our Engineering Reliability and Analytics (ERA) is enabling field users to visualize track conditions using historical repair and upgrade records, combined with data from existing and new test equipment, to better understand the health of the track across the system and prioritize their workload.

# \$1.6B



## INVESTED TO SUPPORT OUR SAFETY AGENDA

including track infrastructure, bridge repairs, branch line upgrades and other general track maintenance.



## FURTHER READING

- + [2017 Leadership and Safety](#)
- + [Safety section of our website](#)



## SPEAKER'S CORNER

### Strengthening Safety with Fatigue Risk Management

*“Over the past year, we enhanced our process of applying fatigue science when scheduling the work of unionized employees, who account for approximately 80% of our workforce.*

*Railroaders in this type of work often think about their fatigue and rest periods.*

*Together with the Teamsters Canada Rail Conference (TCRC), we have been working on an innovative pilot program in Western Canada. The joint union–management task force designed daily call windows in which conductors could be expected to be called to work, as well as a scheduling model providing a three-month view of their shifts. Scheduling allows for some predictability and for employees to better balance their home and work lives.”*

**SHAUNTELLE PAUL**

Assistant Vice-President, Operations

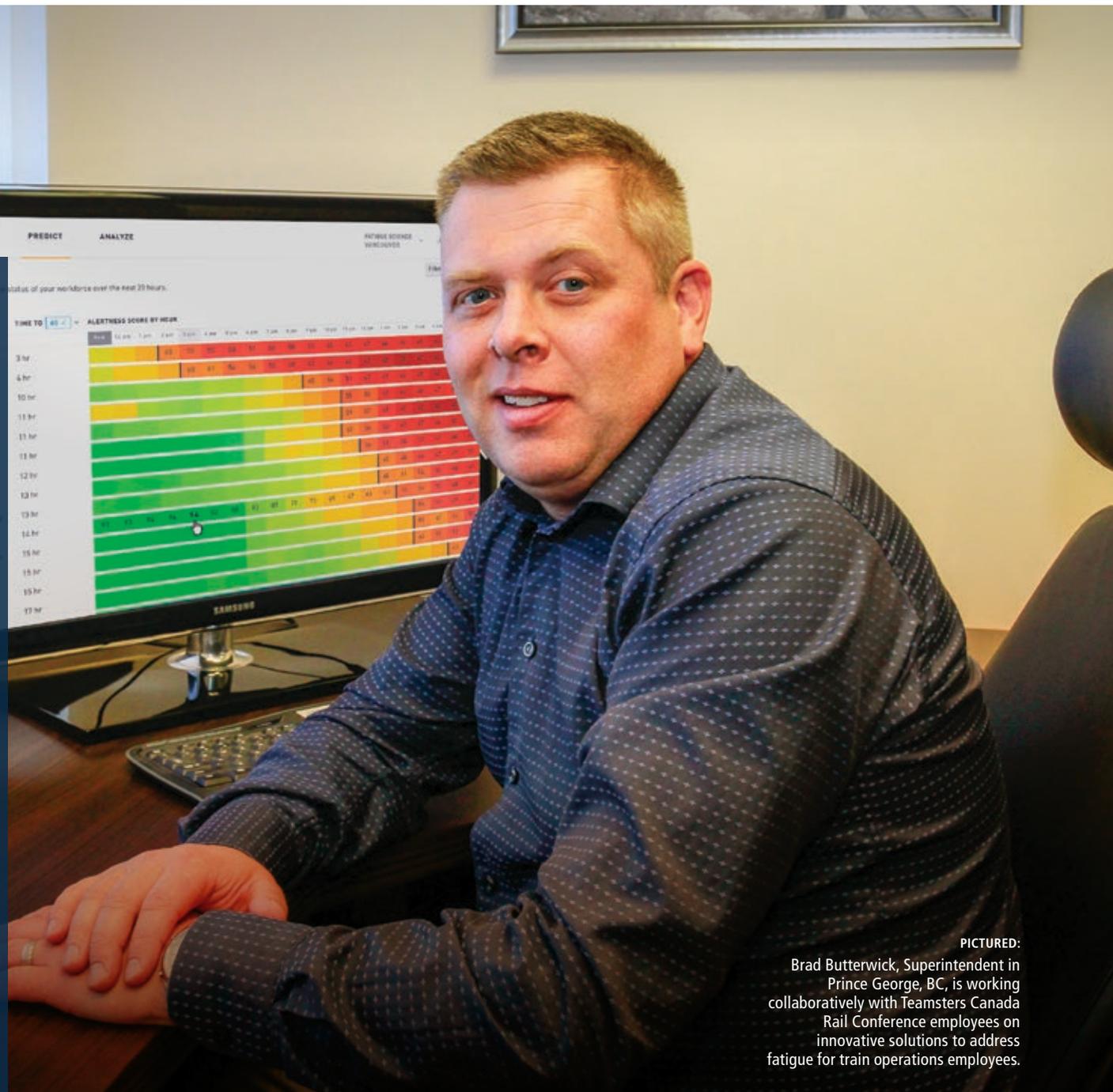
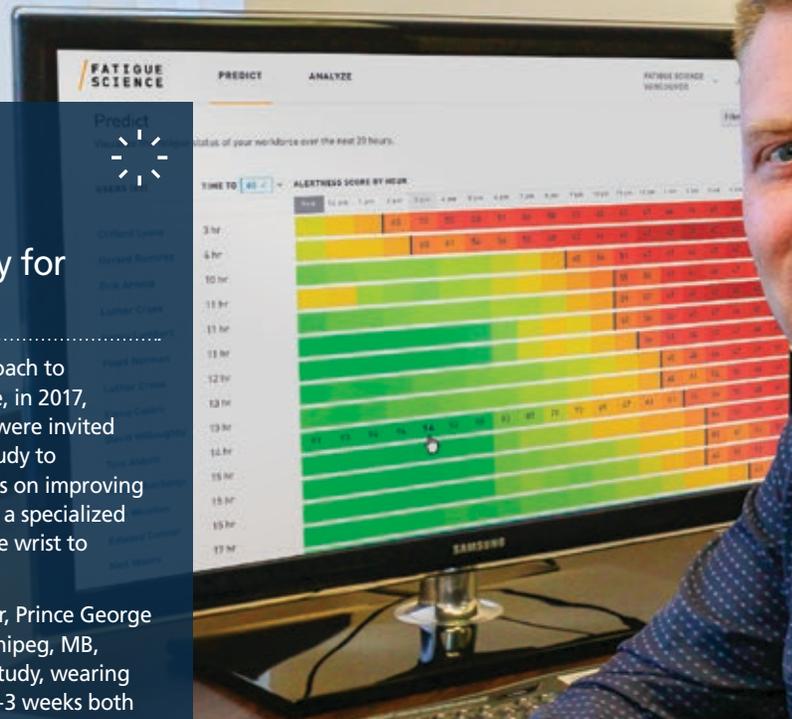


INNOVATION AT WORK

### Leveraging Technology for Fatigue Management

As part of our multi-pronged approach to managing fatigue in the workplace, in 2017, some of our unionized employees were invited to volunteer for a pilot program study to determine the effect scheduling has on improving fatigue by wearing a Readiband™, a specialized motion tracking device worn on the wrist to track their sleep patterns.

Thirty-nine employees in Vancouver, Prince George and Smithers, BC, as well as in Winnipeg, MB, have been engaged in a scientific study, wearing the Readibands continuously for 2–3 weeks both before and after scheduling, on duty and off. The results are being used to better inform initiatives to help address fatigue.



**PICTURED:** Brad Butterwick, Superintendent in Prince George, BC, is working collaboratively with Teamsters Canada Rail Conference employees on innovative solutions to address fatigue for train operations employees.

## SPOTLIGHT

## Partnering on Innovative Technology

Our focus is on investing in the right technologies to enhance safety and support long-term growth, in collaboration with other Class I railroads, research facilities and suppliers.



*“Our technology working group with representatives from all functions in the Company is making important progress in new lines of defense for our network, ensuring we invest in the right technology and explore external connections with other stakeholders.”*

**RICK BAKER**

General Manager, Safety and Regulatory Affairs

We are developing new lines of defense against accidents using advanced predictive data analytics capabilities for our Engineering and Mechanical teams. For example, vast amounts of data produced by our Wayside Inspection Systems (WIS) and other detection technologies are being mined to assess trends and identify opportunities for pre-emptive maintenance work and capital projects.

Furthermore, we are using technologies and equipment to monitor the condition of track and rolling stock. In addition to using WIS, we acquired new hi-rail trucks that measure track geometry parameters like rail gauge and cross-level. In 2017, we plan to invest \$10 million to acquire additional monitoring equipment to enhance our strong technological base for the early detection of defects.

To ensure we invest in the right technology, a technology working group has been established and will be stepping up external engagement with other Class I railroads, research facilities and suppliers to benchmark and identify best practices.



# \$10M

**ON NEW SAFETY TECHNOLOGIES**

planned in 2017 including signalled sidings on key corridors, collision avoidance systems, predictive analytics and data management systems.

### 1 Using Rail Flaw Detectors to Test for Rail Defects

We tested over 219,000 miles of track in 2016 for internal rail defects that could potentially lead to broken rails.

### 2 Monitoring Network Safety with Wayside Detectors

With the densest and most advanced wayside detection technology in North America, we have been able to proactively monitor the network for unsafe operating train conditions.

