ONWARD TOGETHER

2019 ANNUAL REPORT

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).

Certain statements included in this annual 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. The Company 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 risks, uncertainties and other factors that may cause the actual results or performance of the Company 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; increases in maintenance and operating costs; security threats; reliance on technology and related cybersecurity risk; trade restrictions or other changes to international trade arrangements; transportation of hazardous materials; various events that could disrupt operations, including natural events such as severe weather, droughts, fires, 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; timing and completion of capital programs; 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" 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 (www.cn.ca), 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.

As used herein, "Company" or "CN" refers to Canadian National Railway Company and, as the context requires, its wholly-owned subsidiaries.

PHOTO ABOVE BY:
Tim Stevens, CN Lubricator Maintainer
Hinton, AB

COVER PHOTO BY:
Matthew Waller, CN Locomotive Engineer
Jasper, AB

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HIGHLIGHTS

Reinvesting in the Company

$3.9B CAPITAL EXPENDITURES

We completed a record capital expenditure program to increase capacity, particularly in our Western Region, supporting our ability to grow at low incremental cost.

Slower revenue growth

$14.9B REVENUES

2019 revenues rose by $0.6 billion, or 4%, compared to 2018, which was less than expected due to slower economic growth.

Stable earnings

$5.83 DILUTED EPS

$5.80 ADJUSTED DILUTED EPS[1]

While diluted earnings per share decreased 1% compared to 2018, adjusted diluted EPS[1] increased 5%.

Improved fuel efficiency

48K TONS OF CARBON EMISSIONS SAVED

2019 fuel efficiency (GTMs per US gallon of fuel consumed) improved 1%, saving approximately 48,000 tons of carbon emissions, and maintaining CN's fuel efficiency leadership versus the average of Class I North American railways.

[1] See the section entitled *Adjusted performance measures* in the MD&A for an explanation of this non-GAAP measure.


Saskatoon
Regina
Winnipeg
Thunder Bay
Hearst
Sept-Îles
Baie-Comeau
Matane
Moncton
Quebec
Halifax
Saint John
Montreal
Duluth
Sault
Ste. Marie
Stevens
Point
Chippewa Falls
Minneapolis/St. Paul
Green
Bay
Toronto
Arcadia
Fond du Lac
Sarnia
Buffalo
Detroit
Conneaut
Sioux City
Joliet
Toledo
Omaha
Chicago
Pittsburgh
East Peoria
Springfield
Indianapolis
Decatur
East St. Louis
Memphis
Jackson
Baton Rouge
Gulfport
Mobile
Pascagoula
New Orleans
CN main lines
Secondary and feeder lines
Shortline partners
Ports served by CN

MESSAGE FROM **ROBERT PACE**

I feel honoured to serve as Chair of the Board of our magnificent Company, especially now during the 100th anniversary of its founding. Throughout this special year, I've had the opportunity to celebrate with thousands of people from coast to coast to coast.

CELEBRATING 100 YEARS OF SERVICE

One of the most notable CN100 events for me was participating in a citizenship ceremony for 11 new Canadians in my hometown of Halifax, NS. The special event took place aboard CN's historic business car at Pier 1 in Halifax. I had the opportunity to speak to the new citizens about CN's history and its connections to nation-building. CN was a big part of transporting over one million immigrants from Pier 21 in Halifax between 1925 and 1971. The ceremony was one of the most memorable events I've attended in my years with CN.

Over the past 100 years, CN has become an iconic brand, synonymous with innovation and operational excellence. Our deep history of innovation includes CNR Radio, North America's first radio network, which later became the Canadian Broadcasting Corporation. CN also founded Trans-Canada Airlines, which is now Air Canada, and built telecom infrastructure that is still in use today. Among CN's many operational innovations, we were the first North American railroad to use diesel locomotives in mainline service and, many years later, we pioneered Precision Scheduled Railroading. Today, as we close off our CN100 celebrations, I am proud of our legacy and very encouraged by what the future holds.

REWARDING OUR SHAREHOLDERS

On behalf of CN's Board of Directors, I would like to thank our shareholders and other stakeholders for their continued support. In 2019, CN returned $3.2 billion to shareholders in the form of dividends and share repurchases. I am pleased that CN's dividend has increased on average by 16% every year since our IPO 25 years ago. CN has repurchased over $23 billion of shares through normal course issuer bids since 2000. As a result of another year of solid financial performance despite numerous challenges in 2019, the Board approved a 7% increase in our annual dividend for 2020, the 24th consecutive increase.

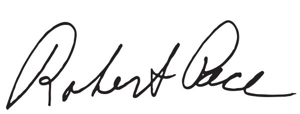
STRIVING FOR THE HIGHEST STANDARDS

At CN, we believe an ethical business is a sustainable business. That's why we strive to continuously improve our culture of integrity and ensure transparency in our communications. CN's business practices continue to be recognized. In 2019, *The Globe and Mail* placed CN first in the industrials group and seventh overall among Canadian publicly traded companies for the quality of our governance practices. CN was also ranked as one of Corporate Knights' 2020 Global 100 Most Sustainable Corporations in the World and CN received Best in Sector – Industrials honours in *IR Magazine's* global ranking of investor relations excellence. CN has been listed on the Dow Jones Sustainability World Index for eight consecutive years. Additionally, we continue to be a member of the FTSE4Good Index, Global Challenges Index and Jantzi Social Index, among others.

To benefit from a broader range of perspectives and experiences, CN is making strides to increase diversity within the Company and on the Board, where 38% of our directors are women. CN is the first transportation company in Canada to receive the Progressive Aboriginal Relations Bronze Level certification from the Canadian Council for Aboriginal Business. We were also selected as one of Canada's Best Diversity Employers by *The Globe and Mail.*

I'm proud of the Company's performance in 2019 and I feel very optimistic as we move ONWARD, together.

Sincerely,



Robert Pace, D.COMM., C.M.
Chair of the Board

MESSAGE FROM
JJ RUEST

2019 was a historic year for CN as we celebrated 100 years on the move. We've certainly come a long way in the past century thanks to the support of thousands of dedicated employees, customers, supply chain partners, shareholders and other stakeholders.

DEMONSTRATING OUR ABILITY TO ADAPT

2019 was characterized by many challenges that hampered expected revenue growth. The early part of the year saw a prolonged period of very cold temperatures in key segments of our network. Near the end of the year, a strike by 3,200 conductors brought operations to a virtual standstill for nine days. However, the main reason for the slower revenue growth was a weakened economy throughout the second half of 2019. The combination of these factors led to lower overall volumes for the Company. Despite this, I'm proud of how we pulled together as ONE TEAM to remain an industry leader and stay competitive. This speaks to the character and strength of our remarkable team.

Overall, compared to 2018, 2019 revenues were up $0.6 billion, or 4%, to a record $14.9 billion. Diluted earnings per share stood at $5.83 and adjusted diluted earnings per share[1] increased 5% to $5.80. However, the number of revenue ton miles (RTMs) delivered by CN was down 3% due to the factors described above.

CN'S COMPETITIVE ADVANTAGES

For many decades, our competitors were predominantly other railways and other modes of transportation. Today, we compete on a global stage as part of a complex and integrated supply chain working as one across a variety of logistics offerings to deliver our customers' goods to their customers and end markets.

Operating efficiently has long been one of the hallmarks of CN's success. Today, our focus goes beyond running a railroad in the most efficient way possible. We work hard to understand our customers' end-to-end supply chains, because we want to be a key factor in enabling their success.

To be a supply chain leader requires sustained commitment to building strong working relationships with customers and supply chain partners such as ports, ocean carriers, trucking companies, terminal operators and others. Through partnerships, investments and a dedicated customer mindset, CN is focused on enabling growth. Moreover, we are driving innovation and deploying technologies that will take Precision Scheduled Railroading to the next level by creating new and better ways to deliver safe, reliable and low-carbon transportation solutions.

> *CN safely and reliably moves the North American economy and enables global trade by helping customers win and communities prosper."*

SAFETY IS A CORE VALUE AT CN

Safety continues to be an area of relentless focus for our Company. Safety is the lens through which we make decisions in all areas of our business, every day. However, we can always do better. It is with a heavy heart that I report the passing of our colleague **Imraan Qamar**, 27, who was fatally injured on August 15, 2019, at MacMillan Yard in Toronto, ON. Imraan had just started his career at CN, having joined as a conductor trainee in June 2018 and qualified as a conductor in December 2018. My thoughts and prayers are with his family, friends and colleagues. The loss of one member of the CN family deeply affects us all. This tragic accident is a harsh reminder of how unforgiving the railroad environment can be, and how extremely important safety is. That's why we must always work to improve our safety culture.

One way we worked toward this in 2019 was by adopting *Life Critical Rules* when operating alone, in teams, or as a supervisor of others. These are the safety rules that, if not precisely followed, can lead to death or serious injury. We also continued to leverage recent advances in technology to progress our safety performance. Drawing on innovations from other industries, these cutting-edge technologies will improve, for example, inspection reliability and preventative maintenance. Technology has an important role to play in the rail industry's future, and CN is a pioneer in making that happen.

ACHIEVING LONG-TERM GROWTH

As part of the economic fabric of North America, we strive to build on our position as a leading rail and multimodal logistics company. Our supply chain expertise is helping us to grow market share with our existing customers as well as gain new customers. We also grow when we partner with and invest in new businesses by bringing them into the CN family. It allows us to offer new services to the market, extend our reach up and down the supply chain and fill the underutilized areas of our network.

A great example of this approach is our 2019 acquisition of TransX, one of Canada's oldest and largest transportation companies. The acquisition positions us to strengthen our intermodal business, expand capacity and foster additional supply chain solutions to continue to create value for customers. We also onboarded a strong entrepreneurial management team with deep expertise in logistics, operations, dispatch and the temperature-controlled supply chain.

DELIVERING AS ONE TEAM

At the beginning of this message I mentioned the exceptional character and strength of our remarkable railroaders. Let me take a moment to acknowledge that their work is what defines CN. Together, we redefine "the art of the possible" every day by working toward a common goal as ONE TEAM.

CN has a long and proud history of developing the best team of railroaders in the business by attracting talent with diverse industry backgrounds. In this way, we pay tribute to our past of building a great company and contributing to national prosperity. It is our people and their talent who have made CN what it is today, and who continue to differentiate us from our competitors.

2020 OUTLOOK – CAUTIOUSLY OPTIMISTIC

2020 represents another special milestone for our Company as we celebrate 25 years since our IPO. But, CN's future is what I'm the most passionate about. CN's strategic agenda is focused on enabling long-term profitable growth, and that means being part of the solutions that enable our partners to continue expanding.

In 2020, the economy is expected to remain uncertain. As a result, CN will continue to focus on cost control and asset utilization to align resources with changing demand. Our capital program is reduced to $3.0 billion, following two years of record capacity investments. Importantly, we will maintain our attention on where the economy is going. That means an even greater emphasis on the consumer market and intermodal shipments, and continued focus on network capacity in our fast-growing Western Region. In addition, we continue to keep a close eye on potential acquisitions with a strong focus on opportunities that support incremental volume on our core rail franchise.

We are not waiting for the economy to bring the freight to us. We will continue to go after the freight in collaboration with our customers, supply chain partners and other stakeholders. Together, we will enable economic prosperity by providing reliable, competitive and carbon-efficient transportation solutions.

CN's President and CEO, JJ Ruest, at Thornton Yard in Vancouver, BC.
Photo by Stuart McCall/Alpha Presse

As we look to the next century, we are raising our game to deliver for a sustainable future, leading the industry to make a meaningful difference for our people, our customers and the many communities where we operate. Rail has tremendous potential to reduce the environmental impact of transportation. As a mover of the economy, CN is committed to playing a key role in the transition to a lower carbon economy.

I'm proud that CN is internationally regarded as one of the best-performing transportation companies. To maintain this enviable position, transformational change is underway within our Company. With our focus on diversifying our talent pool, the introduction of new technologies, and the integration of new companies into our supply chain approach, we are well on our way to achieving our mission of connecting customers with the markets that drive their business success. Let's move ONWARD, together.

Sincerely,

JJ Ruest
President and Chief Executive Officer

[1] See the section entitled *Adjusted performance measures* in the MD&A for an explanation of this non-GAAP measure.

CN100 – A Moving Celebration

To celebrate our 100th birthday, CN is going on tour! Stopping in cities across North America, *CN100 – A Moving Celebration* is a travelling exploration of CN's centenary. It's a great way for CN's extended family and friends — employees, pensioners, customers and the communities we serve from coast to coast to coast — to look back on the miles we have covered together and imagine what lies ahead. A day at the celebration site has something for everyone: historical exhibits, shows, music, food and activities.

Join us in celebrating 100 years on the move!
cn.ca/cn100 **#CN100**

1 Quebec City, QC
2 Edmonton, AB
3 Calgary, AB
4 Vancouver, BC
5 Halifax, NS
6 Winnipeg, MB
7 Regina, SK


3


4


5


6


7
1980
CN Touches the Sky
Le CN atteint des sommets

DELIVERING RESPONSIBLY
FOR A SUSTAINABLE FUTURE

Delivering Responsibly is at the heart of how CN is building for a sustainable future. It means moving customer goods safely and efficiently, being environmentally responsible, attracting and developing the best railroaders, helping build safer, stronger communities, while adhering to the highest ethical standards. CN is proud to be recognized for its efforts to build a more sustainable future.

Five principles anchor our sustainability commitment: Safety, Environment, People, Community and Governance.

PHOTO BY:
Pascale Simard/Alpha Presse
Northern Quebec

Our goal is to reduce serious injuries and fatalities to

zero

at CN.

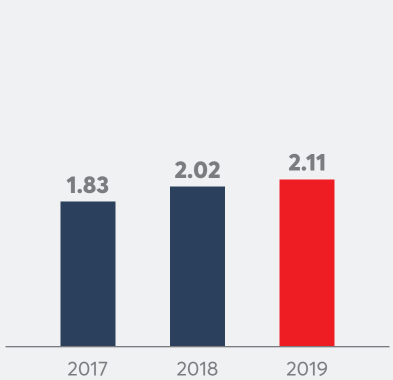
Car Mechanic Terry Rioux (left) and Carman Chance Sterner use a new mobile application for car repair billing.
Prince Rupert, BC
Photo by Pascale Simard/Alpha Presse

SAFETY IS A CORE VALUE

Absolutely nothing is more important to us than running a safe railroad, because a safe day is the only acceptable kind of day at CN. Our goal remains to be the safest railroad in North America by establishing an unwavering safety culture and implementing a management system designed to minimize risk. We are also leveraging recent advances in technology to improve our safety performance.

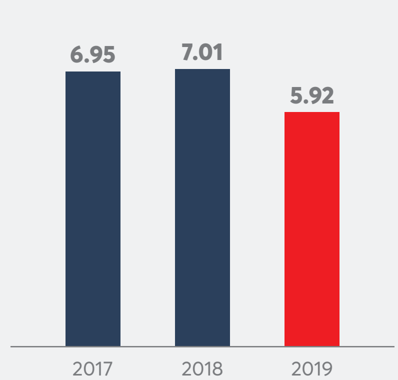
Safety must permeate every role in the Company and be the lens through which every priority is set and decision made. By means of our company-wide safety culture, where no one will compromise on safety, we strive to safeguard our employees, assets, customers' goods, neighbouring communities, and the environment. Together, we look out for each other because every day at CN must be a safe day.

FRA Train Accident Ratio
accidents per million train miles



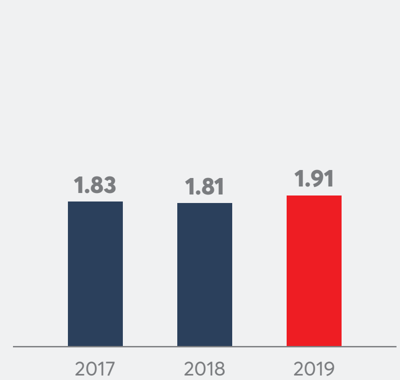
The FRA train accident ratio includes only derailments or collisions in excess of US$10,700 (C$14,500).

TSB Train Accident Ratio
accidents per million train miles



The TSB accident ratio includes all accidents and improved 15.5% in 2019 vs. 2018.

FRA Personal Injury Ratio
injuries per 200,000 person hours



The personal injury ratio was up 5.5% in 2019 compared to 2018.

CN is the fuel-efficiency leader in the North American rail industry, consuming approximately **15%** less fuel per gross ton mile than the industry average.

TAKING ACTION TO PROTECT THE ENVIRONMENT

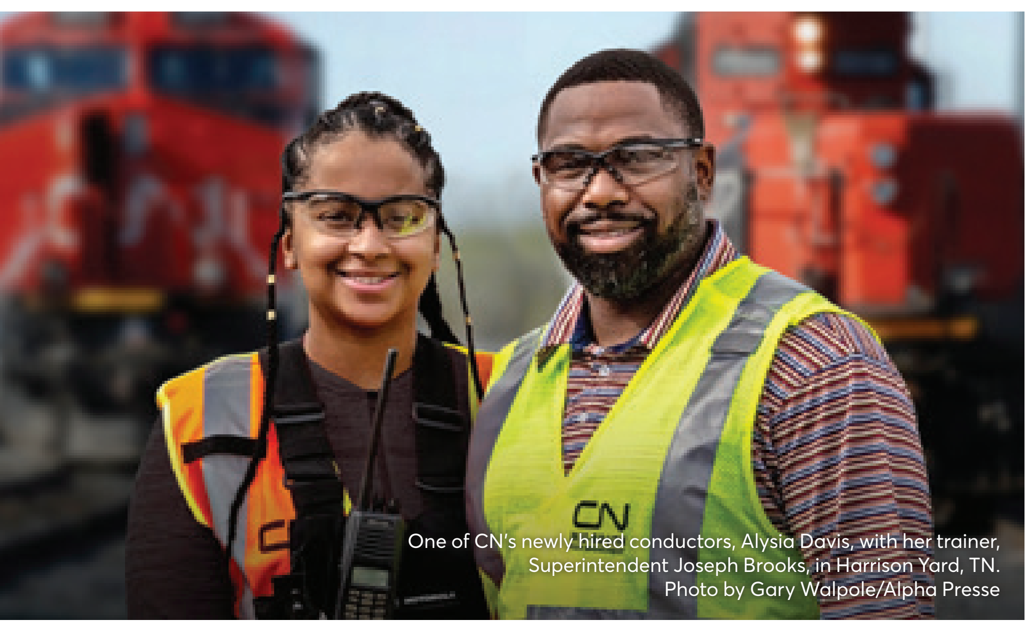
For CN, an environmentally sustainable future means thinking and acting in the interest of generations to come. We are working to build a strong environmental legacy of leadership by means of carbon-efficient operations, conserving resources, and protecting and restoring the rich and diverse natural ecosystems through which our network passes.

Our goal is to conduct our operations with minimal environmental impact while providing cleaner, more sustainable transportation services to our customers. In fact, rail is four to five times more fuel efficient than trucks and has tremendous potential to reduce the environmental impact of transportation and play a key role in the climate change solution. Over the past 25 years, we have reduced our locomotive emission intensity by 39%, avoiding 45 million tons of carbon compared to shipping by truck.

We are committed to advancing the circular economy in all aspects of our operations. Working collaboratively by engaging employees, customers and suppliers, we continue to find innovative ways to optimize the use of resources and divert approximately 90% of waste from landfills through our reduce-reuse-recycle-renew programs.

WORKING AS ONE TEAM

CN's ONE TEAM approach fosters a safe, supportive and diverse work environment where employees can grow to their full potential and be recognized for their contributions to our success. In an increasingly complex global marketplace, we recognize the importance of working as ONE TEAM to make us a stronger and more resilient company. Adopting a ONE TEAM mindset means we are open to learning from each other and drawing on talent from diverse groups, cultures, industries and experiences so we can grow to be more than the sum of our parts. A diverse and respectful workforce enables us to better understand and respond to the needs of our customers and the communities we serve, access a larger talent pool, and increase the effectiveness of our decision-making through a wider range of perspectives, experiences and sensibilities.



One of CN's newly hired conductors, Alysia Davis, with her trainer, Superintendent Joseph Brooks, in Harrison Yard, TN.
Photo by Gary Walpole/Alpha Presse

Progressive Aboriginal RELATIONS BRONZE LEVEL
Canadian Council for Aboriginal Business

Canada's Top 100 Employers 2020

2020 CANADA'S BEST DIVERSITY EMPLOYERS

Montréal's Top Employers 2020

BUILDING SAFER, STRONGER COMMUNITIES

For over 100 years, the employees of CN have been proud to be an important part of the many communities across our 20,000-mile North American network. As neighbours, we are committed to building safer, stronger, more resilient communities together by investing in community development, creating positive socio-economic benefits, and ensuring open, transparent lines of communication. To strengthen community relations and increase the impact of our community investments, CN established Community Boards across the network. The Boards are comprised of local community leaders who provide input on CN's community investments in the region. We want you to be proud to have CN in your communities.

As we do every year, in 2019, CN employees brought critical rail safety information and training to thousands of municipal officials and emergency responders. During our 2019 Rail Safety Week campaign, which aimed to educate communities about rail crossing safety, CN police officers and other employees conducted over 250 activities at schools, community centres, railway stations and level crossings across Canada and the United States.

In 2019, to celebrate CN's 100th anniversary and in conjunction with our travelling *CN100 – A Moving Celebration* tour, CN and Tree Canada partnered to plant a Legacy Forest in nine cities from coast to coast, each consisting of 100 mature trees. Additional Legacy Forests will be planted in other cities in 2020. Overall, in 2019, CN planted almost 135,000 trees in communities along our rail network. Since 2012, we have planted over two million trees, making CN one of the leading private non-forestry company tree planters in Canada.

A 2019 Rail Safety Week participant signs the Rail Safety Pledge.
Amite, LA
Photo by Scott Saltzman/Alpha Presse

JJ Ruest and CN executives rang the closing bell at the Toronto Stock Exchange on June 4, 2019 in honour of CN's 100th anniversary.
Toronto, ON
Photo by Geoff Parkin-GP Photo

COMMITTED TO GOOD CORPORATE GOVERNANCE

As a Canadian reporting issuer with securities listed on the Toronto Stock Exchange (TSX) and the New York Stock Exchange (NYSE), we ensure our corporate governance practices comply with the highest standards and rules adopted by the Canadian Securities Administrators, applicable provisions of the U.S. *Sarbanes-Oxley Act* of 2002 and related rules of the U.S. Securities and Exchange Commission. We are exempted from complying with many of the NYSE corporate governance rules, provided that we comply with Canadian governance requirements. Except as summarized on our website at www.cn.ca/governance, our governance practices comply with the NYSE corporate governance rules in all significant respects.

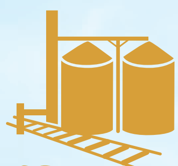
Consistent with the belief that ethical conduct goes beyond compliance and resides in a solid governance culture, we publish and enforce CN's *Corporate Governance Manual, Code of Business Conduct* and *Anti-Corruption Policy.* Because it is important that any potential wrongdoings be reported, CN has adopted several methods for employees and third parties to anonymously report accounting, auditing and other concerns.

CN is committed to diversity and inclusion, not only in principle, but also in practice. CN believes that a diverse board benefits from a broader range of perspectives and relevant experience. The Board-approved *Diversity Policy* with respect to director and executive positions considers various diverse groups, including gender, when recommending director nominees. The Board has a target of at least one-third representation by women, which it has exceeded. The Board aspires to attain, by the end of 2022, a Board composition in which at least forty percent (40%) of directors are from a broader range of diverse groups. We are a proud signatory to the Catalyst Accord 2022.

DELIVERING SUPERIOR SERVICE FOR OUR CUSTOMERS

Our supply chain leadership brings value to our customers as we partner with them to more successfully serve their customers. We proactively go the extra mile to help our customers and supply chain partners reach farther, open new markets, and win in the global marketplace — because, when our customers win, CN wins, too.

Since 2015,
two-thirds
of grain elevators
being built in the Canadian Prairies are being built exclusively on CN's network.



THE TRANSLOAD SOLUTION

For companies not located on a rail spur, but want to take advantage of the economics and carbon efficiency of rail, transload is the solution. In November 2019, CN "spotted" the first railcars of our new transload partnership with FLASH Trucking in Green Bay, WI, boosting the economic potential of all northern Wisconsin.

HELPING FARMERS MOVE RECORD GRAIN CROP

CN's team of railroaders moved a record 27.8 million metric tons (MMT) of Western Canadian grain during the 2018–2019 crop year, 1.5 MMT (or 6%) more than the previous record. CN also moved over 1 MMT of grain in containers out of Western Canada.

PHOTO BY:
Pascale Simard/Alpha Presse
Spruce Grove, AB

Photo by Lloyd Sutton/Alpha Presse
Calgary Logistics Park, Calgary, AB

ENSURING SAFETY OF TEMPERATURE-SENSITIVE GOODS

CN's commitment to the efficient movement of temperature-controlled goods and our remote monitoring artificial intelligence (AI) technology are key to food safety. Each CargoCool container offers the power of almost 100 refrigerators and, through ReeferTrak, our dedicated team has real-time visibility of the temperature inside the box, ensuring that perishable cargo is always at the correct temperature. In 2019, we added 300 new reefers to our fleet to handle growth opportunities and develop new markets. With the addition of the TransX and H&R fleets, CN now has over 2,100 reefers running throughout North America.

In addition to our domestic reefer fleet, we have a diversified fleet of assets to support the movement of international reefer containers for ocean carriers. CN has 94 IntelliGEN powerpack gensets and 150 clip-on gensets, which provide consistent, uninterrupted power supply for international refrigerated products while moving on CN's network.

CN AND GM RENEW THEIR LONG-STANDING RELATIONSHIP

In 2019, CN signed a new multiyear agreement with General Motors (GM) for the transport of finished vehicles and parts. GM is the first customer to use our new Autoport facility in Vancouver. Our latest Autoport facility in New Richmond, WI, will be completed in Q4 2020 with GM operations commencing in 2021. Both facilities will provide quicker vehicle deliveries for GM and its customers throughout the northern U.S. Midwest and British Columbia.

EXTENDING INTERMODAL AGREEMENTS WITH OCEAN CARRIERS

Ocean carriers value CN's network reach, excellence in supply chain logistics and focus on growth. For example, in September 2019, CN and Evergreen extended their 27-year partnership, with Evergreen calling at the CN-served ports of Vancouver, Prince Rupert and Halifax. Also, in the same month, COSCO Shipping chose CN to be the exclusive rail provider for their cargo at the ports of Vancouver, Prince Rupert, Montreal and Halifax to all CN destinations. Finally, with a global reach to over 100 countries, ZIM Integrated Shipping Services partnered with the 2M Alliance in March 2019 to add Prince Rupert as one of their port destinations.

Photo by Lloyd Sutton/Alpha Presse
Port of Vancouver, Vancouver, BC


AltaGas Ridley Island Propane Export Terminal
Port of Prince Rupert, Prince Rupert, BC
Photo by Jan Vozenilek

CN provided training to more than

200 customers

in 2019 at our national training centres in Manitoba and Illinois.

ENABLING NEW EXPORTS THROUGH PRINCE RUPERT

As part of our growth strategy, CN's capital investments in Western Canada are creating additional capacity, allowing us to increase operations at the Port of Prince Rupert. For example, in April 2019, CN delivered the first unit train of propane from production facilities northwest of Edmonton, AB, for export via the new AltaGas Ridley Island Propane Export Terminal. In August 2019, Ray-Mont Logistics completed the first phase of its innovative new multi-million-dollar facility for bagging plastic pellets produced in Alberta into containers for export out of the Port of Prince Rupert.

OPENING OUR DOORS TO LEARNING EXPERIENCES

CN has two modern training facilities: the Claude Mongeau National Training Centre in Winnipeg, MB, and the CN Campus in Homewood, IL. Thanks to the *CN Campus Partnership Program*, CN has provided hundreds of customers with a set of safety-focused learning experiences that help instill a safety mindset and ensure safer operations throughout the rail supply chain.

RECOGNIZING CUSTOMERS AND SUPPLY CHAIN PARTNERS FOR SUSTAINABILITY LEADERSHIP

The *CN EcoConnexions Partnership Program* celebrates companies who are committed to building a more sustainable future by reducing their environmental footprint and being part of the climate solution. On behalf of 45 *EcoConnexions* partners and in collaboration with Tree Canada, we planted 120,000 trees in 2019 in Canada and the U.S.


Volunteers at a CN100 tree-planting event.
Winnipeg, MB
Photo by Tree Canada

GROWTH THROUGH **OPERATIONAL SUPPLY CHAIN LEADERSHIP**

At CN, we are committed to creating the network of the future by building the infrastructure, relationships, technologies and expertise that enable us to make those supply chains as safe, efficient, and reliable as possible. We showcase CN's leadership in the industry by continuing to leverage our unique network to grow with existing customers, with new customers, and by partnering with and investing in new businesses. We have a demonstrated ability to nimbly weather economic downturns when they inevitably occur.

PRINCE RUPERT CONTINUES RAPID GROWTH

The Port of Prince Rupert, which is served exclusively by CN, is currently operating close to its maximum capacity of 1.35 million twenty-foot equivalent units (TEUs) as a result of its status as the fastest West Coast gateway into North America. In fact, 11 steamship lines, including all the top five companies in the world, now leverage Prince Rupert's one-to-two-day sailing advantage to/from Asia. The port also benefits from a wide range of export opportunities to improve round-trip economics for steamship lines and a close partnership with rail operations that drive efficiency and premium customer service.

Our supply chain partners at the Port of Prince Rupert are planning public/private investments with the Government of Canada of over $1 billion. These include the completion of Pembina's liquefied petroleum gas export terminal with a capacity of 25,000 barrels per day, which is expected to begin exports in 2020, with the potential to add another 15,000 barrels per day in 2023. DP World's Fairview container terminal is expected to increase capacity to 1.8 million TEUs by 2022. Vopak Pacific Canada plans to scale up its bulk liquids terminal from 4 MMT to 12 MMT, with Phase 1 to be completed in 2022. Ray-Mont Logistics and Export Logistics both plan new transload facilities for agricultural, plastic resin, dry bulk, and forest products.

Supporting this continued growth is over $350 million in joint infrastructure investment by CN, the Prince Rupert Port Authority and the Government of Canada. These include bridge expansion, double track and new siding projects.

PHOTO BY:
Jan Vozenilek
Prince Rupert, BC

Westshore Terminals
Deltaport, BC
Photo by William Jans/
Vancouver Fraser
Port Authority

INVESTING TO SUPPORT GROWTH IN VANCOUVER

The partners we serve at the Port of Vancouver are showing confidence in our supply chain focus and plan to invest $1 billion in the next few years to expand their capacity. In 2020, Global Container Terminals Canada plans to add 215,000 TEUs at Vanterm and another 500,000 TEUs at Deltaport, bringing the capacity at these intermodal terminals to 1.1 million and 2.4 million TEUs, respectively. DP World has begun a project to more than double capacity at Centerm to 1.5 million TEUs, which is scheduled for completion by early 2022. Neptune Terminal has almost doubled its potash capacity from 6 million metric tons (MMT) to 11 MMT and plans to increase its capacity to handle coal from 12.2 MMT to more than 18.5 MMT by 2021. This dovetails perfectly with CN's long-term agreement with Teck to increase shipments of steelmaking coal from Teck's four B.C. operations through an expanded Neptune Terminal as well as the recently privatized bulk terminal in Prince Rupert. G3 is building a new grain terminal with a capacity of 8 MMT, which will start operations in mid-2020. GrainsConnect and P&H expect to add 3.5 MMT of capacity at the Fraser Surrey grain terminal by the end of 2020. Fibreco, Kinder Morgan, Cargill and Richardson are also increasing their grain-handling capacities.

To improve rail access to accommodate the expected growth, CN, the Port of Vancouver and the Government of Canada signed an agreement in 2019 to jointly fund over $400 million in rail investments to double sections of track and improve tunnel ventilation.

EMULATING PRINCE RUPERT MODEL ON EAST COAST

CN's Canadian East Coast port strategy to leverage our underutilized eastern network is to emulate the success of our Prince Rupert model. Similar advantages exist at Eastern Canadian ports, which aim to capture growth from ultra-large container vessels. Together, we are developing competitive gateways for Asian, European and Mediterranean cargo with end-to-end solutions to Eastern Canada and the U.S. Midwest. To this end, CN is working closely with PSA, a leading global port terminal operator and the new owner of the terminal at the Port of Halifax. Over the past 10 years, the terminal has invested $250 million to build longer and deeper piers as well as upgrade gates and marshalling areas. With the addition of a fifth Super Post-Panamax ship-to-shore crane scheduled to be in service by June 2020, PSA Halifax will be able to handle today's largest vessels.

Another new port operator in the region is Hutchison Ports, the world's leading port network. CN, Hutchison and the Port of Quebec signed a joint venture agreement in 2019 to work together to open a new, state-of-the-art container terminal that is set to become a cornerstone of this deep-water, year-round port. The new terminal will have a capacity of 700,000 TEUs and will be exclusively served by CN. The opening is scheduled for 2024.

CN has

23

strategically located intermodal terminals,

more than double that of our nearest competitor.

EXPANDING OUR UNIQUE INTERMODAL NETWORK

CN's intermodal business continues to grow due in part to the success of our supply chain collaboration and consistent service that help our partners compete in a global environment. For example, CN's full membership in the Equipment Management Pool (EMP) since March 2019 is reducing empty container movements and extending our reach. As well, since August 2019, CN and CSX are offering a new intermodal service between CN's Greater Montreal and Southern Ontario markets, and the CSX-served ports of Philadelphia, New York and New Jersey.

We are also investing in our inland terminals to accommodate greater anticipated demand in key consumer markets. These include major investments in Southern Ontario where we are planning to build a new $250-million logistics hub in Milton. CN also welcomed Canada's first privately operated intermodal terminal located in the Chuka Creek Business Park in Regina, SK, exclusively served by CN, which opened in November 2019.

BUILDING ON OUR ACQUISITION TRACK RECORD

CN continues to pursue inorganic growth opportunities that help our customers get their products to market more efficiently, extend our reach, and increase volume on our network. In 2019, CN made three acquisitions that fit perfectly with this strategic focus. The acquisition of Manitoba-based TransX positions CN to strengthen its intermodal business and allows the Company to expand capacity and foster additional supply chain solutions. We are also expanding our North American rail intermodal supply chain with the acquisition of Alberta-based H&R Transport's intermodal temperature-controlled transportation division. Finally, pending regulatory review, CN acquired the Massena rail line from CSX, which represents more than 220 miles of track between Valleyfield, QC, and Woodard, NY.

Photo by TransX
Winnipeg, MB

TAKING PRECISION SCHEDULED RAILROADING TO NEW HEIGHTS

CN pioneered Precision Scheduled Railroading (PSR) and our vision is to create the network of the future by becoming the first railroad to take PSR to the next level using advanced information technology. The following cost-effective initiatives are expected to improve safety, reliability and customer service.

POSITIVE TRAIN CONTROL (PTC)

PTC is an innovative safety technology system we are adding across our U.S. network. PTC is designed to prevent certain accidents resulting from human error. The system provides an added level of operational safety by initiating a full brake application to stop a train in the unlikely event that the crew is unable to or does not act. It is the largest technology program ever deployed by CN and is a major step toward safer operations. In November 2019, CN began PTC operation on all required subdivisions, 13 months ahead of the congressionally mandated deadline of December 31, 2020. We continue to work with our Class I, short line and passenger rail partners to ensure interoperability throughout the industry.

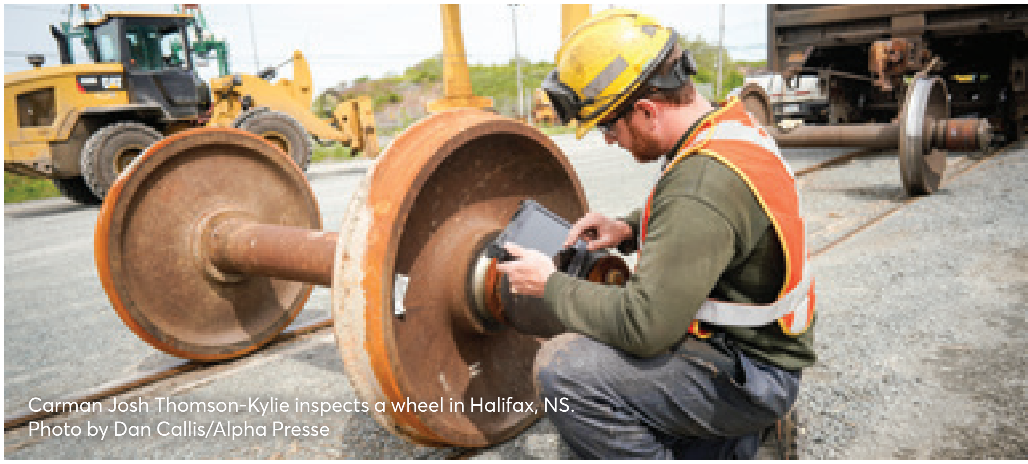
AUTOMATED INSPECTION PORTALS (AIPs)

High-resolution imaging hardware coupled with powerful machine learning software are changing how we inspect our fleet. Our new AIPs feature ultra-high-definition panoramic cameras and infrared lighting that capture a 360° view of a train as it travels at track speed through the portal. The AIPs increase the frequency and quality of inspections and reduce the need for slow roll-by inspections. Our AIPs won a 2019 Rail Safety Award from the Railway Association of Canada and a Digital Transformation Award at the 2019 ICMG Architecture Awards. The first seven AIPs are currently in operation, with more development expected over the next few years.

PHOTO BY:
Pascale Simard/Alpha Presse
Automated inspection portal
Winnipeg, MB

AUTONOMOUS TRACK INSPECTION PROGRAM (ATIP)

With innovation and safety in mind, CN is putting powerful sensor and AI technology into specially equipped automated railcars used during revenue train service to inspect our tracks at normal train speed. This cutting-edge technology will reduce the number of slow-speed inspection vehicles on the tracks, unlock capacity and improve service reliability by reducing track disruptions. In addition, it will increase inspection frequency and quality, and provide more accurate preventative maintenance data. We currently have eight ATIP railcars in service and plan to add two more in 2020, which together will provide 100% core mainline coverage.



Carman Josh Thomson-Kylie inspects a wheel in Halifax, NS.
Photo by Dan Callis/Alpha Presse

SMART NETWORK

CN is developing and systematically deploying an integrated digital scenario analysis and simulation tool to enhance capacity planning. The tool simulates train movements to improve insight on network capacity, cost and fluidity. Stress testing scenario analysis will help identify options/trade-offs to handle anticipated volumes and identify specific pinch points. This is particularly important given the long lead times to add capacity, including infrastructure construction, crews and locomotives.

ENTERPRISE AUTOMATION

CN is building a digitally nimble organization by automating or eliminating labour-intensive and low-value repetitive tasks. CN's Information and Technology team is leveraging a variety of scalable and repeatable technological tools, including robotic process automation and smart data capture, to enable employees to focus on value-added tasks at low incremental cost.

HANDHELD TECHNOLOGY

CN is providing employees with next-generation smartphones and tablets that digitize manual processes, increase safety, improve information flow and accuracy, and drive productivity. This initiative is also a big step towards paperless operations and reduces our environmental footprint.

ATIP railcar
Oshkosh, WI

CN currently has 11,000 mobile devices deployed to Operations employees, with more devices being introduced in 2020.