### 3 Monitoring Signals to Prioritize Workloads

Carrie Alderson, Assistant Track Supervisor, undertaking automated inspections to assist local forces to understand the relative health of the network and prioritize workloads.



# People

*“Our goal is to provide a safe, supportive, and diverse work environment where our employees can grow to their full potential and be recognized for their contribution to our success.”*

**KIM MADIGAN**  
Vice-President, Human Resources

PICTURED:  
Elizabeth Hammack,  
Positive Train Control (PTC)  
System Validation Engineer, with  
Jaspreet Pannu, Trainmaster

# Becoming a Top Employer and Developing the Best Railroaders



Our 23,000 employees are our single greatest asset. By providing them with exciting development opportunities, a competitive total compensation package and opportunities to build their careers, we motivate and empower them to contribute to our business success.

## ACTING ON THE GLOBAL GOALS



- Attracting a diverse and inclusive workforce and becoming a top-of-mind employer for all designated groups
- Ensuring productive employment for our 23,000 employees through competitive wages and benefit packages
- Improving work/life balance by engaging in collaborative partnerships with union partners and employees
- Developing employees to increase their engagement, retention, business knowledge and leadership capabilities

## Talent Recruitment

As we prepare for the next generation of railroaders, our focus is to hire the right people, onboard them successfully, and provide opportunities for them to develop and grow. In 2016, attracting and retaining a high-calibre senior management team was an important priority underpinning our ambition to continue to innovate our business and sustain our leadership position.

We also continued to integrate our newly hired railroaders by equipping them with the tools and knowledge to work safely and efficiently. Through our state-of-the-art CN training centres, we successfully delivered technical skills training, re-certification programs, as well as various development programs. In 2016, 35% of our positions were filled by internal candidates, demonstrating our deep bench strength and commitment to employee development.

## Diversity and Inclusion

In today's increasingly complex global marketplace, we recognize that attracting a diverse workforce that reflects the communities where we operate and with whom we work will be critical to our success. We have various programs to reach out to diverse candidates, including women, visible minorities, Aboriginal peoples, veterans, and people with disabilities.

## Employee Engagement and Innovation

Engaging and connecting our people on our goals helps us reinforce trust and appreciation for their talents and contributions, and ensure they feel invested in our shared success. This year, we continued to nurture an innovative culture harnessing the power of our EcoConnexions program and empowering diverse cross-functional teams to take on our biggest projects and challenges.

## TALENT MANAGEMENT STRATEGY



People are the foundation on which all our guiding principles are built. Talent management at CN is focused on attracting the right people, bringing new hires on board efficiently, developing the best railroaders with the right skills and strengthening connections. Engaging employees on our ongoing transformation journey is at the heart of our strategy.

# Talent Recruitment

To continue to be a world-class leader in the transportation industry, attracting and retaining a diverse and talented workforce will be critical to our success. Our focus is on hiring the right people, onboarding them successfully and helping them grow and develop both personally and professionally.

The past year, we continued to direct our efforts towards recruiting top talent, successfully onboarding new hires, and developing our people to be the best railroaders.

## Recruiting Top Talent

Every year, we devote significant resources under our recruitment strategy to ensure we are a top-of-mind employer. In 2016, we received over 80,000 applications, due in part to our targeted recruitment campaigns and strengthened social media outreach to potential candidates. We recruited 735 new hires, of which 37% were from employee referrals made possible through our more than 400 CN employee ambassadors and extended employee networks.



# 711,396

HOURS OF EMPLOYEE TRAINING

## Onboarding New Hires

Over the past two years, we onboarded more than 2,200 employees by equipping them with the tools and knowledge to work safely and efficiently and to feel connected to the business. We provided them with ongoing training to instill our strong safety culture, set clear expectations, distributed job aids, and made them familiar with fellow railroaders and CN's high operating standards.

## Developing the Best Railroaders

Since the launch of the CN training centres in 2014, we are pleased with the progress we have made to modernize the way we teach, provide a consistent level of training across our network

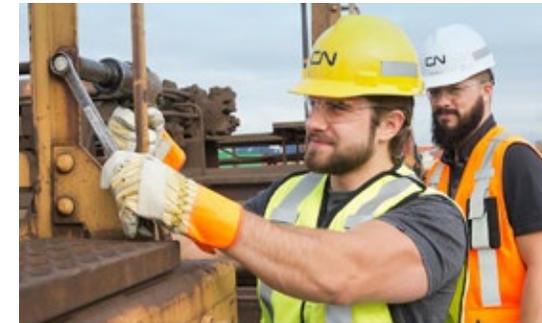
and enable our railroaders to be highly skilled, safety conscious and confident in their work.

We delivered more than 1.9 million hours of training, covering skills training, re-certification, and various leadership development programs such as LINK and LEAD, as well as entry-level training. We also reinforced our core values through the launch of a new mandatory training session for all employees.



## FURTHER READING

- + [Delivering Responsibly section of our website](#)
- + [Management Information Circular, p. 49](#)



## SPEAKER'S CORNER

## Continuous Learning and Development

Ensuring continuous learning for our employees is critical to having a skilled, safe and engaged workforce. For Robert Otto, a new hire Apprentice Car Mechanic at our busy Brampton Intermodal Terminal in Ontario, training and mentoring has been a key factor of success at CN.

He says he has benefitted greatly from the training he received at the CN Claude Mongeau National Training Centre in Winnipeg as well as the ongoing mentoring he gets on the job. As a result, he is comfortable with his role.

*"Our terminal is a great place to be. It's a close-knit group where everyone takes pride and responsibility for their work. It's been a good experience so far at CN. I'm happy to be on board."*

**ROBERT OTTO**  
Apprentice Car Mechanic  
Brampton Intermodal Terminal, ON

**PICTURED:**

Trevor Sheppard, Conductor and peer mentor at MacMillan Yard (right), supporting new hires through Onboarding and even after they qualify – ensuring they feel at ease, are well taken care of, and have a constant focus on safety.

## SPOTLIGHT

# Revitalizing and Modernizing the Way we Teach

We have modernized our teaching, improved the quality of our training, and instilled a culture of on-the-job training through peer-to-peer communications, coaching and mentoring.



*“It’s important to start building a sense of community among the trainees right away. Many of them will likely be working alongside one another when they leave our learning centre. Our first priority is to make sure they have a positive experience while with us.”*

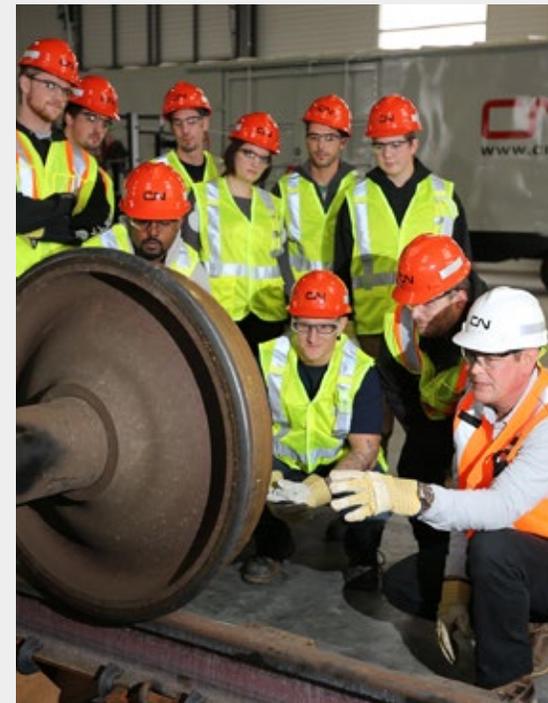
**PAIGE DEMERS**

Logistics Coordinator at the CN Claude Mongeau National Training Centre in Winnipeg

Since 2014, our two state-of-the-art training centres located in Winnipeg, MB and Homewood, IL, have been instrumental in preparing our railroaders of the future to be highly skilled, safety conscious and confident in their work environment.

Our expert logistics team at each training centre campus organizes the personal itineraries of every trainee, including their transportation, accommodation, classroom schedules and extra-curricular activities.

To date, we have trained more than 15,000 employees at the training centres. Training included technical skills training, the Railroader Certification Program, our Future Leaders Program for Trainmasters, and the Assistant Track Supervisors Program.



### 1 Training at Our Ultra-Modern Indoor Lab

Dave Jeffery, Manager, Skilled Trades, and instructor, providing practical training at the CN Claude Mongeau National Training Centre.



### 2 State-of-the-Art Hands-On Training

Drummond Lyons benefits from hands-on technical training at the CN Campus in Homewood, IL.



### 3 Welcoming our Trainees to the CN Campus

Esmeralda Salinas, Manager, CN Campus, Homewood, IL, welcomes conductor Sean King, promoting a sense of community among trainees right away.

# 15,000

**EMPLOYEES TRAINED**

since 2014 at our two state-of-the art training centres.

# Diversity and Inclusion

We recognize the importance of creating a diverse and inclusive work environment at all levels of our Company that respects the contributions and differences of every individual by encouraging collaboration, creative thinking and innovation.

Over the past year, we strengthened our commitments, implemented innovative diversity initiatives, and continued efforts to empower women to develop their talent.

## Strengthening our Diversity Commitments

Our commitments to diversity and inclusion focus on minorities, women, persons with disabilities as well as Aboriginals in Canada and veterans in the U.S. In 2016, approximately 40% of our new employees in Canada and 29% in the U.S. were hired from one of the four designated groups.

We continued to track our diversity objectives, which we established in Canada under our 2013–2016 diversity plan. To date, we achieved the hiring targets that we set for ourselves.