BOARD OF DIRECTORS

TOP ROW:
Gordon Giffin, Shauneen Bruder, Denis Losier, Kevin Lynch, Donald Carty, James O'Connor, Julie Godin, Robert Phillips

BOTTOM ROW:
Edith Holiday, Robert Pace, Maureen Kempston Darkes, Jean-Jacques Ruest, Laura Stein

Robert Pace, D.COMM., C.M.
Chair of the Board
Canadian National Railway Company
President and Chief Executive Officer
The Pace Group
COMMITTEES: 3, 4*, 5, 7

Jean-Jacques Ruest
President and Chief Executive Officer
Canadian National Railway Company
COMMITTEES: 4, 7

Shauneen Bruder
Retired Executive
Vice-President, Operations
Royal Bank of Canada
COMMITTEES: 2, 4, 5, 6, 7

COMMITTEES:

1 Audit
2 Finance
3 Corporate governance and nominating
4 Donations and sponsorships
5 Environment, safety and security
6 Human resources and compensation
7 Strategic planning
8 Pension and investment
* *Denotes chair of the committee*

Donald J. Carty, O.C., LL.D.
Retired Chairman and
Chief Executive Officer
American Airlines
COMMITTEES: 1*, 5, 6, 7, 8

Ambassador Gordon D. Giffin
Partner
Dentons US LLP
COMMITTEES: 3, 5, 7, 8

Julie Godin
Co-Chair of the Board, Executive Vice-President, Strategic Planning and Corporate Development
CGI Inc.
COMMITTEES: 2, 3, 6, 7, 8

Edith E. Holiday
Former General Counsel,
United States Treasury Department
and Secretary of the Cabinet
The White House
COMMITTEES: 1, 2, 7, 8*

V. Maureen Kempston Darkes, O.C., D.COMM., LL.D.
Retired Group Vice-President
General Motors Corporation
and President GM Latin America, Africa and Middle East
COMMITTEES: 1, 2, 3, 7, 8

The Honourable Denis Losier, P.C., LL.D., C.M.
Retired President and Chief Executive Officer
Assumption Life
COMMITTEES: 3*, 4, 7, 8

The Honourable Kevin G. Lynch, P.C., O.C., PH.D., LL.D.
Vice-Chair
BMO Financial Group
COMMITTEES: 1, 3, 6*, 7, 8

James E. O'Connor
Retired Chairman and
Chief Executive Officer
Republic Services, Inc.
COMMITTEES: 1, 2, 4, 5, 7*

Robert L. Phillips
President
R.L. Phillips Investments Inc.
COMMITTEES: 2*, 3, 5, 6, 7

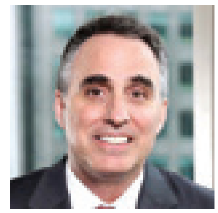
Laura Stein
Executive Vice-President, General Counsel & Corporate Affairs
The Clorox Company
COMMITTEES: 1, 2, 5*, 6, 7

SELECT SENIOR OFFICERS
OF THE COMPANY

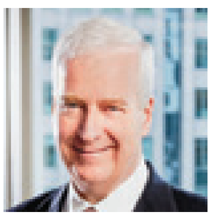
As at December 31, 2019

Jean-Jacques Ruest
President and
Chief Executive Officer

Ghislain Houle
Executive Vice-President
and Chief Financial Officer



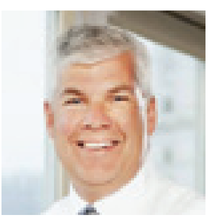
Robert Reilly
Executive Vice-President, Chief
Operating Officer and Interim Chief
Information and Technology Officer



Sean Finn
Executive Vice-President Corporate
Services and Chief Legal Officer

James Cairns
Senior Vice-President
Rail Centric Supply Chain

Dorothea Klein
Senior Vice-President and
Chief Human Resources Officer



Doug MacDonald
Senior Vice-President
Information and Technology

Keith Reardon
Senior Vice-President
Consumer Product Supply Chain

Doug Ryhorchuk
Senior Vice-President
Network Operations

Janet Drysdale
Vice-President
Financial Planning

Marlene Puffer
President and Chief Executive Officer
CN Investment Division

Paul Butcher
Vice-President
Investor Relations

SHAREHOLDER AND INVESTOR INFORMATION

Annual meeting

The annual meeting of shareholders will be held on April 28, 2020.

Please refer to www.cn.ca for meeting details.

Annual information form

The annual information form may be obtained by writing to:

The Corporate Secretary
Canadian National Railway Company
935 de La Gauchetière Street West
Montreal, QC, Canada H3B 2M9

It is also available on CN's website (www.cn.ca).

Transfer agent and registrar

Computershare Trust Company of Canada

Offices in Canada:
Montreal, Quebec
Toronto, Ontario
Calgary, Alberta
Vancouver, British Columbia

Telephone: 1-800-564-6253
www.investorcentre.com

Co-transfer agent and co-registrar

Computershare Trust Company N.A.
Att: Stock Transfer Department

Overnight Mail Delivery:
462 South 4th Street, Louisville, KY, United States 40202

Regular Mail Delivery: P.O. Box 505005,
Louisville, KY, United States 40233-5005

Telephone: 1-800-962-4284

Shareholder services

Shareholders having inquiries concerning their shares, wishing to obtain information about CN, or to receive dividends by direct deposit or in U.S. dollars may obtain detailed information by communicating with:

Computershare Trust Company of Canada
Shareholder Services
100 University Avenue, 8th Floor
Toronto, ON, Canada M5J 2Y1

Telephone: 1-800-564-6253
www.investorcentre.com

Stock exchanges

CN common shares are listed on the Toronto and New York stock exchanges.

Ticker symbols:
CNR Toronto Stock Exchange
CNI New York Stock Exchange

Investor relations

Paul Butcher
Vice-President, Investor Relations
Telephone: 514-399-0052

Head office

Canadian National Railway Company
935 de La Gauchetière Street West
Montreal, QC, Canada H3B 2M9

P.O. Box 8100
Montreal, QC, Canada H3C 3N4

DESIGN: Veronica Chin

Selected Railroad Statistics - unaudited

	2019	2018	2017
Financial measures			
Key financial performance indicators (1)			
Total revenues *($ millions)*	**14,917**	14,321	13,041
Freight revenues *($ millions)*	**14,198**	13,548	12,293
Operating income *($ millions)*	**5,593**	5,493	5,243
Adjusted operating income *($ millions)* (2)	**5,708**	5,520	5,243
Net income *($ millions)*	**4,216**	4,328	5,484
Adjusted net income *($ millions)* (2)	**4,189**	4,056	3,778
Diluted earnings per share *($)*	**5.83**	5.87	7.24
Adjusted diluted earnings per share *($)* (2)	**5.80**	5.50	4.99
Free cash flow *($ millions)* (3)	**1,992**	2,514	2,778
Gross property additions *($ millions)*	**4,079**	3,531	2,703
Share repurchases *($ millions)*	**1,700**	2,000	2,000
Dividends per share *($)*	**2.15**	1.82	1.65
Financial position (1)			
Total assets *($ millions)*	**43,784**	41,214	37,629
Total liabilities *($ millions)*	**25,743**	23,573	20,973
Shareholders' equity *($ millions)*	**18,041**	17,641	16,656
Financial ratios			
Operating ratio *(%)*	**62.5**	61.6	59.8
Adjusted operating ratio (%) (2)	**61.7**	61.5	59.8
Adjusted debt-to-adjusted EBITDA *(times)* (4)	**2.02**	1.94	1.75
Return on invested capital (ROIC) *(%)* (5)	**15.3**	16.7	22.4
Adjusted ROIC *(%)* (5)	**15.1**	15.7	15.9
Operational measures (6)			
Statistical operating data			
Gross ton miles (GTMs) *(millions)*	**482,890**	490,414	469,200
Revenue ton miles (RTMs) *(millions)*	**241,954**	248,383	237,098
Carloads *(thousands)*	**5,912**	5,976	5,737
Route miles *(includes Canada and the U.S.)*	**19,500**	19,500	19,500
Employees *(end of year)*	**25,975**	25,720	23,945
Employees *(average for the year)*	**26,733**	25,423	23,074
Key operating measures			
Freight revenue per RTM *(cents)*	**5.87**	5.45	5.18
Freight revenue per carload *($)*	**2,402**	2,267	2,143
GTMs per average number of employees *(thousands)*	**18,063**	19,290	20,335
Operating expenses per GTM *(cents)*	**1.93**	1.80	1.66
Labor and fringe benefits expense per GTM *(cents)*	**0.61**	0.58	0.54
Diesel fuel consumed *(US gallons in millions)*	**451.4**	462.7	441.4
Average fuel price *($/US gallon)*	**3.17**	3.32	2.74
GTMs per US gallon of fuel consumed	**1,070**	1,060	1,063
Car velocity *(car miles per day)*	**198**	188	211
Through dwell *(hours)*	**7.9**	8.3	7.7
Through network train speed (*miles per hour*)	**18.5**	18.0	20.3
Locomotive utilization *(trailing GTMs per total horsepower)*	**198**	208	225
Safety indicators (7)			
Injury frequency rate *(per 200,000 person hours)*	**1.91**	1.81	1.83
Accident rate *(per million train miles)*	**2.11**	2.02	1.83

(1) Amounts expressed in Canadian dollars and prepared in accordance with United States generally accepted accountable principles (GAAP), unless otherwise noted.

(2) See the section entitled Adjusted performance measures in the MD&A for an explanation of these non-GAAP measures.

(3) See the section entitled Liquidity and capital resources - Free cash flow in the MD&A for an explanation of this non-GAAP measure.

(4) See the section entitled Liquidity and capital resources - Adjusted debt-to-adjusted EBITDA multiple in the MD&A for an explanation of this non-GAAP measure.

(5) See the section entitled Return on invested capital (ROIC) and adjusted ROIC in the MD&A for an explanation of these non-GAAP measures.

(6) Statistical operating data, key operating measures and safety indicators are unaudited and based on estimated data available at such time and are subject to change as more complete information becomes available. Definitions of these indicators are provided on CN's website, www.cn.ca/glossary.

(7) Based on Federal Railroad Administration (FRA) reporting criteria.

Contents

Management's Discussion and Analysis

This Management's Discussion and Analysis (MD&A) dated January 31, 2020, relates to the consolidated financial position and results of operations of Canadian National Railway Company, together with its wholly-owned subsidiaries, collectively "CN" or the "Company," and should be read in conjunction with the Company's 2019 Annual Consolidated Financial Statements and Notes thereto. All financial information reflected herein is expressed in Canadian dollars and prepared in accordance with United States generally accepted accounting principles (GAAP), unless otherwise noted.

CN's common shares are listed on the Toronto and New York stock exchanges. Additional information about CN filed with Canadian securities regulatory authorities and the United States Securities and Exchange Commission (SEC), including the Company's 2019 Annual Information Form and Form 40-F, may be found online on SEDAR at www.sedar.com, on the SEC's website at www.sec.gov through EDGAR, and on the Company's website at www.cn.ca in the Investors section. Printed copies of such documents may be obtained by contacting CN's Corporate Secretary's Office.

Business profile

CN is engaged in the rail and related transportation business. CN's network of approximately 20,000 route miles of track spans Canada and mid-America, uniquely connecting three coasts: the Atlantic, the Pacific and the Gulf of Mexico. CN's extensive network and efficient connections to all Class I railroads provide CN customers access to Canada, the United States (U.S.) and Mexico. A true backbone of the economy, CN handles over $250 billion worth of goods annually and carries over 300 million tons of cargo, serving exporters, importers, retailers, farmers and manufacturers.

CN's freight revenues are derived from seven commodity groups representing a diversified and balanced portfolio of goods transported between a wide range of origins and destinations. This product and geographic diversity better positions the Company to face economic fluctuations and enhances its potential for growth opportunities. For the year ended December 31, 2019, CN's largest commodity group accounted for 25% of total revenues. From a geographic standpoint, 16% of revenues relate to U.S. domestic traffic, 34% transborder traffic, 17% Canadian domestic traffic and 33% overseas traffic. The Company is the originating carrier for over 85%, and the originating and terminating carrier for over 65%, of traffic moving along its network, which allows it both to capitalize on service advantages and build on opportunities to efficiently use assets.

Corporate organization

The Company manages its rail operations in Canada and the U.S. as one business segment. Financial information reported at this level, such as revenues, operating income and cash flow from operations, is used by the Company's corporate management in evaluating financial and operational performance and allocating resources across CN's network. The Company's strategic initiatives are developed and managed centrally by corporate management and are communicated to its regional activity centers (the Western Region and Eastern Region), whose role is to manage the day-to-day service requirements of their respective territories, control direct costs incurred locally, and execute the strategy and operating plan established by corporate management.

See *Note 21 – Segmented information* to the Company's 2019 Annual Consolidated Financial Statements for additional information on the Company's corporate organization, as well as selected financial information by geographic area.

Strategy overview

CN's business strategy is anchored on the continuous pursuit of *Operational and Service Excellence*, an unwavering commitment to safety and sustainability, and the development of a solid team of motivated and competent railroaders. CN's goal is to deliver valuable transportation services for its customers and to grow the business at low incremental cost. A clear strategic agenda, driven by a commitment to innovation, productivity, improving supply chains through collaboration, potential acquisitions and other opportunities, running trains safely, and minimizing environmental impact, drives the Company's efforts to create value for customers. CN thereby creates value for its shareholders by striving for sustainable financial performance through profitable top-line growth, adequate free cash flow and return on invested capital. CN is also focused on returning value to shareholders through dividend payments and share repurchases.

CN's success and long-term economic viability depend on the presence of a supportive regulatory and policy environment that drives investment and innovation. CN's success also depends on a stream of capital investments that supports its business strategy. These investments cover a wide range of areas, from track infrastructure and rolling stock, to information and operating technologies, and other equipment and assets that improve the safety, efficiency and reliability of CN's service offering. Investments in track infrastructure enhance the productivity and integrity of the plant, increase the capacity and the fluidity of the network, promote service excellence and support growth at low incremental cost. The acquisition of new locomotives and railcars generates several key benefits. New locomotives increase capacity, fuel productivity and efficiency, and improve the reliability of service. Locomotives equipped with distributed power allow for greater productivity of trains, particularly in cold weather, while improving train handling and safety. Targeted railcar acquisitions aim to tap growth opportunities, complementing the fleet of privately owned railcars that traverse CN's network. CN is also investing in, and deploying, advanced technology. CN pioneered scheduled railroading and its vision is to be the first railroad to take it to the next level, using advanced technology as a driver for safety, customer and shareholder value.

Balancing "Operational and Service Excellence"

The basic driver of the Company's business is demand for reliable, efficient, and cost effective transportation for customers. As such, the Company's focus is the pursuit of *Operational and Service Excellence*: striving to operate safely and efficiently while providing a high level of service to customers.

CN operates with a mindset that drives cost efficiency and asset utilization. That mindset flows naturally from CN's *Precision Railroading* model, which focuses on improving every process that affects delivery of customers' goods. It is a highly disciplined process whereby CN handles individual rail shipments according to a specific trip plan and manages all aspects of railroad operations to meet customer commitments efficiently and profitably. This calls for the relentless measurement of results and the use of such results to generate further execution improvements in the service provided to customers. The Company's continuous search for efficiency is best captured in its performance according to key operating metrics such as car velocity, through dwell, through network train speed and locomotive utilization. All are at the center of a highly productive and fluid railroad operation, requiring daily engagement in the field. The Company works hard to run more efficient trains, reduce dwell times at terminals and improve overall network velocity. The railroad is run based on a disciplined operating methodology, executing with a sense of urgency and accountability. This philosophy is a key contributor to CN's operating ratio, earnings growth and return on invested capital (ROIC).

CN understands the importance of balancing its drive for productivity with efforts to enhance customer service. The Company's efforts to deliver *Operational and Service Excellence* are anchored on an end-to-end supply chain mindset, working closely with customers and supply chain partners, as well as involving all relevant areas of the Company in the process. By fostering better end-to-end service performance and encouraging all supply-chain players to continuously improve daily engagement, information sharing, problem solving, and execution, CN aims to help customers achieve greater competitiveness in their own markets. Supply chain collaboration agreements with ports, terminal operators and customers leverage key performance metrics that drive efficiencies across the entire supply chain.

The Company is strengthening its commitment to *Operational and Service Excellence* through a wide range of innovations anchored on its continuous improvement philosophy. CN is building on its industry leadership in terms of fast and reliable hub-to-hub service by continuing to improve across the range of customer touch points. The Company's major push in first-mile/last-mile service is focused on improving the quality of customer interactions – developing a sharper outside-in perspective; better monitoring of traffic forecasts; higher and more responsive car order fulfillment; and proactive customer communication at the local level.

CN's broad-based service innovations benefit customers and support the Company's goal to drive top-line growth. CN understands the importance of being the best operator in the business, as well as being the best service innovator.

Delivering safely and responsibly

CN is committed to the safety of its employees, the communities in which it operates and the environment. Safety consciousness permeates every aspect of CN's operations. The Company's long-term safety improvement is driven by continued significant investments in infrastructure, rigorous safety processes and a focus on employee training and safety awareness. CN continues to strengthen its safety culture by investing significantly in training, coaching, recognition and employee involvement initiatives.

CN's Safety Management Plan is the framework for putting safety at the center of its day-to-day operations. This proactive plan is designed to minimize risk, drive continuous improvement in the reduction of injuries and accidents, and engage employees at all levels of the organization. CN believes that the rail industry can enhance safety by working more closely with communities. Under CN's structured Community Engagement program, the Company engages with municipal officers and their emergency responders in an effort to assist them in their emergency response planning. In many cases, this outreach includes face-to-face meetings, during which CN discusses its comprehensive safety programs; its safety performance; the nature, volume and economic importance of dangerous commodities it transports through their communities; a review of emergency response planning; and arranging for training sessions for emergency responders. The outreach builds on CN's involvement in the Transportation Community Awareness and Emergency Response (TRANSCAER®), through which the Company has been working for many years to help communities in Canada and the U.S. understand the movement of hazardous materials and what is required in the event of transportation incidents.

CN has been deepening its commitment to a sustainable operation for many years, and has made sustainability an integral part of its business strategy. The best way in which CN can positively impact the environment is by continuously improving the efficiency of its operations, and reducing its carbon footprint. As part of the Company's comprehensive sustainability action plan and to comply with CN's environmental policy, the Company engages in a number of initiatives, including the use of fuel-efficient locomotives and trucks that reduce greenhouse gas emissions; increasing operational and building efficiencies; investing in energy-efficient data centers and recycling programs for information technology systems; reducing, recycling and reusing waste and scrap at its facilities and on its network; engaging in modal shift agreements that favor low emission transport services; and participating in the Carbon Disclosure Project (CDP) to gain a more comprehensive view of its carbon footprint. The Company combines its expert resources, environmental management procedures, training and audits for employees and contractors, and emergency preparedness response activities to help ensure that it conducts its operations and activities while protecting the natural environment. The Company's environmental activities include monitoring CN's environmental performance in Canada and the U.S., identifying environmental issues inside the Company, and managing them in accordance with CN's environmental policy, which is overseen by the Environment, Safety and Security Committee of the Board of Directors. Certain risk mitigation strategies, such as periodic audits, employee training programs and emergency plans and procedures, are in place to minimize the environmental risks to the Company.

The Company's CDP Report, CN's Sustainability Report entitled "Delivering Responsibly" and the Company's Corporate Governance Manual, which outlines the role and responsibilities of the Environment, Safety and Security Committee of the Board of Directors, are available on CN's website in the Delivering Responsibly section.

Building a solid team of railroaders

CN's ability to develop the best railroaders in the industry has been a key contributor to the Company's success. CN recognizes that without the right people - no matter how good a service plan or business model a company may have - it will not be able to fully execute. CN is taking steps to further align its business and talent strategies by placing a greater emphasis on the identification of specific roles across all functions that drive the greatest impact to the Company's business agenda, and ensuring the right talent are in these critical roles. The Company continues to focus on hiring the right people, onboarding them successfully, helping them build positive relationships with their colleagues, and supporting all employees to grow and develop, while deepening its commitment to develop talent and plan for the future. CN also recognizes the importance of diversity as it provides for a broad range of strengths, perspectives and experiences that makes CN better. It helps the Company attract and retain qualified talent, and it fosters innovation by bringing the best solutions to the table. As part of its strategy to build a solid team of railroaders, the Company leverages its state-of-the-art training facilities in preparing employees to be highly skilled, safety conscious and confident in their work environment. Curricula for technical training and leadership development has been designed to meet the learning needs of CN's railroaders - both current and future. These programs and initiatives provide a solid platform for the assessment and development of the Company's talent pool, and are tightly integrated with the Company's business strategy. Progress made in developing current and future leaders through the Company's leadership development programs is reviewed by the Human Resources and Compensation Committee of the Board of Directors.

2019 Highlights

The Company completed a record capital expenditure program, investing approximately $3.9 billion in 2019, with increased spending on initiatives to increase capacity, particularly in the Company’s Western Region, supporting the Company’s ability to grow at low incremental cost.

Financial highlights - 2019 compared to 2018

- Net income decreased by $112 million, or 3%, to $4,216 million and diluted earnings per share decreased by 1% to $5.83.
- Adjusted net income increased by $133 million, or 3%, to $4,189 million and adjusted diluted earnings per share increased by 5% to $5.80. (1)
- Operating income increased by $100 million, or 2%, to $5,593 million and adjusted operating income increased by $188 million, or 3%, to $5,708 million. (1)
- Operating ratio of 62.5%, an increase of 0.9 points and adjusted operating ratio of 61.7%, an increase of 0.2 points. (1)
- Revenues increased by $596 million, or 4%, to $14,917 million.
- Operating expenses increased by $496 million, or 6%, to $9,324 million.
- ROIC of 15.3%, a decrease of 1.4 points and adjusted ROIC of 15.1%, a decrease of 0.6 points. (2)
- The Company generated free cash flow of $1,992 million, a 21% decrease. (3)

(1) See the section of this MD&A entitled Adjusted performance measures for an explanation of these non-GAAP measures.

(2) See the section of this MD&A entitled Return on invested capital (ROIC) and adjusted ROIC for an explanation of these non-GAAP measures.

(3) See the section of this MD&A entitled Liquidity and capital resources – Free cash flow for an explanation of this non-GAAP measure.

Reinvestment in the business

In 2019, CN spent approximately $3.9 billion in its capital program, with $1.6 billion invested to maintain the safety and integrity of the network, particularly track infrastructure. CN's capital spending also included $1.2 billion on strategic initiatives to increase capacity, enable growth and improve network resiliency, including line capacity upgrades and information technology initiatives, $0.9 billion on equipment capital expenditures, including the acquisition of 154 new high-horsepower locomotives and 560 new grain hopper cars, and $0.2 billion on implementation of Positive Train Control (PTC), the safety technology system mandated by the U.S. Congress.

Acquisitions

On December 2, 2019, following satisfaction of all closing conditions, the Company acquired the intermodal temperature-controlled transportation division of the Alberta-based H&R Transport Limited ("H&R"). The acquisition positions CN to expand its presence in moving customer goods by offering more end to end rail supply chain solutions to a wider range of customers. H&R results of operations have been included in the Company's results of operations since the acquisition date, December 2, 2019. H&R revenues are included as freight revenues in the intermodal commodity group.

On August 29, 2019, the Company announced it had reached an agreement to acquire the Massena rail line from CSX Corporation, which represents more than 220 miles of track between Valleyfield, Quebec, and Woodard, New York. The acquisition will allow CN to continue to expand its network and foster additional supply chain solutions. The acquisition remains subject to regulatory review.

On March 20, 2019, following satisfaction of all closing conditions, the Company acquired the Manitoba-based TransX Group of Companies ("TransX"). TransX provides various transportation and logistics services, including intermodal, truckload, less than truckload and specialized services. The acquisition positions CN to strengthen its intermodal business, and allows the Company to expand capacity and foster additional supply chain solutions, to continue to create value for customers. TransX's results of operations have been included in the Company's results of operations, since the acquisition date, March 20, 2019. TransX’s revenues are included as freight revenues in the intermodal commodity group. The inclusion of TransX’s results of operations impacted the Company’s Revenues and Operating expenses, in particular Purchased services and material and Labor and fringe benefits, for the year ended December 31, 2019 when compared to 2018. See the section of this MD&A entitled *Liquidity and capital resources - Investing activities* for additional information.

Shareholder returns

The Company repurchased 14.3 million of its common shares during the year, returning $1.7 billion to its shareholders. CN also increased its quarterly dividend per share by 18% to $0.5375 from $0.4550 in 2018, effective for the first quarter of 2019, and paid $1.5 billion in dividends in 2019.

Sustainability

The Company's sustainability practices once again earned it a place on the Dow Jones Sustainability World and North American Indices, for the 8th and 11th consecutive year, respectively. CN is the only Canadian company and the only North American railroad listed in the Transportation and Transportation Infrastructure sector World Index. In addition, CN also ranked among Corporate Knights’ 2020 Global 100 Most Sustainable Corporations in the World.

2020 Business outlook and assumptions

For 2020, the Company expects growth across a range of commodities, particularly in petroleum crude, intermodal traffic, Canadian coal exports and refined petroleum products; as well as lower volumes of U.S coal exports, U.S. grain, frac sand, and lumber and panels.

Underpinning the 2020 business outlook, the Company assumes that North American industrial production will increase in the range of 0.5 to one percent. For the 2019/2020 crop year, the grain crop in Canada was in line with its three-year average and the U.S. grain crop was below its three-year average. The Company assumes that the 2020/2021 grain crops in both Canada and the U.S. will be in line with their respective three-year averages.

Future value creation

Reinvestment in the business

In 2020, CN plans to invest approximately $3.0 billion in its capital program, of which $1.6 billion is targeted toward track and railway infrastructure maintenance to support safe and efficient operations. A further $0.8 billion is expected to be spent on initiatives to increase capacity and enable growth, such as track infrastructure expansion; investments in yards and intermodal terminals; and on information technology to improve safety performance, operational efficiency and customer service. CN's equipment capital expenditures are targeted to reach $0.4 billion in 2020, allowing the Company to tap growth opportunities and improve the quality of the fleet. In order to handle expected traffic increase and improve operational efficiency, CN expects to take delivery of 41 new high-horsepower locomotives and 240 new grain hopper cars. In 2020, the Company plans to invest $0.2 billion associated with the U.S. federal government legislative PTC implementation.

Shareholder returns

On January 28, 2020, the Company's Board of Directors approved a new Normal Course Issuer Bid (NCIB) that allows for the repurchase of up to 16 million common shares between February 1, 2020 and January 31, 2021. In addition, on that same day, the Company's Board of Directors approved an increase of 7% to the quarterly dividend to common shareholders, from $0.5375 per share in 2019 to $0.5750 per share in 2020, effective for the first quarter.

The forward-looking statements discussed in this section are subject to risks and uncertainties that could cause actual results or performance to differ materially from those expressed or implied in such statements and are based on certain factors and assumptions which the Company considers reasonable, about events, developments, prospects and opportunities that may not materialize or that may be offset entirely or partially by other events and developments. In addition to the assumptions and expectations discussed in this section, reference should be made to the section of this MD&A entitled *Forward-looking statements* for assumptions and risk factors affecting such statements.

Forward-looking statements

Certain statements included in this MD&A are "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. The Company 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 include, but are not limited to, those set forth in the table below, which also presents key assumptions used in determining the forward-looking statements. See also the section of this MD&A entitled *Strategy overview - 2020 Business outlook and assumptions*.

Forward-looking statements	Key assumptions
Statements relating to revenue growth opportunities, including those referring to general economic and business conditions	• North American and global economic growth • Long-term growth opportunities being less affected by current economic conditions
Statements relating to the Company's ability to meet debt repayments and future obligations in the foreseeable future, including income tax payments, and capital spending	• North American and global economic growth • Adequate credit ratios • Investment-grade credit ratings • Access to capital markets • Adequate cash generated from operations and other sources of financing
Statements relating to pension contributions	• Adequate cash generated from operations and other sources of financing • Adequate long-term return on investment on pension plan assets • Level of funding as determined by actuarial valuations, particularly influenced by discount rates for funding purposes

Forward-looking statements are not guarantees of future performance and involve risks, uncertainties and other factors which may cause the actual results or performance of the Company 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; increases in maintenance and operating costs; security threats; reliance on technology and related cybersecurity risk; trade restrictions or other changes to international trade arrangements; transportation of hazardous materials; various events which could disrupt operations, including natural events such as severe weather, droughts, fires, floods and earthquakes; climate change; labor negotiations and disruptions; environmental claims; uncertainties of investigations, proceedings or other types of claims and litigation; risks and liabilities arising from derailments; timing and completion of capital programs; and other risks detailed from time to time in reports filed by CN with securities regulators in Canada and the U.S., including its Annual Information Form and Form 40-F. See the section entitled *Business risks* of this MD&A 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.

Financial outlook

During the year, the Company issued and updated its 2019 financial outlook. On December 3, 2019, following the impact of an 8-day conductor strike in late November, CN revised its 2019 financial outlook, remaining focused on continuing to realign its resources in light of the weaker demand. The 2019 actual results were in line with the Company's last 2019 financial outlook.

Financial highlights

					Change Favorable/(Unfavorable)	
In millions, except percentage and per share data	**2019**		2018	2017	2019 vs 2018	2018 vs 2017
Revenues	**$**	**14,917**	$ 14,321	$ 13,041	4%	10%
Operating income	**$**	**5,593**	$ 5,493	$ 5,243	2%	5%
Adjusted operating income (1)	**$**	**5,708**	$ 5,520	$ 5,243	3%	5%
Net income	**$**	**4,216**	$ 4,328	$ 5,484	(3%)	(21%)
Adjusted net income (1)	**$**	**4,189**	$ 4,056	$ 3,778	3%	7%
Basic earnings per share	**$**	**5.85**	$ 5.89	$ 7.28	(1%)	(19%)
Adjusted basic earnings per share (1)	**$**	**5.81**	$ 5.52	$ 5.02	5%	10%
Diluted earnings per share	**$**	**5.83**	$ 5.87	$ 7.24	(1%)	(19%)
Adjusted diluted earnings per share (1)	**$**	**5.80**	$ 5.50	$ 4.99	5%	10%
Dividends declared per share	**$**	**2.15**	$ 1.82	$ 1.65	18%	10%
Total assets	**$**	**43,784**	$ 41,214	$ 37,629	6%	10%
Total long-term liabilities	**$**	**21,456**	$ 20,073	$ 16,990	(7%)	(18%)
Operating ratio		**62.5%**	61.6%	59.8%	(0.9)-pts	(1.8)-pts
Adjusted operating ratio (1)		**61.7%**	61.5%	59.8%	(0.2)-pts	(1.7)-pts
Free cash flow (2)	**$**	**1,992**	$ 2,514	$ 2,778	(21%)	(10%)

(1) See the section of this MD&A entitled Adjusted performance measures for an explanation of these non-GAAP measures.

(2) See the section of this MD&A entitled Liquidity and capital resources – Free cash flow for an explanation of this non-GAAP measure.

2019 compared to 2018

Net income for the year ended December 31, 2019 was $4,216 million, a decrease of $112 million, or 3%, when compared to 2018, and diluted earnings per share decreased by 1% to $5.83.

Operating income for the year ended December 31, 2019 increased by $100 million, or 2%, to $5,593 million. The increase mainly reflects increased petroleum and crude and intermodal revenues; partly offset by higher purchased services and material expense, as well as higher depreciation and amortization expense. The operating ratio, defined as operating expenses as a percentage of revenues, was 62.5% in 2019, compared to 61.6% in 2018.

Revenues for the year ended December 31, 2019 were $14,917 million compared to $14,321 million in 2018. The increase of $596 million, or 4%, was mainly attributable to freight rate increases, the inclusion of TransX in the intermodal commodity group within the domestic market, the positive translation impact of a weaker Canadian dollar and higher volumes of petroleum crude, natural gas liquids and refined petroleum products in the first nine months. These factors were partly offset by lower volumes of a broad range of forest products, reduced U.S. thermal coal exports via the Gulf Coast and lower shipments of frac sand.

Operating expenses for the year ended December 31, 2019 were $9,324 million compared to $8,828 million in 2018. The increase of $496 million, or 6%, was mainly due to increased purchased services and material expense, due to the inclusion of TransX, higher depreciation expense and the negative translation impact of a weaker Canadian dollar; partly offset by lower fuel prices.

Non-GAAP measures

This MD&A makes reference to non-GAAP measures including adjusted performance measures, constant currency, ROIC and adjusted ROIC, free cash flow, and adjusted debt-to-adjusted EBITDA multiple that do not have any standardized meaning prescribed by GAAP and therefore, may not be comparable to similar measures presented by other companies. From management's perspective, these non-GAAP measures are useful measures of performance and provide investors with supplementary information to assess the Company's results of operations and liquidity. These non-GAAP measures should not be considered in isolation or as a substitute for financial measures prepared in accordance with GAAP.

For further details of these non-GAAP measures, including a reconciliation to the most directly comparable GAAP financial measures, refer to the sections entitled *Adjusted performance measures, Constant currency, Return on invested capital (ROIC) and adjusted ROIC,* and *Liquidity and capital resources*.

Adjusted performance measures

Management believes that adjusted net income, adjusted earnings per share, adjusted operating income and adjusted operating ratio are useful measures of performance that can facilitate period-to-period comparisons, as they exclude items that do not necessarily arise as part of CN's normal day-to-day operations and could distort the analysis of trends in business performance. Management uses adjusted performance measures, which exclude certain income and expense items in its results that management believes are not reflective of CN's underlying business operations, to set performance goals and as a means to measure CN's performance. The exclusion of such income and expense items in these measures does not, however, imply that these items are necessarily non-recurring. These measures do not have any standardized meaning prescribed by GAAP and therefore, may not be comparable to similar measures presented by other companies.

For the year ended December 31, 2019, the Company reported adjusted net income of $4,189 million, or $5.80 per diluted share, which excludes employee termination benefits and severance costs related to a workforce reduction program of $31 million, or $23 million after-tax ($0.03 per diluted share) in the fourth quarter; a deferred income tax recovery of $112 million ($0.15 per diluted share or $0.16 per basic share) in the second quarter, resulting from the enactment of a lower provincial corporate income tax rate; and a depreciation expense of $84 million, or $62 million after-tax ($0.09 per diluted share) in the first quarter, related to costs previously capitalized for a PTC back office system following the deployment of a replacement system.

For the year ended December 31, 2018, the Company reported adjusted net income of $4,056 million, or $5.50 per diluted share, which excludes employee termination benefits and severance costs related to a workforce reduction program of $27 million, or $20 million after-tax ($0.03 per diluted share) in the fourth quarter and gains on disposal of property of $338 million, or $292 million after-tax ($0.40 per diluted share), consisting of the following:

- in the fourth quarter, a gain previously deferred on the 2014 disposal of a segment of the Guelph subdivision located between Georgetown and Kitchener, Ontario, together with the rail fixtures and certain passenger agreements (the "Guelph"), of $79 million, or $70 million after-tax ($0.10 per diluted share);
- in the third quarter, a gain on disposal of property located in Montreal, Quebec (the "Doney and St-Francois Spurs") of $36 million, or $32 million after-tax ($0.04 per diluted share); and
- in the second quarter, a gain on transfer of the Company's finance lease in the passenger rail facilities in Montreal, Quebec, together with its interests in related railway operating agreements (the "Central Station Railway Lease"), of $184 million, or $156 million after-tax ($0.21 per diluted share), and a gain on disposal of land located in Calgary, Alberta, excluding the rail fixtures (the "Calgary Industrial Lead"), of $39 million, or $34 million after-tax ($0.05 per diluted share).

For the year ended December 31, 2017, the Company reported adjusted net income of $3,778 million, or $4.99 per diluted share, which excludes a net deferred income tax recovery of $1,706 million ($2.25 per diluted share or $2.26 per basic share) consisting of the following:

- in the fourth quarter, a deferred income tax recovery of $1,764 million ($2.33 per diluted share or $2.34 per basic share) resulting from the enactment of a lower U.S. federal corporate income tax rate due to the *Tax Cuts and Jobs Act ("*U.S. Tax Reform") and a deferred income tax expense of $50 million ($0.07 per diluted share) resulting from the enactment of higher provincial corporate income tax rates;
- in the third quarter, a deferred income tax expense of $31 million ($0.04 per diluted share) resulting from the enactment of a higher state corporate income tax rate;
- in the second quarter, a deferred income tax recovery of $18 million ($0.02 per diluted share) resulting from the enactment of a lower provincial corporate income tax rate; and
- in the first quarter, a deferred income tax recovery of $5 million ($0.01 per diluted share) resulting from the enactment of a lower provincial corporate income tax rate.

The following table provides a reconciliation of net income and earnings per share, as reported for the years ended December 31, 2019, 2018 and 2017, to the adjusted performance measures presented herein:

In millions, except per share data	*Year ended December 31,*	**2019**	2018	2017
Net income		**$ 4,216**	$ 4,328	$ 5,484
Adjustments:				
Operating expenses		**115**	27	—
Other income		**—**	(338)	—
Income tax expense (recovery) [1]		**(142)**	39	(1,706)
Adjusted net income		**$ 4,189**	$ 4,056	$ 3,778
Basic earnings per share		**$ 5.85**	$ 5.89	$ 7.28
Impact of adjustments, per share		**(0.04)**	(0.37)	(2.26)
Adjusted basic earnings per share		**$ 5.81**	$ 5.52	$ 5.02
Diluted earnings per share		**$ 5.83**	$ 5.87	$ 7.24
Impact of adjustments, per share		**(0.03)**	(0.37)	(2.25)
Adjusted diluted earnings per share		**$ 5.80**	$ 5.50	$ 4.99

(1) The tax effect of adjustments reflects tax rates in the applicable jurisdiction and the nature of the item for tax purposes.

The following table provides a reconciliation of operating income and operating ratio, as reported for the years ended December 31, 2019, 2018 and 2017, to the adjusted performance measures presented herein:

In millions, except percentage	*Year ended December 31,*	**2019**	2018	2017
Operating income		**$ 5,593**	$ 5,493	$ 5,243
Adjustment: Operating expenses		**115**	27	—
Adjusted operating income		**$ 5,708**	$ 5,520	$ 5,243
Operating ratio [1]		**62.5%**	61.6%	59.8%
Impact of adjustment		**(0.8)-pts**	(0.1)-pts	—
Adjusted operating ratio		**61.7%**	61.5%	59.8%

(1) Operating ratio is defined as operating expenses as a percentage of revenues.

Constant currency

Financial results at constant currency allow results to be viewed without the impact of fluctuations in foreign currency exchange rates, thereby facilitating period-to-period comparisons in the analysis of trends in business performance. Measures at constant currency are considered non-GAAP measures and do not have any standardized meaning prescribed by GAAP and therefore, may not be comparable to similar measures presented by other companies. Financial results at constant currency are obtained by translating the current period results denominated in US dollars at the foreign exchange rates of the comparable period of the prior year. The average foreign exchange rates were $1.33 and $1.30 per US$1.00, for the years ended December 31, 2019 and 2018, respectively.

On a constant currency basis, the Company's net income for the year ended December 31, 2019 would have been lower by $65 million ($0.09 per diluted share).

Return on invested capital (ROIC) and adjusted ROIC

Management believes ROIC and adjusted ROIC are useful measures of the efficiency in the use of capital funds. The Company calculates ROIC as return divided by average invested capital. Return is defined as net income plus interest expense after-tax, calculated using the Company's effective tax rate. Average invested capital is defined as the sum of total shareholders' equity, long-term debt and current portion of long-term debt less cash and cash equivalents, and restricted cash and cash equivalents, averaged between the beginning and ending balance over a twelve-month period. The Company calculates adjusted ROIC as adjusted return divided by average invested capital. Adjusted return is defined as adjusted net income plus interest expense after-tax, calculated using the Company's effective tax rate, excluding the tax effect of adjustments used to determine adjusted net income. ROIC and adjusted ROIC do not have any standardized meaning prescribed by GAAP and therefore, may not be comparable to similar measures presented by other companies.

The following table provides a reconciliation of net income and adjusted net income to return and adjusted return, respectively, as well as the calculation of average invested capital, which have been used to calculate ROIC and adjusted ROIC:

In millions, except percentage *As at and for the year ended December 31,*	**2019**	2018	2017
Net income	**$ 4,216**	$ 4,328	$ 5,484
Interest expense	**538**	489	481
Tax on interest expense (1)	**(120)**	(116)	(124)
Return	**$ 4,634**	$ 4,701	$ 5,841
Average total shareholders' equity	**$ 17,841**	$ 17,149	$ 15,749
Average long-term debt	**11,626**	10,067	9,098
Average current portion of long-term debt	**1,557**	1,632	1,785
Less: Average cash, cash equivalents, restricted cash and restricted cash equivalents	**(674)**	(656)	(613)
Average invested capital	**$ 30,350**	$ 28,192	$ 26,019
ROIC	**15.3%**	16.7%	22.4%
Adjusted net income (2)	**$ 4,189**	$ 4,056	$ 3,778
Interest expense	**538**	489	481
Adjusted tax on interest expense (3)	**(131)**	(120)	(124)
Adjusted return	**$ 4,596**	$ 4,425	$ 4,135
Average invested capital	**$ 30,350**	$ 28,192	$ 26,019
Adjusted ROIC	**15.1%**	15.7%	15.9%

(1) The effective tax rate for 2019 used to calculate the tax on interest expense was 22.3% (2018 - 23.8%; 2017 - 25.8%). Due to the negative effective tax rate reported by the Company in 2017, tax on interest expense for 2017 was calculated using an adjusted effective tax rate.

(2) See the section of this MD&A entitled Adjusted performance measures for an explanation of this non-GAAP measure.

(3) The adjusted effective tax rate for 2019 used to calculate the adjusted tax on interest expense was 24.4% (2018 - 24.5%; 2017 - 25.8%).

Revenues

In millions, unless otherwise indicated	*Year ended December 31,*	**2019**	2018	% Change	% Change at constant currency
Freight revenues		**$ 14,198**	$ 13,548	5%	3%
Other revenues		**719**	773	(7%)	(8%)
Total revenues		**$ 14,917**	$ 14,321	4%	3%
Freight revenues					
Petroleum and chemicals		**$ 3,052**	$ 2,660	15%	13%
Metals and minerals		**1,643**	1,689	(3%)	(5%)
Forest products		**1,808**	1,886	(4%)	(6%)
Coal		**658**	661	—%	(2%)
Grain and fertilizers		**2,392**	2,357	1%	—%
Intermodal		**3,787**	3,465	9%	8%
Automotive		**858**	830	3%	1%
Total freight revenues		**$ 14,198**	$ 13,548	5%	3%
Revenue ton miles (RTMs) *(millions)*		**241,954**	248,383	(3%)	(3%)
Freight revenue/RTM *(cents)*		**5.87**	5.45	8%	6%
Carloads *(thousands)*		**5,912**	5,976	(1%)	(1%)
Freight revenue/carload *($)*		**2,402**	2,267	6%	4%

Revenues for the year ended December 31, 2019, totaled $14,917 million compared to $14,321 million in 2018. The increase of $596 million, or 4%, was mainly attributable to freight rate increases, the inclusion of TransX in the intermodal commodity group within the domestic market, the positive translation impact of a weaker Canadian dollar and higher volumes of petroleum crude, natural gas liquids and refined petroleum products in the first nine months. These factors were partly offset by lower volumes of a broad range of forest products, reduced U.S. thermal coal exports via the Gulf Coast and lower shipments of frac sand. Fuel surcharge revenues decreased by $31 million in 2019, as a result of lower applicable fuel surcharge rates, partly offset by the positive translation impact of a weaker Canadian dollar.

In 2019, RTMs, measuring the weight and distance of freight transported by the Company, declined by 3% relative to 2018. Freight revenue per RTM increased by 8% in 2019 when compared to 2018, mainly driven by freight rate increases, the inclusion of TransX in the intermodal commodity group and the positive translation impact of a weaker Canadian dollar.

Petroleum and chemicals

	Year ended December 31,	**2019**	2018	% Change	% Change at constant currency
Revenues *(millions)*		**$ 3,052**	$ 2,660	15%	13%
RTMs *(millions)*		**53,989**	50,722	6%	6%
Revenue/RTM *(cents)*		**5.65**	5.24	8%	6%
Carloads *(thousands)*		**688**	653	5%	5%

The petroleum and chemicals commodity group comprises a wide range of commodities, including chemicals and plastics, refined petroleum products, natural gas liquids, crude oil and sulfur. The primary markets for these commodities are within North America, and as such, the performance of this commodity group is closely correlated with the North American economy as well as oil and gas production. Most of the Company's petroleum and chemicals shipments originate in the Louisiana petrochemical corridor between New Orleans and Baton Rouge; in Western Canada, a key oil and gas development area and a major center for natural gas feedstock and world-scale petrochemicals and plastics; and in eastern Canadian regional plants.

For the year ended December 31, 2019, revenues for this commodity group increased by $392 million, or 15%, when compared to 2018, mainly due to higher volumes of petroleum crude, natural gas liquids and refined petroleum products in the first nine months; freight rate increases and the positive translation impact of a weaker Canadian dollar.

Revenue per RTM increased by 8% in 2019 when compared to 2018, mainly due to freight rate increases and the positive translation impact of a weaker Canadian dollar.

Percentage of commodity group revenues	**2019**	2018
Refined petroleum products	**38%**	36%
Chemicals and plastics	**36%**	39%
Crude and condensate	**22%**	21%
Sulfur	**4%**	4%

Metals and minerals

Year ended December 31,	**2019**	2018	% Change	% Change at constant currency
Revenues *(millions)*	**$ 1,643**	$ 1,689	(3%)	(5%)
RTMs *(millions)*	**25,449**	27,993	(9%)	(9%)
Revenue/RTM *(cents)*	**6.46**	6.03	7%	5%
Carloads *(thousands)*	**1,008**	1,030	(2%)	(2%)

The metals and minerals commodity group consists primarily of materials related to oil and gas development, steel, iron ore, non-ferrous base metals and ores, construction materials, machinery, railway equipment, and dimensional (large) loads. The Company provides unique rail access to base metals, iron ore and frac sand mining as well as aluminum and steel producing regions, which are among the most important in North America. This strong origin franchise, coupled with the Company's access to port facilities and the end markets for these commodities, has made CN a leader in the transportation of metals and minerals products. The key drivers for this market segment are oil and gas development, automotive production, and non-residential construction.

For the year ended December 31, 2019, revenues for this commodity group decreased by $46 million, or 3%, when compared to 2018, mainly due to lower volumes of frac sand and a broad range of metal products; partly offset by freight rate increases and the positive translation impact of a weaker Canadian dollar.

Revenue per RTM increased by 7% in 2019 when compared to 2018, mainly due to a decrease in the average length of haul, freight rate increases and the positive translation impact of a weaker Canadian dollar.

Percentage of commodity group revenues	**2019**	2018
Metals	**30%**	30%
Minerals	**27%**	24%
Energy materials	**26%**	30%
Iron ore	**17%**	16%

Forest products

Year ended December 31,	**2019**	2018	% Change	% Change at constant currency
Revenues *(millions)*	**$ 1,808**	$ 1,886	(4%)	(6%)
RTMs *(millions)*	**27,187**	29,918	(9%)	(9%)
Revenue/RTM *(cents)*	**6.65**	6.30	6%	3%
Carloads *(thousands)*	**375**	418	(10%)	(10%)

The forest products commodity group includes various types of lumber, panels, paper, wood pulp and other fibers such as logs, recycled paper, wood chips, and wood pellets. The Company has extensive rail access to the western and eastern Canadian fiber-producing regions, which are among the largest fiber source areas in North America. In the U.S., the Company is strategically located to serve both the Midwest and southern U.S. corridors with interline connections to other Class I railroads. The key drivers for the various commodities are: for lumber and panels, housing starts and renovation activities primarily in the U.S.; for fibers (mainly wood pulp), the consumption of paper, pulpboard and tissue in North American and offshore markets; and for newsprint, advertising lineage, non-print media and overall economic conditions, primarily in the U.S.

For the year ended December 31, 2019, revenues for this commodity group decreased by $78 million, or 4%, when compared to 2018, mainly due to lower volumes of a broad range of forest products, partly offset by freight rate increases and the positive translation impact of a weaker Canadian dollar.

Revenue per RTM increased by 6% in 2019 when compared to 2018, mainly due to freight rate increases and the positive translation impact of a weaker Canadian dollar.

Percentage of commodity group revenues	**2019**	2018
Lumber	**38%**	40%
Pulp	**30%**	29%
Paper	**18%**	18%
Panels	**14%**	13%

Coal

Year ended December 31,		**2019**		2018	% Change	% Change at constant currency
Revenues *(millions)*	**$**	**658**	$	661	—%	(2%)
RTMs *(millions)*		**17,653**		17,927	(2%)	(2%)
Revenue/RTM *(cents)*		**3.73**		3.69	1%	—%
Carloads *(thousands)*		**335**		346	(3%)	(3%)

The coal commodity group consists of thermal grades of bituminous coal, metallurgical coal and petroleum coke. Canadian thermal and metallurgical coal are largely exported via terminals on the west coast of Canada to offshore markets. In the U.S., thermal coal is transported from mines served in southern Illinois, or from western U.S. mines via interchange with other railroads, to major utilities in the Midwest and Southeast U.S., as well as offshore markets via terminals on the U.S. Gulf Coast. Petroleum coke, a by-product of the oil refining process, is exported to offshore markets via terminals on the west coast of Canada and the U.S. Gulf Coast, as well as shipped to industrial users in domestic markets. The key drivers for this market segment are weather conditions, environmental regulations, global supply and demand conditions, and for U.S. domestic coal, the price of natural gas.

For the year ended December 31, 2019, revenues for this commodity group remained flat when compared to 2018, mainly due to lower U.S. thermal coal exports via the Gulf Coast; offset by higher metallurgical and thermal coal exports via west coast ports and freight rate increases.

Revenue per RTM increased by 1% in 2019 when compared to 2018, mainly due to freight rate increases.

Percentage of commodity group revenues	**2019**	2018
Canadian coal - export	**40%**	30%
Petroleum coke	**22%**	21%
U.S. coal - export	**19%**	33%
U.S. coal - domestic	**19%**	16%

Grains and fertilizers

Year ended December 31,		**2019**		2018	% Change	% Change at constant currency
Revenues *(millions)*	**$**	**2,392**	$	2,357	1%	—%
RTMs *(millions)*		**55,597**		57,819	(4%)	(4%)
Revenue/RTM *(cents)*		**4.30**		4.08	5%	4%
Carloads *(thousands)*		**619**		632	(2%)	(2%)

The grain and fertilizers commodity group depends primarily on crops grown and fertilizers processed in Western Canada and the U.S. Midwest. The grain segment consists of wheat, oats, barley, flaxseed, rye, peas, lentils, corn, ethanol, dried distillers grain, canola seed and canola products, soybeans and soybean products. Production of grain varies considerably from year to year, affected primarily by weather conditions, seeded and harvested acreage, the mix of grains produced and crop yields. Grain exports are sensitive to the size and quality of the crop produced, international market conditions and foreign government policy. The majority of grain produced in Western Canada and moved by CN is exported via the ports of Vancouver, Prince Rupert and Thunder Bay. These rail movements are subject to government regulation that establishes a maximum revenue entitlement that railways can earn. Although railway companies are free to set freight rates for western grain shipments, total revenue is limited based on a formula that takes into account tonnage, length of haul, and a specified price index. Shipments of grain that are exported to the U.S. are not regulated. Grain grown in the U.S. Midwest is exported as well as transported to domestic processing facilities and feed markets. The Company also serves major producers of potash in Canada, as well as producers of ammonium nitrate, urea and other fertilizers across Canada and the U.S. The key drivers for fertilizers are input prices, demand, government policies, and international competition.

For the year ended December 31, 2019, revenues for this commodity group increased by $35 million, or 1%, when compared to 2018, mainly due to freight rate increases, the positive translation impact of a weaker Canadian dollar and higher U.S. soybean exports; partly offset by lower volumes of potash.

Revenue per RTM increased by 5% in 2019 when compared to 2018, mainly due to freight rate increases and the positive translation impact of a weaker Canadian dollar.

Percentage of commodity group revenues	**2019**	2018
Canadian grain - regulated	**42%**	40%
U.S. grain - domestic	**19%**	19%
Canadian grain - commercial	**13%**	14%
Fertilizers - potash	**10%**	13%
Fertilizers - other	**10%**	9%
U.S. grain - exports	**6%**	5%

Intermodal

Year ended December 31,	**2019**	2018	% Change	% Change at constant currency
Revenues *(millions)*	**$ 3,787**	$ 3,465	9%	8%
RTMs *(millions)*	**58,344**	60,120	(3%)	(3%)
Revenue/RTM *(cents)*	**6.49**	5.76	13%	12%
Carloads *(thousands)*	**2,618**	2,634	(1%)	(1%)

The intermodal commodity group includes rail and trucking services and is comprised of two markets: domestic intermodal and international intermodal. Domestic intermodal transports consumer products and manufactured goods, serving both retail and wholesale channels, within domestic Canada, domestic U.S., Mexico and transborder, while international intermodal handles import and export container traffic, serving the major ports of Vancouver, Prince Rupert, Montreal, Halifax, New Orleans and Mobile. CN's network of inland intermodal terminals are located near ports and large urban centers, which connects customers to major markets in North America and overseas. Domestic intermodal is driven by consumer markets, with growth generally tied to the economy. International intermodal is driven by North American economic and trade conditions. Revenues for TransX and H&R are included in this commodity group within the domestic market.

For the year ended December 31, 2019, revenues for this commodity group increased by $322 million, or 9%, when compared to 2018, mainly due to the inclusion of TransX, higher international container traffic via the Port of Prince Rupert, freight rate increases and the positive translation impact of a weaker Canadian dollar; partly offset by lower international container traffic via the Port of Vancouver and reduced domestic retail volumes, as well as lower applicable fuel surcharge rates.

Revenue per RTM increased by 13% in 2019 when compared to 2018, mainly due to the inclusion of TransX, freight rate increases and the positive translation impact of a weaker Canadian dollar.

Percentage of commodity group revenues	**2019**	2018
International	**68%**	67%
Domestic	**32%**	33%

Automotive

Year ended December 31,		2019		2018	% Change	% Change at constant currency
Revenues *(millions)*	**$**	**858**	$	830	3%	1%
RTMs *(millions)*		**3,735**		3,884	(4%)	(4%)
Revenue/RTM *(cents)*		**22.97**		21.37	7%	5%
Carloads *(thousands)*		**269**		263	2%	2%

The automotive commodity group moves both domestic finished vehicles and parts throughout North America, providing service to certain vehicle assembly plants in Ontario, Michigan and Mississippi. The Company also serves vehicle distribution facilities in Canada and the U.S., as well as parts production facilities in Michigan and Ontario. The Company serves shippers of finished vehicle imports via the ports of Halifax and Vancouver, and through interchange with other railroads. CN's broad network of auto compounds is used to facilitate distribution of vehicles throughout Canada and the U.S. Midwest. The primary drivers for this market are automotive production and sales in North America, which are driven by the average age of vehicles in North America and the price of fuel.

For the year ended December 31, 2019, revenues for this commodity group increased by $28 million, or 3%, when compared to 2018, mainly due to higher volumes of domestic finished vehicles and vehicle parts in the first nine months, the positive translation impact of a weaker Canadian dollar and freight rate increases; partly offset by lower import volumes of finished vehicles via the Port of Halifax.

Revenue per RTM increased by 7% in 2019 when compared to 2018, mainly due to a decrease in the average length of haul, the positive translation impact of a weaker Canadian dollar and freight rate increases.

Percentage of commodity group revenues	**2019**	2018
Finished vehicles	**93%**	94%
Auto parts	**7%**	6%

Other revenues

Year ended December 31,		2019		2018	% Change	% Change at constant currency
Revenues *(millions)*	**$**	**719**	$	773	(7%)	(8%)

Other revenues are derived from non-rail logistics services that support the Company's rail business including vessels and docks, transloading and distribution, automotive logistics, and freight forwarding and transportation management.

For the year ended December 31, 2019, Other revenues decreased by $54 million, or 7%, when compared to 2018, mainly due to lower revenues from vessels.

Percentage of other revenues	**2019**	2018
Vessels and docks	**47%**	50%
Other non-rail services	**44%**	42%
Other revenues	**9%**	8%

Operating expenses

Operating expenses for the year ended December 31, 2019, amounted to $9,324 million compared to $8,828 million in 2018. The increase of $496 million, or 6%, was mainly due to increased purchased services and material expense, due to the inclusion of TransX, higher depreciation expense and the negative translation impact of a weaker Canadian dollar; partly offset by lower fuel prices.

In millions	*Year ended December 31,*	**2019**	2018	% Change	% Change at constant currency
Labor and fringe benefits	**$**	**2,922**	$ 2,860	(2%)	(1%)
Purchased services and material		**2,267**	1,971	(15%)	(14%)
Fuel		**1,637**	1,732	5%	8%
Depreciation and amortization		**1,562**	1,329	(18%)	(16%)
Equipment rents		**444**	467	5%	7%
Casualty and other		**492**	469	(5%)	(3%)
Total operating expenses	**$**	**9,324**	$ 8,828	(6%)	(4%)

Labor and fringe benefits

Labor and fringe benefits expense includes wages, payroll taxes and employee benefits such as incentive compensation, including stock-based compensation, health and welfare, current service cost for pensions and postretirement benefits. Certain incentive and stock-based compensation plans are based on financial performance targets and the related expense is recorded in relation to the attainment of such targets.

Labor and fringe benefits expense increased by $62 million, or 2%, in 2019 when compared to 2018. The increase was primarily due to the inclusion of TransX, general wage increases and the negative translation impact of a weaker Canadian dollar; partly offset by lower incentive compensation.

Purchased services and material

Purchased services and material expense includes the cost of services purchased from outside contractors; materials used in the maintenance of the Company's track, facilities and equipment; transportation and lodging for train crew employees; utility costs; and the net costs of operating facilities jointly used by the Company and other railroads.

Purchased services and material expense increased by $296 million, or 15%, in 2019 when compared to 2018. The increase was mainly due to the inclusion of TransX, higher repairs, maintenance and materials costs, higher costs for services purchased from outside contractors and the negative translation impact of a weaker Canadian dollar.

Fuel

Fuel expense includes fuel consumed by assets, including locomotives, vessels, vehicles and other equipment as well as federal, provincial and state fuel taxes.

Fuel expense decreased by $95 million, or 5%, in 2019 when compared to 2018. The decrease was primarily due to lower fuel prices, decreased volumes of traffic and increased fuel productivity; partly offset by the negative translation impact of a weaker Canadian dollar.

Depreciation and amortization

Depreciation and amortization expense includes the costs associated with the use of properties and intangible assets over their estimated service lives. Depreciation expense is affected by capital additions, railroad property retirements from disposal, sale and/or abandonment and other adjustments including asset impairments.

Depreciation and amortization expense increased by $233 million, or 18%, in 2019 when compared to 2018. The increase was mainly due to a higher depreciable asset base resulting from increased capital expenditures in recent years, an expense related to costs previously capitalized for a PTC back office system following the deployment of a replacement system and the negative translation impact of a weaker Canadian dollar.

Equipment rents

Equipment rents expense includes rental expense for the use of freight cars owned by other railroads (car hire) or private companies and for the lease of freight cars, locomotives and intermodal equipment, net of rental income from other railroads for the use of the Company's freight cars (car hire) and locomotives.

Equipment rents expense decreased by $23 million, or 5%, in 2019 when compared to 2018. The decrease was primarily due to lower costs for leased locomotives, partly offset by higher car hire expense and the negative translation impact of a weaker Canadian dollar.

Casualty and other

Casualty and other expense includes expenses for personal injuries, environmental, freight and property damage, insurance, bad debt, operating taxes, and travel expenses.

Casualty and other expense increased by $23 million, or 5%, in 2019 when compared to 2018. The increase was mainly due to higher incident costs and the negative translation impact of a weaker Canadian dollar; partly offset by lower legal provisions.

Other income and expenses

Interest expense

In 2019, Interest expense was $538 million compared to $489 million in 2018. The increase was mainly due to a higher average level of debt and the negative translation impact of a weaker Canadian dollar; partly offset by a lower average interest rate.

Other components of net periodic benefit income

In 2019, Other components of net periodic benefit income was $321 million compared to $302 million in 2018. The increase was mainly due to lower amortization of net actuarial loss, partly offset by higher interest cost.

Other income

In 2019, Other income was $53 million compared to $376 million in 2018. Included in Other income for 2018 was a gain previously deferred on the 2014 disposal of the Guelph of $79 million, a gain on disposal of the Doney and St-Francois Spurs of $36 million, a gain on the transfer of the Central Station Railway Lease of $184 million, and a gain on disposal of the Calgary Industrial Lead of $39 million.

Income tax recovery (expense)

On December 22, 2017, the President of the United States signed into law the U.S. Tax Reform, which reduced the U.S. federal corporate income tax rate from 35% to 21% effective as of January 1, 2018. The U.S. Tax Reform also allows for immediate capital expensing of new investments in certain qualified depreciable assets made after September 27, 2017, which will be phased down starting in year 2023. As a result of the U.S. Tax Reform, the Company's net deferred income tax liability decreased by $1,764 million for the year ended December 31, 2017.

The U.S. Tax Reform introduced other important changes to U.S. corporate income tax laws including the creation of a new Base Erosion Anti-abuse Tax (BEAT) that subjects certain payments from U.S. corporations to foreign related parties to additional taxes and limitations to the deduction for net interest expense incurred by U.S. corporations. Since the enactment of the U.S. Tax Reform, U.S. authorities have issued various proposed and finalized regulations and guidance interpreting its provisions. These interpretations have been taken into account in calculating the Company's current year income tax provision and tax payments. The U.S. Tax Reform and these regulations are expected to impact the Company's income tax provisions and tax payments in future years.

In 2019, the Company recorded an income tax expense of $1,213 million compared to an income tax expense of $1,354 million in 2018. Included in the 2019 figure was a deferred income tax recovery of $112 million recorded in the second quarter, resulting from the enactment of a lower provincial corporate income tax rate.

The effective tax rate for 2019 was 22.3% compared to 23.8% in 2018. Excluding the aforementioned deferred income tax recovery, the effective tax rate for 2019 was 24.4% compared to 23.8% in 2018. The increase in the effective tax rate was mainly attributable to lower gains on disposal of property in 2019, taxed at the lower capital gain inclusion rate.

For 2020, the Company anticipates the estimated annual effective tax rate to be in the range of 26.0%. The anticipated increase is due to the U.S. Tax Reform, and the related proposed and finalized regulations and interpretations issued as of December 2019.

2018 compared to 2017

Net income for the year ended December 31, 2018 was $4,328 million, a decrease of $1,156 million, or 21%, when compared to 2017, and diluted earnings per share decreased by 19% to $5.87. The decrease was primarily due to a deferred income tax recovery of $1,764 million ($2.33 per diluted share) resulting from the enactment of a lower U.S. federal corporate income tax rate due to the U.S. Tax Reform in 2017, partly offset by an increase in Operating income and Other income.

Operating income for the year ended December 31, 2018 increased by $250 million, or 5%, to $5,493 million. The increase mainly reflects increased revenues from freight rate increases, higher applicable fuel surcharge rates and higher volumes, partly offset by higher costs from higher fuel prices and higher labor costs. The operating ratio was 61.6% in 2018, compared to 59.8% in 2017.

Revenues for the year ended December 31, 2018 were $14,321 million compared to $13,041 million in 2017. The increase of $1,280 million, or 10%, was mainly attributable to freight rate increases, higher applicable fuel surcharge rates and higher volumes of petroleum crude, refined petroleum products, coal, international container traffic and Canadian grain.

Operating expenses for the year ended December 31, 2018 were $8,828 million compared to $7,798 million in 2017. The increase of $1,030 million, or 13%, was mainly due to higher fuel prices, higher costs as a result of increased volumes of traffic and operating performance below 2017 levels.

Constant currency

Financial results at constant currency allow results to be viewed without the impact of fluctuations in foreign currency exchange rates, thereby facilitating period-to-period comparisons in the analysis of trends in business performance. Measures at constant currency are considered non-GAAP measures and do not have any standardized meaning prescribed by GAAP and therefore, may not be comparable to similar measures presented by other companies. Financial results at constant currency are obtained by translating the current period results denominated in US dollars at the foreign exchange rates of the comparable period of the prior year. The average foreign exchange rates were $1.296 and $1.298 per US$1.00, for the years ended December 31, 2018 and 2017, respectively.

On a constant currency basis, the Company's net income for the year ended December 31, 2018 would have been higher by $4 million ($0.01 per diluted share).

Revenues

In millions, unless otherwise indicated	*Year ended December 31,*	2018	2017	% Change	% Change at constant currency
Freight revenues		$ 13,548	$ 12,293	10%	10%
Other revenues		773	748	3%	3%
Total revenues		$ 14,321	$ 13,041	10%	10%
Freight revenues					
Petroleum and chemicals		$ 2,660	$ 2,208	20%	20%
Metals and minerals		1,689	1,523	11%	11%
Forest products		1,886	1,788	5%	6%
Coal		661	535	24%	24%
Grain and fertilizers		2,357	2,214	6%	7%
Intermodal		3,465	3,200	8%	8%
Automotive		830	825	1%	1%
Total freight revenues		$ 13,548	$ 12,293	10%	10%
Revenue ton miles (RTMs) *(millions)*		248,383	237,098	5%	5%
Freight revenue/RTM *(cents)*		5.45	5.18	5%	5%
Carloads *(thousands)*		5,976	5,737	4%	4%
Freight revenue/carload *($)*		2,267	2,143	6%	6%

Revenues for the year ended December 31, 2018, totaled $14,321 million compared to $13,041 million in 2017. The increase of $1,280 million, or 10%, was mainly attributable to freight rate increases, higher applicable fuel surcharge rates and higher volumes of petroleum crude, refined petroleum products, coal, international container traffic and Canadian grain. Fuel surcharge revenues increased by $395 million in 2018, as a result of higher applicable fuel surcharge rates.

In 2018, RTMs increased by 5% relative to 2017. Freight revenue per RTM increased by 5% in 2018 when compared to 2017, mainly driven by freight rate increases and higher applicable fuel surcharge rates.

Petroleum and chemicals

Year ended December 31,		2018		2017	% Change	% Change at constant currency
Revenues *(millions)*	$	2,660	$	2,208	20%	20%
RTMs *(millions)*		50,722		44,375	14%	14%
Revenue/RTM *(cents)*		5.24		4.98	5%	5%
Carloads *(thousands)*		653		614	6%	6%

For the year ended December 31, 2018, revenues for this commodity group increased by $452 million, or 20%, when compared to 2017, mainly due to higher volumes of petroleum crude due to limited pipeline capacity and increased volumes of refined petroleum products, freight rate increases, and higher applicable fuel surcharge rates; partly offset by lower volumes of condensate.

Revenue per RTM increased by 5% in 2018 when compared to 2017, mainly due to freight rate increases and higher applicable fuel surcharge rates; partly offset by an increase in the average length of haul.

Metals and minerals

Year ended December 31,		2018		2017	% Change	% Change at constant currency
Revenues *(millions)*	$	1,689	$	1,523	11%	11%
RTMs *(millions)*		27,993		27,938	—%	—%
Revenue/RTM *(cents)*		6.03		5.45	11%	11%
Carloads *(thousands)*		1,030		995	4%	4%

For the year ended December 31, 2018, revenues for this commodity group increased by $166 million, or 11%, when compared to 2017, mainly due to freight rate increases; higher volumes of semi-finished steel products, and increased shipments of industrial materials and iron ore; and higher applicable fuel surcharge rates; partly offset by lower volumes of frac sand.

Revenue per RTM increased by 11% in 2018 when compared to 2017, mainly due to freight rate increases and higher applicable fuel surcharge rates.

Forest products

Year ended December 31,		2018		2017	% Change	% Change at constant currency
Revenues *(millions)*	$	1,886	$	1,788	5%	6%
RTMs *(millions)*		29,918		30,510	(2%)	(2%)
Revenue/RTM *(cents)*		6.30		5.86	8%	8%
Carloads *(thousands)*		418		424	(1%)	(1%)

For the year ended December 31, 2018, revenues for this commodity group increased by $98 million, or 5%, when compared to 2017, mainly due to freight rate increases and higher applicable fuel surcharge rates, partly offset by decreased volumes of lumber and woodpulp.

Revenue per RTM increased by 8% in 2018 when compared to 2017, mainly due to freight rate increases and higher applicable fuel surcharge rates.

Coal

Year ended December 31,	2018	2017	% Change	% Change at constant currency
Revenues *(millions)*	$ 661	$ 535	24%	24%
RTMs *(millions)*	17,927	14,539	23%	23%
Revenue/RTM *(cents)*	3.69	3.68	—%	—%
Carloads *(thousands)*	346	303	14%	14%

For the year ended December 31, 2018, revenues for this commodity group increased by $126 million, or 24%, when compared to 2017, mainly due to increased exports of U.S. thermal coal via the Gulf Coast, higher metallurgical coal exports via west coast ports, higher applicable fuel surcharge rates as well as freight rate increases.

Revenue per RTM remained flat in 2018 when compared to 2017, mainly due to higher applicable fuel surcharge rates and freight rate increases, offset by an increase in the average length of haul.

Grain and fertilizers

Year ended December 31,	2018	2017	% Change	% Change at constant currency
Revenues *(millions)*	$ 2,357	$ 2,214	6%	7%
RTMs *(millions)*	57,819	56,123	3%	3%
Revenue/RTM *(cents)*	4.08	3.94	4%	4%
Carloads *(thousands)*	632	619	2%	2%

For the year ended December 31, 2018, revenues for this commodity group increased by $143 million, or 6%, when compared to 2017, mainly due to freight rate increases, higher export volumes of Canadian wheat, peas and lentils, and higher applicable fuel surcharge rates; partly offset by reduced Canadian canola volumes, as well as lower export volumes of U.S. soybeans.

Revenue per RTM increased by 4% in 2018 when compared to 2017, mainly due to freight rate increases and higher applicable fuel surcharge rates.

Intermodal

Year ended December 31,	2018	2017	% Change	% Change at constant currency
Revenues *(millions)*	$ 3,465	$ 3,200	8%	8%
RTMs *(millions)*	60,120	59,356	1%	1%
Revenue/RTM *(cents)*	5.76	5.39	7%	7%
Carloads *(thousands)*	2,634	2,514	5%	5%

For the year ended December 31, 2018, revenues for this commodity group increased by $265 million, or 8%, when compared to 2017, mainly due to higher applicable fuel surcharge rates, increased international container traffic via the ports of Prince Rupert and Montreal, and freight rate increases; partly offset by lower international container traffic via the Port of Vancouver, as well as reduced domestic retail shipments.

Revenue per RTM increased by 7% in 2018 when compared to 2017, mainly due to higher applicable fuel surcharge rates and freight rate increases.

Automotive

Year ended December 31,		2018		2017	% Change	% Change at constant currency
Revenues *(millions)*	$	830	$	825	1%	1%
RTMs *(millions)*		3,884		4,257	(9%)	(9%)
Revenue/RTM *(cents)*		21.37		19.38	10%	11%
Carloads *(thousands)*		263		268	(2%)	(2%)

For the year ended December 31, 2018, revenues for this commodity group increased by $5 million, or 1%, when compared to 2017, mainly due to higher applicable fuel surcharge rates and freight rate increases; partly offset by lower volumes of domestic finished vehicles.

Revenue per RTM increased by 10% in 2018 when compared to 2017, mainly due to a decrease in the average length of haul, higher applicable fuel surcharge rates and freight rate increases.

Other revenues

Year ended December 31,		2018		2017	% Change	% Change at constant currency
Revenues *(millions)*	$	773	$	748	3%	3%

For the year ended December 31, 2018, Other revenues increased by $25 million, or 3%, when compared to 2017, mainly due to higher revenues from freight forwarding and transportation management services, and vessels and docks.

Operating expenses

Operating expenses for the year ended December 31, 2018 amounted to $8,828 million compared to $7,798 million in 2017. The increase of $1,030 million, or 13%, was mainly due to higher fuel prices, higher costs as a result of increased volumes of traffic and operating performance below 2017 levels.

In millions *Year ended December 31,*		2018		2017	% Change	% Change at constant currency
Labor and fringe benefits	$	2,860	$	2,536	(13%)	(13%)
Purchased services and material		1,971		1,769	(11%)	(11%)
Fuel		1,732		1,362	(27%)	(27%)
Depreciation and amortization		1,329		1,281	(4%)	(4%)
Equipment rents		467		418	(12%)	(12%)
Casualty and other		469		432	(9%)	(9%)
Total operating expenses	$	8,828	$	7,798	(13%)	(13%)

Labor and fringe benefits

Labor and fringe benefits expense increased by $324 million, or 13%, in 2018 when compared to 2017. The increase was primarily due to higher headcount, general wage increases, higher overtime costs and training costs for new employees, higher pension expense, and employee termination benefits and severance costs related to a workforce reduction program in the fourth quarter.

Purchased services and material

Purchased services and material expense increased by $202 million, or 11%, in 2018 when compared to 2017. The increase was mainly due to higher costs of services purchased from outside contractors, higher trucking and transload costs, and higher repairs, maintenance and materials costs resulting mainly from increased volumes of traffic.

Fuel

Fuel expense increased by $370 million, or 27%, in 2018 when compared to 2017. The increase was primarily due to higher fuel prices and increased volumes of traffic.

Depreciation and amortization

Depreciation and amortization expense increased by $48 million, or 4%, in 2018 when compared to 2017. The increase was mainly due to net asset additions, partly offset by the favorable impact of depreciation studies.

Equipment rents

Equipment rents expense increased by $49 million, or 12%, in 2018 when compared to 2017. The increase was primarily due to higher costs for leased locomotives and higher car hire expense.

Casualty and other

Casualty and other expense increased by $37 million, or 9%, in 2018 when compared to 2017. The increase was mainly due to higher incident costs and higher legal provisions.

Other income and expenses

Interest expense

In 2018, interest expense was $489 million compared to $481 million in 2017. The increase was mainly due to a higher average level of debt, partly offset by a lower average interest rate.

Other components of net periodic benefit income

In 2018, Other components of net periodic benefit income was $302 million compared to $315 million in 2017.

Other income

In 2018, Other income was $376 million compared to $12 million in 2017. Included in Other income for 2018 was a gain previously deferred on the 2014 disposal of the Guelph of $79 million, a gain on disposal of the Doney and St-Francois Spurs of $36 million, a gain on the transfer of the Central Station Railway Lease of $184 million, and a gain on disposal of the Calgary Industrial Lead of $39 million.

Income tax recovery (expense)

In 2018, the Company recorded an income tax expense of $1,354 million compared to an income tax recovery of $395 million in 2017. Included in the 2017 figure was a net deferred income tax recovery of $1,706 million consisting of a deferred income tax recovery of $1,764 million recorded in the fourth quarter, resulting from the enactment of the U.S. Tax Reform; deferred income tax expenses of $50 million recorded in the fourth quarter and $31 million recorded in the third quarter, resulting from the enactment of higher provincial corporate income tax rates and a higher state corporate income tax rate, respectively; and deferred income tax recoveries of $18 million recorded in the second quarter and $5 million recorded in the first quarter, both resulting from the enactment of lower provincial corporate income tax rates.

The effective tax rate for 2018 was 23.8% compared to (7.8)% in 2017. Excluding the aforementioned deferred income tax recoveries and expenses, the effective tax rate for 2018 was 23.8% compared to 25.8% in 2017. The decrease in the effective tax rate was mainly attributable to a lower U.S. Federal corporate tax rate and gains on disposal of property taxed at the lower capital gain inclusion rate.

Summary of quarterly financial data

	2019 Quarters				2018 Quarters			
In millions, except per share data	**Fourth**	**Third**	**Second**	**First**	Fourth	Third	Second	First
Revenues	**$ 3,584**	**$ 3,830**	**$ 3,959**	**$ 3,544**	$ 3,808	$ 3,688	$ 3,631	$ 3,194
Operating income (1)	**$ 1,218**	**$ 1,613**	**$ 1,682**	**$ 1,080**	$ 1,452	$ 1,492	$ 1,519	$ 1,030
Net income (1)	**$ 873**	**$ 1,195**	**$ 1,362**	**$ 786**	$ 1,143	$ 1,134	$ 1,310	$ 741
Basic earnings per share	**$ 1.22**	**$ 1.66**	**$ 1.89**	**$ 1.08**	$ 1.57	$ 1.55	$ 1.78	$ 1.00
Diluted earnings per share	**$ 1.22**	**$ 1.66**	**$ 1.88**	**$ 1.08**	$ 1.56	$ 1.54	$ 1.77	$ 1.00
Dividends per share	**$ 0.5375**	**$ 0.5375**	**$ 0.5375**	**$ 0.5375**	$ 0.4550	$ 0.4550	$ 0.4550	$ 0.4550

(1) Certain quarters include items that management believes do not necessarily arise as part of CN's normal day-to-day operations and can distort the analysis of trends in business performance. See the section of this MD&A entitled Adjusted performance measures for additional information on these items.

Revenues generated by the Company during the year are influenced by seasonal weather conditions, general economic conditions, cyclical demand for rail transportation, and competitive forces in the transportation marketplace (see the section entitled *Business risks* of this MD&A). Operating expenses reflect the impact of freight volumes, seasonal weather conditions, labor costs, fuel prices, and the Company's productivity initiatives. Fluctuations in the Canadian dollar relative to the US dollar have also affected the conversion of the Company's US dollar-denominated revenues and expenses and resulted in fluctuations in net income in the rolling eight quarters presented above.

Summary of fourth quarter 2019

Fourth quarter 2019 net income was $873 million, a decrease of $270 million, or 24%, when compared to the same period in 2018, and diluted earnings per share decreased by 22% to $1.22.

Operating income for the quarter ended December 31, 2019 decreased by $234 million, or 16%, to $1,218 million, when compared to the same period in 2018. The decrease mainly reflects lower revenues across all the commodity groups, other than intermodal. The operating ratio was 66.0% in the fourth quarter of 2019 compared to 61.9% in the fourth quarter of 2018.

Revenues for the fourth quarter of 2019 decreased by $224 million, or 6%, to $3,584 million, when compared to the same period in 2018. The decrease was mainly attributable to lower volumes, due to the weakening economic environment and the conductor strike in November; partly offset by the inclusion of TransX in the intermodal commodity group within the domestic market, freight rate increases and higher international container traffic via the Port of Prince Rupert. Fuel surcharge revenues decreased by $64 million in the fourth quarter of 2019, mainly due to lower applicable fuel surcharge rates.

Operating expenses for the fourth quarter of 2019 remained flat when compared to the same period in 2018. The increases in purchased services and material expense, due to the inclusion of TransX, and depreciation expense; were offset by lower costs from decreased volumes of traffic and lower incentive compensation.

Financial position

The following tables provide an analysis of the Company's balance sheet as at December 31, 2019 as compared to 2018. Assets and liabilities denominated in US dollars have been translated to Canadian dollars using the foreign exchange rate in effect at the balance sheet date. As at December 31, 2019 and 2018, the foreign exchange rates were $1.2990 and $1.3637 per US$1.00, respectively.

In millions *December 31,*	**2019**	2018	Foreign exchange impact	Variance excluding foreign exchange	Explanation of variance, other than foreign exchange impact
Total assets	**$ 43,784**	$ 41,214	$ (968)	$ 3,538	
Variance mainly due to:					
Properties	**39,669**	37,773	(884)	2,780	See the section of this MD&A entitled *Liquidity and capital resources - Investing activities,* property additions of $4,079 million, partly offset by depreciation of $1,559 million.
Operating lease right-of-use assets	**520**	—	—	520	Increase due to Adoption of ASU 2016-02: Leases and related amendments (Topic 842).
Pension asset	**336**	446	—	(110)	Decrease primarily due to the reduction in the year-end discount rate from 3.77% in 2018 to 3.10% in 2019, partly offset by higher actual returns.
Total liabilities	**$ 25,743**	$ 23,573	$ (723)	$ 2,893	
Variance mainly due to:					
Deferred income taxes	**7,844**	7,480	(184)	548	Increase due to deferred income tax expense of $569 million recorded in Net income, partly offset by a deferred income tax recovery of $21 million recorded in Other comprehensive income (loss), mostly attributable to new temporary differences generated during the year.
Pension and other postretirement benefits	**733**	707	(9)	35	Increase primarily due to the reduction in the year-end discount rate from 3.77% in 2018 to 3.10% in 2019, partly offset by higher actual returns.
Total long-term debt, including the current portion	**13,796**	12,569	(501)	1,728	See the section entitled *Liquidity and capital resources - Financing activities* for debt financing activities in 2019, as well as issuance of finance leases of $214 million.
Operating lease liabilities, including the current portion	**501**	—	(16)	517	Increase due to Adoption of ASU 2016-02: Leases and related amendments (Topic 842).