# 40%



**NEW EMPLOYEES IN CANADA AND 29% IN U.S. REPRESENTED BY DIVERSITY GROUPS**

Looking to the future, we plan to explore opportunities to increase diversity at more senior levels within our Company, as our workforce continues to turnover due to many retirements.

## Promoting Cultural Awareness

Over the past year, we created a Diversity Task Force and implemented a number of diversity initiatives across CN. Most notably, we provided cultural awareness training and employee sensitivity on Aboriginal issues, and held discussions on diversity at our “Working Together” initiative, enabling employees to candidly discuss diversity and the need for inclusion and teamwork at CN.

We also promoted our Diversity Scholarship program, which in 2016 generated five times more applicants than usual. As part of campaigns such as “This Could be You,” we educated new applicants to CN positions on the importance of diversity and inclusion at all levels of the organization.

Through these collaborations, we increased our diversity hiring in Canada by up to 30%, and doubled the number of women hired in both Canada and the U.S.

## Empowering Women

We are committed to developing and empowering CN women. Notably, in 2015, we launched the CN Women in Operations Internship Program in Canada, enabling them to gain valuable knowledge and skills.

In 2016, approximately 21% of promotions in Canada were filled by women (women represent 10% of our Canada employees overall). To date, 14.3% of the executive officer team are women. We will continue to review executive officer appointments with our diversity and talent management objectives in mind.



### FURTHER READING

- + [People section of our website](#)
- + [Management Information Circular, p. 28](#)



### SPEAKER'S CORNER

## Recognizing CN's Diversity Efforts

*“As a leading transportation provider, we recognize that building diversity at all levels of our Company to reflect the customers and communities we serve is essential to maintaining our competitive focus, enhancing our performance, innovating and accessing a larger talent pool.”*

*In 2016, we hosted “Women in Rail” webinars enabling 350 female job applicants to receive insights on positions at CN through women currently working in the positions for which we were hiring.*

*Last year we were pleased to receive the Employment Equity Achievement Award from the Government of Canada and in 2017 were recognized as one of Canada's Best Diversity Employers.”*

**CHRISTINE O'NEILL**  
Senior Manager, Talent Acquisition

**PICTURED:**

After serving as a Logistics Officer in the United States Army for 10 years, newly hired veteran, Rob Farmer, was ready for another adventure – a change in career. After joining CN in 2014, he took the initiative to learn and rapidly moved up to the position of Assistant Trainmaster.

## SPOTLIGHT

# Women Railroaders

Gender is an important attribute of diversity that we are addressing across our entire Company. We have developed and implemented a number of Company-wide innovative diversity initiatives relating to women.



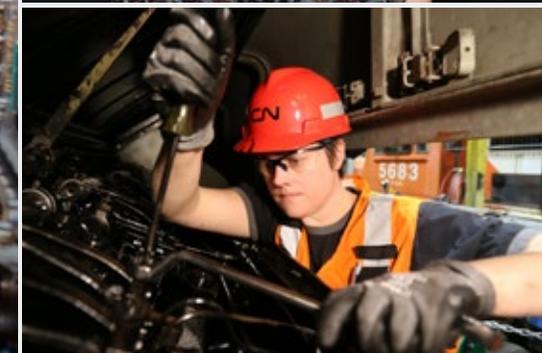
*“We offer opportunities for women to intern in operations. Our teams are always on the lookout for talent, recognizing that, to develop a strong team, you need a wide variety of people, skills, and strengths. The program gives women the opportunity to gain valuable knowledge and skills.”*

**VIRGINIE BRONSARD**  
Senior Director, Human Resources

Our diversity initiatives provide women with training, development and mentorship opportunities to help them:

- understand opportunities for personal and professional growth within the Company;
- further develop their skills in operations; and
- build strong partnerships with fellow employees and communities where we have operations.

Through our CN Women in Operations Internship Program, which we launched in 2015, women railroaders are gaining first-hand experience and development opportunities in Transportation, Network Operations, Safety, Mechanical, and Supply Management across Canada. In addition to providing a better understanding of CN operations, the internship enables women railroaders to take charge of their careers and contribute to strategic initiatives that drive the business forward.



### 1 Preparing for the First Positive Train Control Production Run

Maria Caravaggio, Telecom Integration Manager, in Montreal, Quebec, works closely with her team of 11 to configure and develop Interoperable Train Control Messaging.

### 2 From Unionized Service Delivery Representative to Fleet Manager

Isabel Peters interned as a Rail Equipment Pipeline Manager where she refined her customer service experience and gained confidence in her work.

### 3 Overhauling Locomotives Safely and Efficiently

Heidi Rowley, Heavy Duty Mechanic at the Transcona Shops in Winnipeg and member of one of CN's top three policy health and safety committees, rebuilding a locomotive.

# 21%

OF PROMOTIONS FILLED BY WOMEN IN CANADA

# Employee Engagement and Innovation

To foster a culture of engagement and innovation, we strive to provide an environment where our people feel supported and proud of the work they do, the company they work for, and the difference they can make. Engaging our employees in this way reinforces the trust and appreciation we have for their talents.

Over the past year, we collaborated with our union partners, engaged and empowered our employees to contribute innovative solutions, and recognized the accomplishments of our people.

## Collaborating with Union Partners

In 2016, 79% of our employees were unionized. As part of our ongoing commitment to fostering collaborative relationships with union partners and employees, last year, we worked with the Teamsters Canada Rail Conference (TCRC) union partners to extend the conciliation period prior to the collective agreement expiration on July 22, 2016. The extension enabled additional time for us to work together on developing a consensus towards an amicable renewal of the collective agreements.



# 93%

NEW HIRE EMPLOYEE SATISFACTION  
DURING OUR ONBOARDING PROGRAM

## Engaging on Innovative Solutions

Promoting a supportive work environment ensures our people feel valued and respected. Last year, our “Let’s Connect” initiative” was instrumental in providing opportunities for employees to get to know each other, learn what their colleagues do, and share experiences.

Furthermore, our EcoConnexions employee engagement program is helping to encourage innovative environmental solutions in our yards, buildings and offices. As a result of the program, since 2011, we have reduced energy consumption by 16% at key yards and facilities, diverted over 90% of operational waste from landfill, and completed over 1,000 housekeeping projects leading to a cleaner, more efficient and safer work environment for our people.

In addition to environmental stewardship, we also engage our employees on our health and wellness program to support good health habits and active living.

## Recognizing the Best Railroaders

Our CN President’s Awards for Excellence provides us with an important opportunity to recognize the outstanding achievements of our employees. Today, the program recognizes achievements in several categories, including operational excellence, service excellence, safety first, delivering sustainably, building a solid team of railroaders, Railroaders in the Community and terminal of the year.



### FURTHER READING

- + [People section of our website](#)
- + [Management Information Circular, p. 49](#)



CN EcoChampions (from left):  
Suzanne Battick, Leo Godin, John Nicoletti

## ECOCONNEXIONS EMPLOYEE ENGAGEMENT

Since 2011, our EcoConnexions program has grown. Today, over 700 EcoChampions together with all employees are delivering results, including 16% savings in energy consumption (avoiding 65,000 tonnes of carbon) in major CN yards and over 1,000 housekeeping projects completed.



Cyclists (from left): Jamie Lamarche, Carl Simard,  
Mario Bergeron, part of the CN Wellness Challenge

## INSPIRING EMPLOYEES TO GET FIT

Last year, over 2,000 employees signed up for our six-week CN Wellness Challenge. Across North America, our employees participated in CN Traction, our health and wellness program that supports good health habits and active living. Employee teams diligently tracked their activities adding up to close to 411 million steps.