In millions *December 31,*	**2019**	2018	Variance	Explanation of variance
Total shareholders' equity	**$ 18,041**	$ 17,641	$ 400	
Variance mainly due to:				
Accumulated other comprehensive loss	**(3,483)**	(2,849)	(634)	Increase in Other comprehensive loss due to after-tax amounts of $308 million from net foreign exchange losses and $326 million resulting from net actuarial losses on defined benefit pension and post-retirement benefit plans, net of amortization.
Retained earnings	**17,634**	16,623	1,011	Increase primarily due to current year net income of $4,216 million, partly offset by share repurchases of $1,627 million and dividends paid of $1,544 million.

Liquidity and capital resources

The Company's principal source of liquidity is cash generated from operations, which is supplemented by borrowings in the money markets and capital markets. To meet its short-term liquidity needs, the Company has access to various financing sources, including an unsecured revolving credit facility, commercial paper programs, and an accounts receivable securitization program. In addition to these sources, the Company can issue debt securities to meet its longer-term liquidity needs. The strong focus on cash generation from all sources gives the Company increased flexibility in terms of meeting its financing requirements.

The Company's primary uses of funds are for working capital requirements, including income tax installments, pension contributions, and contractual obligations; capital expenditures relating to track infrastructure and other; acquisitions; dividends; and share repurchases. The Company sets priorities on its uses of available funds based on short-term operational requirements, expenditures to continue to operate a safe railway and pursue strategic initiatives, while also considering its long-term contractual obligations and returning value to its shareholders; and as part of its financing strategy, the Company regularly reviews its capital structure, cost of capital, and the need for additional debt financing.

The Company has a working capital deficit, which is common in the capital-intensive rail industry, and is not an indication of a lack of liquidity. The Company maintains adequate resources to meet daily cash requirements, and has sufficient financial capacity to manage its day-to-day cash requirements and current obligations. As at December 31, 2019 and 2018, the Company had Cash and cash equivalents of $64 million and $266 million, respectively; Restricted cash and cash equivalents of $524 million and $493 million, respectively; and a working capital deficit of $1,457 million and $772 million, respectively. The cash and cash equivalents pledged as collateral for a minimum term of one month pursuant to the Company's bilateral letter of credit facilities are recorded as Restricted cash and cash equivalents. There are currently no specific requirements relating to working capital other than in the normal course of business as discussed herein.

The Company's U.S. and other foreign subsidiaries maintain sufficient cash to meet their respective operational requirements. If the Company should require more liquidity in Canada than is generated by its domestic operations, the Company could decide to repatriate funds associated with undistributed earnings of its foreign operations, including its U.S. and other foreign subsidiaries. The impact on liquidity resulting from the repatriation of funds held outside Canada would not be significant as such repatriation of funds would not cause significant tax implications to the Company under the tax laws of Canada and the U.S. and other foreign tax jurisdictions, and the tax treaties currently in effect between them.

The Company expects cash from operations and its various sources of financing to be sufficient to meet its ongoing obligations. The Company is not aware of any trends or expected fluctuations in its liquidity that would impact its ongoing operations or financial condition as of the date of this MD&A.

The Company adopted Accounting Standards Update (ASU) 2016-02: Leases and related amendments (Topic 842) in the first quarter of 2019 using a modified retrospective approach with no restatement of comparative period financial information. Comparative balances previously referred to as capital leases are now referred to as finance leases. See the section of this MD&A entitled *Recent accounting pronouncements* for additional information.

Available financing sources

Shelf prospectus and registration statement

During 2019, under its current shelf prospectus and registration statement, the Company issued a total of $1.25 billion of debt securities in the Canadian capital markets. The Company's shelf prospectus and registration statement, under which CN may issue debt securities in the Canadian and U.S. capital markets until March 13, 2020, has remaining capacity of $3.1 billion.

The Company's access to long-term funds in the capital markets depends on its credit ratings and market conditions. The Company believes that it continues to have access to the capital markets. If the Company were unable to borrow funds at acceptable rates in the capital markets, the Company could borrow under its credit facilities, draw down on its accounts receivable securitization program, raise cash by disposing of surplus properties or otherwise monetizing assets, reduce discretionary spending or take a combination of these measures to assure that it has adequate funding for its business.

Revolving credit facility

On March 15, 2019, the Company's revolving credit facility agreement was amended, which extended the term of the credit facility by one year and increased the credit facility from $1.8 billion to $2.0 billion, effective May 5, 2019. The increase in capacity provides the Company with additional financial flexibility. The amended credit facility of $2.0 billion consists of a $1.0 billion tranche maturing on May 5, 2022 and a $1.0 billion tranche maturing on May 5, 2024. The accordion feature included in the credit facility agreement, which provides for an additional $500 million subject to the consent of individual lenders, remains unchanged. The credit facility is available for general corporate purposes, including backstopping the Company's commercial paper programs.

As at December 31, 2019 and December 31, 2018, the Company had no outstanding borrowings under its revolving credit facility and there were no draws during the years ended 2019 and 2018.

Non-revolving credit facility

On July 25, 2019, the Company entered into an agreement for a non-revolving term loan credit facility in the principal amount of up to US$300 million, secured by rolling stock, which may be drawn upon during the period from July 25, 2019 to March 31, 2020. Term loans made under the facility have a tenor of 20 years, bear interest at a variable rate, and are prepayable at any time without penalty. The credit facility is available for financing or refinancing the purchase of equipment. As at December 31, 2019, the Company had no outstanding borrowings under its non-revolving credit facility and there were no draws during the year ended December 31, 2019. On January 24, 2020, the Company requested a borrowing of US$300 million under its non-revolving credit facility. The funds are expected to be received on February 3, 2020.

Commercial paper

The Company has a commercial paper program in Canada and in the U.S. Both programs are backstopped by the Company's revolving credit facility. As of May 5, 2019, the maximum aggregate principal amount of commercial paper that could be issued increased from $1.8 billion to $2.0 billion, or the US dollar equivalent, on a combined basis. The commercial paper programs, which are subject to market rates in effect at the time of financing, provide the Company with a flexible financing alternative, and can be used for general corporate purposes. The cost of commercial paper and access to the commercial paper market in Canada and the U.S. are dependent on credit ratings and market conditions. If the Company were to lose access to its commercial paper program for an extended period of time, the Company could rely on its $2.0 billion revolving credit facility to meet its short-term liquidity needs.

As at December 31, 2019 and 2018, the Company had total commercial paper borrowings of US$983 million ($1,277 million) and US$862 million ($1,175 million), respectively, presented in Current portion of long-term debt on the Consolidated Balance Sheets.

Accounts receivable securitization program

The Company has an agreement, expiring on February 1, 2021, to sell an undivided co-ownership interest in a revolving pool of accounts receivable to unrelated trusts for maximum cash proceeds of $450 million. The trusts are multi-seller trusts and the Company is not the primary beneficiary. Funding for the acquisition of these assets is customarily through the issuance of asset-backed commercial paper notes by the unrelated trusts.

The Company has retained the responsibility for servicing, administering and collecting the receivables sold. The average servicing period is approximately one month and is renewed at market rates then in effect. Subject to customary indemnifications, each trust's recourse is limited to the accounts receivable transferred.

The accounts receivable securitization program provides the Company with readily available short-term financing for general corporate use. In the event the program is terminated before its scheduled maturity, the Company expects to meet its future payment obligations through its various sources of financing including its revolving credit facility and commercial paper program, and/or access to capital markets.

As at December 31, 2019, the Company had accounts receivable securitization borrowings of $200 million, secured by and limited to $224 million of accounts receivable, presented in Current portion of long-term debt on the Consolidated Balance Sheet. As at December 31, 2018, the Company had no proceeds received under the accounts receivable securitization program.

Bilateral letter of credit facilities

The Company has a series of committed and uncommitted bilateral letter of credit facility agreements. On March 15, 2019, the Company extended the maturity date of the committed bilateral letter of credit facility agreements to April 28, 2022. The agreements are held with various banks to support the Company's requirements to post letters of credit in the ordinary course of business. Under the agreements, the Company has the option from time to time to pledge collateral in the form of cash or cash equivalents, for a minimum term of one month, equal to at least the face value of the letters of credit issued.

As at December 31, 2019, the Company had outstanding letters of credit of $424 million (2018 - $410 million) under the committed facilities from a total available amount of $459 million (2018 - $447 million) and $149 million (2018 - $137 million) under the uncommitted facilities.

As at December 31, 2019, included in Restricted cash and cash equivalents was $429 million (2018 - $408 million) and $90 million (2018 - $80 million) pledged as collateral under the committed and uncommitted bilateral letter of credit facilities, respectively.

Additional information relating to the Company's financing sources is provided in *Note 13 – Debt* to the Company's 2019 Annual Consolidated Financial Statements.

Credit ratings

The Company's ability to access funding in the debt capital markets and the cost and amount of funding available depends in part on its credit ratings. Rating downgrades could limit the Company's access to the capital markets, or increase its borrowing costs.

The following table provides the credit ratings that CN has received from credit rating agencies as of the date of this MD&A:

	Long-term debt rating	**Commercial paper rating**
Dominion Bond Rating Service	A	R-1 (low)
Moody's Investors Service	A2	P-1
Standard & Poor's	A	A-1

These credit ratings are not recommendations to purchase, hold, or sell the securities referred to above. Ratings may be revised or withdrawn at any time by the credit rating agencies. Each credit rating should be evaluated independently of any other credit rating.

Cash flows

In millions *Year ended December 31,*	**2019**	2018	Variance
Net cash provided by operating activities	**$ 5,923**	$ 5,918	$ 5
Net cash used in investing activities	**(4,190)**	(3,404)	(786)
Net cash used in financing activities	**(1,903)**	(2,308)	405
Effect of foreign exchange fluctuations on cash, cash equivalents, restricted cash, and restricted cash equivalents	**(1)**	—	(1)
Net increase (decrease) in cash, cash equivalents, restricted cash, and restricted cash equivalents	**$ (171)**	$ 206	$ (377)
Cash, cash equivalents, restricted cash, and restricted cash equivalents, beginning of year	**759**	553	206
Cash, cash equivalents, restricted cash, and restricted cash equivalents, end of year	**$ 588**	$ 759	$ (171)

Operating activities

Net cash provided by operating activities increased by $5 million in 2019 due to higher cash earnings and advance consideration received related to a long-term rail freight contract; partly offset by unfavorable changes in working capital.

Pension contributions

The Company's contributions to its various defined benefit pension plans are made in accordance with the applicable legislation in Canada and the U.S. and such contributions follow minimum and maximum thresholds as determined by actuarial valuations. Pension contributions for the years ended December 31, 2019 and 2018 of $128 million and $92 million, respectively, primarily represent contributions to the CN Pension Plan, for the current service cost as determined under the Company's current actuarial valuations for funding purposes. The increase in pension contributions was mainly due to the Company reducing its current service cost contributions in 2018 for the CN Pension Plan as permitted based on the prevailing actuarial valuations filed for those respective years. The Company expects to make total cash contributions of approximately $135 million for all pension plans in 2020.

See the section of this MD&A entitled *Critical accounting estimates – Pensions and other postretirement benefits* for additional information pertaining to the funding of the Company's pension plans. Additional information relating to the pension plans is provided in *Note 15 – Pensions and other postretirement benefits* to the Company's 2019 Annual Consolidated Financial Statements.

Income tax payments

The Company is required to make scheduled installment payments as prescribed by the tax authorities. In Canada, the Company's domestic jurisdiction, tax installments in a given year are generally based on the prior year's taxable income whereas in the U.S., the Company's predominant foreign jurisdiction, they are based on forecasted taxable income of the current year.

In 2019, net income tax payments were $822 million (2018 - $776 million). The increase was mainly due to higher required installment payments in both Canada and the U.S.

For 2020, the Company's net income tax payments are expected to be approximately $750 million, and include the impacts of the U.S. Tax Reform, and the related proposed and finalized regulations and interpretations issued as of December 2019. The decrease is primarily due to lower required installment payments in Canada in 2020.

Investing activities

Net cash used in investing activities increased by $786 million in 2019, mainly as a result of higher property additions, primarily locomotives, the acquisitions of TransX and H&R and lower proceeds received from the disposal of property in the current year.

Property additions

In millions	*Year ended December 31,*		**2019**		2018
Track and roadway [(1)]		**$**	**2,262**	$	2,341
Rolling stock			**999**		433
Buildings			**87**		95
Information technology			**421**		459
Other			**310**		203
Gross property additions			**4,079**		3,531
Less: Finance leases [(2)]			**214**		—
Property additions [(3)]		**$**	**3,865**	$	3,531

(1) In 2019, approximately 65% (2018 - 65%) of the Track and roadway property additions were incurred to renew basic infrastructure. Costs relating to normal repairs and maintenance of Track and roadway properties are expensed as incurred, and amounted to approximately 11% of the Company's total operating expenses in 2019 (2018 - 10%).

(2) Includes re-measurement of finance leases.

(3) Includes $227 million associated with the U.S. federal government legislative PTC implementation in 2019 (2018 - $419 million).

Disposal of property

In 2019, there were no significant disposals of property. In 2018, cash flows from investing activities included cash proceeds of $194 million, before transaction costs, from the disposals of the Doney and St-Francois spurs, Central Station Railway lease, and Calgary Industrial Lead. Additional information relating to disposals of property is provided in *Note 5 – Other income* to the Company's 2019 Annual Consolidated Financial Statements.

Acquisitions

On December 2, 2019, the Company acquired H&R for a total purchase price of $105 million, of which $95 million was paid on the closing date and $10 million, mostly related to funds withheld for the indemnification of claims, will be paid within twenty months of the acquisition date.

The preliminary allocation of the purchase price to the assets acquired and liabilities assumed was performed on the basis of their respective fair values. The Company used a third party to assist in establishing the fair values of the assets acquired and liabilities assumed which resulted in the recognition of identifiable net assets of $93 million and goodwill of $12 million. The goodwill acquired through the business combination is mainly attributable to the premium of an established business operation. The Company's purchase price allocation is preliminary and subject to change over the measurement period, which may be up to one year from the acquisition date.

The Company's Consolidated Balance Sheet includes the assets and liabilities of H&R as of December 2, 2019, the acquisition date. Since the acquisition date, H&R's results of operations have been included in the Company's results of operations. The Company has not provided pro forma information relating to the pre-acquisition period as it was not material.

On March 20, 2019, the Company acquired TransX. The total purchase price of $192 million included an initial cash payment of $170 million, additional consideration of $25 million paid on August 27, 2019 upon achievement of targets, less an adjustment of $3 million in the fourth quarter of 2019 to reflect the settlement of working capital.

The preliminary allocation of the purchase price to the assets acquired and liabilities assumed was performed on the basis of their respective fair values. The Company used a third party to assist in establishing the fair values of the assets acquired and liabilities assumed which resulted in the recognition of identifiable net assets of $127 million and goodwill of $65 million. The goodwill acquired through the business combination is mainly attributable to the premium of an established business operation. The Company's purchase price allocation is preliminary and subject to change over the measurement period, which may be up to one year from the acquisition date.

The Company's Consolidated Balance Sheet includes the assets and liabilities of TransX as of March 20, 2019, the acquisition date. Since the acquisition date, TransX's results of operations have been included in the Company's results of operations. The Company has not provided pro forma information relating to the pre-acquisition period as it was not material.

Additional information relating to the acquisitions is provided in *Note 3 - Business combinations* to the Company's 2019 Annual Consolidated Financial Statements.

2020 Capital expenditure program

In 2020, the Company expects to invest approximately $3.0 billion in its capital program, which will be financed with cash generated from operations or with cash from financing activities as required, as outlined below:

- $1.6 billion on track and railway infrastructure maintenance to support safe and efficient operations, including the replacement of rail and ties, bridge improvements, as well as other general track maintenance;
- $0.8 billion on initiatives to increase capacity and enable growth, such as track infrastructure expansion, investments in yards and intermodal terminals, and on information technology to improve safety performance, operational efficiency and customer service;
- $0.4 billion on equipment capital expenditures, allowing the Company to tap growth opportunities and improve the quality of the fleet, and in order to handle expected traffic increase and improve operational efficiency, CN expects to take delivery of 41 new high-horsepower locomotives and 240 new grain hopper cars; and
- $0.2 billion associated with the U.S. federal government legislative PTC implementation.

Financing activities

Net cash used in financing activities decreased by $405 million in 2019, primarily driven by lower net repayment of debt and lower repurchases of common shares; partly offset by higher dividends paid.

Debt financing activities

Debt financing activities in 2019 included the following:

- On November 1, 2019, issuance of $450 million 3.05% Notes due 2050 in the Canadian capital markets, which resulted in net proceeds of $443 million;
- On February 8, 2019, issuance of $350 million 3.00% Notes due 2029 and $450 million 3.60% Notes due 2049 in the Canadian capital markets, which resulted in total net proceeds of $790 million;
- Net issuance of commercial paper of $141 million;
- Proceeds from the accounts receivable securitization program of $420 million;
- Repayment of accounts receivable securitization borrowings of $220 million; and
- Repayment of finance leases of $162 million.

Debt financing activities in 2018 included the following:

- On November 7, 2018, issuance of US$650 million ($854 million) 4.45% Notes due 2049 in the U.S. capital markets, which resulted in net proceeds of $845 million;
- On August 30, 2018, early redemption of US$550 million 5.55% Notes due 2019 for US$558 million ($720 million), which resulted in a loss of US$8 million ($10 million) that was recorded in Other income;
- On July 31, 2018, issuance of $350 million 3.20% Notes due 2028 and $450 million 3.60% Notes due 2048 in the Canadian capital markets, which resulted in total net proceeds of $787 million;
- On July 15, 2018, repayment of US$200 million ($264 million) 6.80% Notes due 2018 upon maturity;
- On May 15, 2018, repayment of US$325 million ($415 million) 5.55% Notes due 2018 upon maturity;
- On February 6, 2018, issuance of US$300 million ($374 million) 2.40% Notes due 2020 and US$600 million ($749 million) 3.65% Notes due 2048 in the U.S. capital markets, which resulted in total net proceeds of $1,106 million;
- Net issuance of commercial paper of $99 million;
- Proceeds from the accounts receivable securitization program of $530 million;
- Repayment of accounts receivable securitization borrowings of $950 million; and
- Repayment of finance leases of $44 million.

Cash obtained from the issuance of debt was used for general corporate purposes, including the redemption and refinancing of outstanding indebtedness, share repurchases, acquisitions and other business opportunities. Additional information relating to the Company's outstanding debt securities is provided in *Note 13 – Debt* to the Company's 2019 Annual Consolidated Financial Statements.

Repurchase of common shares

The Company may repurchase its common shares pursuant to a NCIB at prevailing market prices plus brokerage fees, or such other prices as may be permitted by the TSX. The Company repurchased 14.1 million common shares under its NCIB effective between February 1, 2019 and January 31, 2020, which allowed for the repurchase of up to 22.0 million common shares.

Previous NCIBs allowed for the repurchase of up to 5.5 million common shares between October 30, 2018 and January 31, 2019, and up to 31.0 million common shares between October 30, 2017 and October 29, 2018.

The following table provides the information related to the share repurchases for the years ended December 31, 2019, 2018 and 2017:

In millions, except per share data *Year ended December 31,*		**2019**		2018		2017		**Total NCIB**
February 2019 - January 2020 NCIB								
Number of common shares		**12.8**		N/A		N/A		12.8
Weighted-average price per share	**$**	**120.03**		N/A		N/A	$	120.03
Amount of repurchase	**$**	**1,547**		N/A		N/A	$	1,547
October 2018 - January 2019 NCIB								
Number of common shares		**1.5**		2.6		N/A		4.1
Weighted-average price per share	**$**	**106.78**	$	109.92		N/A	$	108.82
Amount of repurchase	**$**	**153**	$	293		N/A	$	446
October 2017 - October 2018 NCIB								
Number of common shares		**N/A**		16.4		2.9		19.3
Weighted-average price per share		**N/A**	$	104.19	$	102.40	$	103.92
Amount of repurchase		**N/A**	$	1,707	$	293	$	2,000
Total for the year								
Number of common shares		**14.3**		19.0		20.4 (1)		
Weighted-average price per share	**$**	**118.70**	$	104.99	$	98.27 (1)		
Amount of repurchase	**$**	**1,700**	$	2,000	$	2,000 (1)		

(1) Includes 2017 repurchases from the October 2016 - October 2017 NCIB, which consisted of 17.5 million common shares, a weighted-average price per share of $97.60 and an amount of repurchase of $1,707 million. Includes repurchases in the first and second quarters of 2017, pursuant to private agreements between the Company and arm's-length third-party sellers.

On January 28, 2020, the Board of Directors of the Company approved a new NCIB, which allows for the repurchase of up to 16 million common shares between February 1, 2020 and January 31, 2021.

The Company's NCIB notices may be found online on SEDAR at www.sedar.com and on the SEC's website at www.sec.gov through EDGAR. Printed copies may be obtained by contacting the Corporate Secretary's Office.

Share Trusts

The Company's Employee Benefit Plan Trusts ("Share Trusts") purchase CN's common shares on the open market, which are used to deliver common shares under the Share Units Plan and, beginning in 2019, the Employee Share Investment Plan (ESIP). Shares purchased by the Share Trusts are retained until the Company instructs the trustee to transfer shares to participants of the Share Units Plan or the ESIP. Additional information relating to Share Trusts is provided in *Note 16 – Share capital* to the Company's 2019 Annual Consolidated Financial Statements.

The following table provides the information related to the share purchases and settlements by Share Trusts under the Share Units Plan for the years ended December 31, 2019, 2018 and 2017:

In millions, except per share data *Year ended December 31,*		**2019**		2018		2017
Share purchases by Share Units Plan Share Trusts						
Number of common shares		**–**		0.4		0.5
Weighted-average price per share	**$**	**–**	$	104.87	$	102.17
Amount of purchase	**$**	**–**	$	38	$	55
Share settlements by Share Units Plan Share Trusts						
Number of common shares		**0.5**		0.4		0.3
Weighted-average price per share	**$**	**88.23**	$	84.53	$	77.99
Amount of settlement	**$**	**45**	$	31	$	24

For the year ended December 31, 2019, the ESIP Share Trusts purchased 0.3 million common shares for $33 million at a weighted-average price of $118.83 per share.

Dividends paid

During 2019, the Company paid quarterly dividends of $0.5375 per share amounting to $1,544 million, compared to $1,333 million, at the rate of $0.4550 per share, in 2018. For 2020, the Company's Board of Directors approved an increase of 7% to the quarterly dividend to common shareholders, from $0.5375 per share in 2019 to $0.5750 per share in 2020.

Contractual obligations

In the normal course of business, the Company incurs contractual obligations. The following table sets forth the Company's contractual obligations for the following items as at December 31, 2019:

In millions		Total		2020		2021		2022		2023		2024		2025 & thereafter
Debt obligations [(1)]	**$**	**13,662**	$	1,871	$	761	$	317	$	187	$	447	$	10,079
Interest on debt obligations		**9,884**		509		504		485		471		463		7,452
Finance lease obligations [(2)]		**138**		62		72		1		—		—		3
Operating lease obligations [(3)]		**560**		135		108		73		51		37		156
Purchase obligations [(4)]		**1,621**		1,136		201		120		86		40		38
Other long-term liabilities [(5)]		**701**		104		56		47		46		34		414
Total contractual obligations	**$**	**26,566**	**$**	**3,817**	**$**	**1,702**	**$**	**1,043**	**$**	**841**	**$**	**1,021**	**$**	**18,142**

(1) Presented net of unamortized discounts and debt issuance costs and excludes finance lease obligations.

(2) Includes $4 million of imputed interest.

(3) Includes $70 million related to renewal options reasonably certain to be exercised and $59 million of imputed interest.

(4) Includes fixed and variable commitments for rail, information technology services and licenses, locomotives, wheels, engineering services, railroad ties, rail cars, as well as other equipment and services. Costs of variable commitments were estimated using forecasted prices and volumes.

(5) Includes expected payments for workers' compensation, postretirement benefits other than pensions, net unrecognized tax benefits, environmental liabilities and pension obligations that have been classified as contractual settlement agreements.

Free cash flow

Management believes that free cash flow is a useful measure of liquidity as it demonstrates the Company's ability to generate cash for debt obligations and for discretionary uses such as payment of dividends, share repurchases and strategic opportunities. The Company defines its free cash flow measure as the difference between net cash provided by operating activities and net cash used in investing activities, adjusted for the impact of business acquisitions, if any. Free cash flow does not have any standardized meaning prescribed by GAAP and therefore, may not be comparable to similar measures presented by other companies.

The following table provides a reconciliation of net cash provided by operating activities, as reported for the years ended December 31, 2019, 2018 and 2017, to free cash flow:

In millions	*Year ended December 31,*		2019		2018		2017
Net cash provided by operating activities		**$**	**5,923**	$	5,918	$	5,516
Net cash used in investing activities			**(4,190)**		(3,404)		(2,738)
Net cash provided before financing activities			**1,733**		2,514		2,778
Adjustment: Acquisitions, net of cash acquired [(1)]			**259**		—		—
Free cash flow		**$**	**1,992**	$	2,514	$	2,778

(1) Relates to the acquisitions of H&R Transport Limited ("H&R") and the TransX Group of Companies ("TransX"). See the section of this MD&A entitled Liquidity and capital resources - Investing activities for additional information.

Adjusted debt-to-adjusted EBITDA multiple

Management believes that the adjusted debt-to-adjusted earnings before interest, income taxes, depreciation and amortization (EBITDA) multiple is a useful credit measure because it reflects the Company's ability to service its debt and other long-term obligations. The Company calculates the adjusted debt-to-adjusted EBITDA multiple as adjusted debt divided by adjusted EBITDA. These measures do not have any standardized meaning prescribed by GAAP and therefore, may not be comparable to similar measures presented by other companies.

The following table provides a reconciliation of debt and net income to the adjusted measures presented below, which have been used to calculate the adjusted debt-to-adjusted EBITDA multiple:

In millions, unless otherwise indicated *As at and for the year ended December 31,*	**2019**	2018	2017
Debt	**$ 13,796**	$ 12,569	$ 10,828
Adjustments:			
Operating lease liabilities, including current portion (1)	**501**	579	478
Pension plans in deficiency	**521**	477	455
Adjusted debt	**$ 14,818**	$ 13,625	$ 11,761
Net income	**$ 4,216**	$ 4,328	$ 5,484
Interest expense	**538**	489	481
Income tax expense (recovery)	**1,213**	1,354	(395)
Depreciation and amortization	**1,562**	1,329	1,281
EBITDA	**7,529**	7,500	6,851
Adjustments:			
Other income	**(53)**	(376)	(12)
Other components of net periodic benefit income	**(321)**	(302)	(315)
Operating lease cost (1)	**171**	218	191
Adjusted EBITDA	**$ 7,326**	$ 7,040	$ 6,715
Adjusted debt-to-adjusted EBITDA multiple *(times)*	**2.02**	1.94	1.75

(1) The Company adopted Accounting Standards Update (ASU) 2016-02: Leases and related amendments (Topic 842) in the first quarter of 2019. The Company now includes operating lease liabilities, as defined by Topic 842, in adjusted debt and excludes operating lease cost, as defined by Topic 842, in adjusted EBITDA. Comparative balances previously referred to as present value of operating lease commitments and operating lease expense have not been adjusted and are now referred to as operating lease liabilities and operating lease cost, respectively. See the section of this MD&A entitled Recent accounting pronouncements for additional information.

All forward-looking statements discussed in this section are subject to risks and uncertainties and are based on assumptions about events and developments that may not materialize or that may be offset entirely or partially by other events and developments. See the section of this MD&A entitled *Forward-looking statements* for a discussion of assumptions and risk factors affecting such forward-looking statements.

Off balance sheet arrangements

Guarantees and indemnifications

In the normal course of business, the Company enters into agreements that may involve providing guarantees or indemnifications to third parties and others, which may extend beyond the term of the agreements. These include, but are not limited to, standby letters of credit, surety and other bonds, and indemnifications that are customary for the type of transaction or for the railway business. As at December 31, 2019, the Company has not recorded a liability with respect to guarantees and indemnifications. Additional information relating to guarantees and indemnifications is provided in *Note 19 – Major commitments and contingencies* to the Company's 2019 Annual Consolidated Financial Statements.

Outstanding share data

As at January 31, 2020, the Company had 711.2 million common shares and 3.6 million stock options outstanding.

Financial instruments

Risk management

In the normal course of business, the Company is exposed to various risks from its use of financial instruments. To manage these risks, the Company follows a financial risk management framework, which is monitored and approved by the Company's Finance Committee, with a goal of maintaining a strong balance sheet, optimizing earnings per share and free cash flow, financing its operations at an optimal cost of capital and preserving its liquidity. The Company has limited involvement with derivative financial instruments in the management of its risks and does not hold or issue them for trading or speculative purposes.

Credit risk

Credit risk arises from cash and temporary investments, accounts receivable and derivative financial instruments. To manage credit risk associated with cash and temporary investments, the Company places these financial assets with governments, major financial institutions, or other creditworthy counterparties, and performs ongoing reviews of these entities. To manage credit risk associated with accounts receivable, the Company reviews the credit history of each new customer, monitors the financial condition and credit limits of its customers, and keeps the average daily sales outstanding within an acceptable range. The Company works with customers to ensure timely payments, and in certain cases, requires financial security, including letters of credit. CN also obtains credit insurance for certain high risk customers. Although the Company believes there are no significant concentrations of customer credit risk, economic conditions can affect the Company's customers and can result in an increase to the Company's credit risk and exposure to business failures of its customers. A widespread deterioration of customer credit and business failures of customers could have a material adverse effect on the Company's results of operations, financial position or liquidity. The Company considers the risk due to the possible non-performance by its customers to be remote.

The Company has limited involvement with derivative financial instruments, however from time to time, it may enter into derivative financial instruments to manage its exposure to interest rates or foreign currency exchange rates. To manage the counterparty risk associated with the use of derivative financial instruments, the Company enters into contracts with major financial institutions that have been accorded investment grade ratings. Though the Company is exposed to potential credit losses due to non-performance of these counterparties, the Company considers this risk to be remote.

Liquidity risk

Liquidity risk is the risk that sufficient funds will not be available to satisfy financial obligations as they come due. In addition to cash generated from operations, which represents its principal source of liquidity, the Company manages liquidity risk by aligning other external sources of funds which can be obtained upon short notice, such as a revolving credit facility, commercial paper programs, and an accounts receivable securitization program. As well, the Company can issue debt securities in the Canadian and U.S. capital markets under its shelf prospectus and registration statement. The Company's access to long-term funds in the debt capital markets depends on its credit ratings and market conditions. The Company believes that its investment grade credit ratings contribute to reasonable access to capital markets. See the section of this MD&A entitled *Liquidity and capital resources* for additional information relating to the Company's available financing sources and its credit ratings.

Foreign currency risk

The Company conducts its business in both Canada and the U.S. and as a result, is affected by currency fluctuations. Changes in the exchange rate between the Canadian dollar and the US dollar affect the Company's revenues and expenses. To manage foreign currency risk, the Company designates US dollar-denominated debt of the parent company as a foreign currency hedge of its net investment in foreign operations. As a result, from the dates of designation, foreign exchange gains and losses on translation of the Company's US dollar-denominated debt are recorded in Accumulated other comprehensive loss, which minimizes volatility of earnings resulting from the conversion of US dollar-denominated debt into the Canadian dollar.

The Company also enters into foreign exchange forward contracts to manage its exposure to foreign currency risk. As at December 31, 2019, the Company had outstanding foreign exchange forward contracts with a notional value of US$1,088 million (2018 - US$1,465 million). Changes in the fair value of foreign exchange forward contracts, resulting from changes in foreign exchange rates, are recognized in Other income in the Consolidated Statements of Income as they occur. For the year ended December 31, 2019, the Company recorded a loss of $75 million (2018 - gain of $157 million; 2017 - loss of $72 million), related to foreign exchange forward contracts. These gains or losses were largely offset by the re-measurement of US dollar-denominated monetary assets and liabilities recognized in Other income. As at December 31, 2019, the fair value of outstanding foreign exchange forward contracts included in Other current assets and Accounts payable and other was $nil and $24 million, respectively (2018 - $67 million and $nil, respectively).

The estimated annual impact on net income of a one-cent change in the Canadian dollar relative to the US dollar is approximately $35 million.

Interest rate risk

The Company is exposed to interest rate risk, which is the risk that the fair value or future cash flows of a financial instrument will vary as a result of changes in market interest rates. Such risk exists in relation to the Company's debt. The Company mainly issues fixed-rate debt, which exposes the Company to variability in the fair value of the debt. The Company also issues debt with variable interest rates, which exposes the Company to variability in interest expense.

To manage interest rate risk, the Company manages its borrowings in line with liquidity needs, maturity schedule, and currency and interest rate profile. In anticipation of future debt issuances, the Company may use derivative instruments such as forward rate agreements. The Company does not currently hold any significant derivative instruments to manage its interest rate risk.

The estimated annual impact on net income of a one-percent change in the interest rate on floating rate debt is approximately $10 million.

Commodity price risk

The Company is exposed to commodity price risk related to purchases of fuel and the potential reduction in net income due to increases in the price of diesel. Fuel prices are impacted by geopolitical events, changes in the economy or supply disruptions. Fuel shortages can occur due to refinery disruptions, production quota restrictions, climate, and labor and political instability.

The Company manages fuel price risk by offsetting the impact of rising fuel prices with the Company's fuel surcharge program. The surcharge applied to customers is determined in the second calendar month prior to the month in which it is applied, and is generally calculated using the average monthly price of On-Highway Diesel, and, to a lesser extent, West-Texas Intermediate crude oil.

While the Company's fuel surcharge program provides effective coverage, residual exposure remains given that fuel price risk cannot be completely managed due to timing and given the volatility in the market. As such, the Company may enter into derivative instruments to manage such risk when considered appropriate.

Fair value of financial instruments

The financial instruments that the Company measures at fair value on a recurring basis in periods subsequent to initial recognition are categorized into the following levels of the fair value hierarchy based on the degree to which inputs are observable:

- Level 1: Inputs are quoted prices for identical instruments in active markets
- Level 2: Significant inputs (other than quoted prices included in Level 1) are observable
- Level 3: Significant inputs are unobservable

The carrying amounts of Cash and cash equivalents and Restricted cash and cash equivalents approximate fair value. These financial instruments include highly liquid investments purchased three months or less from maturity, for which the fair value is determined by reference to quoted prices in active markets.

The carrying amounts of Accounts receivable, Other current assets, and Accounts payable and other approximate fair value. The fair value of these financial instruments is not determined using quoted prices, but rather from market observable information. The fair value of derivative financial instruments, classified as Level 2, used to manage the Company's exposure to foreign currency risk and included in Other current assets and Accounts payable and other is measured by discounting future cash flows using a discount rate derived from market data for financial instruments subject to similar risks and maturities.

The carrying amount of the Company's debt does not approximate fair value. The fair value is estimated based on quoted market prices for the same or similar debt instruments, as well as discounted cash flows using current interest rates for debt with similar terms, company rating, and remaining maturity. The Company classifies debt as Level 2. As at December 31, 2019, the Company's debt, excluding finance leases, had a carrying amount of $13,662 million (2018 - $12,540 million) and a fair value of $15,667 million (2018 - $13,287 million).

Recent accounting pronouncements

The following recent ASUs issued by the Financial Accounting Standards Board (FASB) were adopted by the Company during the current year:

ASU 2016-02 Leases and related amendments (Topic 842)

The ASU requires a lessee to recognize a right-of-use asset and a lease liability on the balance sheet for all leases greater than twelve months and requires additional qualitative and quantitative disclosures. The lessor accounting model under the new standard is substantially unchanged. The guidance must be applied using a modified retrospective approach. Entities may elect to apply the guidance to each prior period presented with a cumulative-effect adjustment to retained earnings recognized at the beginning of the earliest period presented or to apply the guidance with a cumulative-effect adjustment to retained earnings recognized at the beginning of the period of adoption.

The new standard provides a number of practical expedients and accounting policy elections upon transition. On January 1, 2019, the Company did not elect the package of three practical expedients that permits the Company not to reassess prior conclusions about lease qualification, classification and initial direct costs. Upon adoption, the Company elected the following practical expedients:

- the use-of-hindsight practical expedient to reassess the lease term and the likelihood that a purchase option will be exercised;
- the land easement practical expedient to not evaluate land easements that were not previously accounted for as leases under Topic 840;
- the short-term lease exemption for all asset classes that permits entities not to recognize right-of-use assets and lease liabilities onto the balance sheet for leases with terms of twelve months or less; and
- the practical expedient to not separate lease and non-lease components for the freight car asset category.

The Company adopted this standard in the first quarter of 2019 with an effective date of January 1, 2019 using a modified retrospective approach with a cumulative-effect adjustment to Retained earnings recognized on January 1, 2019, with no restatement of comparative period financial information. As at January 1, 2019, the cumulative-effect adjustment to adopt the new standard increased the balance of Retained earnings by $29 million, relating to a deferred gain on a sale-leaseback transaction of a real estate property. The initial adoption transition adjustment to record right-of-use assets and lease liabilities for leases over twelve months on the Company's Consolidated Balance Sheet was $756 million to each balance. The initial adoption transition adjustment is comprised of finance and operating leases of $215 million and $541 million, respectively. New finance lease right-of-use assets and finance lease liabilities are a result of the reassessment of leases with purchase options that are reasonably certain to be exercised by the Company under the transition to Topic 842, previously accounted for as operating leases.

ASU 2017-04 Intangibles - Goodwill and other (Topic 350): Simplifying the test for goodwill impairment

The ASU simplifies the goodwill impairment test by removing the requirement to compare the implied fair value of goodwill with its carrying amount. Under the new standard, goodwill impairment tests are performed by comparing the fair value of a reporting unit with its carrying amount, recognizing an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value, up to the value of goodwill.

The guidance must be applied prospectively. The ASU is effective for annual and any interim impairment tests for periods beginning after December 15, 2019. Early adoption is permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017.

The Company adopted this standard in the first quarter of 2019 with an effective date of January 1, 2019. The adoption of this standard did not have an impact on the Company's Consolidated Financial Statements.

The following recent ASUs issued by FASB have an effective date after December 31, 2019 and have not been adopted by the Company:

ASU 2019-12 Income taxes (Topic 740): Simplifying the accounting for income taxes

The ASU adds new guidance to simplify accounting for income taxes, changes the accounting for certain income tax transactions and makes minor improvements to the codification. The ASU introduces new guidance that provides a policy election to not allocate consolidated income taxes when a member of a consolidated tax return is not subject to income tax, and provides guidance to evaluate whether a step-up in tax basis of goodwill relates to a business combination in which book goodwill was recognized or a separate transaction. In addition, the ASU changes the current guidance by making an intraperiod allocation if there is a loss in continuing operations and gains outside of continuing operations; by determining when a deferred tax liability is recognized after an investor in a foreign entity transitions to or from the equity method of accounting; by accounting for tax law changes and year-to-date losses in interim periods; and by determining how to apply the income tax guidance to franchise taxes and other taxes that are partially based on income.

The ASU is effective for annual and any interim period beginning after December 15, 2020. Early adoption is permitted.

The Company is evaluating the effects that the adoption of the ASU will have on its Consolidated Financial Statements; no significant impact is expected.

ASU 2016-13 Financial instruments - Credit losses (Topic 326): Measurement of credit losses on financial instruments
The ASU requires financial assets measured at amortized cost to be presented at the net amount expected to be collected. The new standard replaces the current incurred loss impairment methodology with one that reflects expected credit losses. The adoption of the ASU is not expected to have a significant impact on the Company's Consolidated Financial Statements. CN will adopt the requirements of the ASU effective January 1, 2020.

Other recently issued ASUs required to be applied for periods beginning on or after January 1, 2020 have been evaluated by the Company and will not have a significant impact on the Company's Consolidated Financial Statements.