## INNOVATION AT WORK



## Employee Innovative Idea: Track Circuit Simulator

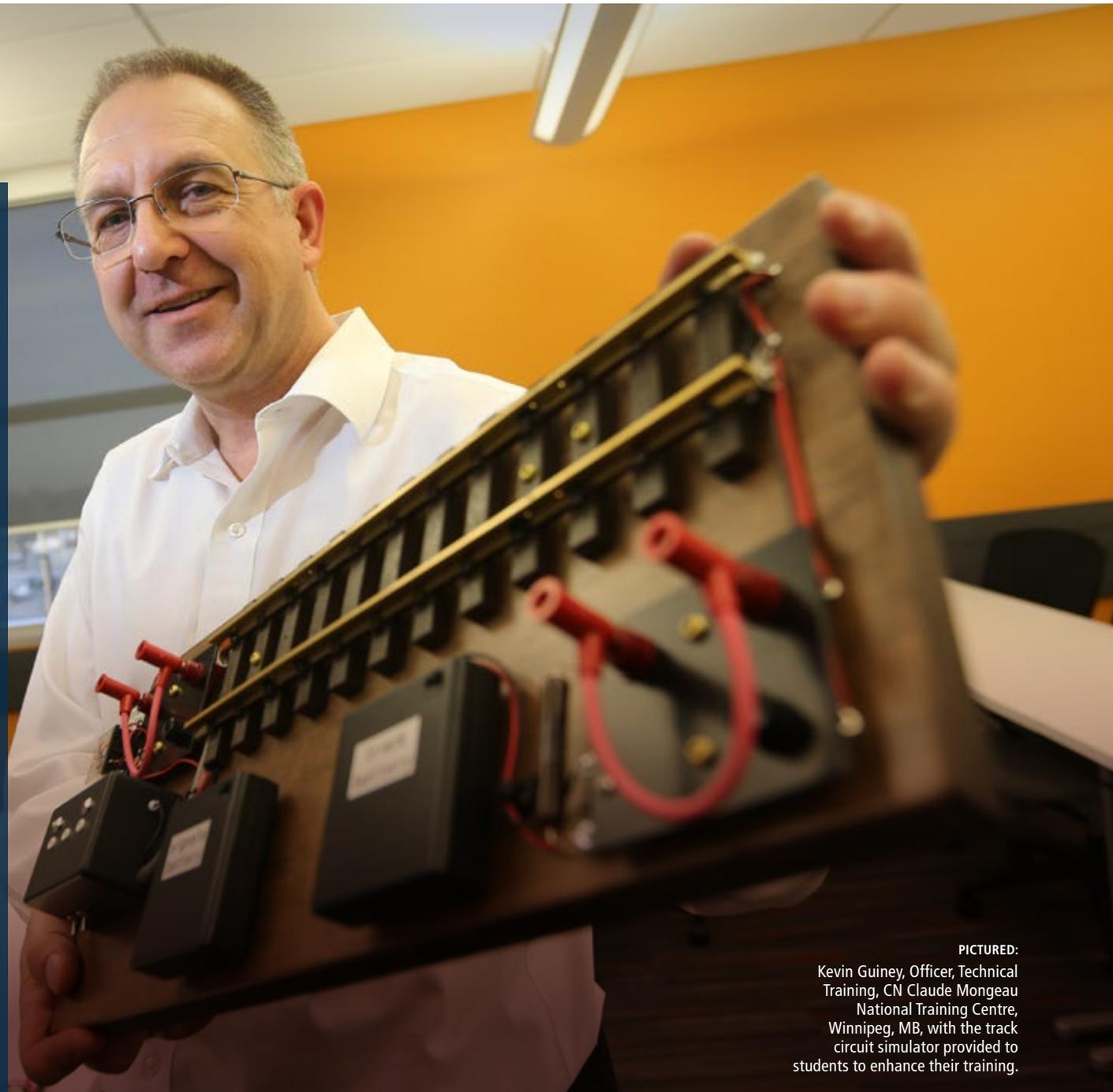


At CN, one of the best sources of innovation is the ideas that come from our employees, particularly in how we have revitalized and modernized our technical training.

Kevin Guiney, Technical Instructor at the Claude Mongeau National Training Centre in Winnipeg, brought his passion alive when he came up with the idea to improve the Signals and Communications training experience for new hires using a track circuit simulator.

Kevin's idea to mount a railway track circuit on a board was such a hit with the Symington Yard Electronic Repair Centre that Les Kulasza, S&C Technician, and Tony Hoffman, S&C Coordinator, went beyond expectations and designed, built and delivered a fully functional simulator. Today, each student has a simulated track circuit to enhance their understanding and to try trouble-shooting techniques during classroom training.

For Kevin, the development of the simulator was a great example of teamwork, taking a good idea and making it great.



PICTURED:  
Kevin Guiney, Officer, Technical Training, CN Claude Mongeau National Training Centre, Winnipeg, MB, with the track circuit simulator provided to students to enhance their training.

# Community

*“We strive to be a good neighbour, making communities better and safer places to live, work and play by investing in development and creating positive socio-economic benefits.”*

**SEAN FINN**

Executive Vice-President, Corporate Services  
and Chief Legal Officer

**PICTURED:**

CN is the first railway in North America to introduce immersive virtual reality 360° videos to educate viewers on rail safety at diverse community events. Seen here, the viewer was distributed at the 2016 CN Cycle for the Children’s Hospital of Eastern Ontario (CHEO).

# Investing in Stronger, Safer Communities



As part of the fabric of the many cities, towns and villages across our entire 19,600-mile North American network, we are proud of the important contribution we make towards social and economic progress. Supporting inclusive, sustainable and equitable communities underpins our goal of leaving communities and economies better for our being there.

## ACTING ON THE GLOBAL GOALS



- Promoting safety in communities, especially in terms of dangerous goods right-to-know initiatives
- Protecting community residents through our CN Police officers
- Promoting environmental sustainability through efficient freight services; helping reduce emissions, traffic congestion, accidents, and the burden on overstressed transportation infrastructure
- Building community trust by maintaining open and timely communications

## Socio-Economic Benefits

Across our rail network, we reach people living in hundreds of communities throughout North America, transporting millions of goods annually for a wide range of businesses. Delivering our transportation services safely, efficiently, and responsibly is vital to the running of our railroad and the value we create for society.

As a true backbone of the economy, we provide positive socio-economic impacts through our sizeable investments in employment, infrastructure, goods and services, sponsorships and donations, as well as the taxes we pay to all levels of government. Since 2006 we have invested \$21 billion in capital improvements.

## Community Investments

Building safer and stronger communities is vital to the running of our trans-continental railroad. This is why we strive to be a good neighbour – not only in our commitment to safety and environmental sustainability, but also by investing directly to make communities better places to live and work.

We support many national and community-based non-profit organizations throughout Canada and the U.S., and provide CN grants to our employees who volunteer their time to hundreds of worthy causes through our CN Railroaders in the Community program.

In 2016, we invested \$18.2 million in communities to support safety, transportation education, the environment, diversity, the CN Railroaders in the Community program, and caring and solidarity initiatives.



Kate Fenske, Manager, Regional Relations, CN Public Affairs, taking the safety pledge

## RAIL SAFETY WEEK

CN kicked off Rail Safety Week giving presentations on the devastating consequences of trespassing on rail property and ignoring rail crossing signals. CN employees, retirees and the public were invited to take the Safety Pledge to share rail safety tips and report unsafe behaviour.



PICTURED:  
CN train travelling through  
Saint-Tite, QC, moving goods and  
playing an important role as the  
backbone of the economy.  
Photo by CN Employee  
Jean-François Dumont

# Socio-Economic Benefits

Every year, we handle over 300 million tonnes of cargo from the food we eat, the wood to build our homes, the cars we drive, the appliances that make our lives easier, the products that improve our quality of life, and the energy to power our activities.

Over the past year, we continued to play an important role as a backbone of the economy contributing to global economic prosperity, improving living standards and quality of life, and supporting the shift to a cleaner, more sustainable economy.

## Being a True Backbone of the Clean Economy

As a world-class transportation leader, our rail network and operations are an important driver for economic and social progress. We transport over 300 million tonnes of goods annually for a wide range of business sectors, serving exporters, importers, retailers, farmers and manufacturers, while touching the lives of millions of people every day. Many of these goods are being transformed into more sustainable products, enabling us to play a key role as a backbone and lifeblood of healthier communities.

By providing our customers with one of the most environmentally friendly ways to move their goods, we not only contribute by moving the clean economy but also by leading the rail industry in fuel efficiency.

## Contributing to Global Trade and Economic Competitiveness

As a true supply chain enabler, we move more than \$250 billion worth of goods annually for customers, providing quality end-to-end transportation services that drive trade and competitiveness in key markets.

Our \$2.75 billion annual investments in track infrastructure, rolling stock, technology and equipment are helping ensure the safety, efficiency and reliability of our service, while reducing the burden on overstressed public transportation infrastructure.

## Creating Jobs and Improving Quality of Life

We are a major employer in North America, providing approximately \$3 billion in wages and benefits to our 23,000 employees. Our positive shareholder returns, dividend payments and share repurchase programs are benefitting millions of individuals who rely on their pensions and individual savings for income. We also pay millions of dollars in taxes, and contribute to community and infrastructure projects.

We are creating positive impacts with our suppliers. In 2016, we spent approximately \$6 billion on goods and services from some tens of thousands of suppliers. Encouraging local sourcing and diversity in our supply base supports our objective to be an inclusive company and strengthens our partnerships with Aboriginal communities.

# \$6B



IN GOODS AND SERVICES FROM OVER 15,000 SUPPLIERS



### FURTHER READING

- + [CN in the Community Report](#)
- + [Investor Fact Book](#)



### SPEAKER'S CORNER

## Moving Goods in the Clean Economy

*“As the world makes the shift towards cleaner, more sustainable goods, we are well-positioned to play our role as a backbone of the clean economy. We provide one of the most efficient and environmentally friendly ways to move goods, and continue to lead the rail industry in fuel efficiency.”*

*Shippers can leverage our intermodal freight shipping combining the resources of different modes, such as trucking and rail, to move their products. Intermodal helps lower transportation costs by allowing each mode to be used for the portion of the trip to which it is best suited, while helping reduce emissions, traffic congestion, accidents, and the burden on overstressed transportation infrastructure.”*

### KEITH REARDON

Vice-President, Intermodal and Automotive

# Contributing to Economic and Social Progress

## Global Prosperity and Competitive Economy

**\$250B+**

**CUSTOMER GOODS HANDLED**  
by our seamless end-to-end transportation solution

**\$2.75B**

**CAPITAL INVESTMENTS**  
in track infrastructure, rolling stock, technology and equipment to run a safe, efficient and reliable service

**\$3.2B**

**RETURNED TO SHAREHOLDERS**  
through dividends and share repurchases



## Quality of Life in Society

**\$3B**

**SALARIES AND WAGES PAID**  
including stock-based compensation, health and welfare and pension benefits

**\$18.2M**

**COMMUNITY SPONSORSHIPS AND DONATIONS**

**\$653M**

**INCOME TAX PAYMENTS**

## Backbone of the Clean Economy

**8,000,000 tonnes**

**CARBON AVOIDED**  
by our customers shipping with rail instead of truck

## Moving more

**ALTERNATIVE ENERGY AND CLEAN TECHNOLOGY**  
goods for our customers

# Community Investment

Investing in the communities where we operate is one of the best ways for us to contribute to making them stronger, safer and resilient. Through our spirit of caring, we are focused on worthy causes, organizations and projects where we can share our knowledge and experience to make a difference.