Critical accounting estimates

The preparation of financial statements in accordance with GAAP requires management to make estimates, judgments and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the disclosure of contingent assets and liabilities at the date of the financial statements. On an ongoing basis, management reviews its estimates based upon available information. Actual results could differ from these estimates. The Company's policies for income taxes, capital expenditures, depreciation, pensions and other postretirement benefits, personal injury and other claims and environmental matters, require management's more significant judgments and estimates in the preparation of the Company's consolidated financial statements and, as such, are considered to be critical. The following information should be read in conjunction with the Company's 2019 Annual Consolidated Financial Statements and Notes thereto.

Management discusses the development and selection of the Company's critical accounting policies, including the underlying estimates and assumptions, with the Audit Committee of the Company's Board of Directors. The Audit Committee has reviewed the Company's related disclosures.

Income taxes
The Company follows the asset and liability method of accounting for income taxes. Under the asset and liability method, the change in the net deferred income tax asset or liability is included in the computation of Net income or Other comprehensive income (loss). Deferred income tax assets and liabilities are measured using enacted income tax rates expected to apply to taxable income in the years in which temporary differences are expected to be recovered or settled. As a result, a projection of taxable income is required for those years, as well as an assumption of the ultimate recovery/settlement period for temporary differences. The projection of future taxable income is based on management's best estimate and may vary from actual taxable income.

On an annual basis, the Company assesses the need to establish a valuation allowance for its deferred income tax assets, and if it is deemed more likely than not that its deferred income tax assets will not be realized, a valuation allowance is recorded. The ultimate realization of deferred income tax assets is dependent upon the generation of sufficient future taxable income, of the necessary character, during the periods in which those temporary differences become deductible. Management considers the scheduled reversals of deferred income tax liabilities, the available carryback and carryforward periods, and projected future taxable income in making this assessment. As at December 31, 2019, in order to fully realize all of the deferred income tax assets, the Company will need to generate future taxable income of approximately $3.0 billion, and, based upon the level of historical taxable income, projections of future taxable income of the necessary character over the periods in which the deferred income tax assets are deductible, and the reversal of taxable temporary differences, management believes, following an assessment of the current economic environment, it is more likely than not that the Company will realize the benefits of these deductible differences. See the section of this MD&A entitled *Other income and expenses - Income tax recovery (expense)* for information about the U.S. Tax Reform.

In addition, Canadian, or domestic, tax rules and regulations, as well as those relating to foreign jurisdictions, are subject to interpretation and require judgment by the Company that may be challenged by the taxation authorities upon audit of the filed income tax returns. Tax benefits are recognized if it is more likely than not that the tax position will be sustained on examination by the taxation authorities. As at December 31, 2019, the total amount of gross unrecognized tax benefits was $62 million, before considering tax treaties and other arrangements between taxation authorities. The amount of net unrecognized tax benefits as at December 31, 2019 was $60 million. If recognized, $7 million of the net unrecognized tax benefits as at December 31, 2019 would affect the effective tax rate. The Company believes that it is reasonably possible that $23 million of the net unrecognized tax benefits as at December 31, 2019 related to Canadian federal and provincial income tax matters, may be recognized over the next twelve months as a result of settlements and a lapse of the applicable statute of limitations, and will not affect the effective tax rate as they relate to temporary differences.

The Company's deferred income tax assets are mainly composed of temporary differences related to net operating losses and tax credit carryforwards, the pension liability, lease liabilities, accruals for personal injury and other claims, other postretirement benefits liability, and compensation reserves. The Company's deferred income tax liabilities are mainly composed of temporary differences related to properties, operating lease right-of-use assets, and the pension asset. These deferred income tax assets and liabilities are recorded at the enacted tax rates of the periods in which the related temporary differences are expected to reverse. As a result, fiscal budget changes and/or changes in income tax laws that affect a change in the timing, the amount, and/or the income tax rate at which the temporary difference components will reverse, could materially affect deferred income tax expense as recorded in the Company's results of operations. The reversal of temporary differences is expected at future-enacted income tax rates which could change due to fiscal budget changes and/or changes in income tax laws. As a result, a change in the timing and/or the income tax rate at which the components will reverse, could materially affect deferred income tax expense as recorded in the Company's results of operations. From time to time, the federal, provincial, and state governments enact new corporate income tax rates resulting in either lower or higher tax liabilities. A one-percentage-point change in the Canadian and U.S. statutory federal tax rate would have the effect of changing the deferred income tax expense by $160 million and $140 million in 2019, respectively.

For the year ended December 31, 2019, the Company recorded an income tax expense of $1,213 million, of which $569 million was a deferred income tax expense. The deferred income tax expense included a recovery of $112 million resulting from the enactment of a lower provincial corporate income tax rate. For the year ended December 31, 2018, the Company recorded an income tax expense of $1,354 million, of which $527 million was a deferred income tax expense. For the year ended December 31, 2017, the Company recorded total income tax recovery of $395 million, of which $1,195 million was a deferred income tax recovery. The deferred income tax recovery included a net recovery of $1,706 million resulting from the enactment of the U.S. Tax Reform, and changes to provincial and state corporate income tax rates. The Company's net deferred income tax liability as at December 31, 2019 was $7,844 million (2018 - $7,480 million). Additional disclosures are provided in *Note 6 – Income taxes* to the Company's 2019 Annual Consolidated Financial Statements.

Depreciation

Properties are carried at cost less accumulated depreciation including asset impairment write-downs. The Company has a process in place to determine whether or not costs qualify for capitalization, which requires judgment. The cost of properties, including those under finance leases, net of asset impairment write-downs, is depreciated on a straight-line basis over their estimated service lives, measured in years, except for rail and ballast whose services lives are measured in millions of gross tons. The Company follows the group method of depreciation whereby a single composite depreciation rate is applied to the gross investment in a class of similar assets, despite small differences in the service life or salvage value of individual property units within the same asset class. The Company uses approximately 40 different depreciable asset classes.

For all depreciable assets, the depreciation rate is based on the estimated service lives of the assets. Assessing the reasonableness of the estimated service lives of properties requires judgment and is based on currently available information, including periodic depreciation studies conducted by the Company. The Company's U.S. properties are subject to comprehensive depreciation studies as required by the Surface Transportation Board (STB) and are conducted by external experts. Depreciation studies for Canadian properties are not required by regulation and are conducted internally. Studies are performed on specific asset groups on a periodic basis. Changes in the estimated service lives of the assets and their related composite depreciation rates are implemented prospectively.

The studies consider, among other factors, the analysis of historical retirement data using recognized life analysis techniques, and the forecasting of asset life characteristics. Changes in circumstances, such as technological advances, changes to the Company's business strategy, changes in the Company's capital strategy or changes in regulations can result in the actual service lives differing from the Company's estimates.

A change in the remaining service life of a group of assets, or their estimated net salvage value, will affect the depreciation rate used to amortize the group of assets and thus affect depreciation expense as reported in the Company's results of operations. A change of one year in the composite service life of the Company's fixed asset base would impact annual depreciation expense by approximately $56 million.

Depreciation studies are a means of ensuring that the assumptions used to estimate the service lives of particular asset groups are still valid and where they are not, they serve as the basis to establish the new depreciation rates to be used on a prospective basis. In 2019, the Company completed depreciation studies for track properties and as a result, the Company changed the estimated service lives for various types of track assets and their related composite depreciation rates. The results of these depreciation studies did not materially affect the Company's annual depreciation expense.

Given the nature of the railroad and the composition of its network which is made up of homogeneous long-lived assets, it is impractical to maintain records of specific properties at their lowest unit of property.

Retirements of assets occur through the replacement of an asset in the normal course of business, the sale of an asset or the abandonment of a section of track. For retirements in the normal course of business, generally the life of the retired asset is within a reasonable range of the expected useful life, as determined in the depreciation studies, and, as such, no gain or loss is recognized under the group method. The asset's cost is removed from the asset account and the difference between its cost and estimated related accumulated depreciation (net of salvage proceeds), if any, is recorded as an adjustment to accumulated depreciation and no gain or loss is recognized. The historical cost of the retired asset is estimated by using deflation factors or indices that closely correlate to the properties comprising the asset classes in combination with the estimated age of the retired asset using a first-in, first-out approach, and applying it to the replacement value of the asset.

In each depreciation study, an estimate is made of any excess or deficiency in accumulated depreciation for all corresponding asset classes to ensure that the depreciation rates remain appropriate. The excess or deficiency in accumulated depreciation is amortized over the remaining life of the asset class.

For retirements of depreciable properties that do not occur in the normal course of business, the historical cost, net of salvage proceeds, is recorded as a gain or loss in income. A retirement is considered not to be in the normal course of business if it meets the following criteria: (i) it is unusual, (ii) it is significant in amount, and (iii) it varies significantly from the retirement pattern identified through depreciation studies. A gain or loss is recognized in Other income for the sale of land or disposal of assets that are not part of railroad operations.

For the year ended December 31, 2019, the Company recorded total depreciation expense of $1,559 million (2018 - $1,327 million; 2017 - $1,279 million). As at December 31, 2019, the Company had Properties of $39,669 million, net of accumulated depreciation of $13,912 million (2018 - $37,773 million, net of accumulated depreciation of $13,305 million). Additional disclosures are provided in *Note 9 – Properties* to the Company's 2019 Annual Consolidated Financial Statements.

GAAP requires the use of historical cost as the basis of reporting in financial statements. As a result, the cumulative effect of inflation, which has significantly increased asset replacement costs for capital-intensive companies such as CN, is not reflected in operating expenses. Depreciation charges on an inflation-adjusted basis, assuming that all operating assets are replaced at current price levels, would be substantially greater than historically reported amounts.

Pensions and other postretirement benefits

The Company's plans have a measurement date of December 31. The following table provides the Company's pension asset, pension liability and other postretirement benefits liability as at December 31, 2019, and 2018:

In millions	*December 31,*	**2019**		2018
Pension asset	**$**	**336**	$	446
Pension liability	**$**	**521**	$	477
Other postretirement benefits liability	**$**	**227**	$	247

The descriptions in the following paragraphs pertaining to pensions relate generally to the Company's main pension plan, the CN Pension Plan, unless otherwise specified.

Calculation of net periodic benefit cost (income)

In accounting for pensions and other postretirement benefits, assumptions are required for, among other things, the discount rate, the expected long-term rate of return on plan assets, the rate of compensation increase, health care cost trend rates, mortality rates, employee early retirements, terminations and disability. Changes in these assumptions result in actuarial gains or losses, which are recognized in Other comprehensive income (loss). The Company generally amortizes these gains or losses into net periodic benefit cost (income) over the expected average remaining service life of the employee group covered by the plans only to the extent that the unrecognized net actuarial gains and losses are in excess of the corridor threshold, which is calculated as 10% of the greater of the beginning-of-year balances of the projected benefit obligation or market-related value of plan assets. The Company's net periodic benefit cost (income) for future periods is dependent on demographic experience, economic conditions and investment performance. Recent demographic experience has revealed no material net gains or losses on termination, retirement, disability and mortality. Experience with respect to economic conditions and investment performance is further discussed herein.

For the years ended December 31, 2019, 2018 and 2017, the consolidated net periodic benefit cost (income) for pensions and other postretirement benefits were as follows:

In millions	*Year ended December 31,*	**2019**		2018		2017
Net periodic benefit income for pensions	**$**	**(183)**	$	(139)	$	(190)
Net periodic benefit cost for other postretirement benefits	**$**	**7**	$	9	$	7

As at December 31, 2019 and 2018, the projected pension benefit obligation and accumulated other postretirement benefit obligation were as follows:

In millions	*December 31,*	**2019**		2018
Projected pension benefit obligation	**$**	**18,609**	$	17,275
Accumulated other postretirement benefit obligation	**$**	**227**	$	247

Discount rate assumption

The Company's discount rate assumption, which is set annually at the end of each year, is determined by management with the aid of third-party actuaries. The discount rate is used to measure the single amount that, if invested at the measurement date in a portfolio of high-quality debt instruments with a rating of AA or better, would provide the necessary cash flows to pay for pension benefits as they become due. For the Canadian pension and other postretirement benefit plans, future expected benefit payments are discounted using spot rates based on a derived AA corporate bond yield curve for each maturity year. A year-end discount rate of 3.10% based on bond yields prevailing at December 31, 2019 (2018 - 3.77%) was considered appropriate by the Company.

The Company uses the spot rate approach to measure current service cost and interest cost for all defined benefit pension and other postretirement benefit plans. Under the spot rate approach, individual spot discount rates along the same yield curve used in the determination of the projected benefit obligation are applied to the relevant projected cash flows for current service cost at the relevant maturity. More specifically, current service cost is measured using the cash flows related to benefits expected to be accrued in the following year by active members of a plan and interest cost is measured using the projected cash flows making up the projected benefit obligation multiplied by the corresponding spot discount rate at each maturity.

As at December 31, 2019, a 0.25% decrease in the 3.10% discount rate used to determine the projected benefit obligation would have resulted in a decrease of approximately $570 million to the funded status for pensions and would result in a decrease of approximately $25 million to the 2020 projected net periodic benefit income. A 0.25% increase in the discount rate would have resulted in an increase of approximately $540 million to the funded status for pensions and would result in an increase of approximately $25 million to the 2020 projected net periodic benefit income.

Expected long-term rate of return assumption

The expected long-term rate of return is determined based on expected future performance for each asset class and is weighted based on the investment policy. Consideration is taken of the historical performance, the premium return generated from an actively managed portfolio, as well as current target asset allocations, published market return expectations, economic developments, inflation rates and administrative expenses. Based on these factors, the rate is determined by the Company. For 2019, the Company used a long-term rate of return assumption of 7.00% on the market-related value of plan assets to compute net periodic benefit cost (income). The Company has elected to use a market-related value of assets, whereby realized and unrealized gains/losses and appreciation/depreciation in the value of the investments are recognized over a period of five years, while investment income is recognized immediately. In 2020, the Company will maintain the expected long-term rate of return on plan assets at 7.00% to reflect management's current view of long-term investment returns.

The assets of the Company's various plans are primarily held in separate trust funds ("Trusts") which are diversified by asset type, country, sector and investment strategy. Each year, the CN Board of Directors reviews and confirms or amends the Statement of Investment Policies and Procedures ("SIPP") which includes the plans' long-term target asset allocation ("Policy") and related benchmark indices. This Policy is based on the long-term expectations of the economy and financial market returns and considers the dynamics of the plans' benefit obligations. In 2019, the Policy was amended to affect a target asset allocation change to bonds and mortgages, emerging market debt, private debt, absolute return, and investment-related liabilities. These changes were taken into account in the determination of the Company's expected long-term rate of return assumption. In 2019, the Policy was: 3% cash and short-term investments, 35% bonds and mortgages, 1.5% emerging market debt, 1.5% private debt, 40% equities, 4% real estate, 7% oil and gas, 4% infrastructure investments, 10% absolute return investments and negative 6% for investment-related liabilities.

Annually, the CN Investment Division ("Investment Manager"), a division of the Company created to invest and administer the assets of the plans, can also implement an investment strategy ("Strategy") which can lead the Plan's actual asset allocation to deviate from the Policy due to changing market risks and opportunities. The Pension and Investment Committee of the Board of Directors ("Committee") regularly compares the actual plan asset allocation to the Policy and Strategy and compares the actual performance of the Company's pension plan assets to the performance of the benchmark indices.

The Committee's approval is required for all major investments in illiquid securities. The SIPP allows for the use of derivative financial instruments to implement strategies, hedge and adjust existing or anticipated exposures. The SIPP prohibits investments in securities of the Company or its subsidiaries.

The actual, market-related value and expected rates of return on plan assets for the last five years were as follows:

	2019	2018	2017	2016	2015
Actual	**12.2%**	(2.4%)	9.2%	4.4%	5.5%
Market-related value	**6.1%**	5.7%	9.1%	8.2%	7.0%
Expected	**7.00%**	7.00%	7.00%	7.00%	7.00%

The Company's expected long-term rate of return on plan assets reflects management's view of long-term investment returns and the effect of a 1% variation in such rate of return would result in a change to the net periodic benefit cost (income) of approximately $100 million. Management's assumption of the expected long-term rate of return is subject to risks and uncertainties that could cause the actual rate of return to differ materially from management's assumption. There can be no assurance that the plan assets will be able to earn the expected long-term rate of return on plan assets.

Net periodic benefit income for pensions for 2020

In 2020, the Company expects net periodic benefit income to be $117 million (2019 - $183 million) for all its defined benefit pension plans.

Plan asset allocation

Based on the fair value of the assets held as at December 31, 2019, the assets of the Company's various plans are comprised of 3% in cash and short-term investments, 36% in bonds and mortgages, 3% in emerging market debt, 3% in private debt, 37% in equities, 2% in real estate, 5% in oil and gas, 3% in infrastructure, 10% in absolute return investments, 1% in risk-factor allocation investments and negative 3% in investment-related liabilities. See *Note 15 - Pensions and other postretirement benefits* to the Company's 2019 Annual Consolidated Financial Statements for information on the fair value measurements of such assets.

A significant portion of the plans' assets are invested in publicly traded equity securities whose return is primarily driven by stock market performance. Debt securities also account for a significant portion of the plans' investments and provide a partial offset to the variation in the pension benefit obligation that is driven by changes in the discount rate. The funded status of the plan fluctuates with market conditions and impacts funding requirements. The Company will continue to make contributions to the pension plans that as a minimum meet pension legislative requirements.

Rate of compensation increase

The rate of compensation increase is determined by the Company based upon its long-term plans for such increases. For 2019, a basic rate of compensation increase of 2.75% was used to determine the projected benefit obligation and the net periodic benefit cost (income).

Mortality

The Canadian Institute of Actuaries (CIA) published in 2014 a report on Canadian Pensioners' Mortality ("Report"). The Report contained Canadian pensioners' mortality tables and improvement scales based on experience studies conducted by the CIA. The CIA's conclusions were taken into account in selecting management's best estimate mortality assumption used to calculate the projected benefit obligation as at December 31, 2019, 2018 and 2017.

Funding of pension plans

The Company's main Canadian defined benefit pension plan, the CN Pension Plan, accounts for 93% of the Company's pension obligation and can produce significant volatility in pension funding requirements, given the pension fund's size, the many factors that drive the plan's funded status, and Canadian statutory pension funding requirements. Adverse changes to the assumptions used to calculate the plan's funding status, particularly the discount rate used for funding purposes, as well as changes to existing federal pension legislation, regulation and guidance could significantly impact the Company's future contributions.

For accounting purposes, the funded status is calculated under generally accepted accounting principles for all pension plans. For funding purposes, the funded status is also calculated under going concern and solvency scenarios as prescribed under pension legislation and subject to guidance issued by the CIA and the Office of the Superintendent of Financial Institutions (OSFI) for all registered Canadian defined benefit pension plans. The Company's funding requirements are determined upon completion of actuarial valuations. Actuarial valuations are generally required on an annual basis for all Canadian defined benefit pension plans, or when deemed appropriate by the OSFI. Actuarial valuations are also required annually for the Company's U.S. qualified defined benefit pension plans.

The Company's most recently filed actuarial valuations for funding purposes for its Canadian registered defined pension plans conducted as at December 31, 2018 indicated a funding excess on a going concern basis of approximately $3.3 billion and a funding excess on a solvency basis of approximately $0.5 billion, calculated using the three-year average of the plans' hypothetical wind-up ratio in accordance with the *Pension Benefit Standards Regulations, 1985*. The federal pension legislation requires funding deficits, if any, to be paid over a number of years, as calculated under current pension regulations. Alternatively, a letter of credit can be subscribed to fulfill required solvency deficit payments. The OSFI proposed revisions to its Instruction guide for the Preparation of Actuarial Reports for defined benefit pension plans. If these proposed revisions become final, they would affect the December 31, 2020 actuarial valuations by reducing the solvency status of the Company’s defined benefit pension plans, and may negatively impact the Company’s pension funding requirements starting in year 2021.

The Company's next actuarial valuations for funding purposes for its Canadian registered defined benefit pension plans required as at December 31, 2019 will be performed in 2020. These actuarial valuations are expected to identify a funding excess on a going concern basis of approximately $3.5 billion, while on a solvency basis a funding excess of approximately $0.5 billion is expected.

Based on the anticipated results of these valuations, the Company expects to make total cash contributions of approximately $135 million for all of the Company's pension plans in 2020. The Company expects cash from operations and its other sources of financing to be sufficient to meet its 2020 funding obligations.

Information disclosed by major pension plan

The following table provides the Company's plan assets by category, projected benefit obligation at end of year, as well as Company and employee contributions by major defined benefit pension plan:

In millions	*December 31, 2019*	**CN Pension Plan**	**BC Rail Pension Plan**	**U.S. and other plans**	**Total**
Plan assets by category					
Cash and short-term investments		$ 480	$ 16	$ 6	$ 502
Bonds		6,140	316	165	6,621
Mortgages		51	1	—	52
Emerging market debt		490	8	2	500
Private debt		469	10	2	481
Public equities		6,333	161	115	6,609
Private equities		210	4	1	215
Real estate		424	9	2	435
Oil and gas		879	18	4	901
Infrastructure		603	12	4	619
Absolute return		1,729	28	8	1,765
Risk-factor allocation		283	4	1	288
Total investments		18,091	587	310	18,988
Investment-related liabilities (1)		(554)	(9)	(2)	(565)
Other (2)		(14)	1	14	1
Total plan assets		**$ 17,523**	**$ 579**	**$ 322**	**$ 18,424**
Projected benefit obligation at end of year		$ 17,252	$ 515	$ 842	$ 18,609
Company contributions in 2019		$ 81	$ —	$ 24	$ 105
Employee contributions in 2019		$ 64	$ —	$ —	$ 64

(1) Investment-related liabilities include securities sold under repurchase agreements.

(2) Other consists of operating assets of $108 million and liabilities of $107 million required to administer the Trusts' investment assets and the plans' benefit and funding activities.

Additional disclosures are provided in *Note 15 – Pensions and other postretirement benefits* to the Company's 2019 Annual Consolidated Financial Statements.

Personal injury and other claims

In the normal course of business, the Company becomes involved in various legal actions seeking compensatory and occasionally punitive damages, including actions brought on behalf of various purported classes of claimants and claims relating to employee and third-party personal injuries, occupational disease and property damage, arising out of harm to individuals or property allegedly caused by, but not limited to, derailments or other accidents.

Canada

Employee injuries are governed by the workers' compensation legislation in each province whereby employees may be awarded either a lump sum or a future stream of payments depending on the nature and severity of the injury. As such, the provision for employee injury claims is discounted. In the provinces where the Company is self-insured, costs related to employee work-related injuries are accounted for based on actuarially developed estimates of the ultimate cost associated with such injuries, including compensation, health care and third-party administration costs. An actuarial study is generally performed at least on a triennial basis. For all other legal actions, the Company maintains, and regularly updates on a case-by-case basis, provisions for such items when the expected loss is both probable and can be reasonably estimated based on currently available information.

In 2019, 2018 and 2017 the Company recorded a decrease of $7 million, and an increase of $4 million and $2 million, respectively, to its provision for personal injuries in Canada as a result of actuarial valuations for employee injury claims.

As at December 31, 2019, 2018 and 2017, the Company's provision for personal injury and other claims in Canada was as follows:

In millions		**2019**		2018		2017
Beginning of year	**$**	**207**	$	183	$	183
Accruals and other		**29**		52		38
Payments		**(29)**		(28)		(38)
End of year	**$**	**207**	$	207	$	183
Current portion - End of year	**$**	**55**	$	60	$	40

The assumptions used in estimating the ultimate costs for Canadian employee injury claims include, among other factors, the discount rate, the rate of inflation, wage increases and health care costs. The Company periodically reviews its assumptions to reflect currently available information. Over the past three years, the Company has not had to significantly change any of these assumptions. Changes in any of these assumptions could materially affect Casualty and other expense as reported in the Company's results of operations.

For all other legal claims in Canada, estimates are based on the specifics of the case, trends and judgment.

United States

Personal injury claims by the Company's employees, including claims alleging occupational disease and work-related injuries, are subject to the provisions of the *Federal Employers' Liability Act* (FELA). Employees are compensated under FELA for damages assessed based on a finding of fault through the U.S. jury system or through individual settlements. As such, the provision is undiscounted. With limited exceptions where claims are evaluated on a case-by-case basis, the Company follows an actuarial-based approach and accrues the expected cost for personal injury, including asserted and unasserted occupational disease claims, and property damage claims, based on actuarial estimates of their ultimate cost. An actuarial study is performed annually.

For employee work-related injuries, including asserted occupational disease claims, and third-party claims, including grade crossing, trespasser and property damage claims, the actuarial valuation considers, among other factors, the Company's historical patterns of claims filings and payments. For unasserted occupational disease claims, the actuarial valuation includes the projection of the Company's experience into the future considering the potentially exposed population. The Company adjusts its liability based upon management's assessment and the results of the study. On an ongoing basis, management reviews and compares the assumptions inherent in the latest actuarial valuation with the current claim experience and, if required, adjustments to the liability are recorded.

Due to the inherent uncertainty involved in projecting future events, including events related to occupational diseases, which include but are not limited to, the timing and number of actual claims, the average cost per claim and the legislative and judicial environment, the Company's future payments may differ from current amounts recorded.

In 2019, the Company recorded an increase of $2 million to its provision for U.S. personal injury and other claims attributable to third-party claims, occupational disease claims and non-occupational disease claims pursuant to the 2019 actuarial valuation. In 2018 and 2017, actuarial valuations resulted in an increase of $13 million and $15 million, respectively. The prior years' adjustments from the actuarial valuations were mainly attributable to non-occupational disease claims, third-party claims and occupational disease claims reflecting changes in the Company's estimates of unasserted claims and costs related to asserted claims. The Company has an ongoing risk mitigation strategy focused on reducing the frequency and severity of claims through injury prevention and containment; mitigation of claims; and lower settlements of existing claims.

As at December 31, 2019, 2018 and 2017, the Company's provision for personal injury and other claims in the U.S. was as follows:

In millions		**2019**		2018		2017
Beginning of year	**$**	**139**	$	116	$	118
Accruals and other		**44**		41		46
Payments		**(31)**		(28)		(41)
Foreign exchange		**(7)**		10		(7)
End of year	**$**	**145**	$	139	$	116
Current portion - End of year	**$**	**36**	$	37	$	25

For the U.S. personal injury and other claims liability, historical claim data is used to formulate assumptions relating to the expected number of claims and average cost per claim for each year. Changes in any one of these assumptions could materially affect Casualty and other expense as reported in the Company's results of operations. A 5% change in the asbestos average claim cost or a 1% change in the inflation trend rate for all injury types would result in an increase or decrease in the liability recorded of approximately $2 million.

Environmental matters

Known existing environmental concerns

The Company is or may be liable for remediation costs at individual sites, in some cases along with other potentially responsible parties, associated with actual or alleged contamination. The ultimate cost of addressing these known contaminated sites cannot be definitively established given that the estimated environmental liability for any given site may vary depending on the nature and extent of the contamination; the nature of anticipated response actions, taking into account the available clean-up techniques; evolving regulatory standards governing environmental liability; and the number of potentially responsible parties and their financial viability. As a result, liabilities are recorded based on the results of a four-phase assessment conducted on a site-by-site basis. A liability is initially recorded when environmental assessments occur, remedial efforts are probable, and when the costs, based on a specific plan of action in terms of the technology to be used and the extent of the corrective action required, can be reasonably estimated. The Company estimates the costs related to a particular site using cost scenarios established by external consultants based on the extent of contamination and expected costs for remedial efforts. In the case of multiple parties, the Company accrues its allocable share of liability taking into account the Company's alleged responsibility, the number of potentially responsible parties and their ability to pay their respective share of the liability. Adjustments to initial estimates are recorded as additional information becomes available.

The Company's provision for specific environmental sites is undiscounted and includes costs for remediation and restoration of sites, as well as monitoring costs. Environmental expenses, which are classified as Casualty and other in the Consolidated Statements of Income, include amounts for newly identified sites or contaminants as well as adjustments to initial estimates. Recoveries of environmental remediation costs from other parties are recorded as assets when their receipt is deemed probable.

As at December 31, 2019, 2018 and 2017, the Company's provision for specific environmental sites was as follows:

In millions		**2019**		2018		2017
Beginning of year	**$**	**61**	$	78	$	86
Accruals and other		**31**		16		16
Payments		**(34)**		(34)		(23)
Foreign exchange		**(1)**		1		(1)
End of year	**$**	**57**	$	61	$	78
Current portion - End of year	**$**	**38**	$	39	$	57

The Company anticipates that the majority of the liability at December 31, 2019 will be paid out over the next five years. Based on the information currently available, the Company considers its provisions to be adequate.

Unknown existing environmental concerns

While the Company believes that it has identified the costs likely to be incurred for environmental matters based on known information, the discovery of new facts, future changes in laws, the possibility of releases of hazardous materials into the environment and the Company's ongoing efforts to identify potential environmental liabilities that may be associated with its properties may result in the identification of additional environmental liabilities and related costs. The magnitude of such additional liabilities and the costs of complying with future environmental laws and containing or remediating contamination cannot be reasonably estimated due to many factors, including:

- the lack of specific technical information available with respect to many sites;
- the absence of any government authority, third-party orders, or claims with respect to particular sites;
- the potential for new or changed laws and regulations and for development of new remediation technologies and uncertainty regarding the timing of the work with respect to particular sites; and
- the determination of the Company's liability in proportion to other potentially responsible parties and the ability to recover costs from any third parties with respect to particular sites.

Therefore, the likelihood of any such costs being incurred or whether such costs would be material to the Company cannot be determined at this time. There can thus be no assurance that liabilities or costs related to environmental matters will not be incurred in the future, or will not have a material adverse effect on the Company's financial position or results of operations in a particular quarter or fiscal year, or that the Company's liquidity will not be adversely impacted by such liabilities or costs, although management believes, based on current information, that the costs to address environmental matters will not have a material adverse effect on the Company's financial position or liquidity. Costs related to any unknown existing or future contamination will be accrued in the period in which they become probable and reasonably estimable.

Future occurrences

In railroad and related transportation operations, it is possible that derailments or other accidents, including spills and releases of hazardous materials, may occur that could cause harm to human health or to the environment. As a result, the Company may incur costs in the future, which may be material, to address any such harm, compliance with laws and other risks, including costs relating to the performance of clean-ups, payment of environmental penalties and remediation obligations, and damages relating to harm to individuals or property.

Regulatory compliance

The Company may incur significant capital and operating costs associated with environmental regulatory compliance and clean-up requirements, in its railroad operations and relating to its past and present ownership, operation or control of real property. Environmental expenditures that relate to current operations are expensed unless they relate to an improvement to the property. Expenditures that relate to an existing condition caused by past operations and which are not expected to contribute to current or future operations are expensed. Operating expenses related to regulatory compliance activities for environmental matters for the year ended December 31, 2019 amounted to $25 million (2018 - $22 million; 2017 - $20 million). For 2020, the Company expects to incur operating expenses relating to environmental matters in the same range as 2019. In addition, based on the results of its operations and maintenance programs, as well as ongoing environmental audits and other factors, the Company plans for specific capital improvements on an annual basis. Certain of these improvements help ensure facilities, such as fueling stations, waste water and storm water treatment systems, comply with environmental standards and include new construction and the updating of existing systems and/or processes. Other capital expenditures relate to assessing and remediating certain impaired properties. The Company's environmental capital expenditures for the year ended December 31, 2019 amounted to $25 million (2018 - $19 million; 2017 - $21 million). For 2020, the Company expects to incur capital expenditures relating to environmental matters in the same range as 2019.

Business risks

In the normal course of business, the Company is exposed to various business risks and uncertainties that can have an effect on the Company's results of operations, financial position, or liquidity. While some exposures may be reduced by the Company's risk management strategies, many risks are driven by external factors beyond the Company's control or are of a nature which cannot be eliminated. The key areas of business risks and uncertainties described in this section are not the only ones that can affect the Company. Additional risks and uncertainties not currently known to management or that may currently not be considered material by management, could nevertheless also have an adverse effect on the Company's business.

Competition

The Company faces significant competition, including from rail carriers and other modes of transportation, and is also affected by its customers' flexibility to select among various origins and destinations, including ports, in getting their products to market. Specifically, the Company faces competition from Canadian Pacific Railway Company (CP), which operates the other major rail system in Canada and services most of the same industrial areas, commodity resources and population centers as the Company; major U.S. railroads and other Canadian and U.S. railroads; long-distance trucking companies, transportation via the St. Lawrence-Great Lakes Seaway and the Mississippi River and transportation via pipelines. In addition, while railroads must build or acquire and maintain their rail systems, motor carriers and barges are able to use public rights-of-way that are built and maintained by public entities without paying fees covering the entire costs of their usage.

Competition is generally based on the quality and the reliability of the service provided, access to markets, as well as price. Factors affecting the competitive position of customers, including exchange rates and energy cost, could materially adversely affect the demand for goods supplied by the sources served by the Company and, therefore, the Company's volumes, revenues and profit margins. Factors affecting the general market conditions for the Company's customers can result in an imbalance of transportation capacity relative to demand. An extended period of supply/demand imbalance could negatively impact market rate levels for all transportation services, and more specifically the Company's ability to maintain or increase rates. This, in turn, could materially and adversely affect the Company's business, results of operations or financial position.

The level of consolidation of rail systems in the U.S. has resulted in larger rail systems that are in a position to compete effectively with the Company in numerous markets.

There can be no assurance that the Company will be able to compete effectively against current and future competitors in the transportation industry, or that further consolidation within the transportation industry and legislation allowing for more leniency in size and weight for motor carriers will not adversely affect the Company's competitive position. No assurance can be given that competitive pressures will not lead to reduced revenues, profit margins or both.

Environmental matters

The Company's operations are subject to numerous federal, provincial, state, municipal and local environmental laws and regulations in Canada and the U.S. concerning, among other things, emissions into the air; discharges into waters; the generation, handling, storage, transportation, treatment and disposal of waste, hazardous substances and other materials; decommissioning of underground and aboveground storage tanks; and soil and groundwater contamination. A risk of environmental liability is inherent in railroad and related transportation operations; real estate ownership, operation or control; and other commercial activities of the Company with respect to both current and past operations. As a result, the Company incurs significant operating and capital costs, on an ongoing basis, associated with environmental regulatory compliance and clean-up requirements in its railroad operations and relating to its past and present ownership, operation or control of real property.

While the Company believes that it has identified the costs likely to be incurred for environmental matters in the next several years based on known information, the discovery of new facts, future changes in laws, the possibility of releases of hazardous materials into the environment and the Company's ongoing efforts to identify potential environmental liabilities that may be associated with its properties may result in the identification of additional environmental liabilities and related costs.

In railroad and related transportation operations, it is possible that derailments or other accidents, including spills and releases of hazardous materials, may occur that could cause harm to human health or to the environment. In addition, the Company is also exposed to potential catastrophic liability risk, faced by the railroad industry generally, in connection with the transportation of toxic inhalation hazard materials such as chlorine and anhydrous ammonia, or other dangerous commodities such as crude oil and propane that the Company may be required to transport as a result of its common carrier obligations. Therefore, the Company may incur costs in the future, which may be material, to address any such harm, compliance with laws or other risks, including costs relating to the performance of clean-ups, payment of environmental penalties and remediation obligations, and damages relating to harm to individuals or property.

The environmental liability for any given contaminated site varies depending on the nature and extent of the contamination; the available clean-up techniques; evolving regulatory standards governing environmental liability; and the number of potentially responsible parties and their financial viability. As such, the ultimate cost of addressing known contaminated sites cannot be definitively established. Also, additional contaminated sites yet unknown may be discovered or future operations may result in accidental releases.

While some exposures may be reduced by the Company's risk mitigation strategies (including periodic audits, employee training programs, emergency plans and procedures, and insurance), many environmental risks are driven by external factors beyond the Company's control or are of a nature which cannot be completely eliminated. Therefore, there can be no assurance, notwithstanding the Company's mitigation strategies, that liabilities or costs related to environmental matters will not be incurred in the future or that environmental matters will not have a material adverse effect on the Company's results of operations, financial position or liquidity, or reputation.

Personal injury and other claims

In the normal course of business, the Company becomes involved in various legal actions seeking compensatory and occasionally punitive damages, including actions brought on behalf of various purported classes of claimants and claims relating to employee and third-party personal injuries, occupational disease, and property damage, arising out of harm to individuals or property allegedly caused by, but not limited to, derailments or other accidents. The Company maintains provisions for such items, which it considers to be adequate for all of its outstanding or pending claims and benefits from insurance coverage for occurrences in excess of certain amounts. The final outcome with respect to actions outstanding or pending at December 31, 2019, or with respect to future claims, cannot be predicted with certainty, and therefore there can be no assurance that their resolution will not have a material adverse effect on the Company's results of operations, financial position or liquidity, in a particular quarter or fiscal year.

Labor negotiations

As at December 31, 2019, CN employed a total of 18,726 employees in Canada, of which 13,447, or 72%, were unionized employees and 7,249 employees in the U.S., of which 6,111, or 84%, were unionized employees. The Company's relationships with its unionized workforce are governed by, amongst other items, collective agreements which are negotiated from time to time. Disputes relating to the renewal of collective agreements could potentially result in strikes, slowdowns and loss of business. Future labor agreements or renegotiated agreements could increase labor and fringe benefits and related expenses. There can be no assurance that the Company will be able to renew and have its collective agreements ratified without any strikes or lockouts or that the resolution of these collective bargaining negotiations will not have a material adverse effect on the Company's results of operations or financial position.

Canadian workforce

On February 5, 2019, the collective agreement with the United Steelworkers governing track and bridge workers was ratified by its members, renewing the collective agreement for a five-year term expiring on December 31, 2023.

On March 22, 2019, CN received notice to commence collective bargaining with the Teamsters Canada Rail Conference (TCRC) to renew the collective agreements covering conductors and yard service employees. On June 26, 2019, the Minister of Labour appointed conciliators to assist the parties in their negotiations. On August 23, 2019, the parties agreed to extend the conciliation period. On November 19, 2019, the TCRC initiated strike action and on November 26, 2019 a tentative agreement was reached to renew the collective agreements. On January 31, 2020, the collective agreements were ratified by its members, renewing the collective agreements for a three-year term, retroactive from July 23, 2019.

On May 10, 2019, the collective agreements with Unifor for three bargaining units covering clerical and intermodal employees, and other classifications, were ratified by its members, renewing the collective agreements for a 45-month term expiring on December 31, 2022.

On October 2, 2019, subsequent to the tentative agreement reached with Unifor to renew the collective agreement governing owner-operator truck drivers which was rejected by the membership on May 10, 2019, a revised agreement was ratified by its members, renewing that collective agreement through December 31, 2023.

On June 14, 2019, the collective agreement with the TCRC governing rail traffic controllers was ratified by its members, renewing the collective agreements for a four-year term expiring on December 31, 2022.

The Company's collective agreements remain in effect until the bargaining process outlined under the *Canada Labour Code* has been exhausted.

U.S. workforce

As of January 31, 2020, collective agreements covering all non-operating and operating craft employees at Grand Trunk Western Railroad Company (GTW), companies owned by Illinois Central Corporation (ICC), companies owned by Wisconsin Central Ltd. (WC) and Bessemer & Lake Erie Railroad Company (BLE), and all employees at Pittsburgh and Conneaut Dock Company (PCD) were ratified. The tentative agreement covering the laborers represented by the United Steelworkers at PCD was reached on December 23, 2019 and was ratified by its members on December 27, 2019. Agreements in place have various moratorium provisions, which preserve the status quo in respect of the given collective agreement during the terms of such moratoriums. Where negotiations are ongoing, the terms and conditions of existing agreements generally continue to apply until new agreements are reached or the processes of the *Railway Labor Act* have been exhausted.

The general approach to labor negotiations by U.S. Class I railroads is to bargain on a collective national basis with the industry, which GTW, ICC, WC and BLE currently participate in, for collective agreements covering all non-operating and operating employees. The next national bargaining round has commenced.

Regulation

Economic regulation – Canada

The Company's rail operations in Canada are subject to economic regulation by the Canadian Transportation Agency under the *Canada Transportation Act*, which provides rate and service remedies, including final offer arbitration, long-haul interswitching rates and mandatory interswitching. It also regulates the maximum revenue entitlement for the movement of regulated grain, charges for railway ancillary services and noise-related disputes. In addition, various Company business transactions must gain prior regulatory approval, with attendant risks and uncertainties, and the Company is subject to government oversight with respect to rate, service and business practice issues.