Through the CN Stronger Communities Fund, we support many national and community-based non-profit organizations. Our community partnerships focus on promoting safety, transportation education, environmental stewardship, diversity, as well as the CN Railroaders in the Community program.

## Promoting Safety and Transportation Education

Safety always comes first at CN. In 2016, we actively participated in Railway Safety Week through our partnership with Operation Lifesaver, conducting more than 200 safety blitzes at commuter stations and railway crossings in Canada and the U.S. We also worked with communities to exchange information on dangerous goods shipments.

In addition to safety education, we also support transportation education to inspire and help today's youth become tomorrow's railroaders. We promote post-secondary education in transportation, including through trade and apprenticeships, college and university programs, and scholarships and bursary programs.

## Being an Environmental Steward

We invest in a range of community investment activities that align with our environmental values. Last year our partnerships included Ducks Unlimited, Trans Canada Trail, and Tree Canada and Communities in Bloom, which is helping us drive our EcoConnexions community program – a core platform to make a difference in communities through tree-planting initiatives.

## Supporting CN Railroaders in the Community and Diversity

We are proud of the hundreds of CN employees, their families, and retired employees who generously give their time to local causes through our CN Railroaders in the Community program. In 2016, more than 1,400 people volunteered to 1,263 causes of their choice, which we supported by providing \$1.1 million in CN grant funding.

Supporting diversity is an important part of our community contribution. We are focused on advancing women, minorities, Aboriginal communities and other groups. In 2016, we supported Aboriginal communities through an annual week-long "Pulling Together" canoe event and the "Dare to Dream" youth outreach program to instill pride in Aboriginal participants.

# \$18.2M

INVESTED IN COMMUNITIES



### FURTHER READING ONLINE

- + [CN in the Community Report](#)
- + [Community section of our website](#)



### SPEAKER'S CORNER

## Celebrating Canada's 150 – CN EcoConnexions From the Ground Up

*"Our EcoConnexions From the Ground Up program was launched in 2012, to promote the greening of municipal properties along our rail lines. To date, we have planted 90,000 trees and shrubs to enhance the environmental and social health of 168 communities across North America.*

*In 2017, we will celebrate the sixth year of our EcoConnexions From the Ground Up program and Canada's 150th birthday by increasing from 25 to 52 the number of communities awarded a \$25,000 grant. Each grant will include the donation of a commemorative plaque and the planting of a ceremonial maple tree. We've also donated \$1 million to Tree Canada's Operation Releaf in Fort McMurray."*

**NURIA PÉREZ DE LEÓN**  
Manager, Community Partnerships

INNOVATION AT WORK



## Expanding Our EcoConnexions Community Program



In 2012, we expanded EcoConnexions with our From the Ground Up program, to promote the greening of municipal properties in communities along our rail lines – providing grants of up to \$25,000 for tree planting within a community.

In 2016 the city of Sault Ste. Marie, ON, was a proud recipient of one of these grants. Mayor Christian Provenzano participated in the planting ceremony and addressed the community. "With the support of CN's EcoConnexions program, the City of Sault Ste. Marie was able to establish a unique urban orchard and sugar bush in a downtown neighbourhood. The grant we received from EcoConnexions has helped to make our City greener and has enabled us to create a fantastic new community resource that will be enjoyed for generations."

Since 2012, more than 90,000 trees and shrubs have been planted through the program, helping to enhance the environmental and social health of 168 communities across North America.



PICTURED:  
Etienne Brulé Community Orchard, in Sault Ste. Marie, where CN's EcoConnexions grant helped create a new unique urban orchard and sugar bush in a downtown neighbourhood.

## SPOTLIGHT

# Honouring CN Railroaders in the Community

Every year, CN railroaders contribute thousands of hours of personal time to make communities better places to live and work. It's part of our Company's long and proud tradition of giving something back.



*"We give back because we have been recipients of other people's generosity and kindness. Many kids are new immigrants who came here with nothing. CN's grants really helped us provide programs for our community kids."*

**FLORENT DUGUAY**  
Retired CN Car Inspector  
CN Railroader in the Community

Through the CN Railroaders in the Community program, we provide grants to the organizations where our employees, retirees and their families volunteer. The grants encourage a spirit of caring, and support our railroaders' endeavours to make a difference in their communities. Through our efforts, we touch people in hundreds of communities across North America.

This year we were especially proud to recognize the volunteering efforts of Florent Duguay, retired CN car inspector, and his wife Helene, who have been volunteering for Scouts Canada since 1977.

In 2016, Florent was recognized for his stellar achievements, receiving the Governor General's Sovereign's Medal for Volunteering and was named "Volunteer of the Year" by the Scouts. As a result, Scouts Canada received an additional \$12,500 from the CN Railroaders in the Community grant.



## \$4.5M

PROVIDED IN GRANTS THROUGH CN RAILROADERS IN THE COMMUNITY

to the community-based charitable organizations our CN volunteers choose to support from 2011 to 2016.

Railroaders  
in the community



### 1 On-Call for a Tight-Knit Community

Everett Craig, Foreman, Engineering, Valemount, BC, spends 100 hours each year on call or training at the Valemount Fire Department.

### 2 Organizing a Clothing Drive for a Local Shelter

Dora Nelson, Chief Intermodal Clerk, Harvey, IL, organized a clothing drive for The Haven House, a local shelter for battered women and their children.

### 3 Open Hearts to a Syrian Refugee Family

CN railroaders Caroline Drouin, Johanne Cavé, Christine Deschamps, and retired CN employee Marie-Andrée Vaillancourt welcomed and supported a refugee family from Syria.



# Governance

*“We are committed to continuously improving our culture of integrity and ethical business conduct, building the trust and confidence of our stakeholders and encouraging an inclusive and diverse governance approach that supports sound business decision-making.”*

**CRISTINA CIRCELLI**

Deputy Corporate Secretary and  
General Counsel

# Doing the Right Thing



Robust corporate governance is simply good business. It helps strengthen our reputation, build the trust and confidence of our stakeholders, and make sound business decisions for our long-term success. Doing the right thing is a core value, reflecting our commitment to make the right choices and bring integrity in all aspects of our business.

## ACTING ON THE GLOBAL GOALS



- Established and met a 2017 target to have at least one-third women on our Board
- Signed the Catalyst Accord, a call to action to increase representation of women on Financial Post 500 boards to 25% by 2017
- Became a member of the Canadian chapter of the 30% Club, which aims to boost the representation of women on boards to 30% by 2019
- 5 of 13 members of the CN's Board of Directors are female (38%)

## Business Ethics and Integrity

Holding ourselves to the highest standards of ethics and integrity is essential to the success of our business. As one of North America's leading railroads, we know people expect the best of CN – a responsibility we take very seriously.

Our core values, CN's Code of Business Conduct, and corporate policies frame our values and commitments to responsible management, alongside our robust Board and executive governance models. In 2016, we updated our Code of Business Conduct, trained our management employees and reconfirmed adherence to our standards. To date, 100% of our management employees completed the online training course and attested their compliance with the Code.

## Board Diversity

An inclusive and diverse Board is an important part of how we govern. We believe that diversity, including gender diversity, on the Board helps increase the effectiveness of decision-making by

bringing together a variety of perspectives. In 2015, we established our Diversity Policy, which takes into account gender, age and ethnicity when recommending director nominees to our Board. Our Diversity Policy reflects our commitment to have at least one-third of our Board represented by women by the end of 2017. In mid-2017, 5 of 13 directors were women, representing 38%.

## Stakeholder and Aboriginal Outreach

Given the high visibility of our business throughout North America, we recognize the importance of maintaining a positive reputation in the communities where we operate. We value our stakeholders' views and are committed to building mutually beneficial and lasting relationships.

## GOVERNING RESPONSIBLY



## Stakeholder Engagement

Our five core values and Code of Business Conduct frame our commitments to Delivering Responsibly for all our stakeholders. Board oversight and executive management ensure we have the right controls, policies and programs.

# Business Ethics and Integrity

As one of North America's leading railroads, we believe there is no asset more valuable than our reputation. We recognize the importance of conducting ourselves in accordance with the highest standards of ethical conduct. It's about doing the right thing and bringing integrity to all aspects of our business.

Over the past year, we continued to strengthen our solid ethics program. Specifically, we updated our Code of Business Conduct (the Code), trained our management employees on our expectations, encouraged the reporting of concerns and embedded our values into how we measure employee performance.

## Strengthening our Code

Our Code establishes the values and expectations that underpin our approach to ethical behaviour. *Doing the Right Thing* is the core tenet that supports our ethics approach. It means ensuring legal compliance, avoiding conflicts of interest, providing a diverse, safe and supportive work environment, and treating customers, competitors, suppliers and other business partners with respect, honesty and fairness.



# 100%

OF MANAGEMENT EMPLOYEES COMPLETED THE ONLINE TRAINING COURSE ON THE CODE

In 2016, we updated the Code to clearly articulate our expectations and align with industry standards.

## Training on Ethics and Integrity

To reinforce our high standards of ethics, every year our directors, executive officers and managers certify their compliance to the Code and management employees complete an online training course.