No assurance can be given that any current or future regulatory or legislative initiatives by the Canadian federal government and agencies will not materially adversely affect the Company's results of operations or its competitive and financial position.

Economic regulation – U.S.

The Company's U.S. rail operations are subject to economic regulation by the STB. The STB serves as both an adjudicatory and regulatory body and has jurisdiction over certain railroad rate and service issues and rail restructuring transactions such as mergers, line sales, line construction and line abandonments. As such, various Company business transactions must gain prior regulatory approval and aspects of its pricing and service practices may be subject to challenge, with attendant risks and uncertainties. Recent proceedings undertaken by the STB in a number of significant matters remain pending.

The rail industry had previously challenged as unconstitutional Congress' delegation in the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) to Amtrak and the Federal Railroad Administration (FRA) of joint authority to promulgate the PRIIA performance standards. On March 23, 2017, the U.S. District Court for the District of Columbia concluded that Section 207 of PRIIA was void and unconstitutional and vacated the performance standards. The Government defendants challenged this decision in the U.S. Court of Appeals for the District of Columbia. On July 20, 2018, the U.S. Court of Appeals for the District of Columbia Circuit reversed the judgment of the District Court and held that the constitutional defect could be appropriately remedied by severing the arbitration provision in Section 207(d). The U.S. Court of Appeals noted that the aspect of the District Court's decision that vacated the performance standards is final because the Government defendants did not challenge it on appeal. On October 24, 2018, the U.S. Court of Appeals denied the rail industry's petition for rehearing. On June 3, 2019, the U.S. Supreme Court denied the rail industry's petition for review. As part of PRIIA, U.S. Congress authorized the STB to investigate any railroad over whose track Amtrak operates that fails to meet heightened performance standards preference to Amtrak, the STB is authorized to assess damages against the host railroad.

On August 8, 2019, the STB issued interim findings and guidance to National Railroad Passenger Corporation (Amtrak) and the Company regarding the terms and conditions for Amtrak's use of the Company's lines. The STB ordered Board-sponsored mediation.

In 2019, the STB proposed rules and policy statements and received comments related to the reporting of rail service data, the agency's methodology for determining the rail industry's cost of capital, and rate reasonableness standards, in addition to issuing proposals concerning demurrage and accessorial charges. The STB held a hearing to receive comments on a report concerning revenue adequacy and received additional comments in the proceeding relating to the STB's prior notice of proposed rulemaking to revoke previously granted exemptions of five commodities from regulatory oversight.

No assurance can be given that these and any other current or future regulatory or legislative initiatives by the U.S. federal government and agencies will not materially adversely affect the Company's results of operations or its competitive and financial position.

Safety regulation – Canada

The Company's rail operations in Canada are subject to safety regulation by the Minister under the *Railway Safety Act* as well as the rail portions of other safety-related statutes, which are administered by Transport Canada. The Company may be required to transport toxic inhalation hazard materials as a result of its common carrier obligations and, as such, is exposed to additional regulatory oversight in Canada. The *Transportation of Dangerous Goods Act*, also administered by Transport Canada, establishes the safety requirements for the transportation of goods classified as dangerous and enables the adoption of regulations for security training and screening of personnel working with dangerous goods, as well as the development of a program to require a transportation security clearance for dangerous goods, the tracking of dangerous goods during transport and the development of an emergency response plan.

In 2014, Transport Canada's new *Grade Crossings Regulations* under the *Railway Safety Act* came into force, which establish specific standards for new grade crossings and requirements that existing crossings be upgraded to basic safety standards by November 2021, as well as safety related data that must be provided by railway companies on an annual basis. The Company has complied with the information requirements by providing road authorities with specific information respecting public grade crossings. The Company has also initiated the work required to have grade crossings on its network to meet the new standards.

On April 26, 2017, the Minister initiated the review of the *Railway Safety Act*, which was initially scheduled for 2018, and a panel of three persons was appointed to proceed with the review. On May 31, 2018, the Minister tabled in the House of Commons the report of the three-person panel. The Minister has not indicated how and when he will answer to the panel's report.

Transport Canada's new regulations aimed at lowering the risk of terrorism on the Canadian rail system, entitled *Transportation of Dangerous Goods by Rail Security Regulations* were adopted on May 6, 2019 but are coming into force in sequence. The provisions under which rail carriers have to conduct security inspections of certain railway vehicles containing dangerous goods, report potential security threats and concerns to the Canadian Transport Emergency Centre, and employ a rail security coordinator are in force since August 6, 2019. The requirements that all rail carriers proactively engage in security planning processes and manage security risks, by introducing security awareness training for employees, security plans that include measures to address assessed risks, and security plan training for employees with duties related to the security plan or security sensitive dangerous goods will come into force on February 6, 2020.

Bill C-49, which came into force on May 23, 2018, contains provisions that amend the *Railway Safety Act* to prohibit a railway company from operating railway equipment unless the equipment is fitted with prescribed recording instruments and prescribed information is recorded using those instruments, collected and preserved. These changes are not yet in force as regulations detailing their conditions must first be enacted by Transport Canada. On May 24, 2019, Transport Canada published the proposed *Locomotive Voice and Video Recorder Regulations* ("LVVR") and invited interested parties to comment by July 24, 2019. The LVVR draft regulations, to be adopted pursuant to the *Transportation Modernization Act* (Bill C-49), will require railway companies to procure and install LVVR equipment within two years after their coming into force. The LVVR regulations set out the technical specifications of the equipment, deal with record keeping, provide for privacy protection and detail how railway companies can access the information on a random basis. LVVR technology will assist in preventing accidents and facilitate investigations to better understand the circumstances of accidents. On July 24, 2019, CN provided its submission. Transport Canada is expected to issue a revised version of the proposed regulations when all comments have been reviewed.

On December 20, 2018, the Minister issued an order requesting Canadian railway companies to revise the *Work/Rest Rules* under the *Railway Safety Act* to reflect the latest fatigue science and fatigue management practices and address a series of related elements.

On April 13, 2019, Transport Canada published proposed new *Passenger Rail Security Regulations*, these regulations would require passenger railway and host companies to effectively manage their security risks by implementing risk-based security practices, including security awareness training, security risk assessments, security plans, security plan training, the designation of a rail security coordinator, security inspections, security exercises and security incident reporting.

No assurance can be given that these and any other current or future regulatory or legislative initiatives by the Canadian federal government and agencies will not materially adversely affect the Company's results of operations or its competitive and financial position.

Safety regulation – U.S.

The Company's U.S. rail operations are subject to safety regulation by the FRA under the *Federal Railroad Safety Act* as well as rail portions of other safety statutes, with the transportation of certain hazardous commodities also governed by regulations promulgated by the Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA requires carriers operating in the U.S. to report annually the volume and route-specific data for cars containing these commodities; conduct a safety and security risk analysis for each used route; identify a commercially practicable alternative route for each used route; and select for use the practical route posing the least safety and security risk. In addition, the Transportation Security Administration (TSA) requires rail carriers to provide upon request, within five minutes for a single car and 30 minutes for multiple cars, location and shipping information on cars on their networks containing toxic inhalation hazard materials and certain radioactive or explosive materials; and ensure the secure, attended transfer of all such cars to and from shippers, receivers and other carriers that will move from, to, or through designated high-threat urban areas.

On October 16, 2008, the U.S. Congress enacted the *Rail Safety Improvement Act of 2008*, which required all Class I railroads and intercity passenger and commuter railroads to implement a PTC system by December 31, 2015 on mainline track where intercity passenger railroads and commuter railroads operate and where toxic inhalation hazard materials of certain thresholds are transported. PTC is a collision avoidance technology designed to override locomotive controls and prevent train-to-train collisions, overspeed derailments, misaligned switch derailments, and unauthorized incursions onto established work zones. Pursuant to the *Positive Train Control Enforcement and Implementation Act* of 2015 and the *FAST Act* of 2015, Congress extended the PTC installation deadline until December 31, 2018, with the option for a railroad carrier to complete full implementation by no later than December 31, 2020, provided certain milestones were met by the end of 2018. In 2018, the Company completed the milestones required for the extension and the FRA has approved the extension for the Company to complete full implementation by December 31, 2020. CN has received conditional FRA approval to conduct PTC revenue operation, which enables interoperability testing with other railroads. The FRA is reviewing CN's PTC Safety Plan. In 2019, CN initiated PTC revenue operation on its remaining subdivisions where PTC is required and began interoperability testing with tenant railroads. Noncompliance with these or other laws and regulations may subject the Company to fines, penalties and/or service interruptions. The implementation of PTC will result in additional capital expenditures and operating costs. In order to implement PTC, the Company has invested in various information technology applications, including back office systems, aimed to enhance the reliability of PTC operations. The Company continues to evaluate the technical and operational merits of its information technology applications. In the event that such evaluations lead to the identification of better or more reliable technology, the Company may consider implementing such technology, which may result in additional costs. PTC may result in reduced operational efficiency and service levels.

On February 28, 2019, in coordination with the FRA, PHMSA issued a final rule for oil spill response plans and information sharing for high-hazard flammable trains for the purpose of improving oil spill response readiness and mitigating the effects of oil-related rail incidents. On March 29, 2019, the Association of American Railroads sought reconsideration from PHMSA of certain aspects of the final rule. On May 29, 2019, PHMSA denied the request for reconsideration.

No assurance can be given that these and any other current or future regulatory or legislative initiatives by the U.S. federal government and agencies will not materially adversely affect the Company's results of operations or its competitive and financial position.

Regulation – Vessels

The Company's vessel operations are subject to regulation by the U.S. Coast Guard and the Department of Transportation, Maritime Administration, which regulate the ownership and operation of vessels operating on the Great Lakes and in U.S. coastal waters. In addition, the Environmental Protection Agency has authority to regulate air emissions from these vessels.

Security

The Company is subject to statutory and regulatory directives in the U.S. addressing homeland security concerns. In the U.S., safety matters related to security are overseen by the TSA, which is part of the U.S. Department of Homeland Security (DHS) and PHMSA, which, like the FRA, is part of the U.S. Department of Transportation. Border security falls under the jurisdiction of U.S. Customs and Border Protection (CBP), which is part of the DHS. In Canada, the Company is subject to regulation by the Canada Border Services Agency (CBSA). Matters related to agriculture-related shipments crossing the Canada/U.S. border also fall under the jurisdiction of the U.S. Department of Agriculture (USDA) and the Food and Drug Administration (FDA) in the U.S. and the Canadian Food Inspection Agency (CFIA) in Canada. More specifically, the Company is subject to:

- border security arrangements, pursuant to an agreement the Company and CP entered into with the CBP and the CBSA;
- the CBP's Customs-Trade Partnership Against Terrorism (C-TPAT) program and designation as a low-risk carrier under CBSA's Customs Self-Assessment (CSA) program;
- regulations imposed by the CBP requiring advance notification by all modes of transportation for all shipments into the U.S. The CBSA is also working on similar requirements for Canada-bound traffic;
- inspection for imported fruits and vegetables grown in Canada and the agricultural quarantine and inspection (AQI) user fee for all traffic entering the U.S. from Canada; and
- gamma ray screening of cargo entering the U.S. from Canada, and potential security and agricultural inspections at the Canada/U.S. border.

The Company has worked with the AAR to develop and put in place an extensive industry-wide security plan to address terrorism and security-driven efforts by state and local governments seeking to restrict the routings of certain hazardous materials. If such state and local routing restrictions were to go into force, they would be likely to add to security concerns by foreclosing the Company's most optimal and secure transportation routes, leading to increased yard handling, longer hauls, and the transfer of traffic to lines less suitable for moving hazardous materials, while also infringing upon the exclusive and uniform federal oversight over railroad security matters.

While the Company will continue to work closely with the CBSA, CBP, and other Canadian and U.S. agencies, as described above, no assurance can be given that these and future decisions by the U.S., Canadian, provincial, state, or local governments on homeland security matters, legislation on security matters enacted by the U.S. Congress or Parliament, or joint decisions by the industry in response to threats to the North American rail network, will not materially adversely affect the Company's results of operations, or its competitive and financial position.

Transportation of hazardous materials

As a result of its common carrier obligations, the Company is legally required to transport toxic inhalation hazard materials regardless of risk or potential exposure or loss. A train accident involving the transport of these commodities could result in significant costs and claims for personal injury, property damage, and environmental penalties and remediation in excess of insurance coverage for these risks, which may materially adversely affect the Company's results of operations, or its competitive and financial position.

Economic conditions

The Company is susceptible to changes in the economic conditions of the industries and geographic areas that produce and consume the freight it transports or the supplies it requires to operate. In addition, many of the goods and commodities carried by the Company experience cyclicality in demand. For example, the volatility in domestic and global energy markets could impact the demand for transportation services as well as impact the Company's fuel costs and surcharges. In addition, the volatility in other commodity markets such as coal and iron ore could have an impact on volumes. Many of the bulk commodities the Company transports move offshore and are affected more by global rather than North American economic conditions. Adverse North American and global economic conditions, or economic or industrial restructuring, that affect the producers and consumers of the commodities carried by the Company, including customer insolvency, may have a material adverse effect on the volume of rail shipments and/or revenues from commodities carried by the Company, and thus materially and negatively affect its results of operations, financial position, or liquidity.

Pension funding volatility

The Company's funding requirements for its defined benefit pension plans are determined using actuarial valuations. See the section of this MD&A entitled *Critical accounting estimates – Pensions and other postretirement benefits* for information relating to the funding of the Company's defined benefit pension plans. Adverse changes with respect to pension plan returns and the level of interest rates as well as changes to existing federal pension legislation and regulation may significantly impact future pension contributions and have a material adverse effect on the funding status of the plans and the Company's results of operations. The OSFI proposed revisions to its Instruction guide for the Preparation of Actuarial Reports for defined benefit pension plans. This will affect the December 31, 2020 actuarial valuations by reducing the solvency status of the Company's defined benefit pension plans, and may negatively impact the Company's pension funding requirements starting in year 2021.

There can be no assurance that the Company's pension expense and funding of its defined benefit pension plans will not increase in the future and thereby negatively impact earnings and/or cash flow.

Reliance on technology and related cybersecurity risk

The Company relies on information technology in all aspects of its business. While the Company has business continuity and disaster recovery plans, as well as other security and mitigation programs in place to protect its operations, information and technology assets, a cybersecurity attack and significant disruption or failure of its information technology and communications systems could result in service interruptions, safety failures, security violations, regulatory compliance failures or other operational difficulties, leading to possible litigation and regulatory oversight. Security threats are evolving, and can come from nation states, organized criminals, hacktivists and others with malicious intent. A security incident could compromise corporate information and assets, as well as operations. If the Company is unable to restore service or to acquire or implement any needed new technology, it may suffer a competitive disadvantage, which could also have an adverse effect on the Company's results of operations, financial position or liquidity. The Company is investing to meet evolving network and data security expectations and regulations, in an effort to mitigate the impact a security incident might have on the Company's results of operations, financial position or liquidity. The final outcome of a potential security incident cannot be predicted with certainty, and therefore there can be no assurance that its resolution will not have a material adverse effect on the Company's reputation, goodwill, results of operations, financial position or liquidity, in a particular quarter or fiscal year.

Trade restrictions

Global as well as North American trade conditions, including trade barriers on certain commodities, may interfere with the free circulation of goods across Canada and the U.S. or the cost associated therewith. Following the expiration of the Softwood Lumber Agreement (SLA) between Canada and the U.S., including the expiration of the one year moratorium period preventing the U.S. from launching any trade action against Canadian producers, on January 3, 2018, based on affirmative final determinations by both the U.S. Department of Commerce and the U.S. International Trade Commission, antidumping and countervailing duty orders were imposed on imports of Canadian softwood lumber to the U.S., which Canada responded to the imposition by the U.S. of antidumping and countervailing duties, in connection with lumber and other commodities, by filing a complaint with the World Trade Organization (WTO). In June 2019, Canada appealed the WTO panel ruling of April 2019 that allowed the U.S. to continue to use their current methodology to calculate anti-dumping tariffs on lumber.

On November 30, 2018, the U.S., Canada and Mexico signed the United States-Mexico-Canada Agreement (USMCA), a new trade agreement to replace the North American Free Trade Agreement, which was subject to ratification by the legislature of Canada and the U.S., with Mexico having ratified it on June 19, 2019. On May 17, 2019, Canada and the U.S. reached an understanding on tariffs of steel and aluminum to eliminate all tariffs the U.S. imposed on Canadian imports of steel and aluminum, and all tariffs Canada imposed in retaliation for the action taken by the U.S. On December 10, 2019, Canada, U.S. and Mexico announced that an agreement had been reached on the remaining provisions to implement the USMCA. The revised USMCA is still subject to the remaining ratification of the legislature of Canada.

It remains too early to assess the potential outcome of other ongoing various trade actions taken by governments and agencies. As such, there can be no assurance that trade actions will not materially adversely affect the volume of rail shipments and/or revenues from commodities carried by the Company, and thus materially and negatively impact earnings and/or cash flow.

Terrorism and international conflicts

Potential terrorist actions can have a direct or indirect impact on the transportation infrastructure, including railway infrastructure in North America, and can interfere with the free flow of goods. Rail lines, facilities and equipment could be directly targeted or become indirect casualties, which could interfere with the free flow of goods. International conflicts can also have an impact on the Company's markets. Government response to such events could adversely affect the Company's operations. Insurance premiums could also increase significantly or coverage could become unavailable.

Customer credit risk

In the normal course of business, the Company monitors the financial condition and credit limits of its customers and reviews the credit history of each new customer. Although the Company believes there are no significant concentrations of credit risk, economic conditions can affect the Company's customers and can result in an increase to the Company's credit risk and exposure to the business failures of its customers. A widespread deterioration of customer credit and/or business failures of customers could have a material adverse effect on the Company's results of operations, financial position or liquidity.

Liquidity

Disruptions in financial markets or deterioration of the Company's credit ratings could hinder the Company's access to external sources of funding to meet its liquidity needs. There can be no assurance that changes in the financial markets will not have a negative effect on the Company's liquidity and its access to capital at acceptable terms and rates.

Supplier concentration

The Company operates in a capital-intensive industry where the complexity of rail equipment limits the number of suppliers available. The supply market could be disrupted if changes in the economy caused any of the Company's suppliers to cease production or to experience capacity or supply shortages. The supply market could become further concentrated and could result in changes to the product or service offerings by suppliers. This could also result in cost increases to the Company and difficulty in obtaining and maintaining the Company's rail equipment and materials. Since the Company also has foreign suppliers, international relations, trade restrictions and global economic and other conditions may potentially interfere with the Company's ability to procure necessary equipment and materials. Widespread business failures of, or restrictions on suppliers, could have a material adverse effect on the Company's results of operations or financial position.

Availability of qualified personnel

The Company may experience demographic challenges in the employment levels of its workforce. Changes in employee demographics, training requirements and the availability of qualified personnel, particularly locomotive engineers and conductors, could negatively impact the Company's ability to meet demand for rail service. The Company monitors employment levels and seeks to ensure that there is an adequate supply of personnel to meet rail service requirements. However, the Company's efforts to attract and retain qualified personnel may be hindered by specific conditions in the job market. No assurance can be given that demographic or other challenges will not materially adversely affect the Company's results of operations or its financial position.

Fuel costs

The Company is susceptible to the volatility of fuel prices due to changes in the economy or supply disruptions. Fuel shortages can occur due to refinery disruptions, production quota restrictions, climate, and labor and political instability. Increases in fuel prices or supply disruptions may materially adversely affect the Company's results of operations, financial position or liquidity.

Foreign exchange

The Company conducts its business in both Canada and the U.S. and as a result, is affected by currency fluctuations. Changes in the exchange rate between the Canadian dollar and other currencies (including the US dollar) make the goods transported by the Company more or less competitive in the world marketplace and thereby may adversely affect the Company's revenues and expenses.

Interest rates

The Company is exposed to interest rate risk relating to the Company's debt. The Company mainly issues fixed-rate debt, which exposes the Company to variability in the fair value of the debt. The Company also issues debt with variable interest rates, which exposes the Company to variability in interest expense. Adverse changes to market interest rates may significantly impact the fair value or future cash flows of the Company's financial instruments. There can be no assurance that changes in the market interest rates will not have a negative effect on the Company's results of operations or liquidity.

Transportation network disruptions

Due to the integrated nature of the North American freight transportation infrastructure, the Company's operations may be negatively affected by service disruptions of other transportation links such as ports and other railroads which interchange with the Company. A significant prolonged service disruption of one or more of these entities could have an adverse effect on the Company's results of operations, financial position or liquidity. Furthermore, deterioration in the cooperative relationships with the Company's connecting carriers could directly affect the Company's operations.

Severe weather

The Company's success is dependent on its ability to operate its railroad efficiently. Severe weather and natural disasters, such as extreme cold or heat, flooding, droughts, fires, hurricanes and earthquakes, can disrupt operations and service for the railroad, affect the performance of locomotives and rolling stock, as well as disrupt operations for both the Company and its customers. Business interruptions resulting from severe weather could result in increased costs, increased liabilities and lower revenues, which could have a material adverse effect on the Company's results of operations, financial condition or liquidity.

Climate change

Climate change, including the impacts of global warming, has the potential physical risks of increasing the frequency of adverse weather events, which can disrupt the Company's operations and damage its infrastructure or properties. It could also affect the markets for, or the volume of, the goods the Company carries or otherwise have a material adverse effect on the Company's results of operations, financial position or liquidity. Government action or inaction to address climate change could also affect CN. The Company is currently subject to climate change and other emissions-related laws and regulations that have been proposed and, in some cases adopted, on the federal, provincial and state levels. While CN is continually focused on efficiency improvements and reducing its carbon footprint, cap and trade systems, carbon taxes, or other controls on emissions of greenhouse gasses imposed by various government bodies could increase the Company's capital and operating costs. The Company may not be able to offset such impacts, including, for example, through higher freight rates. Climate change legislation and regulation could also affect CN's customers; make it difficult for CN's customers to produce products in a cost-competitive manner due to increased energy costs; and increase legal costs related to defending and resolving legal claims and other litigation related to climate change.

Controls and procedures

The Company's Chief Executive Officer and its Chief Financial Officer, after evaluating the effectiveness of the Company's disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) as of December 31, 2019, have concluded that the Company's disclosure controls and procedures were effective.

During the fourth quarter ended December 31, 2019, there was no change in the Company's internal control over financial reporting that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

As of December 31, 2019, management has assessed the effectiveness of the Company's internal control over financial reporting using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control – Integrated Framework* (2013). Based on this assessment, management has determined that the Company's internal control over financial reporting was effective as of December 31, 2019, and issued Management's Report on Internal Control over Financial Reporting dated January 31, 2020 to that effect.

Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements.

Management has assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2019 using the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control - Integrated Framework* (2013). Based on this assessment, management has determined that the Company's internal control over financial reporting was effective as of December 31, 2019.

KPMG LLP, an independent registered public accounting firm, has issued an unqualified audit report on the effectiveness of the Company's internal control over financial reporting as of December 31, 2019 and has also expressed an unqualified audit opinion on the Company's 2019 consolidated financial statements as stated in their Reports of Independent Registered Public Accounting Firm dated January 31, 2020.

(s) Jean-Jacques Ruest
President and Chief Executive Officer

January 31, 2020

(s) Ghislain Houle
Executive Vice-President and Chief Financial Officer

January 31, 2020

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Canadian National Railway Company:

Opinion on the consolidated financial statements

We have audited the accompanying consolidated balance sheets of Canadian National Railway Company (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of income, comprehensive income, changes in shareholders' equity and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (collectively, the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2019, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control – Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated January 31, 2020 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Change in accounting principle

As discussed in Note 2 to the consolidated financial statements, the Company has changed its method of accounting for leases as of January 1, 2019 due to the adoption of Accounting Standards Codification Topic 842 Leases, using a modified retrospective adoption approach.

Basis for opinion

These consolidated financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these consolidated financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical audit matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the consolidated financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Evaluation of income taxes

As discussed in Note 6 to the consolidated financial statements, the net deferred income tax liability was $7,844 million as of December 31, 2019 and income tax expense was $1,213 million for the year ended December 31, 2019. The Company operates in different tax jurisdictions which requires the Company to make significant judgments and estimates in relation to its tax positions.

We identified the evaluation of the net deferred income tax liability and income tax expense as a critical audit matter due to the magnitude of these tax balances and complexities in the evaluation of the application of the relevant tax regulations applicable to the Company. A higher degree of auditor judgment is required in assessing certain of the Company’s tax positions and balances.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's income tax accounting process, including controls related to the Company's reconciliation and analysis of its deferred income tax balances. We involved income tax and transfer pricing professionals with specialized skills and knowledge to assist in: (1) assessing the Company's interpretation of the relevant tax regulations, including the impact of the U.S. Tax Cuts and Jobs Act; (2) evaluating the Company's tax positions and transfer pricing arrangements; (3) analyzing the Company's deferred income tax balances by comparing prior year tax estimates to actual tax returns filed, and evaluating the Company's reconciliation of the deferred income tax balances to the underlying temporary differences.

Evaluation of capitalization of costs relating to track and railway infrastructure and depreciation related to properties

As discussed in Notes 1 and 9 to the consolidated financial statements, capital additions were $3,865 million for the year ended December 31, 2019, of which $1,489 million related to track and railway infrastructure maintenance, including the replacement of rail, ties, bridge improvements, and other general track maintenance. For self-constructed properties, expenditures include direct material, labor, and contracted services, as well as other allocated costs. The Company follows the group method of depreciation whereby a single composite depreciation rate is applied to the gross investment in a class of similar assets. These Notes also discussed that depreciation expense relating to properties was $1,559 million for the year ended December 31, 2019. The Company performs comprehensive Canadian and U.S. depreciation studies on specific asset groups on a periodic basis, which require significant judgment. These studies incorporate numerous assumptions related to the remaining service lives and the U.S. studies involve a third party expert. The depreciation studies consider, among other factors, the analysis of historical retirement data using recognized life analysis techniques, and the forecasting of asset life characteristics.

We identified the evaluation of capitalization of costs relating to track and railway infrastructure and depreciation expense related to properties as a critical audit matter. The magnitude and complexities in self-constructed properties, as well as the judgments involved in the determination of the expenditure meeting the Company's pre-determined capitalization criteria requires subjective auditor judgment. Further, there is a higher degree of auditor judgment required in evaluating the estimated service lives of the respective asset classes. Changes in estimated service lives can significantly impact the amount of depreciation expense.

The primary procedures we performed to address this critical audit matter included the following. We tested certain internal controls over the Company's capital additions process, including controls related to the monitoring of budget versus actual costs on capital projects and the Company's analysis of projects assessing that the expenditures charged to projects meet the Company's pre-determined capitalization criteria. We also tested certain internal controls over the Company's depreciation expense process, including controls related to the Company's assessment of the Canadian and U.S. depreciation studies. We traced a sample of capital expenditure additions to underlying documentation and assessed whether the expenditure met the Company's pre-determined capitalization criteria. The testing was performed at a disaggregated level by type of cost (including direct material, labor, and contracted services), and included comparisons to prior period per unit measures by region. We evaluated the key assumptions in determining the estimated service lives in the Company's Canadian and U.S. depreciation studies by testing the historical data used in the depreciation studies through comparison to underlying documentation. In addition, we compared the Company's historical retirement patterns to the service lives used in the depreciation studies, and interviewed the Company's personnel with specialized knowledge of the subject matter and a third party expert.

(s) KPMG LLP*

We have served as the Company's auditor since 1992.

Montréal, Canada
January 31, 2020

** CPA auditor, CA, public accountancy permit No. A123145*

KPMG LLP is a Canadian limited liability partnership and a member firm of the KPMG network of independent member firms affiliated with KPMG International Cooperative ("KPMG International"), a Swiss entity.

KPMG Canada provides services to KPMG LLP.

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Canadian National Railway Company:

Opinion on internal control over financial reporting

We have audited the Canadian National Railway Company's (the "Company") internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) ("PCAOB"), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, the related consolidated statements of income, comprehensive income, changes in shareholders' equity and cash flows for each of the years in the three-year period ended December 31, 2019, and the related notes (collectively, the "consolidated financial statements"), and our report dated January 31, 2020 expressed an unqualified opinion on those consolidated financial statements.

Basis for opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and limitations of internal control over financial reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

(s) KPMG LLP*

Montréal, Canada
January 31, 2020

** CPA auditor, CA, public accountancy permit No. A123145*

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Consolidated Statements of Income

In millions, except per share data	*Year ended December 31,*	**2019**		2018		2017
Revenues *(Note 4)*	**$**	**14,917**	$	14,321	$	13,041
Operating expenses						
Labor and fringe benefits		**2,922**		2,860		2,536
Purchased services and material		**2,267**		1,971		1,769
Fuel		**1,637**		1,732		1,362
Depreciation and amortization *(Note 9)*		**1,562**		1,329		1,281
Equipment rents		**444**		467		418
Casualty and other		**492**		469		432
Total operating expenses		**9,324**		8,828		7,798
Operating income		**5,593**		5,493		5,243
Interest expense		**(538)**		(489)		(481)
Other components of net periodic benefit income *(Note 15)*		**321**		302		315
Other income *(Note 5)*		**53**		376		12
Income before income taxes		**5,429**		5,682		5,089
Income tax recovery (expense) *(Note 6)*		**(1,213)**		(1,354)		395
Net income	**$**	**4,216**	$	4,328	$	5,484
Earnings per share *(Note 7)*						
Basic	**$**	**5.85**	$	5.89	$	7.28
Diluted	**$**	**5.83**	$	5.87	$	7.24
Weighted-average number of shares *(Note 7)*						
Basic		**720.1**		734.5		753.6
Diluted		**722.6**		737.7		757.3

See accompanying notes to consolidated financial statements.

Consolidated Statements of Comprehensive Income

In millions	*Year ended December 31,*	**2019**		2018		2017
Net income	**$**	**4,216**	$	4,328	$	5,484
Other comprehensive income (loss) *(Note 18)*						
Net gain (loss) on foreign currency translation		**(256)**		403		(197)
Net change in pension and other postretirement benefit plans *(Note 15)*		**(440)**		(759)		(224)
Other comprehensive loss before income taxes		**(696)**		(356)		(421)
Income tax recovery (expense)		**62**		291		(5)
Other comprehensive loss		**(634)**		(65)		(426)
Comprehensive income	**$**	**3,582**	$	4,263	$	5,058

See accompanying notes to consolidated financial statements.

Consolidated Balance Sheets

In millions December 31,		2019		2018
Assets				
Current assets				
Cash and cash equivalents	**$**	**64**	$	266
Restricted cash and cash equivalents *(Note 13)*		**524**		493
Accounts receivable *(Note 8)*		**1,213**		1,169
Material and supplies		**611**		557
Other current assets		**418**		243
Total current assets		**2,830**		2,728
Properties *(Note 9)*		**39,669**		37,773
Operating lease right-of-use assets *(Note 10)* (1)		**520**		—
Pension asset *(Note 15)*		**336**		446
Intangible assets, goodwill and other *(Note 11)*		**429**		267
Total assets	**$**	**43,784**	$	41,214
Liabilities and shareholders' equity				
Current liabilities				
Accounts payable and other *(Note 12)*	**$**	**2,357**	$	2,316
Current portion of long-term debt *(Note 13)*		**1,930**		1,184
Total current liabilities		**4,287**		3,500
Deferred income taxes *(Note 6)*		**7,844**		7,480
Other liabilities and deferred credits *(Note 14)*		**634**		501
Pension and other postretirement benefits *(Note 15)*		**733**		707
Long-term debt *(Note 13)*		**11,866**		11,385
Operating lease liabilities *(Note 10)* (1)		**379**		—
Shareholders' equity				
Common shares *(Note 16)*		**3,650**		3,634
Common shares in Share Trusts *(Note 16)*		**(163)**		(175)
Additional paid-in capital		**403**		408
Accumulated other comprehensive loss *(Note 18)*		**(3,483)**		(2,849)
Retained earnings		**17,634**		16,623
Total shareholders' equity		**18,041**		17,641
Total liabilities and shareholders' equity	**$**	**43,784**	$	41,214

(1) The Company adopted Accounting Standards Update (ASU) 2016-02: Leases and related amendments (Topic 842) in the first quarter of 2019 using a modified retrospective approach with a cumulative-effect adjustment to Retained earnings recognized on January 1, 2019, with no restatement of comparative period financial information. The Company now includes Operating lease right-of-use assets and Operating lease liabilities on the Consolidated Balance Sheet. See Note 2 - Recent accounting pronouncements for additional information.

See accompanying notes to consolidated financial statements.

On behalf of the Board of Directors:

(s) Robert Pace
Director

(s) Jean-Jacques Ruest
Director

Consolidated Statements of Changes in Shareholders' Equity

In millions	Number of common shares: Outstanding	Number of common shares: Share Trusts	Common shares	Common shares in Share Trusts	Additional paid-in capital	Accumulated other comprehensive loss	Retained earnings	Total shareholders' equity
Balance at December 31, 2016	762.0	1.8	$ 3,647	$ (137)	$ 450	$ (2,358)	$ 13,239	$ 14,841
Net income							5,484	5,484
Stock options exercised	1.2		68		(10)			58
Settlement of equity settled awards *(Note 16)*	0.3	(0.3)		24	(84)		(22)	(82)
Stock-based compensation expense and other					78		(3)	75
Repurchase of common shares *(Note 16)*	(20.4)		(102)				(1,898)	(2,000)
Share purchases by Share Trusts *(Note 16)*	(0.5)	0.5		(55)				(55)
Other comprehensive loss *(Note 18)*						(426)		(426)
Dividends ($1.65 per share)							(1,239)	(1,239)
Balance at December 31, 2017	742.6	2.0	3,613	(168)	434	(2,784)	15,561	16,656
Net income							4,328	4,328
Stock options exercised	1.7		120		(17)			103
Settlement of equity settled awards *(Note 16)*	0.4	(0.4)		31	(68)		(30)	(67)
Stock-based compensation expense and other					59		(2)	57
Repurchase of common shares *(Note 16)*	(19.0)		(99)				(1,901)	(2,000)
Share purchases by Share Trusts *(Note 16)*	(0.4)	0.4		(38)				(38)
Other comprehensive loss *(Note 18)*						(65)		(65)
Dividends ($1.82 per share)							(1,333)	(1,333)
Balance at December 31, 2018	725.3	2.0	3,634	(175)	408	(2,849)	16,623	17,641
Net income							4,216	4,216
Stock options exercised	1.1		89		(12)			77
Settlement of equity settled awards *(Note 16)*	0.5	(0.5)		45	(56)		(61)	(72)
Stock-based compensation expense and other					63		(2)	61
Repurchase of common shares *(Note 16)*	(14.3)		(73)				(1,627)	(1,700)
Share purchases by Share Trusts *(Note 16)*	(0.3)	0.3		(33)				(33)
Other comprehensive loss *(Note 18)*						(634)		(634)
Dividends ($2.15 per share)							(1,544)	(1,544)
Cumulative-effect adjustment from the adoption of ASU 2016-02 [(1)]							29	29
Balance at December 31, 2019	**712.3**	**1.8**	**$ 3,650**	**$ (163)**	**$ 403**	**$ (3,483)**	**$ 17,634**	**$ 18,041**

(1) The Company adopted Accounting Standards Update (ASU) 2016-02: Leases and related amendments (Topic 842) in the first quarter of 2019 using a modified retrospective approach with a cumulative-effect adjustment to Retained earnings recognized on January 1, 2019, with no restatement of comparative period financial information. See Note 2 - Recent accounting pronouncements for additional information.

See accompanying notes to consolidated financial statements.

Consolidated Statements of Cash Flows

In millions Year ended December 31,	**2019**	2018	2017
Operating activities			
Net income	**$ 4,216**	$ 4,328	$ 5,484
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	**1,562**	1,329	1,281
Pension income and funding [1]	**(288)**	(209)	(286)
Deferred income taxes *(Note 6)*	**569**	527	(1,195)
Gain on disposal of property *(Note 5)*	**—**	(338)	—
Changes in operating assets and liabilities:			
Accounts receivable	**(7)**	(91)	(125)
Material and supplies	**(60)**	(120)	(70)
Accounts payable and other	**(498)**	379	418
Other current assets	**5**	14	(80)
Other operating activities, net [1]	**424**	99	89
Net cash provided by operating activities	**5,923**	5,918	5,516
Investing activities			
Property additions	**(3,865)**	(3,531)	(2,673)
Acquisitions, net of cash acquired *(Note 3)*	**(259)**	—	—
Disposal of property *(Note 5)*	**—**	194	—
Other investing activities, net	**(66)**	(67)	(65)
Net cash used in investing activities	**(4,190)**	(3,404)	(2,738)
Financing activities			
Issuance of debt *(Note 13)*	**1,653**	3,268	916
Repayment of debt *(Note 13)*	**(402)**	(2,393)	(841)
Change in commercial paper, net *(Note 13)*	**141**	99	379
Settlement of foreign exchange forward contracts on debt	**2**	53	(15)
Issuance of common shares for stock options exercised *(Note 17)*	**77**	103	58
Withholding taxes remitted on the net settlement of equity settled awards *(Note 17)*	**(61)**	(51)	(57)
Repurchase of common shares *(Note 16)*	**(1,700)**	(2,000)	(2,016)
Purchase of common shares for settlement of equity settled awards	**(11)**	(16)	(25)
Purchase of common shares by Share Trusts *(Note 16)*	**(33)**	(38)	(55)
Dividends paid	**(1,544)**	(1,333)	(1,239)
Acquisition, additional cash consideration *(Note 3)*	**(25)**	—	—
Net cash used in financing activities	**(1,903)**	(2,308)	(2,895)
Effect of foreign exchange fluctuations on cash, cash equivalents, restricted cash, and restricted cash equivalents	**(1)**	—	(2)
Net increase (decrease) in cash, cash equivalents, restricted cash, and restricted cash equivalents	**(171)**	206	(119)
Cash, cash equivalents, restricted cash, and restricted cash equivalents, beginning of year	**759**	553	672
Cash, cash equivalents, restricted cash, and restricted cash equivalents, end of year	**$ 588**	$ 759	$ 553
Cash and cash equivalents, end of year	**$ 64**	$ 266	$ 70
Restricted cash and cash equivalents, end of year	**524**	493	483
Cash, cash equivalents, restricted cash, and restricted cash equivalents, end of year	**$ 588**	$ 759	$ 553
Supplemental cash flow information			
Interest paid	**$ (521)**	$ (488)	$ (477)
Income taxes paid *(Note 6)*	**$ (822)**	$ (776)	$ (712)

(1) In the first quarter of 2019, the Company began presenting Pension income and funding as a separate line on the Consolidated Statements of Cash Flows. Previously pension income and funding was included in Other operating activities, net. Comparative figures have been adjusted to conform to the current presentation.

See accompanying notes to consolidated financial statements.

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Notes to the Consolidated Financial Statements

Canadian National Railway Company, together with its wholly-owned subsidiaries, collectively "CN" or the "Company," is engaged in the rail and related transportation business. CN spans Canada and mid-America, from the Atlantic and Pacific oceans to the Gulf of Mexico, serving the cities and ports of Vancouver, Prince Rupert (British Columbia), Montreal, Halifax, New Orleans and Mobile (Alabama), and the metropolitan areas of Toronto, Edmonton, Winnipeg, Calgary, Chicago, Memphis, Detroit, Duluth (Minnesota)/Superior (Wisconsin) and Jackson (Mississippi), with connections to all points in North America. CN's freight revenues are derived from the movement of a diversified and balanced portfolio of goods, including petroleum and chemicals, grain and fertilizers, coal, metals and minerals, forest products, intermodal and automotive.

1 – Summary of significant accounting policies

Basis of presentation

These consolidated financial statements are expressed in Canadian dollars, except where otherwise indicated, and have been prepared in accordance with United States generally accepted accounting principles (GAAP) as codified in the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC).

Principles of consolidation

These consolidated financial statements include the accounts of all subsidiaries and variable interest entities for which the Company is the primary beneficiary. The Company is the primary beneficiary of the Employee Benefit Plan Trusts ("Share Trusts") as the Company funds the Share Trusts. The Company's investments in which it has significant influence are accounted for using the equity method and all other investments for which fair value is not readily determinable are accounted for at cost minus impairment, plus or minus observable price changes.