In 2017, 100% of our management employees completed the online training and certified compliance with the Code. We also held a live training course on *Doing the Right Thing* for all our managers to reinforce the importance of protecting our reputation. Going forward, the live training will be part of every new employee's onboarding program and integrated into our employee performance reviews.

## Monitoring Code Compliance

Over the past year, we continued to provide mechanisms to report violations of the Code, including a confidential hotline, a legal assistance helpline, the Human Resources Centre, the confidential Employee and Family Assistance Program, the CN Police, the CN Public Inquiry Line and the CN Ombudsman's Office. Our CN Ombudsman compiles all logged cases and provides a report to the Corporate Governance and Nominating Committee of the Board. In 2015 and 2016, no material contraventions of the Code were reported.



## FURTHER READING

- + [Code of Business Conduct](#)
- + [Management Information Circular, pp 21-22](#)



## SPEAKER'S CORNER

### Doing the Right Thing

*"Participating in the live training course refreshed my understanding of our Code through real-life examples. I have a much better appreciation for what 'Doing the Right Thing' means and how to conduct business with integrity and respect."*

*Through the course, we discussed a broad range of topics, including business conduct essentials, legal compliance, conflicts of interest, fair dealings, and reporting of illegal or unethical behaviour. I feel well-equipped to deal with issues as they arise, and am even more aware of the many resources and tools at my disposal."*

**MARC PAVLICA**  
Senior Director, Technology and  
Infrastructure Management

## INNOVATION AT WORK



## Industry-leading Corporate Governance Practices



Our belief that a successful business is the result of a solid governance culture is reinforced by the leading standards we have adopted to continuously improve the

functioning and activities of our Board of Directors. Noteworthy are our peer review assessments of individual directors, as well as our independent third-party reviews, which we use when appropriate to independently assess the performance of the Board of Directors, Board committees, Board and committee chairs and individual directors.

In 2016, as part of the annual performance assessment process, our Board Chair led a peer review exercise comprising one-on-one meetings with each individual director. Each director was given the opportunity to assess the contribution of each of his or her peers relative to their specific position performance standards. The results were compiled by an outside consultant and submitted to the Chair to inform follow-up discussions with individual directors on their personal performance.

Many of our innovative governance practices continue to be recognized. For example in 2016, we were proud to be recognized by the Governance Professionals of Canada for best overall corporate governance for publicly traded Canadian companies.

# Board Diversity

We believe that diversity is an important attribute of a well-functioning board. Increasing the diversity of the Board, including gender diversity, can drive innovation and contribute to enhanced business performance and success.

The Governance and Nominating Committee of the Board continues to play an integral role in turning our diversity commitments from principle to practice. To do so, they not only formalized a Board diversity policy, but also enhanced our recruitment protocols, established women representation targets, and partnered with leading organizations to promote Board diversity in North America.

## Formalizing Our Diversity Commitments

In March 2015, we established a diversity policy for the Board, which sets out our commitment to consider candidates on merit, based on a balance of skills, background, experience and knowledge.

These factors are now part of our director recruitment tools. Taking gender, age, race, culture, geography and ethnicity into account when identifying the highest quality directors ensures our Board benefits from a broader range of perspectives, backgrounds, skills, viewpoints, and experience.

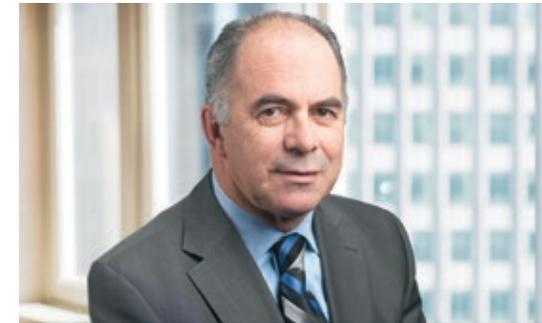
## Increasing Female Board Nominees

As part of our commitment to gender diversity, we set targets to have a minimum representation of one-third of the Board by women, by 2017.

Currently, 5 out of 13 of our directors are women. We also adopted a strict policy on term limits where any member appointed for the first time can serve for a maximum of 14 years.

## Promoting Diversity on Boards

We are committed to actively supporting external initiatives that promote diversity on Boards. In 2017, we became a signatory to the Catalyst Accord, a call to action to increase the representation of women of Financial Post 500 boards to 25% by the end of 2017. We also became a member of the Canadian Chapter of the 30% Club – an organization with an aspirational objective of having representation by at least 30% women on boards by 2019.



### SPEAKER'S CORNER

## Joining Forces on Gender Diversity

*“The importance of gender balance in governance has become a business imperative, which we believe is critical to our long-term sustainable success. In 2017, we put principle to practice by electing two additional women directors to our Board.*

*We identified Shauneen Bruder and Julie Godin as being exceptional candidates with strong public company and business backgrounds in finance, operations, information technology, strategy, human resources, risk management and public policy. These two new directors bring our women directors to 38% in 2017 versus 27% a year ago.”*

**DENIS LOSIER**  
Chair of the Corporate Governance and Nominating Committee



WOMEN ON THE BOARD OF DIRECTORS IN 2017



### FURTHER READING

- + [Board Diversity Policy](#)
- + [Management Information Circular, pp 27-28](#)

# Stakeholder and Aboriginal Outreach

As good neighbours in the communities we serve, we recognize the importance of engaging with our stakeholders and Aboriginal communities with trust and integrity.

By encouraging open dialogue and building lasting relationships, we aim to promote understanding and build a positive reputation.

## Communicating with Investors

We engage with a broad investment community, including shareholders, analysts, potential investors and advocacy groups. Last year, we focused investor presentations on our operational and service excellence, market outlook, and sustainability performance.

## Listening to Our Customers

Working closely with our customers to better understand their business is an important part of our customer-centric approach to deliver superior service. In 2016, we worked on innovative commercial agreements to add flexibility and efficiency to the Canadian grain supply chain.



ASSOCIATION OF CANADIAN PORT AUTHORITIES  
ASSOCIATION DES ADMINISTRATIONS PORTUAIRES CANADIENNES

RECEIVED MEDAL OF MERIT IN 2015 FROM  
THE CANADIAN PORT AUTHORITIES  
in recognition of outstanding service.

## Working with Governments

We engage with governments, participate on advisory councils and review boards and play a part in regulatory proceedings.

## Reaching Aboriginal Groups

Our outreach to Aboriginal peoples included enrolling in the Canadian Council for Aboriginal Business' Progressive Aboriginal Relations (PAR) program and becoming a partner of the Assembly of First Nations. In 2016, we became a PAR Committed company. We also became a partner of the Assembly of First Nation, participating in many of their events, including the Annual General Assembly and Circle of Trade tradeshow in Niagara Falls.

## Collaborating with Industry Partners

Our strong end-to-end collaborations optimize supply chain performance. In 2016, we shared information with partners to improve network efficiencies from scheduling hopper cars and container supply to planning vessel loading and managing the supply chain to help keep the ports running smoothly.

Supplier engagement takes place through annual supplier council meetings. We also participated in industry association meetings with the Railway Association of Canada and the Association of American Railroads.

## Engaging Employees and Communities

Fostering strong relations with union leaders and employees is a constant priority. In 2016, CN worked collaboratively with the Teamsters Canada Rail Conference on innovative initiatives to improve safety and work/life balance. Our CN in Your Community publications further describes how we are building strong relationships with people across our rail network.



### FURTHER READING

- + [CN Investor Presentation](#)
- + [CN Investor Fact Book](#)
- + [CN in Your Community](#)
- + [CN Aboriginal Vision and Strategy](#)



Richard McNeil,  
CN Port Manager, Halifax, NS

## INDUSTRY PARTNERS

CN's strong collaboration with the Port of Halifax and its two terminal operators – Halterm and Cerescorp – is a prime example of stakeholder outreach. For Richard McNeil, CN Port Manager in Halifax, understanding each party's requirements is essential to successful collaborations." It allows us to work together on the best way to serve our shared customers with a more efficient supply chain."



Michel Jean, CN Account Manager (left), with  
Benoit Dagenais, Manager, Transport, ArcelorMittal

## CUSTOMER SOLUTIONS

We work closely with our customers to better understand their businesses. By leveraging our expertise and fostering open communication with all our stakeholders, we seek to deepen customer engagement, optimize supply chain performance and create value for our customers.

## SPOTLIGHT

# Aboriginal Engagement



CN operates within or adjacent to nearly 200 different reserve lands of more than 110 First Nations and some Métis territories in eight provinces. We are strengthening our ties and cultivating and developing mutually beneficial relationships.

*“CN reached out to the original stewards of the land, the Mississaugas of New Credit First Nation (MNCFN), to ensure that environmental and archaeological concerns are respected. CN has made presentations and has worked alongside our Department of Consultation and Accommodation. We look forward to continuing the positive relationship we have developed.”*

**CHIEF R. STACEY LAFORME**  
Mississaugas of the  
New Credit First Nation



**RECEIVED IN THE BEST PRACTICE –  
INDIGENOUS RELATIONS CATEGORY**  
for excellence in Aboriginal Relations  
from the Alberta Chamber  
of Commerce.



We strive to develop respectful and mutually beneficial relationships with all Aboriginal peoples, while ensuring service to our customers. We also aim to be recognized by key stakeholders, including

customers and governments, for having a sound approach to engaging with Aboriginal communities and having a respectful and sustainable relationship with Aboriginal peoples across the CN network.

We are working diligently to reach Aboriginal communities by:

- proactively engaging Aboriginal communities and maintaining open dialogue;
- encouraging employee sensitivity to Aboriginal issues and providing cultural awareness training to them;
- supporting Aboriginal community initiatives and participating in Aboriginal organizations;
- seeking out and encouraging opportunities for Aboriginal business development; and
- promoting employment opportunities for Aboriginal peoples.



### 1 Pulling Together Annual Canoe Journey

Mélanie Allaire, Senior Counsel, Environmental and Aboriginal Affairs, joins the 2016 Pulling Together Canoe Journey – a week-long event starting in Mount Currie and ending in Mission, BC.



### 2 Empowering Aboriginal Peoples through Education

We partnered with Unifor and the federal government to establish a bursary program for Indigenous post-secondary students across Canada, advancing Indspire's mission to improve Aboriginal education.



### 3 Partnering with the Assembly of First Nations

Doug Devlin, Senior Manager, Community Affairs, attends the celebration welcoming the Pan Am/Parapan Am Games flame to the host First Nation community in Hagersville, ON.



**PICTURED:**  
Aboriginal Day, Prince Rupert, BC  
We marked the 20th anniversary of Canada's National Aboriginal Day on June 21 with a number of unique events celebrating diversity and highlighting Aboriginal culture and heritage.

# Performance Data Summary

The following data is a summary of performance. For detailed performance see our Data Supplement at [www.cn.ca/delivering-responsibly](http://www.cn.ca/delivering-responsibly).

Data	Measurement	2016	2015	2014	2013
<b>ENVIRONMENT</b>					
<b>Emissions</b>					
<b>Total GHG emissions (Scope 1 and 2)<sup>(a)</sup></b>	Metric tonnes of CO <sub>2</sub> e	<b>5,252,867</b>	5,561,870	5,728,123	5,276,446
Direct GHG emissions (Scope 1) <sup>(b)</sup>	Metric tonnes of CO <sub>2</sub> e	<b>5,064,024</b>	5,368,257	5,534,058	5,087,946
Indirect GHG emissions (Scope 2) – energy <sup>(c)</sup>	Metric tonnes of CO <sub>2</sub> e	<b>188,843</b>	193,613	194,065	188,500
<b>Other indirect GHG emissions (Scope 3)<sup>(d)</sup></b>	Metric tonnes of CO <sub>2</sub> e	<b>2,740,942</b>	2,578,190	1,626,867	1,492,053
<b>GHG emissions intensity<sup>(e)</sup></b>					
Total GHG emissions (by rail freight revenue)	Metric tonnes of CO <sub>2</sub> e per thousand dollars of rail freight revenue	<b>0.46</b>	0.47	0.50	0.53
Total GHG emissions (by employee)	Metric tonnes of CO <sub>2</sub> e per full-time employee	<b>235</b>	228	234	223
<b>Total direct and indirect energy consumed within the organization<sup>(f)</sup></b>	Megawatt hours	<b>19,366,012</b>	20,543,278	21,094,164	19,417,395
Total direct energy consumed	Megawatt hours	<b>18,809,291</b>	19,948,919	20,521,735	18,862,621
Total indirect energy consumed – electricity	Megawatt hours	<b>556,720</b>	594,360	572,429	554,775
<b>Energy intensity<sup>(g)</sup></b>	Megawatt hours per million CDN dollars of rail freight revenue	<b>1.71</b>	1.73	1.84	1.95
<b>Nitrous oxides (NO<sub>x</sub>)<sup>(h)</sup></b>					
Canada	Kilo tonnes	<b>46.32</b>	49.40	51.10	49.66
U.S.	Kilo tonnes	<b>17.74</b>	18.79	19.71	19.73
<b>Sulphur dioxide (SO<sub>x</sub>)<sup>(h)</sup></b>					
Canada	Kilo tonnes	<b>0.02</b>	0.02	0.02	0.02
U.S.	Kilo tonnes	<b>0.01</b>	0.01	0.01	0.01
<b>Particulate matter<sup>(h)</sup></b>					
Canada	Kilo tonnes	<b>1.00</b>	1.07	1.11	1.13
U.S.	Kilo tonnes	<b>0.39</b>	0.41	0.43	0.45
<b>Total weight of waste generated<sup>(i)</sup></b>	Metric tonnes	<b>400,744</b>	395,292	370,185	432,533
Total hazardous waste generated	Metric tonnes	<b>770</b>	927	857	770
Total non-hazardous waste	Metric tonnes	<b>399,974</b>	394,365	369,328	431,763
<b>Spend on site assessments and remediation</b>	\$ million	<b>29</b>	91	19	18
<b>SAFETY</b>					
<b>% of workforce represented in joint union–management H&amp;S committees<sup>(j)</sup></b>	%	<b>96</b>	95	95	95
<b>Injury frequency rate – Federal Railroad Administration (FRA)<sup>(k)</sup></b>	Ratio	<b>1.70</b>	1.63	1.81	1.69
<b>Lost-time injury frequency rate – FRA<sup>(k)</sup></b>	Ratio	<b>1.19</b>	1.21	1.29	1.20
<b>Accidents – FRA</b>	Per million train miles	<b>1.42</b>	2.06	2.73	2.11
<b>Fatalities</b>	Number	<b>1</b>	2	2	2

Data	Measurement	2016	2015	2014	2013
<b>PEOPLE</b>					
Total number of full-time employees (end of year) <sup>(a)</sup>	Total number	22,249	23,172	25,530	23,721
Canada	Total number	14,692	15,303	16,957	15,953
U.S.	Total number	6,481	6,668	7,174	6,745
Female	Total number	1,904	1,939	2,110	1,989
Male	Total number	19,269	20,032	22,021	20,709
Permanent contract <sup>(m)</sup>	Total number	21,107	21,889	24,045	22,623
% of employees covered by collective bargaining agreements	% of total employees	79%	79%	81%	80%
Total new employee hires	Total number	735	1,511	3,786	2,525
Total employee turnover number <sup>(n)</sup>	Total number	1,903	2,211	2,458	2,295
Total hours of training <sup>(o)</sup>	Total number of hours	711,396	1,256,962	1,627,391	1,469,980
Females	% of total employees	9%	9%	9%	9%
Diversity in Canada <sup>(p)</sup>	% of total employees	15%	14%	13%	12%
Diversity in the U.S. <sup>(q)</sup>	% of total employees	17%	17%	17%	17%
<b>COMMUNITY AND ECONOMY</b>					
Direct economic value generated (revenue)	\$ million	12,037	12,611	12,134	10,575
Operating costs	\$ million	6,725	7,345	7,510	6,702
Payments to providers of capital – dividends	\$ million	1,159	996	818	724
Payments to Canadian tax authorities	\$ million	728	620	427	610
Payments to U.S. tax authorities	\$ million	(75)	105	295	280
Community investment	\$ million	18.2	18.2	18.3	21.9

(a) Our Scope 1 and 2 GHG emissions are consolidated based on an operational control approach.

(b) Our GHG Scope 1 emissions include rail and non-rail emissions. The GHG Protocol was applied. We measured carbon dioxide, methane and nitrous oxides using emission factors and global warming potentials from the Environment Canada National Inventory report and the International Panel on Climate Change Fifth Assessment reports, respectively. 2013 to 2015 were restated to reflect IPCC Fifth Assessment Global Warming Potentials excluding climate-carbon feedbacks.

(c) Our GHG Scope 2 emissions comprise electricity emissions only. The GHG Protocol was used to calculate the Scope 2 GHG emissions, covering carbon dioxide, methane and nitrous oxide. We applied North American utility cost per MWh conversion factors and used emission factors from Environment Canada's National Inventory Report and the US EPA eGRID database to convert MWh into tonnes of CO<sub>2</sub>e. 2013 to 2015 values were restated to reflect the most recent applicable emission factors.

(d) We have been increasing the robustness of our Scope 3 inventory reporting. In 2015 and 2016, in addition to emissions from diesel fuel production and business travel, we calculated emissions from purchased goods and services, capital goods, waste generated in operations and upstream transportation and distribution. Business travel emissions are provided by corporate travel service providers. Other categories of emissions were calculated using standard emission factors multiplied by activity levels.

(e) Calculations for GHG emission intensity covers Scope 1 and 2 emissions only.

(f) Energy consumption relates to fuel and electricity consumed within the Company. Conversions to MWh from volumes of fuel were based on Natural Resource Canada conversion factors, and include renewable fuel volumes (biodiesel). Electricity MWh were estimated from utility invoice data using North American utility cost per MWh conversion factors.

(g) Energy includes total direct and indirect energy, covering locomotive fuel, non-locomotive fuel, electricity, natural gas, and other fuels such as propane, gasoline, kerosene, stove oil, and furnace oil. The energy is used within the organization only.

(h) NO<sub>x</sub>, SO<sub>x</sub>, and other significant rail emissions were calculated using Canadian emission factors published by the Railway Association of Canada (RAC). The most recent 2014 emission factors were used to calculate 2014, 2015 and 2016 emissions.

(i) Total weight of waste generated includes our rail ties, scrap metal, locomotive lead acid batteries and day-to-day office and yard waste. Waste quantities are provided by our third-party waste disposal contractors. Where data was not available, estimations were made based on extrapolations of the data. Definitions of hazardous and non-hazardous waste are based on provincial and state regulations, which we assess on a case-by-case basis depending on the condition of the waste.