Use of estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, and the disclosure of contingent assets and liabilities at the date of the financial statements. On an ongoing basis, management reviews its estimates, including those related to goodwill, intangible assets, identified assets and liabilities acquired in business combinations, income taxes, depreciation, pensions and other postretirement benefits, personal injury and other claims, and environmental matters, based upon available information. Actual results could differ from these estimates.

Revenues

Nature of services

The Company's revenues consist of freight revenues and other revenues. Freight revenues include revenue from the movement of freight over rail and are derived from the following seven commodity groups:

- Petroleum and chemicals, which includes chemicals and plastics, refined petroleum products, crude and condensate, and sulfur;
- Metals and minerals, which includes energy materials, metals, minerals, and iron ore;
- Forest products, which includes lumber, pulp, paper, and panels;
- Coal, which includes coal and petroleum coke;
- Grain and fertilizers, which includes Canadian regulated grain, Canadian commercial grain, U.S. grain, potash and other fertilizers;
- Intermodal, which includes rail and trucking services for domestic and international traffic; and
- Automotive, which includes finished vehicles and auto parts.

Freight revenues also comprise revenues for optional services beyond the basic movement of freight including asset use, switching, storage, and other services.

Other revenues are derived from non-rail logistics services that support the Company's rail business including vessels and docks, transloading and distribution, automotive logistics, and freight forwarding and transportation management.

Revenue recognition

Revenues are recognized when control of promised services is transferred to customers in an amount that reflects the consideration the Company expects to be entitled to receive in exchange for those services.

The Company accounts for contracts with customers when it has approval and commitment from both parties, each party's rights have been identified, payment terms are defined, the contract has commercial substance and collection is probable. For contracts that involve multiple performance obligations, the Company allocates the transaction price to each performance obligation in the contract based on relative standalone selling prices and recognizes revenue when, or as, performance obligations in the contract are satisfied.

Revenues are presented net of taxes collected from customers and remitted to governmental authorities.

Freight revenues

Freight services are arranged through publicly-available tariffs or customer-specific agreements that establish the pricing, terms and conditions for freight services offered by the Company. For revenue recognition purposes, a contract for the movement of freight over rail exists when shipping instructions are sent by a customer and have been accepted by the Company in connection with the relevant tariff or customer-specific agreement.

Revenues for the movement of freight over rail are recognized over time due to the continuous transfer of control to the customer as freight moves from origin to destination. Progress towards completion of the performance obligation is measured based on the transit time of freight from origin to destination. The allocation of revenues between periods is based on the relative transit time in each period with expenses recorded as incurred. Revenues related to freight contracts that require the involvement of another rail carrier to move freight from origin to destination are reported on a net basis. Freight movements are completed over a short period of time and are generally completed before payment is due. Freight receivables are included in Accounts receivable on the Consolidated Balance Sheets.

The Company has no material contract assets associated with freight revenues.

Contract liabilities represent consideration received from customers for which the related performance obligation has not been satisfied. Contract liabilities are recognized into revenues when or as the related performance obligation is satisfied. The Company includes contract liabilities within Accounts payable and other and Other liabilities and deferred credits on the Consolidated Balance Sheets.

Revenues for optional services are recognized at a point in time or over time as performance obligations are satisfied, depending on the nature of the service.

Freight contracts may be subject to variable consideration in the form of volume-based incentives, rebates, or other items, which affect the transaction price. Variable consideration is recognized as revenue to the extent that it is probable that a significant reversal in the amount of cumulative revenue recognized will not occur. Variable consideration is accrued on the basis of management's best estimate of the expected amount, which is based on available historical, current and forecasted information.

Other revenues

Other revenues are recognized at a point in time or over time as performance obligations are satisfied, depending on the nature of the service.

Income taxes

The Company follows the asset and liability method of accounting for income taxes. Under the asset and liability method, the change in the net deferred income tax asset or liability is included in the computation of Net income or Other comprehensive income (loss). Deferred income tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which temporary differences are expected to be recovered or settled.

Earnings per share

Basic earnings per share is calculated using the weighted-average number of basic shares outstanding during the period. The weighted-average number of basic shares outstanding excludes shares held in the Share Trusts and includes vested equity settled stock-based compensation awards other than stock options. Diluted earnings per share is calculated using the weighted-average number of diluted shares outstanding during the period, applying the treasury stock method. The weighted-average number of diluted shares outstanding includes the dilutive effects of common shares issuable upon exercise of outstanding stock options and nonvested equity settled awards.

Foreign currency

All of the Company's foreign subsidiaries use the US dollar as their functional currency. Accordingly, the foreign subsidiaries' assets and liabilities are translated into Canadian dollars at the exchange rate in effect at the balance sheet date and the revenues and expenses are translated at the average exchange rates during the year. All adjustments resulting from the translation of the foreign operations are recorded in Other comprehensive income (loss).

The Company designates the US dollar-denominated debt of the parent company as a foreign currency hedge of its net investment in foreign operations. Accordingly, foreign exchange gains and losses, from the dates of designation, on the translation of the US dollar-denominated debt are included in Other comprehensive income (loss).

Cash and cash equivalents

Cash and cash equivalents include highly liquid investments purchased three months or less from maturity and are stated at cost plus accrued interest, which approximates fair value.

Restricted cash and cash equivalents

The Company has the option, under its bilateral letter of credit facility agreements with various banks, to pledge collateral in the form of cash and cash equivalents for a minimum term of one month, equal to at least the face value of the letters of credit issued. Restricted cash and cash equivalents include highly liquid investments purchased three months or less from maturity and are stated at cost plus accrued interest, which approximates fair value.

Accounts receivable

Accounts receivable are recorded at cost net of billing adjustments and an allowance for doubtful accounts. The allowance for doubtful accounts is based on expected collectability and considers historical experience as well as known trends or uncertainties related to account collectability. When a receivable is deemed uncollectible, it is written off against the allowance for doubtful accounts. Subsequent recoveries of amounts previously written off are credited to bad debt expense in Casualty and other in the Consolidated Statements of Income.

Material and supplies

Material and supplies, which consist mainly of rail, ties, and other items for construction and maintenance of property and equipment, as well as diesel fuel, are measured at weighted-average cost.

Properties

Capitalization of costs

The Company's railroad operations are highly capital intensive. The Company's properties mainly consist of homogeneous or network-type assets such as rail, ties, ballast and other structures, which form the Company's Track and roadway properties, and Rolling stock. The Company's capital expenditures are for the replacement of existing assets and for the purchase or construction of new assets to enhance operations or provide new service offerings to customers. A large portion of the Company's capital expenditures are for self-constructed properties, including the replacement of existing track and roadway assets and track line expansion, as well as major overhauls and large refurbishments of rolling stock.

Expenditures are capitalized if they extend the life of the asset or provide future benefits such as increased revenue-generating capacity, functionality or service capacity. The Company has a process in place to determine whether or not costs qualify for capitalization, which requires judgment. For Track and roadway properties, the Company establishes basic capital programs to replace or upgrade the track infrastructure assets which are capitalized if they meet the capitalization criteria.

In addition, for Track and roadway properties, expenditures that meet the minimum level of activity as defined by the Company are also capitalized as follows:

- *grading*: installation of road bed, retaining walls, and drainage structures;
- *rail and related track material*: installation of 39 or more continuous feet of rail;
- *ties*: installation of 5 or more ties per 39 feet; and
- *ballast*: installation of 171 cubic yards of ballast per mile.

For purchased assets, the Company capitalizes all costs necessary to make the assets ready for their intended use. For self-constructed properties, expenditures include direct material, labor, and contracted services, as well as other allocated costs. These allocated costs include, but are not limited to, project supervision, fringe benefits, maintenance on equipment used on projects as well as the cost of small tools and supplies. The Company reviews and adjusts its allocations, as required, to reflect the actual costs incurred each year.

For the rail asset, the Company capitalizes the costs of rail grinding which consists of restoring and improving the rail profile and removing irregularities from worn rail to extend the service life. The service life of the rail asset is increased incrementally as rail grinding is performed thereon, and as such, the costs incurred are capitalized given that the activity extends the service life of the rail asset beyond its original or current condition as additional gross tons can be carried over the rail for its remaining service life.

For the ballast asset, the Company engages in shoulder ballast undercutting that consists of removing some or all of the ballast, which has deteriorated over its service life, and replacing it with new ballast. When ballast is installed as part of a shoulder ballast undercutting project, it represents the addition of a new asset and not the repair or maintenance of an existing asset. As such, the Company capitalizes expenditures related to shoulder ballast undercutting given that an existing asset is retired and replaced with a new asset. Under the group method of accounting for properties, the deteriorated ballast is retired at its historical cost.

Costs of deconstruction and removal of replaced assets, referred to herein as dismantling costs, are distinguished from installation costs for self-constructed properties based on the nature of the related activity. For Track and roadway properties, employees concurrently perform dismantling and installation of new track and roadway assets and, as such, the Company estimates the amount of labor and other costs that are related to dismantling. The Company determines dismantling costs based on an analysis of the track and roadway installation process.

Expenditures relating to the Company's properties that do not meet the Company's capitalization criteria are expensed as incurred. For Track and roadway properties, such expenditures include but are not limited to spot tie replacement, spot or broken rail replacement, physical track inspection for detection of rail defects and minor track corrections, and other general maintenance of track infrastructure.

Depreciation

Properties are carried at cost less accumulated depreciation including asset impairment write-downs. The cost of properties, including those under finance leases, net of asset impairment write-downs, is depreciated on a straight-line basis over their estimated service lives, measured in years, except for rail and ballast whose service lives are measured in millions of gross tons. The Company follows the group method of depreciation whereby a single composite depreciation rate is applied to the gross investment in a class of similar assets, despite small differences in the service life or salvage value of individual property units within the same asset class. The Company uses approximately 40 different depreciable asset classes.

For all depreciable asset classes, the depreciation rate is based on the estimated service lives of the assets. Assessing the reasonableness of the estimated service lives of properties requires judgment and is based on currently available information, including periodic depreciation studies conducted by the Company. The Company's United States (U.S.) properties are subject to comprehensive depreciation studies as required by the Surface Transportation Board (STB) and are conducted by external experts. Depreciation studies for Canadian properties are not required by regulation and are conducted internally. Studies are performed on specific asset groups on a periodic basis. Changes in the estimated service lives of the assets and their related composite depreciation rates are implemented prospectively.

The service life of the rail asset is based on expected future usage of the rail in its existing condition, determined using railroad industry research and testing (based on rail characteristics such as weight, curvature and metallurgy), factoring in the rail asset's usage to date. The annual composite depreciation rate for the rail asset is determined by dividing the estimated annual number of gross tons carried over the rail by the estimated service life of the rail measured in millions of gross tons. The Company amortizes the cost of rail grinding over the remaining life of the rail asset, which includes the incremental life extension generated by rail grinding.

Given the nature of the railroad and the composition of its network which is made up of homogeneous long-lived assets, it is impractical to maintain records of specific properties at their lowest unit of property.

Retirements of assets occur through the replacement of an asset in the normal course of business, the sale of an asset or the abandonment of a section of track. For retirements in the normal course of business, generally the life of the retired asset is within a reasonable range of the expected useful life, as determined in the depreciation studies, and, as such, no gain or loss is recognized under the group method. The asset's cost is removed from the asset account and the difference between its estimated historical cost and estimated related accumulated depreciation (net of salvage proceeds and dismantling costs), if any, is recorded as an adjustment to accumulated depreciation and no gain or loss is recognized. The estimated historical cost of the retired asset is estimated by using deflation factors or indices that closely correlate to the properties comprising the asset classes in combination with the estimated age of the retired asset using a first-in, first-out approach, and applying it to the replacement value of the asset.

In each depreciation study, an estimate is made of any excess or deficiency in accumulated depreciation for all corresponding asset classes to ensure that the depreciation rates remain appropriate. The excess or deficiency in accumulated depreciation is amortized over the remaining life of the asset class.

For retirements of depreciable properties that do not occur in the normal course of business, the historical cost, net of salvage proceeds, is recorded as a gain or loss in income. A retirement is considered not to be in the normal course of business if it meets the following criteria: (i) it is unusual, (ii) it is significant in amount, and (iii) it varies significantly from the retirement pattern identified through depreciation studies. A gain or loss is recognized in Other income for the sale of land or disposal of assets that are not part of railroad operations.

Leases

The Company engages in short and long-term leases for rolling stock including locomotives and freight cars, equipment, real estate and service contracts that contain embedded leases. The Company determines whether or not a contract contains a lease at inception. Leases with a term of twelve months or less are not recorded by the Company on the Consolidated Balance Sheets.

Finance and operating lease right-of-use assets and liabilities are recognized based on the present value of the future lease payments over the lease term at the commencement date. Where the implicit interest rate is not determinable from the lease, the Company uses internal incremental borrowing rates by tenor and currency to initially measure leases in excess of twelve months on the Consolidated Balance Sheets. Operating lease expense is recognized on a straight-line basis over the lease term.

The Company's lease contracts may contain termination, renewal, and/or purchase options, residual value guarantees, or a combination thereof, all of which are evaluated by the Company on a quarterly basis. The majority of renewal options available extend the lease term from one to five years. The Company accounts for such contract options when the Company is reasonably certain that it will exercise one of these options.

Lease contracts may contain lease and non-lease components that the Company generally accounts for separately, with the exception of the freight car asset category for which the Company has elected to not separate the lease and non-lease components.

Intangible assets

Intangible assets consist mainly of customer contracts and relationships acquired through business acquisitions. Intangible assets are generally amortized on a straight-line basis over their expected useful lives, ranging from 20 to 50 years. If a change in the estimated useful life of an intangible asset is determined, amortization is adjusted prospectively.

For the purpose of impairment testing, the Company tests the recoverability of its intangible assets held and used whenever events or changes in circumstances indicate that the carrying amount may not be recoverable, based on future undiscounted cash flows. If the carrying amount of an intangible asset is not recoverable and exceeds the fair value, an impairment loss is recognized for the amount by which the carrying amount of the asset exceeds the fair value.

Goodwill

The Company recognizes goodwill as the excess of the purchase price over the fair value of identifiable net assets acquired in business combinations. Goodwill is assigned to the reporting units that are expected to benefit from the business acquisition. The carrying amount of goodwill is not amortized; instead, it is tested for impairment annually as of the first day of the fiscal fourth quarter or more frequently if events or changes in circumstances indicate that it is more likely than not that the fair value of a reporting unit is less than the carrying amount.

For the purpose of impairment testing, the Company may first assess certain qualitative factors to determine if it is more likely than not that the fair value of a reporting unit is less than its carrying amount, including goodwill, or proceed directly to a quantitative goodwill impairment test. Qualitative factors include but are not limited to, economic, market and industry conditions, cost factors and overall financial performance of the reporting unit, and events such as changes in management or customers. If the qualitative assessment indicates that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, the quantitative impairment test must be performed. The quantitative impairment test is performed by comparing the fair value of a reporting unit with its carrying amount, including goodwill, and an impairment loss is recognized for the amount by which the carrying amount exceeds the reporting unit's fair value, up to the value of goodwill. The Company defines the fair value of a reporting unit as the price that would be received to sell the reporting unit as a whole in an orderly transaction between market participants as of the impairment date. To determine the fair value of a reporting unit, the Company uses the discounted cash flow method using the pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset or group of assets.

Accounts receivable securitization

Based on the structure of its accounts receivable securitization program, the Company accounts for the proceeds received as secured borrowings.

Pensions

Pension costs are determined using actuarial methods. Net periodic benefit cost (income) includes the current service cost of pension benefits provided in exchange for employee service rendered during the year, which is recorded in Labor and fringe benefits expense. Net periodic benefit cost (income) also includes the following, which are recorded in Other components of net periodic benefit income (cost):

- the interest cost of pension obligations;
- the expected long-term return on pension fund assets;
- the amortization of prior service costs and amendments over the expected average remaining service life of the employee group covered by the plans; and
- the amortization of cumulative net actuarial gains and losses in excess of 10% of the greater of the beginning of year balances of the projected benefit obligation or market-related value of plan assets, over the expected average remaining service life of the employee group covered by the plans.

The pension plans are funded through contributions determined in accordance with the projected unit credit actuarial cost method.

Postretirement benefits other than pensions

The Company accrues the cost of postretirement benefits other than pensions using actuarial methods. These benefits, which are funded as they become due, include life insurance programs, medical benefits and, for a closed group of employees, free rail travel benefits.

The Company amortizes the cumulative net actuarial gains and losses in excess of 10% of the projected benefit obligation at the beginning of the year, over the expected average remaining service life of the employee group covered by the plan.

Additional paid-in capital
Additional paid-in capital includes the stock-based compensation expense on equity settled awards and other items relating to equity settled awards. Upon the exercise of stock options, the stock-based compensation expense related to those awards is reclassified from Additional paid-in capital to Common shares. Upon settlement of all other equity settled awards, the Company reclassifies from Additional paid-in capital to Retained Earnings the excess, if any, of the settlement cost of the awards over the related stock-based compensation expense, with no adjustment to common shares.

Stock-based compensation
For equity settled awards, stock-based compensation costs are accrued over the requisite service period based on the fair value of the awards at the grant date. The grant date fair value of performance share unit (PSU) awards is dependent on the type of PSU award. The grant date fair value of PSU-ROIC awards is determined using a lattice-based model incorporating a minimum share price condition and the grant date fair value of PSU-TSR awards is determined using a Monte Carlo simulation model. The grant date fair value of equity settled deferred share unit (DSU) awards is determined using the stock price at the grant date. The grant date fair value of stock option awards is determined using the Black-Scholes option-pricing model. For cash settled awards, stock-based compensation costs are accrued over the requisite service period based on the fair value determined at each period-end. The fair value of cash settled DSU awards is determined using their intrinsic value.

Personal injury and other claims
In Canada, the Company accounts for costs related to employee work-related injuries based on actuarially developed estimates on a discounted basis of the ultimate cost associated with such injuries, including compensation, health care and third-party administration costs. In the U.S., the Company accrues the expected cost for personal injury, property damage and occupational disease claims, based on actuarial estimates of their ultimate cost on an undiscounted basis. For all other legal actions in Canada and the U.S., the Company maintains, and regularly updates on a case-by-case basis, provisions for such items when the expected loss is both probable and can be reasonably estimated based on currently available information.

Environmental expenditures
Environmental expenditures that relate to current operations, or to an existing condition caused by past operations, are expensed as incurred. Environmental expenditures that provide a future benefit are capitalized. Environmental liabilities are recorded when environmental assessments occur, remedial efforts are probable, and when the costs, based on a specific plan of action in terms of the technology to be used and the extent of the corrective action required, can be reasonably estimated. The Company accrues its allocable share of liability taking into account the Company's alleged responsibility, the number of potentially responsible parties and their ability to pay their respective shares of the liability. Recoveries of environmental remediation costs from other parties are recorded as assets when their receipt is deemed probable.

Derivative financial instruments
The Company uses derivative financial instruments from time to time in the management of its interest rate and foreign currency exposures. Derivative instruments are recorded on the balance sheet at fair value. The changes in fair value of derivative instruments not designated or not qualified as a hedge are recorded in Net income in the current period.

2 – Recent accounting pronouncements

The following recent Accounting Standards Updates (ASUs) issued by FASB were adopted by the Company during the current year:

ASU 2016-02 Leases and related amendments (Topic 842)
The ASU requires a lessee to recognize a right-of-use asset and a lease liability on the balance sheet for all leases greater than twelve months and requires additional qualitative and quantitative disclosures. The lessor accounting model under the new standard is substantially unchanged. The guidance must be applied using a modified retrospective approach. Entities may elect to apply the guidance to each prior period presented with a cumulative-effect adjustment to retained earnings recognized at the beginning of the earliest period presented or to apply the guidance with a cumulative-effect adjustment to retained earnings recognized at the beginning of the period of adoption.

The new standard provides a number of practical expedients and accounting policy elections upon transition. On January 1, 2019, the Company did not elect the package of three practical expedients that permits the Company not to reassess prior conclusions about lease qualification, classification and initial direct costs. Upon adoption, the Company elected the following practical expedients:

- the use-of-hindsight practical expedient to reassess the lease term and the likelihood that a purchase option will be exercised;
- the land easement practical expedient to not evaluate land easements that were not previously accounted for as leases under Topic 840;

- the short-term lease exemption for all asset classes that permits entities not to recognize right-of-use assets and lease liabilities onto the balance sheet for leases with terms of twelve months or less; and
- the practical expedient to not separate lease and non-lease components for the freight car asset category.

The Company adopted this standard in the first quarter of 2019 with an effective date of January 1, 2019 using a modified retrospective approach with a cumulative-effect adjustment to Retained earnings recognized on January 1, 2019, with no restatement of comparative period financial information. As at January 1, 2019, the cumulative-effect adjustment to adopt the new standard increased the balance of Retained earnings by $29 million, relating to a deferred gain on a sale-leaseback transaction of a real estate property. The initial adoption transition adjustment to record right-of-use assets and lease liabilities for leases over twelve months on the Company's Consolidated Balance Sheet was $756 million to each balance. The initial adoption transition adjustment is comprised of finance and operating leases of $215 million and $541 million, respectively. New finance lease right-of-use assets and finance lease liabilities are a result of the reassessment of leases with purchase options that are reasonably certain to be exercised by the Company under the transition to Topic 842, previously accounted for as operating leases.

ASU 2017-04 Intangibles - Goodwill and other (Topic 350): Simplifying the test for goodwill impairment

The ASU simplifies the goodwill impairment test by removing the requirement to compare the implied fair value of goodwill with its carrying amount. Under the new standard, goodwill impairment tests are performed by comparing the fair value of a reporting unit with its carrying amount, recognizing an impairment charge for the amount by which the carrying amount exceeds the reporting unit's fair value, up to the value of goodwill.

The guidance must be applied prospectively. The ASU is effective for annual and any interim impairment tests for periods beginning after December 15, 2019. Early adoption is permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017.

The Company adopted this standard in the first quarter of 2019 with an effective date of January 1, 2019. The adoption of this standard did not have an impact on the Company's Consolidated Financial Statements.

The following recent ASUs issued by FASB have an effective date after December 31, 2019 and have not been adopted by the Company:

ASU 2019-12 Income taxes (Topic 740): Simplifying the accounting for income taxes

The ASU adds new guidance to simplify accounting for income taxes, changes the accounting for certain income tax transactions and makes minor improvements to the codification. The ASU introduces new guidance that provides a policy election to not allocate consolidated income taxes when a member of a consolidated tax return is not subject to income tax, and provides guidance to evaluate whether a step-up in tax basis of goodwill relates to a business combination in which book goodwill was recognized or a separate transaction. In addition, the ASU changes the current guidance by making an intraperiod allocation if there is a loss in continuing operations and gains outside of continuing operations; by determining when a deferred tax liability is recognized after an investor in a foreign entity transitions to or from the equity method of accounting; by accounting for tax law changes and year-to-date losses in interim periods; and by determining how to apply the income tax guidance to franchise taxes and other taxes that are partially based on income.

The ASU is effective for annual and any interim period beginning after December 15, 2020. Early adoption is permitted.

The Company is evaluating the effects that the adoption of the ASU will have on its Consolidated Financial Statements; no significant impact is expected.

ASU 2016-13 Financial instruments - Credit losses (Topic 326): Measurement of credit losses on financial instruments

The ASU requires financial assets measured at amortized cost to be presented at the net amount expected to be collected. The new standard replaces the current incurred loss impairment methodology with one that reflects expected credit losses. The adoption of the ASU is not expected to have a significant impact on the Company's Consolidated Financial Statements. CN will adopt the requirements of the ASU effective January 1, 2020.

Other recently issued ASUs required to be applied for periods beginning on or after January 1, 2020 have been evaluated by the Company and will not have a significant impact on the Company's Consolidated Financial Statements.

3 – Business combinations

2019

Acquisition of intermodal division of H&R Transport Limited

On December 2, 2019, the Company acquired the intermodal temperature-controlled transportation division of the Alberta-based H&R Transport Limited ("H&R"). The acquisition positions CN to expand its presence in moving customer goods by offering more end to end rail supply chain solutions to a wider range of customers.

The Company's Consolidated Balance Sheet includes the assets and liabilities of H&R as of December 2, 2019, the acquisition date. Since the acquisition date, H&R's results of operations have been included in the Company's results of operations. The Company has not provided pro forma information relating to the pre-acquisition period as it was not material.

Of the total purchase price of $105 million, $95 million was paid on the closing date and $10 million, mostly related to funds withheld for the indemnification of claims, will be paid within twenty months of the acquisition date.

The following table summarizes the consideration transferred to acquire H&R, as well as the preliminary fair value of the assets acquired and liabilities assumed, and goodwill that were recognized at the acquisition date:

In millions		**December 2 2019**
Consideration transferred		
Cash paid at closing	**$**	**95**
Consideration payable		**10**
Fair value of total consideration transferred	**$**	**105**
Recognized amounts of identifiable assets acquired and liabilities assumed (1)		
Current assets	**$**	**10**
Non-current assets (2)		**84**
Non-current liabilities		**(1)**
Total identifiable net assets (3)	**$**	**93**
Goodwill (4)	**$**	**12**

(1) The Company's purchase price allocation is preliminary, based on information available to the Company to date, and subject to change over the measurement period, which may be up to one year from the acquisition date.

(2) Includes identifiable intangible assets of $52 million.

(3) Includes operating lease right-of-use assets and liabilities.

(4) The goodwill acquired through the business combination is mainly attributable to the premium of an established business operation. The goodwill is deductible for tax purposes.

Acquisition of the TransX Group of Companies

On March 20, 2019, the Company acquired the Manitoba-based TransX Group of Companies ("TransX"). TransX provides various transportation and logistics services, including intermodal, truckload, less than truckload and specialized services. The acquisition positions CN to strengthen its intermodal business, and allows the Company to expand capacity and foster additional supply chain solutions. The acquisition was subject to a number of conditions, including regulatory review by the Competition Bureau Canada and Canada's Ministry of Transportation. On March 18, 2019, the Competition Bureau Canada issued a No Action Letter, satisfying the only outstanding condition and allowing the Company to close the transaction.

The Company's Consolidated Balance Sheet includes the assets and liabilities of TransX as of March 20, 2019, the acquisition date. Since the acquisition date, TransX's results of operations have been included in the Company's results of operations. The Company has not provided pro forma information relating to the pre-acquisition period as it was not material.

The total purchase price of $192 million included an initial cash payment of $170 million, additional consideration of $25 million, less an adjustment of $3 million in the fourth quarter of 2019 to reflect the settlement of working capital. The acquisition date fair value of the additional consideration, recorded as a contingent liability, was estimated based on the expected outcome of operational and financial targets, and remained unchanged since the acquisition date. The fair value measure was based on Level 3 inputs not observable in the market. On August 27, 2019, the additional consideration was paid.

The following table summarizes the consideration transferred to acquire TransX, as well as the preliminary fair value of the assets acquired and liabilities assumed, and goodwill that were recognized at the acquisition date:

In millions		March 20 2019
Consideration transferred		
Cash paid at closing	**$**	**170**
Additional cash consideration and other (1)		**22**
Fair value of total consideration transferred	**$**	**192**
Recognized amounts of identifiable assets acquired and liabilities assumed (2)		
Current assets	**$**	**85**
Non-current assets (3)		**260**
Current liabilities		**(134)**
Non-current liabilities		**(84)**
Total identifiable net assets (4)	**$**	**127**
Goodwill (5)	**$**	**65**

(1) *Includes additional cash consideration paid of $25 million less an adjustment of $3 million to reflect the settlement of working capital.*

(2) *The Company's purchase price allocation is preliminary, based on information available to the Company to date, and subject to change over the measurement period, which may be up to one year from the acquisition date. In the fourth quarter of 2019, the fair value of net assets acquired was adjusted to reflect the settlement of working capital and other adjustments.*

(3) *Includes identifiable intangible assets of $34 million.*

(4) *Includes finance and operating lease right-of-use assets and liabilities.*

(5) *The goodwill acquired through the business combination is mainly attributable to the premium of an established business operation. The goodwill is not deductible for tax purposes.*

4 – Revenues

The following table provides disaggregated information for revenues:

In millions	*Year ended December 31,*		**2019**		2018		2017
Freight revenues							
Petroleum and chemicals		**$**	**3,052**	$	2,660	$	2,208
Metals and minerals			**1,643**		1,689		1,523
Forest products			**1,808**		1,886		1,788
Coal			**658**		661		535
Grain and fertilizers			**2,392**		2,357		2,214
Intermodal			**3,787**		3,465		3,200
Automotive			**858**		830		825
Total freight revenues			**14,198**		13,548		12,293
Other revenues			**719**		773		748
Total revenues (1) (2)		**$**	**14,917**	$	14,321	$	13,041

(1) *As at December 31, 2019, the Company had remaining performance obligations related to freight in-transit, for which revenues of $91 million are expected to be recognized in the next period.*

(2) *See Note 21 - Segmented information for the disaggregation of revenues by geographic area.*

Contract liabilities

The following table provides a reconciliation of the beginning and ending balances of contract liabilities for the years ended December 31, 2019, and 2018:

In millions		**2019**		2018
Beginning of year	**$**	**3**	$	3
Revenue recognized included in the beginning balance		**(3)**		(3)
Increase due to consideration received, net of revenue recognized		**211**		3
End of year	**$**	**211**	$	3
Current portion - End of year	**$**	**50**	$	3

5 – Other income

In millions	*Year ended December 31,*	**2019**		2018		2017
Gain on disposal of property	**$**	**–**	$	338	$	–
Gain on disposal of land		**50**		27		22
Other (1)		**3**		11		(10)
Total other income	**$**	**53**	$	376	$	12

(1) Includes foreign exchange gains and losses related to foreign exchange forward contracts and the re-measurement of foreign currency denominated monetary assets and liabilities. See Note 20 – Financial instruments for additional information.

Disposal of property

2018

Guelph

On November 15, 2018, the Company recorded a gain of $79 million ($70 million after-tax) in Other income upon transfer of control of a segment of the Guelph subdivision located between Georgetown and Kitchener, Ontario, together with the rail fixtures and certain passenger agreements (the "Guelph"). The gain recognized in 2018 was previously deferred from a 2014 transaction at which time the Company did not transfer control.

Doney and St-Francois Spurs

On September 5, 2018, the Company completed the sale of property located in Montreal, Quebec (the "Doney and St-Francois Spurs") for cash proceeds of $40 million. The transaction resulted in a gain of $36 million ($32 million after-tax) that was recorded in Other income on that date.

Central Station Railway Lease

On April 9, 2018, the Company completed the transfer of its finance lease in the passenger rail facilities in Montreal, Quebec, together with its interests in related railway operating agreements (the "Central Station Railway Lease"), for cash proceeds of $115 million. The transaction resulted in a gain of $184 million ($156 million after-tax) that was recorded in Other income on that date. The gain includes the difference between the net book value of the asset and the cash proceeds, the extinguishment of the finance lease obligation, and the recognition of a gain previously deferred from a sale-leaseback transaction.

Calgary Industrial Lead

On April 6, 2018, the Company completed the sale of land located in Calgary, Alberta, excluding the rail fixtures (the "Calgary Industrial Lead"), for cash proceeds of $39 million. The transaction resulted in a gain of $39 million ($34 million after-tax) that was recorded in Other income on that date.

6 – Income taxes

The Company's consolidated effective income tax rate differs from the Canadian, or domestic, statutory federal tax rate. The effective tax rate is affected by recurring items in provincial, U.S. federal, state and other foreign jurisdictions, such as tax rates and the proportion of income earned in those jurisdictions. The effective tax rate is also affected by discrete items such as income tax rate enactments, and lower corporate income tax rates on capital dispositions that may occur in any given year.

On December 22, 2017, the President of the United States signed into law the Tax Cuts and Jobs Act ("U.S. Tax Reform"). The U.S. Tax Reform reduces the U.S. federal corporate income tax rate from 35% to 21%, effective as of January 1, 2018. The U.S. Tax Reform also allows for immediate capital expensing of new investments in certain qualified depreciable assets made after September 27, 2017, which will be phased down starting in year 2023. As a result of the U.S. Tax Reform, the Company's net deferred income tax liability decreased by $1,764 million for the year ended December 31, 2017.

The U.S. Tax Reform introduced other important changes to U.S. corporate income tax laws including the creation of a new Base Erosion Anti-abuse Tax (BEAT) that subjects certain payments from U.S. corporations to foreign related parties to additional taxes and limitations to the deduction for net interest expense incurred by U.S. corporations. Since the enactment of the U.S. Tax Reform, U.S. authorities have issued various proposed and finalized regulations and guidance interpreting its provisions. These interpretations have been taken into account in calculating the Company's current year income tax provision and tax payments. The U.S. Tax Reform and these regulations are expected to impact the Company's income tax provisions and tax payments in future years.

The following table provides a reconciliation of income tax expense (recovery):

In millions	*Year ended December 31,*	**2019**		2018		2017
Canadian statutory federal tax rate		**15%**		15%		15%
Income tax expense at the Canadian statutory federal tax rate	**$**	**814**	$	852	$	763
Income tax expense (recovery) resulting from:						
Provincial and foreign income taxes (1)		**551**		535		536
Deferred income tax adjustments due to rate enactments (2)		**(112)**		—		(1,706)
Gain on disposals (3)		**(6)**		(51)		(3)
Other (4)		**(34)**		18		15
Income tax expense (recovery)	**$**	**1,213**	$	1,354	$	(395)
Net cash payments for income taxes	**$**	**822**	$	776	$	712

(1) Includes mainly the impact of Canadian provincial taxes and U.S. federal and state taxes.

(2) Includes the net deferred income tax recovery resulting from the enactment of provincial, U.S. federal, and state corporate income tax laws and/or rates.

(3) Relates to the permanent differences arising from lower capital gain tax rates on the gain on disposal of the Company's properties in Canada.

(4) Includes adjustments relating to the filing or resolution of matters pertaining to prior years' income taxes, including net recognized tax benefits, excess tax benefits, and other items.

The following table provides tax information on a domestic and foreign basis:

In millions	*Year ended December 31,*	**2019**		2018		2017
Income before income taxes						
Domestic	**$**	**4,162**	$	4,400	$	3,964
Foreign		**1,267**		1,282		1,125
Total income before income taxes	**$**	**5,429**	$	5,682	$	5,089
Current income tax expense						
Domestic	**$**	**608**	$	818	$	758
Foreign		**36**		9		42
Total current income tax expense	**$**	**644**	$	827	$	800
Deferred income tax expense (recovery)						
Domestic	**$**	**423**	$	419	$	349
Foreign		**146**		108		(1,544)
Total deferred income tax expense (recovery)	**$**	**569**	$	527	$	(1,195)

The following table provides the significant components of deferred income tax assets and liabilities:

In millions *December 31,*		2019		2018
Deferred income tax assets				
Net operating losses and tax credit carryforwards [(1)]	**$**	**234**	$	20
Pension liability		**137**		128
Lease liabilities		**127**		—
Personal injury and other claims		**61**		65
Other postretirement benefits liability		**59**		70
Compensation reserves		**51**		74
Unrealized foreign exchange losses		**—**		50
Other		**69**		61
Total deferred income tax assets	**$**	**738**	$	468
Deferred income tax liabilities				
Properties	**$**	**8,222**	$	7,672
Operating lease right-of-use assets		**131**		—
Pension asset		**88**		120
Unrealized foreign exchange gains		**15**		—
Other		**126**		156
Total deferred income tax liabilities	**$**	**8,582**	$	7,948
Total net deferred income tax liability	**$**	**7,844**	$	7,480
Total net deferred income tax liability				
Domestic	**$**	**4,184**	$	3,808
Foreign		**3,660**		3,672
Total net deferred income tax liability	**$**	**7,844**	$	7,480

(1) As at December 31, 2019, the Company has $937 million net operating loss carryforwards for U.S. federal income tax purposes that arose in 2019, over an indefinite period. The utilization of those U.S. federal net operating loss carryforwards is limited to 80% of taxable income in any given year, as prescribed under the provisions of the U.S. Tax Reform. In addition, the Company has net operating loss carryforwards of $177 million for U.S. state tax purposes, which are available to offset future U.S. state taxable income between the years 2020 and 2039.

On an annual basis, the Company assesses the need to establish a valuation allowance for its deferred income tax assets, and if it is deemed more likely than not that its deferred income tax assets will not be realized, a valuation allowance is recorded. The ultimate realization of deferred income tax assets is dependent upon the generation of future taxable income, of the necessary character, during the periods in which those temporary differences become deductible. Management considers the scheduled reversals of deferred income tax liabilities, the available carryback and carryforward periods, and projected future taxable income in making this assessment. As at December 31, 2019, in order to fully realize all of the deferred income tax assets, the Company will need to generate future taxable income of approximately $3.0 billion, and, based upon the level of historical taxable income, projections of future taxable income of the necessary character over the periods in which the deferred income tax assets are deductible, and the reversal of taxable temporary differences, management believes, following an assessment of the current economic environment, it is more likely than not that the Company will realize the benefits of these deductible differences. As at December 31, 2019, the Company has not recognized a deferred income tax asset of $244 million (2018 - $217 million) on the unrealized foreign exchange loss recorded in Accumulated other comprehensive loss relating to its net investment in U.S. subsidiaries, as the Company does not expect this temporary difference to reverse in the foreseeable future.

The following table provides a reconciliation of unrecognized tax benefits on the Company's domestic and foreign tax positions:

In millions	*Year ended December 31,*	**2019**		2018		2017
Gross unrecognized tax benefits at beginning of year	**$**	**74**	$	74	$	61
Increases for:						
Tax positions related to the current year		**5**		12		13
Tax positions related to prior years		**—**		2		2
Decreases for:						
Tax positions related to prior years		**(17)**		(13)		—
Settlements		**—**		(1)		(1)
Lapse of the applicable statute of limitations		**—**		—		(1)
Gross unrecognized tax benefits at end of year		**62**		74		74
Adjustments to reflect tax treaties and other arrangements		**(2)**		(5)		(5)
Net unrecognized tax benefits at end of year	**$**	**60**	$	69	$	69

As at December 31, 2019, the total amount of gross unrecognized tax benefits was $62 million, before considering tax treaties and other arrangements between taxation authorities. The amount of net unrecognized tax benefits as at December 31, 2019 was $60 million. If recognized, $7 million of the net unrecognized tax benefits as at December 31, 2019 would affect the effective tax rate. The Company believes that it is reasonably possible that $23 million of the net unrecognized tax benefits as at December 31, 2019 related to Canadian federal and provincial income tax matters, may be recognized over the next twelve months as a result of settlements and a lapse of the applicable statute of limitations, and will not affect the effective tax rate as they relate to temporary differences.

The Company recognizes accrued interest and penalties related to gross unrecognized tax benefits in Income tax expense in the Company's Consolidated Statements of Income. For the year ended December 31, 2019, the Company recognized accrued interest and penalties of $1 million (2018 - $3 million; 2017 - $3 million). As at December 31, 2019, the Company had accrued interest and penalties of $11 million (2018 - $10 million).

In Canada, the Company's federal and provincial income tax returns filed for the years 2014 to 2018 remain subject to examination by the taxation authorities. An examination of the Company's federal income tax returns for the years 2014 and 2015 is currently in progress and is expected to be completed during 2020. In the U.S., the federal income tax returns filed for the years 2016 to 2018 and the state income tax returns filed for the years 2015 to 2018 remain subject to examination by the taxation authorities. During the year, the Company settled certain state tax audits which resulted in the recognition of tax benefits. Examination of the Company's U.S. federal income tax return for the year 2017 as well as examinations of certain state income tax returns are currently in progress. The Company does not anticipate any significant impacts to its results of operations or financial position as a result of the final resolutions of such matters.