(j) The joint union–management health and safety committee exists at the local level across the system.

(k) As a North American railroad, our occupational health and safety metrics are established based on industry guidelines set by the Federal Railroad Administration (FRA) and the Transportation Safety Board (TSB) of Canada. We track the FRA injury and accident rates and the TSB accident rate covering our operations in North America. The FRA injury rates per country and gender are based on an estimate using demographic data calculations. The FRA injury rate is the number of reportable injuries per 200,000 hours worked. According to the FRA, a reportable injury rate must be occupational or work-related; be a new case, and not a new episode of an already existing medical condition; and result in one of the following situations: death, day(s) away from work, day(s) on modified/alternate duties, medical treatment and/or loss of consciousness. In 2016, 80% of our reportable injuries represented: sprain or strain (41%), cut/laceration/abrasion (13%), painful body part (11%), bruise or contusion (8%), and fractures (6%). The remaining 20% is represented by over 18 different injury types.

(l) The total number of employees (year end) for each year is from the CN Annual Report of the equivalent year.

(m) As defined by national laws.

(n) Employee turnover is the number of employees who leave the organization voluntarily or due to dismissal, retirement, or death in service.

(o) The decrease of training hours in 2016 is due to a lower level of hiring.

(p) The diversity % for Canada includes the following designated groups: visible minorities, persons with disabilities and Aboriginals.

(q) The diversity % for the U.S. includes the group called Minority.

# About this Report

## Our Approach and Scope

The scope of information covered in this report relates to our operations in Canada and the U.S., in the 2015 and 2016 calendar years, unless otherwise noted.

We issue our report on a biennial basis. Previous reports can be accessed at [www.cn.ca/delivering-responsibly](http://www.cn.ca/delivering-responsibly).

## Reporting Standards

This report has been prepared in accordance with the Global Reporting Initiative (GRI) Standards: Core option. The GRI is an independent institution that provides a standard framework for sustainability reporting across companies and industries.

We also provide information to the CDP, the Dow Jones Sustainability Index (DJSI) and other organizations that assess our sustainability performance. An index of our conformance to the GRI Standards core reporting requirements



### FURTHER READING ONLINE

- + [2017 Carbon Disclosure Project Report](#)
- + [2016 Data Supplement](#)
- + [2016 GRI Index](#)
- + [Delivering Responsibly section of our website](#)

Our sixth Delivering Responsibly sustainability report is part of our commitment to be open about our business and to communicate our progress with focus, clarity and comparability.

and references to other relevant information sources can be found at [www.cn.ca/griindex](http://www.cn.ca/griindex).

## External Assurance

We are dedicated to continuously improving our sustainability reporting and believe that independent assurance leads to quality and process improvements. In 2015–2016 our environmental data related to GHG emissions from Scope 1 (locomotive emissions), Scope 2 (electricity consumption) and Scope 3 (fuel production) were verified by PricewaterhouseCoopers to a limited level of assurance in accordance with the ISO 14064-3: 2006 Specification with guidance for the validation and verification of greenhouse gas assertions.

## Identifying our Priorities

To inform the content of the report, we applied the principles of materiality and stakeholder inclusiveness to prioritize relevant topics.

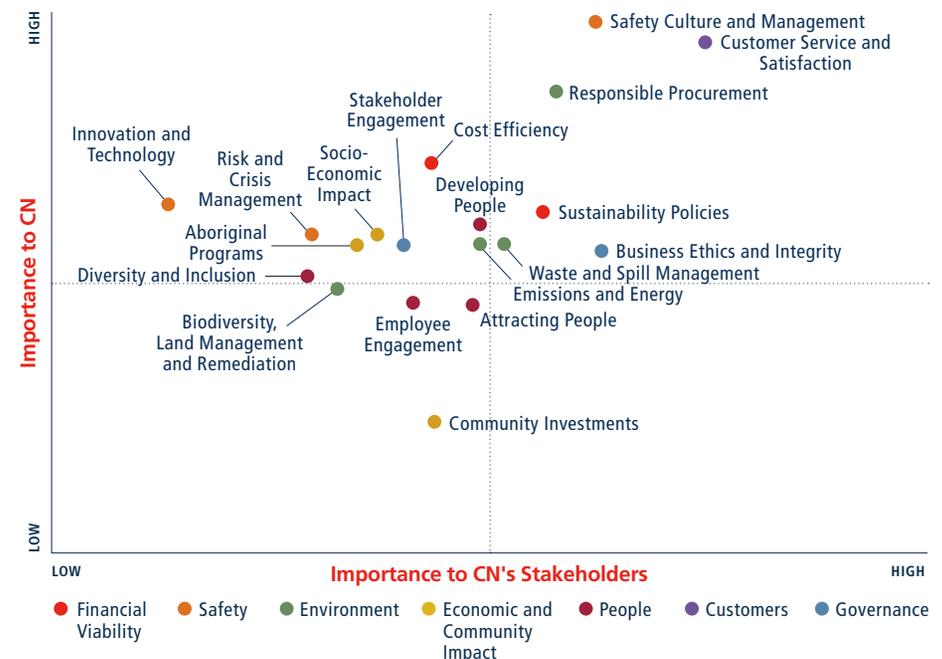
In 2016, we received input from 244 stakeholders using an electronic survey to understand the sustainability topics that most influence their decisions or perspectives of CN.

Diverse groups were engaged, including employees, suppliers, governments, railway associations, customers, investors, unions, Aboriginal peoples, community groups, and NGOs. The selection and identification of stakeholders considered their geographic representation and their influence and interest in our business.

We also engaged with our executive management to further inform the sustainability topics prioritization process.

The most important topics are plotted on our prioritization matrix and are covered in depth within this report.

## OUR PRIORITIZATION MATRIX





We welcome comments, questions and feedback on this report. Please contact:

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## About CN

Canadian National Railway Company (CN) was incorporated in 1919 by special act of the Parliament of Canada with the appointment of its first Board of Directors by Order in Council in 1922. We were privatized in 1995, transformed from a Crown corporation into an investor-owned company. We are headquartered in Montreal, Quebec, and our stock trades on the Toronto Stock Exchange (CNR) and the New York Stock Exchange (CNI). Except where otherwise indicated, all financial information reflected in this document is expressed in Canadian dollars and determined on the basis of United States generally accepted accounting principles (GAAP). For more information, please refer to our Annual Information Form available on SEDAR at [www.sedar.com](http://www.sedar.com) or on our website at [www.cn.ca](http://www.cn.ca).

## Forward-looking Statements

Certain statements included in this report constitute “forward-looking statements” within the meaning of the United States Private Securities Litigation Reform Act of 1995 and under Canadian securities laws. By their nature, forward-looking statements involve risks, uncertainties and assumptions. CN cautions that its assumptions may not materialize and that current economic conditions render such assumptions, although reasonable at the time they were made, subject to greater uncertainty. Forward-looking statements may be identified by the use of terminology such as “believes,” “expects,” “anticipates,” “assumes,” “outlook,” “plans,” “targets” or other similar words. Forward-looking statements are not guarantees of future performance and involve known and unknown risks, uncertainties and other factors which may cause the actual results or performance of CN to be materially different from the outlook or any future results or performance implied by such statements. Accordingly, readers are advised not to place undue reliance on forward-looking statements. Important risk factors that could affect the forward-looking statements include, but are not limited to, the effects of general economic and business conditions; industry competition; inflation, currency and interest rate fluctuations; changes in fuel prices; legislative and/or regulatory developments; compliance with environmental laws and regulations; actions by regulators; security threats, reliance on technology; trade restrictions; transportation of hazardous materials; various events which could disrupt operations, including natural events such as severe weather, droughts, floods and earthquakes; climate change; labour negotiations and disruptions; environmental claims; uncertainties of investigations, proceedings or other types of claims and litigation; risks and liabilities arising from derailments, and other risks detailed from time to time in reports filed by CN with securities regulators in Canada and the United States. Reference should be made to Management’s Discussion and Analysis (MD&A) in CN’s annual and interim reports, Annual Information Form and Form 40-F, filed with Canadian and U.S. securities regulators and available on CN’s website, for a description of major risk factors. Forward-looking statements reflect information as of the date on which they are made. CN assumes no obligation to update or revise forward-looking statements to reflect future events, changes in circumstances, or changes in beliefs, unless required by applicable securities laws. In the event CN does update any forward-looking statement, no inference should be made that CN will make additional updates with respect to that statement, related matters, or any other forward-looking statement.

PICTURED: Distributed power train, Lillooet, BC. Photo by CN Employee Michel (Mike) Thomas



# Our Sustainability Commitment

Delivering Responsibly is one of the pillars of What CN Stands For. It determines how we conduct our business every day and defines our contribution to building a more sustainable future. Five principles anchor our sustainability commitment:

## ENVIRONMENT

Conduct our operations with minimal environmental impact, while providing cleaner, more sustainable transportation services to our customers.

## SAFETY

Be the safest railroad in North America by establishing an uncompromising safety culture and implementing a management system designed to minimize risk and drive continuous improvement.

## PEOPLE

Provide a safe, supportive and diverse work environment where our employees can grow to their full potential and be recognized for their contributions to our success.

## COMMUNITY

Build safer, stronger communities by investing in community development, creating positive socio-economic benefits and ensuring open lines of communication.

## GOVERNANCE

Continuously improve our culture of integrity and ethical business, building trust and confidence with all our stakeholders.



## STAY CONNECTED WITH CN:



[www.cn.ca](http://www.cn.ca)