7 – Earnings per share

The following table provides a reconciliation between basic and diluted earnings per share:

In millions, except per share data	*Year ended December 31,*	**2019**		2018		2017
Net income	**$**	**4,216**	$	4,328	$	5,484
Weighted-average basic shares outstanding		**720.1**		734.5		753.6
Dilutive effect of stock-based compensation		**2.5**		3.2		3.7
Weighted-average diluted shares outstanding		**722.6**		737.7		757.3
Basic earnings per share	**$**	**5.85**	$	5.89	$	7.28
Diluted earnings per share	**$**	**5.83**	$	5.87	$	7.24
Units excluded from the calculation as their inclusion would not have a dilutive effect						
Stock options		**0.5**		0.6		0.4
Performance share units		**0.2**		0.3		0.1

8 – Accounts receivable

In millions	*December 31,*	**2019**	2018
Freight		**$ 1,008**	$ 974
Non-freight		**233**	221
Gross accounts receivable		**1,241**	1,195
Allowance for doubtful accounts		**(28)**	(26)
Net accounts receivable		**$ 1,213**	$ 1,169

9 – Properties

	December 31, 2019				December 31, 2018		
In millions	**Depreciation rate**	**Cost**	**Accumulated Depreciation**	**Net**	Cost	Accumulated Depreciation	Net
Properties including finance leases							
Track and roadway [1]	**2%**	**$ 39,395**	**$ 8,502**	**$ 30,893**	$ 38,352	$ 8,276	$ 30,076
Rolling stock	**5%**	**7,538**	**2,941**	**4,597**	6,883	2,842	4,041
Buildings	**3%**	**1,956**	**692**	**1,264**	1,924	668	1,256
Information technology [2]	**9%**	**1,972**	**688**	**1,284**	1,795	686	1,109
Other	**5%**	**2,720**	**1,089**	**1,631**	2,124	833	1,291
Total properties including finance leases [3] [4]		**$ 53,581**	**$ 13,912**	**$ 39,669**	$ 51,078	$ 13,305	$ 37,773
Finance leases included in properties							
Track and roadway [5]		**$ 406**	**$ 85**	**$ 321**	$ 406	$ 80	$ 326
Rolling stock		**87**	**2**	**85**	—	—	—
Buildings		**27**	**9**	**18**	27	9	18
Other		**128**	**18**	**110**	92	18	74
Total finance leases included in properties		**$ 648**	**$ 114**	**$ 534**	$ 525	$ 107	$ 418

(1) As at December 31, 2019, includes land of $2,401 million (2018 - $2,455 million).

(2) In 2019, the Company capitalized costs for internally developed software and related licenses of $273 million (2018 - $283 million).

(3) In 2019, property additions, net of finance leases, were $3,865 million (2018 - $3,531 million), of which $1,489 million (2018 - $1,547 million) related to track and railway infrastructure maintenance.

(4) In 2019, depreciation expense related to properties was $1,559 million (2018 - $1,327 million).

(5) As at December 31, 2019, includes right-of-way access of $106 million (2018 - $107 million).

In the first quarter of 2019, the Company recognized an expense of $84 million related to costs previously capitalized for a Positive Train Control (PTC) back office system following the deployment of a replacement system. The expense was recognized in Depreciation and amortization on the Consolidated Statements of Income.

10 – Leases

The following table provides the Company's lease costs for the year ended December 31, 2019:

In millions	*Year ended December 31,*	**2019**
Finance lease cost		
Amortization of right-of-use assets	$	**11**
Interest on lease liabilities		**8**
Total finance lease cost		**19**
Operating lease cost		**171**
Short-term lease cost		**47**
Variable lease cost (1)		**63**
Total lease cost (2)	$	**300**

(1) *Mainly relates to leases of trucks for the Company's freight delivery service contracts.*

(2) *Includes lease costs from purchased services and material and equipment rents in the Consolidated Statements of Income.*

Rental expense for operating leases for the years ended December 31, 2018 and 2017 were $218 million and $191 million, respectively.

The following table provides the Company's lease right-of-use assets and lease liabilities, and their classification on the Consolidated Balance Sheet as at December 31, 2019:

In millions	**Classification**	*December 31,*	**2019**
Lease right-of-use assets			
Finance leases	Properties	$	**534**
Operating leases	Operating lease right-of-use assets		**520**
Total lease right-of-use assets		$	**1,054**
Lease liabilities			
Current			
Finance leases	Current portion of long-term debt	$	**59**
Operating leases	Accounts payable and other		**122**
Noncurrent			
Finance leases	Long-term debt		**75**
Operating leases	Operating lease liabilities		**379**
Total lease liabilities		$	**635**

The following table provides the remaining lease terms and discount rates for the Company's leases as at December 31, 2019:

	December 31,	**2019**
Weighted-average remaining lease term *(years)*		
Finance leases		**1.4**
Operating leases		**7.0**
Weighted-average discount rate *(%)*		
Finance leases		**3.21**
Operating leases		**3.12**

The following table provides additional information for the Company's leases for the year ended December 31, 2019:

In millions	*Year ended December 31,*	**2019**
Cash paid for amounts included in the measurement of lease liabilities		
Operating cash outflows from operating leases	**$**	**170**
Operating cash outflows from finance leases	**$**	**6**
Financing cash outflows from finance leases	**$**	**162**
Right-of-use assets obtained in exchange for lease liabilities		
Operating lease	**$**	**79**
Finance lease	**$**	**—**

The following table provides the maturities of lease liabilities for the next five years and thereafter as at December 31, 2019:

In millions		**Finance leases**		**Operating leases** (1)
2020	$	62	$	135
2021		72		108
2022		1		73
2023		—		51
2024		—		37
2025 and thereafter		3		156
Total lease payments		138		560
Less: Imputed interest		4		59
Present value of lease payments	$	134	$	501

(1) *Includes $70 million related to renewal options that are reasonably certain to be exercised.*

The following table provides the maturities of lease liabilities under ASC 840 "Leases" for the next five years and thereafter as at December 31, 2018:

In millions		**Capital leases**		**Operating leases**
2019	$	10	$	190
2020		15		136
2021		5		103
2022		—		64
2023		—		45
2024 and thereafter		—		125
Total lease payments	$	30	$	663
Less: Imputed interest		1		
Present value of lease payments	$	29		

11 – Intangible assets, goodwill and other

In millions	*December 31,*	**2019**	2018
Intangible assets		**$ 152**	$ 73
Investments [1]		**84**	70
Goodwill *(Note 3)*		**77**	—
Deferred costs		**67**	61
Long-term receivables		**31**	26
Other long-term assets		**18**	37
Total intangible assets, goodwill and other		**$ 429**	$ 267

(1) As at December 31, 2019, the Company had $60 million (2018 - $54 million) of investments accounted for under the equity method and $24 million (2018 - $16 million) of investments for which fair value was not readily determinable accounted for at cost minus impairment, plus or minus observable price changes.

12 – Accounts payable and other

In millions	*December 31,*	**2019**	2018
Trade payables		**$ 866**	$ 982
Accrued charges		**318**	232
Payroll-related accruals		**284**	436
Income and other taxes		**202**	205
Accrued interest		**161**	142
Operating lease liabilities *(Note 10)*		**122**	—
Personal injury and other claims provisions *(Note 19)*		**91**	97
Contract liabilities *(Note 4)*		**50**	3
Environmental provisions *(Note 19)*		**38**	39
Other postretirement benefits liability *(Note 15)*		**15**	17
Other		**210**	163
Total accounts payable and other		**$ 2,357**	$ 2,316

13 – Debt

In millions		Maturity	US dollar-denominated amount	*December 31,* 2019	2018
Notes and debentures (1)					
Canadian National series:					
2.40%	2-year notes (2)	Feb 3, 2020	US$ 300	$ **390**	$ 409
2.75%	7-year notes (2)	Feb 18, 2021		**250**	250
2.85%	10-year notes (2)	Dec 15, 2021	US$ 400	**520**	546
2.25%	10-year notes (2)	Nov 15, 2022	US$ 250	**325**	341
7.63%	30-year debentures	May 15, 2023	US$ 150	**195**	205
2.95%	10-year notes (2)	Nov 21, 2024	US$ 350	**455**	477
2.80%	10-year notes (2)	Sep 22, 2025		**350**	350
2.75%	10-year notes (2)	Mar 1, 2026	US$ 500	**649**	682
6.90%	30-year notes (2)	Jul 15, 2028	US$ 475	**617**	648
3.20%	10-year notes (2)	Jul 31, 2028		**350**	350
3.00%	10-year notes (2)	Feb 8, 2029		**350**	—
7.38%	30-year debentures (2)	Oct 15, 2031	US$ 200	**260**	273
6.25%	30-year notes (2)	Aug 1, 2034	US$ 500	**649**	682
6.20%	30-year notes (2)	Jun 1, 2036	US$ 450	**585**	614
6.71%	Puttable Reset Securities PURS℠ (2)	Jul 15, 2036	US$ 250	**325**	341
6.38%	30-year debentures (2)	Nov 15, 2037	US$ 300	**390**	409
3.50%	30-year notes (2)	Nov 15, 2042	US$ 250	**325**	341
4.50%	30-year notes (2)	Nov 7, 2043	US$ 250	**325**	341
3.95%	30-year notes (2)	Sep 22, 2045		**400**	400
3.20%	30-year notes (2)	Aug 2, 2046	US$ 650	**844**	886
3.60%	30-year notes (2)	Aug 1, 2047		**500**	500
3.65%	30-year notes (2)	Feb 3, 2048	US$ 600	**779**	818
3.60%	30-year notes (2)	Jul 31, 2048		**450**	450
4.45%	30-year notes (2)	Jan 20, 2049	US$ 650	**844**	886
3.60%	30-year notes (2)	Feb 8, 2049		**450**	—
3.05%	30-year notes (2)	Feb 8, 2050		**450**	—
4.00%	50-year notes (2)	Sep 22, 2065		**100**	100
Illinois Central series:					
7.70%	100-year debentures	Sep 15, 2096	US$ 125	**162**	170
BC Rail series:					
Non-interest bearing 90-year subordinated notes (3)		Jul 14, 2094		**842**	842
Total notes and debentures				**13,131**	12,311
Other					
Commercial paper				**1,277**	1,175
Accounts receivable securitization				**200**	—
Finance lease liabilities and other (4)				**138**	29
Total debt, gross				**14,746**	13,515
Net unamortized discount and debt issuance costs (3)				**(950)**	(946)
Total debt (5)				**13,796**	12,569
Less: Current portion of long-term debt				**1,930**	1,184
Total long-term debt				$ **11,866**	$ 11,385

(1) The Company's notes and debentures are unsecured.

(2) The fixed rate debt securities are redeemable, in whole or in part, at the option of the Company, at any time, at the greater of par and a formula price based on interest rates prevailing at the time of redemption.

(3) As at December 31, 2019, these notes were recorded as a discounted debt of $12 million (2018 - $12 million) using an imputed interest rate of 5.75% (2018 - 5.75%). The discount of $830 million (2018 - $830 million) is included in Net unamortized discount and debt issuance costs.

(4) Includes $4 million of equipment loans in 2019.

(5) See Note 20 - Financial instruments for the fair value of debt.

Notes and debentures

For the year ended December 31, 2019, the Company issued the following:

- On November 1, 2019, issuance of $450 million 3.05% Notes due 2050 in the Canadian capital markets, which resulted in net proceeds of $443 million; and
- On February 8, 2019, issuance of $350 million 3.00% Notes due 2029 and $450 million 3.60% Notes due 2049 in the Canadian capital markets, which resulted in total net proceeds of $790 million.

For the year ended December 31, 2018, the Company issued and repaid the following:

- On November 7, 2018, issuance of US$650 million ($854 million) 4.45% Notes due 2049 in the U.S. capital markets, which resulted in net proceeds of $845 million;
- On August 30, 2018, early redemption of US$550 million 5.55% Notes due 2019 for US$558 million ($720 million), which resulted in a loss of US$8 million ($10 million) that was recorded in Other income;
- On July 31, 2018, issuance of $350 million 3.20% Notes due 2028 and $450 million 3.60% Notes due 2048 in the Canadian capital markets, which resulted in total net proceeds of $787 million;
- On July 15, 2018, repayment of US$200 million ($264 million) 6.80% Notes due 2018 upon maturity;
- On May 15, 2018, repayment of US$325 million ($415 million) 5.55% Notes due 2018 upon maturity; and
- On February 6, 2018, issuance of US$300 million ($374 million) 2.40% Notes due 2020 and US$600 million ($749 million) 3.65% Notes due 2048 in the U.S. capital markets, which resulted in total net proceeds of $1,106 million.

Revolving credit facility

The Company has an unsecured revolving credit facility with a consortium of lenders, which is available for general corporate purposes, including backstopping the Company's commercial paper programs. On March 15, 2019, the Company's revolving credit facility agreement was amended, which extended the term of the credit facility by one year and increased the credit facility from $1.8 billion to $2.0 billion, effective May 5, 2019. The amended credit facility of $2.0 billion consists of a $1.0 billion tranche maturing on May 5, 2022 and a $1.0 billion tranche maturing on May 5, 2024. Under the amended credit facility, the Company has the option to request an extension once a year to maintain the tenors of three years and five years of the respective tranches subject to the consent of the individual lenders. The accordion feature, which provides for an additional $500 million of credit under the facility, remains unchanged. The credit facility agreement contains customary terms and conditions, which were substantially unchanged by the amendment. The credit facility provides for borrowings at various benchmark interest rates, plus applicable margins, based on CN's debt credit ratings. The credit facility agreement has one financial covenant, which limits debt as a percentage of total capitalization, and with which the Company is in compliance.

As at December 31, 2019 and 2018, the Company had no outstanding borrowings under its revolving credit facility and there were no draws during the years ended December 31, 2019 and 2018.

Non-revolving credit facility

On July 25, 2019, the Company entered into an agreement for a non-revolving term loan credit facility in the principal amount of up to US$300 million, secured by rolling stock, which may be drawn upon during the period from July 25, 2019 to March 31, 2020. Term loans made under the facility have a tenor of 20 years, bear interest at a variable rate, and are prepayable at any time without penalty. The credit facility is available for financing or refinancing the purchase of equipment. As at December 31, 2019, the Company had no outstanding borrowings under its non-revolving credit facility and there were no draws during the year ended December 31, 2019.

Commercial paper

The Company has a commercial paper program in Canada and in the U.S. Both programs are backstopped by the Company's revolving credit facility. As of May 5, 2019, the maximum aggregate principal amount of commercial paper that could be issued increased from $1.8 billion to $2.0 billion, or the US dollar equivalent, on a combined basis. As at December 31, 2019 and 2018, the Company had total commercial paper borrowings of US$983 million ($1,277 million) and US$862 million ($1,175 million), respectively, at a weighted-average interest rate of 1.77% and 2.47%, respectively, presented in Current portion of long-term debt on the Consolidated Balance Sheets.

The following table provides a summary of cash flows associated with the issuance and repayment of commercial paper:

In millions *Year ended December 31,*		**2019**		2018		2017
Commercial paper with maturities less than 90 days						
Issuance	**$**	**5,069**	$	8,292	$	4,539
Repayment		**(5,141)**		(8,442)		(4,160)
Change in commercial paper with maturities less than 90 days, net	**$**	**(72)**	$	(150)	$	379
Commercial paper with maturities of 90 days or greater						
Issuance	**$**	**2,115**	$	1,135	$	—
Repayment		**(1,902)**		(886)		—
Change in commercial paper with maturities of 90 days or greater, net	**$**	**213**	$	249	$	—
Change in commercial paper, net	**$**	**141**	$	99	$	379

Accounts receivable securitization program

The Company has an agreement, expiring on February 1, 2021, to sell an undivided co-ownership interest in a revolving pool of accounts receivable to unrelated trusts for maximum cash proceeds of $450 million.

As at December 31, 2019, the Company had accounts receivable securitization borrowings of $200 million at a weighted-average interest rate of 1.90%, secured by and limited to $224 million of accounts receivable, presented in Current portion of long-term debt on the Consolidated Balance Sheet. As at December 31, 2018, the Company had no proceeds received under the accounts receivable securitization program.

The following table provides a summary of cash flows associated with the proceeds received and repayment of the accounts receivable securitization program:

In millions *Year ended December 31,*		**2019**		2018		2017
Beginning of year	**$**	**—**	$	421	$	—
Proceeds received		**420**		530		423
Repayment		**(220)**		(950)		—
Foreign exchange		**—**		(1)		(2)
End of year	**$**	**200**	$	—	$	421

Bilateral letter of credit facilities

The Company has a series of committed and uncommitted bilateral letter of credit facility agreements. On March 15, 2019, the Company extended the maturity date of the committed bilateral letter of credit facility agreements to April 28, 2022. The agreements are held with various banks to support the Company's requirements to post letters of credit in the ordinary course of business. Under these agreements, the Company has the option from time to time to pledge collateral in the form of cash or cash equivalents, for a minimum term of one month, equal to at least the face value of the letters of credit issued.

As at December 31, 2019, the Company had outstanding letters of credit of $424 million (2018 - $410 million) under the committed facilities from a total available amount of $459 million (2018 - $447 million) and $149 million (2018 - $137 million) under the uncommitted facilities. As at December 31, 2019, included in Restricted cash and cash equivalents was $429 million (2018 - $408 million) and $90 million (2018 - $80 million) which were pledged as collateral under the committed and uncommitted bilateral letter of credit facilities, respectively.

Debt maturities

The following table provides the debt maturities, excluding finance lease liabilities, as at December 31, 2019, for the next five years and thereafter:

In millions		Debt [1]
2020	$	1,871
2021		761
2022		317
2023		187
2024		447
2025 and thereafter		10,079
Total		13,662
Finance lease liabilities [2]		134
Total debt	**$**	**13,796**

(1) Presented net of unamortized discounts and debt issuance costs.

(2) See Note 10 - Leases for maturities of finance lease liabilities.

Amount of US dollar-denominated debt

In millions	*December 31,*		**2019**		2018
Notes and debentures		**US$**	**6,650**	US$	6,650
Commercial paper			**983**		862
Finance lease liabilities and other			**74**		21
Total amount of US dollar-denominated debt in US$		**US$**	**7,707**	US$	7,533
Total amount of US dollar-denominated debt in C$		**$**	**10,011**	$	10,273

14 – Other liabilities and deferred credits

In millions	*December 31,*		**2019**		2018
Personal injury and other claims provisions *(Note 19)* [1]		**$**	**261**	$	249
Contract liabilities *(Note 4)* [1]			**161**		—
Environmental provisions *(Note 19)* [1]			**19**		22
Stock-based compensation liability *(Note 17)*			**16**		19
Deferred credits and other			**177**		211
Total other liabilities and deferred credits		**$**	**634**	$	501

(1) See Note 12 – Accounts payable and other for the related current portion.

15 – Pensions and other postretirement benefits

The Company has various retirement benefit plans under which substantially all of its employees are entitled to benefits at retirement age, generally based on compensation and length of service and/or contributions. Senior and executive management employees, subject to certain minimum service and age requirements, are also eligible for an additional retirement benefit under their Special Retirement Stipend Agreements, the Supplemental Executive Retirement Plan or the Defined Contribution Supplemental Executive Retirement Plan.

The Company also offers postretirement benefits to certain employees providing life insurance, medical benefits and, for a closed group of employees, free rail travel benefits during retirement. These postretirement benefits are funded as they become due. The information in the tables that follow pertains to all of the Company's defined benefit plans. However, the following descriptions relate solely to the Company's main pension plan, the CN Pension Plan, unless otherwise specified.

Description of the CN Pension Plan

The CN Pension Plan is a contributory defined benefit pension plan that covers the majority of CN employees. It provides for pensions based mainly on years of service and final average pensionable earnings and is generally applicable from the first day of employment. Indexation of pensions is provided after retirement through a gain/loss sharing mechanism, subject to guaranteed minimum increases. An independent trust company is the Trustee of the Company's pension trust funds (which includes the CN Pension Trust Fund). As Trustee, the trust company performs certain duties, which include holding legal title to the assets of the CN Pension Trust Fund and ensuring that the Company, as Administrator, complies with the provisions of the CN Pension Plan and the related legislation. The Company utilizes a measurement date of December 31 for the CN Pension Plan.

Funding policy

Employee contributions to the CN Pension Plan are determined by the plan rules. Company contributions are in accordance with the requirements of the Government of Canada legislation, the *Pension Benefits Standards Act, 1985*, including amendments and regulations thereto, and such contributions follow minimum and maximum thresholds as determined by actuarial valuations. Actuarial valuations are generally required on an annual basis for all Canadian defined benefit pension plans, or when deemed appropriate by the Office of the Superintendent of Financial Institutions. These actuarial valuations are prepared in accordance with legislative requirements and with the recommendations of the Canadian Institute of Actuaries for the valuation of pension plans. Actuarial valuations are also required annually for the Company's U.S. qualified defined benefit pension plans.

The Company's most recently filed actuarial valuations for funding purposes for its Canadian registered defined benefit pension plans conducted as at December 31, 2018 indicated a funding excess on a going concern basis of approximately $3.3 billion and a funding excess on a solvency basis of approximately $0.5 billion, calculated using the three-year average of the plans' hypothetical wind-up ratio in accordance with the *Pension Benefit Standards Regulations, 1985*. The federal pension legislation requires funding deficits, if any, to be paid over a number of years, as calculated under current pension regulations. Alternatively, a letter of credit can be subscribed to fulfill required solvency deficit payments.

The Company's next actuarial valuations for funding purposes for its Canadian registered defined benefit pension plans required as at December 31, 2019 will be performed in 2020. These actuarial valuations are expected to identify a funding excess on a going concern basis of approximately $3.5 billion, while on a solvency basis a funding excess of approximately $0.5 billion is expected. Based on the anticipated results of these valuations, the Company expects to make total cash contributions of approximately $135 million for all of the Company's pension plans in 2020. As at January 31, 2020 the Company had contributed $59 million to its defined benefit pension plans for 2020.

Plan assets

The assets of the Company's various Canadian defined benefit pension plans are primarily held in separate trust funds ("Trusts") which are diversified by asset type, country, sector and investment strategy. Each year, the CN Board of Directors reviews and confirms or amends the Statement of Investment Policies and Procedures ("SIPP") which includes the plans' long-term target asset allocation ("Policy") and related benchmark indices. This Policy is based on the long-term expectations of the economy and financial market returns and considers the dynamics of the plans' pension benefit obligations. In 2019, the Policy was amended to affect a target asset allocation change to bonds and mortgages, emerging market debt, private debt, absolute return and investment-related liabilities.

The CN Investment Division ("Investment Manager"), a division of the Company created to invest and administer the assets of the plan, can also implement an investment strategy ("Strategy") which can lead the Plan's actual asset allocation to deviate from the Policy due to changing market risks and opportunities. The Pension and Investment Committee of the Board of Directors ("Committee") regularly compares the actual plan asset allocation to the Policy and Strategy and compares the actual performance of the Company's pension plan assets to the performance of the benchmark indices.

The Company's 2019 Policy and actual asset allocation for the Company's pension plans based on fair value are as follows:

		Actual plan asset allocation	
	Policy	**2019**	2018
Cash and short-term investments	3 %	**3 %**	3%
Bonds and mortgages (1)	35 %	**36 %**	35%
Emerging market debt (1)	1.5 %	**3 %**	3%
Private debt (1)	1.5 %	**3 %**	2%
Equities	40 %	**37 %**	33%
Real estate	4 %	**2 %**	2%
Oil and gas	7 %	**5 %**	6%
Infrastructure (1)	4 %	**3 %**	4%
Absolute return	10 %	**10 %**	10%
Risk-factor allocation	— %	**1 %**	2%
Investment-related liabilities	(6)%	**(3)%**	— %
Total	100 %	**100 %**	100%

(1) Certain assets in the 2018 comparative figures have been reclassified from bonds and mortgages and infrastructure to emerging market debt and private debt, respectively, to conform to the current year's presentation.

The Committee's approval is required for all major investments in illiquid securities. The SIPP allows for the use of derivative financial instruments to implement strategies, hedge and adjust existing or anticipated exposures. The SIPP prohibits investments in securities of the Company or its subsidiaries. Investments held in the Company's pension plans consist mainly of the following:

- Cash and short-term investments consist of highly liquid securities which ensure adequate cash flows are available to cover near-term benefit payments. Short-term investments are mainly obligations issued by Canadian chartered banks.
- Bonds include bond instruments, issued or guaranteed by governments and non-government entities. As at December 31, 2019, 80% (2018 - 80%) of bonds were issued or guaranteed by Canadian, U.S. or other governments. Mortgages consist of mortgage products which are primarily conventional or participating loans secured by commercial properties. On an exposure basis, the Plan's policy reflects an allocation of 45%, comprising a 35% allocation to bonds and mortgages investments and a 10% allocation to derivative financial instruments.
- Emerging market debt consists of units invested in mainly open-ended funds whose mandate is to invest in debt instruments of emerging market countries.
- Private debt includes participations in private debt funds focused on generating steady yields.
- Equity investments include publicly traded securities diversified by industry sector, country and issuer and investments in mainly energy related private equity funds. As at December 31, 2019, the most significant allocation to an individual issuer of a publicly traded security was 1% (2018 - 2%) and the most significant allocation to an industry sector was 12% (2018 - 22%).
- Real estate is a diversified portfolio of Canadian land and commercial properties and investments in real estate private equity funds.
- Oil and gas investments include petroleum and natural gas properties and listed and non-listed securities of oil and gas companies.
- Infrastructure investments include participations in private infrastructure funds, term loans and notes of infrastructure companies.
- Absolute return investments are primarily a portfolio of units of externally managed hedge funds, which are invested in various long/short strategies within multi-strategy, fixed income, equity and global macro funds. Managers are monitored on a continuous basis through investment and operational due diligence.

- Risk-factor allocation investments are a portfolio of units of externally managed funds and internally managed strategies in order to capture alternative risk premia.
- Investment-related liabilities include a certain level of financing associated with securities sold under repurchase agreements and other assets.

The plans' Investment Manager monitors market events and risk exposures to foreign currencies, interest rates, market risks, credit risks and liquidity risks daily. When investing in foreign securities, the plans are exposed to foreign currency risk that may be adjusted or hedged; the effect of which is included in the valuation of the foreign securities. Net of the adjusted or hedged amount, the plans were 60% exposed to the Canadian dollar, 21% to the US dollar, 9% to European currencies, 3% to the Japanese Yen and 7% to various other currencies as at December 31, 2019. Interest rate risk represents the risk that the fair value of the investments will fluctuate due to changes in market interest rates. Sensitivity to interest rates is a function of the timing and amount of cash flows of the interest-bearing assets and liabilities of the plans. Derivatives are used from time to time to adjust the plan asset allocation or exposures to interest rates, foreign currencies, market risks or commodity prices of the portfolio or anticipated transactions. Derivatives are contractual agreements whose value is derived from interest rates, foreign exchange rates, and equity or commodity prices. They may include forwards, futures, options and swaps and are included in investment categories based on their underlying exposure. When derivatives are used for hedging purposes, the gains or losses on the derivatives are offset by a corresponding change in the value of the hedged assets. To manage credit risk, established policies require dealing with counterparties considered to be of high credit quality. Adequate liquidity is maintained to cover cash flows by monitoring factors such as fair value, collateral pledged and received, repurchase agreements and securities lending agreements.

Overall return in the capital markets and the level of interest rates affect the funded status of the Company's pension plans, particularly the Company's main Canadian pension plan. Adverse changes with respect to pension plan returns and the level of interest rates from the date of the last actuarial valuations may have a material adverse effect on the funded status of the plans and on the Company's results of operations.

The following tables present the fair value of plan assets by asset class as at December 31, 2019 and 2018:

	Fair value measurements at December 31, 2019				
In millions	**Total**	**Level 1**	**Level 2**	**Level 3**	**NAV**
Cash and short-term investments (1)	$ 502	$ 92	$ 410	$ —	$ —
Bonds (2)					
Canada, U.S. and supranational	771	—	771	—	—
Provinces of Canada and municipalities	4,503	—	4,503	—	—
Corporate	1,347	—	1,347	—	—
Emerging market debt (3)	500	—	500	—	—
Mortgages (4)	52	—	52	—	—
Private debt (5)	481	—	—	—	481
Public equities (6)					
Canadian	338	338	—	—	—
U.S.	3,265	3,234	31	—	—
International	3,006	3,006	—	—	—
Private equities (7)	215	—	—	—	215
Real estate (8)	435	—	—	329	106
Oil and gas (9)	901	177	17	707	—
Infrastructure (10)	619	—	66	—	553
Absolute return funds (11)					
Multi-strategy	1,083	—	—	—	1,083
Fixed income	175	—	—	—	175
Global macro	490	—	—	—	490
Growth insurance	17	17	—	—	—
Risk-factor allocation (12)	288	—	—	—	288
Total investments **(13)**	**$ 18,988**	**$ 6,864**	**$ 7,697**	**$ 1,036**	**$ 3,391**
Investment-related liabilities (14)	(565)				
Other (15)	1				
Total plan assets	**$ 18,424**				

	Fair value measurements at December 31, 2018				
In millions	Total	Level 1	Level 2	Level 3	NAV
Cash and short-term investments (1)	$ 577	$ 12	$ 565	$ —	$ —
Bonds (2)					
Canada, U.S. and supranational	1,801	—	1,801	—	—
Provinces of Canada and municipalities	2,987	—	2,987	—	—
Corporate	1,180	—	1,180	—	—
Emerging market debt (3)	540	—	540	—	—
Mortgages (4)	90	—	90	—	—
Private debt (5)	366	—	—	—	366
Public equities (6)					
Canadian	1,561	1,561	—	—	—
U.S.	447	447	—	—	—
International	3,338	3,338	—	—	—
Private equities (7)	274	—	—	—	274
Real estate (8)	421	—	—	321	100
Oil and gas (9)	948	202	18	728	—
Infrastructure (10)	704	—	64	—	640
Absolute return funds (11)					
Multi-strategy	898	—	—	—	898
Fixed income	239	—	—	—	239
Global macro	480	—	—	—	480
Risk-factor allocation (12)	286	—	—	—	286
Total investments (13)	$ 17,137	$ 5,560	$ 7,245	$ 1,049	$ 3,283
Other (15)	107				
Total plan assets	$ 17,244				

Level 1: Fair value based on quoted prices in active markets for identical assets.

Level 2: Fair value based on other significant observable inputs.

Level 3: Fair value based on significant unobservable inputs.

NAV: Investments measured at net asset value as a practical expedient.

Footnotes to the table follow on the next page.

The following table reconciles the beginning and ending balances of the fair value of investments classified as Level 3:

	Fair value measurements based on significant unobservable inputs (Level 3)		
In millions	Real estate (8)	Oil and gas (9)	Total
Balance at December 31, 2017	$ 332	$ 769	$ 1,101
Actual return relating to assets still held at the reporting date	(2)	(11)	(13)
Purchases	1	—	1
Sales	(1)	—	(1)
Disbursements	(9)	(30)	(39)
Balance at December 31, 2018	321	728	1,049
Actual return relating to assets still held at the reporting date	13	7	20
Purchases	3	—	3
Sales	(1)	—	(1)
Disbursements	(7)	(28)	(35)
Balance at December 31, 2019	**$ 329**	**$ 707**	**$ 1,036**

(1) Cash and short-term investments with related accrued interest are valued at cost, which approximates fair value, and are categorized as Level 1 and Level 2 respectively.

(2) Bonds are valued using mid-market prices obtained from independent pricing data suppliers. When prices are not available from independent sources, the fair value is based on the present value of future cash flows using current market yields for comparable instruments.

(3) Emerging market debt funds are valued based on the net asset value which is readily available and published by each fund's independent administrator.

(4) Mortgages are valued based on the present value of future net cash flows using current market yields for comparable instruments.

(5) Private debt investments are valued based on the net asset value as reported by each fund's manager, generally based on the present value of future net cash flows using current market yields for comparable instruments.

(6) The fair value of public equity investments is based on quoted prices in active markets for identical assets.

(7) Private equity investments are valued based on the net asset value as reported by each fund's manager, generally using discounted cash flow analysis or earnings multiples.

(8) The fair value of real estate investments categorized as Level 3 includes immoveable properties. Land is valued based on the fair value of comparable assets, and income producing properties are valued based on the present value of estimated future net cash flows or the fair value of comparable assets. Independent valuations of all immoveable properties are performed triennially on a rotational basis. The fair value of real estate investments categorized as NAV consists mainly of investments in real estate private equity funds and is based on the net asset value as reported by each fund's manager, generally using a discounted cash flow analysis or earnings multiples.

(9) Oil and gas investments categorized as Level 1 are valued based on quoted prices in active markets. Oil and gas participations traded on a secondary market are valued based on the most recent transaction price and are categorized as Level 2. Investments in oil and gas categorized as Level 3 consist of operating oil and gas properties and the fair value is based on estimated future net cash flows that are discounted using prevailing market rates for transactions in similar assets. Estimated future net cash flows are based on forecasted oil and gas prices and projected annual production and costs.

(10) The fair value of infrastructure investments categorized as Level 2 is based on the present value of future cash flows using current market yields for comparable instruments. The fair value of infrastructure funds categorized as NAV is based on the net asset value as reported by each fund's manager, generally using a discounted cash flow analysis or earnings multiples.

(11) Absolute return investments are valued using the net asset value as reported by each fund's independent administrator. All absolute return investments have contractual redemption frequencies, ranging from monthly to annually, and redemption notice periods varying from 5 to 90 days.

(12) Risk-factor allocation investments are valued using the net asset value as reported by each fund's independent administrator or fund manager. All funds have contractual redemption frequencies ranging from daily to annually, and redemption notice periods varying from 5 to 60 days.

(13) Derivative financial instruments, which are included in gross investments, are valued using quoted market prices when available and are categorized as Level 1, or based on valuation techniques using market data, when quoted market prices are not available and are categorized as Level 2. Derivatives are included in the investment asset categories based on their underlying exposure.

(14) Investment-related liabilities include securities sold under repurchase agreements. The securities sold under repurchase agreement do not meet the conditions to remove from the assets and are therefore maintained on the books with an offsetting liability recorded to represent the financing nature of this transaction. These agreements are recorded at cost, which together with accrued interest approximates fair value due to their short-term nature.

(15) Other consists of operating assets of $108 million (2018 - $120 million) and liabilities of $107 million (2018 - $13 million) required to administer the Trusts' investment assets and the plans' benefit and funding activities. Such assets are valued at cost and have not been assigned to a fair value category.

Obligations and funded status for defined benefit pension and other postretirement benefit plans

In millions *Year ended December 31,*	Pensions 2019	Pensions 2018	Other postretirement benefits 2019	Other postretirement benefits 2018
Change in benefit obligation				
Projected benefit obligation at beginning of year	**$ 17,275**	$ 18,025	**$ 247**	$ 261
Amendments	**—**	—	**—**	(6)
Interest cost	**596**	568	**8**	9
Actuarial loss (gain) on projected benefit obligation (1)	**1,611**	(538)	**(9)**	(10)
Current service cost	**143**	170	**2**	2
Plan participants' contributions	**64**	63	**—**	—
Foreign currency changes	**(15)**	25	**(3)**	8
Benefit payments, settlements and transfers	**(1,065)**	(1,038)	**(18)**	(17)
Projected benefit obligation at the end of the year (2)	**$ 18,609**	$ 17,275	**$ 227**	$ 247
Component representing future salary increases	**(253)**	(266)	**—**	—
Accumulated benefit obligation at end of year	**$ 18,356**	$ 17,009	**$ 227**	$ 247
Change in plan assets				
Fair value of plan assets at beginning of year	**$ 17,244**	$ 18,564	**$ —**	$ —
Employer contributions	**105**	70	**—**	—
Plan participants' contributions	**64**	63	**—**	—
Foreign currency changes	**(11)**	19	**—**	—
Actual return on plan assets	**2,087**	(434)	**—**	—
Benefit payments, settlements and transfers	**(1,065)**	(1,038)	**—**	—
Fair value of plan assets at end of year (2)	**$ 18,424**	$ 17,244	**$ —**	$ —
Funded status - Deficiency of fair value of plan assets over projected benefit obligation at end of year	**$ (185)**	$ (31)	**$ (227)**	$ (247)

(1) Substantially all of the pensions' actuarial loss for the year ended December 31, 2019 and actuarial gain for the year ended December 31, 2018 is the result of the change in the end of year discount rate of the current year versus the prior year (67 basis points decrease for 2019 and 26 basis points increase for 2018).

(2) For the CN Pension Plan, as at December 31, 2019, the projected benefit obligation was $17,252 million (2018 - $16,004 million) and the fair value of plan assets was $17,523 million (2018 - $16,393 million). The measurement date of all plans is December 31.

Amounts recognized in the Consolidated Balance Sheets

In millions *December 31,*	Pensions 2019	Pensions 2018	Other postretirement benefits 2019	Other postretirement benefits 2018
Noncurrent assets - Pension asset	**$ 336**	$ 446	**$ —**	$ —
Current liabilities *(Note 12)*	**—**	—	**(15)**	(17)
Noncurrent liabilities - Pension and other postretirement benefits	**(521)**	(477)	**(212)**	(230)
Total amount recognized	**$ (185)**	$ (31)	**$ (227)**	$ (247)

Amounts recognized in Accumulated other comprehensive loss (Note 18)

In millions *December 31,*	Pensions 2019	Pensions 2018	Other postretirement benefits 2019	Other postretirement benefits 2018
Net actuarial gain (loss)	**$ (4,336)**	$ (3,887)	**$ 14**	$ 8
Prior service credit (cost)	**$ (3)**	$ (6)	**$ 4**	$ 4

Information for defined benefit pension plans with an accumulated benefit obligation in excess of plan assets

In millions December 31,		Pensions 2019		2018
Accumulated benefit obligation [(1)]	**$**	**676**	$	714
Fair value of plan assets [(1)]	**$**	**225**	$	303

(1) All of the Company's other postretirement benefit pension plans have an accumulated benefit obligation in excess of plan assets.

Information for defined benefit pension plans with a projected benefit obligation in excess of plan assets

In millions December 31,		Pensions 2019		2018
Projected benefit obligation	**$**	**843**	$	780
Fair value of plan assets	**$**	**322**	$	303

Components of net periodic benefit cost (income) for defined benefit pension and other postretirement benefit plans

In millions Year ended December 31,		Pensions						Other postretirement benefits				
		2019		2018		2017		**2019**		2018		2017
Current service cost	**$**	**143**	$	170	$	130	**$**	**2**	$	2	$	2
Other components of net periodic benefit cost (income)												
Interest cost		**596**		568		540		**8**		9		8
Settlement loss		**5**		3		—		**—**		—		—
Expected return on plan assets		**(1,085)**		(1,083)		(1,047)		**—**		—		—
Amortization of prior service cost		**3**		3		5		**—**		—		—
Amortization of net actuarial loss (gain)		**155**		200		182		**(3)**		(2)		(3)
Total Other components of net periodic benefit cost (income)	**$**	**(326)**	$	(309)	$	(320)	**$**	**5**	$	7	$	5
Net periodic benefit cost (income)	**$**	**(183)**	$	(139)	$	(190)	**$**	**7**	$	9	$	7

Weighted-average assumptions used in accounting for defined benefit pension and other postretirement benefit plans

December 31,	Pensions **2019**	2018	2017	Other postretirement benefits **2019**	2018	2017
To determine projected benefit obligation						
Discount rate [(1)]	**3.10%**	3.77%	3.51%	**3.14%**	4.00%	3.59%
Rate of compensation increase [(2)]	**2.75%**	2.75%	2.75%	**2.75%**	2.75%	2.75%
To determine net periodic benefit cost (income)						
Rate to determine current service cost [(3)]	**3.93%**	3.68%	4.11%	**4.25%**	3.83%	4.43%
Rate to determine interest cost [(3)]	**3.47%**	3.15%	3.15%	**3.68%**	3.23%	3.29%
Rate of compensation increase [(2)]	**2.75%**	2.75%	2.75%	**2.75%**	2.75%	2.75%
Expected return on plan assets [(4)]	**7.00%**	7.00%	7.00%	**N/A**	N/A	N/A

(1) The Company's discount rate assumption, which is set annually at the end of each year, is determined by management with the aid of third-party actuaries. The discount rate is used to measure the single amount that, if invested at the measurement date in a portfolio of high-quality debt instruments with a rating of AA or better, would provide the necessary cash flows to pay for pension benefits as they become due. For the Canadian pension and other postretirement benefit plans, future expected benefit payments are discounted using spot rates based on a derived AA corporate bond yield curve for each maturity year.

(2) The rate of compensation increase is determined by the Company based upon its long-term plans for such increases.

(3) The Company uses the spot rate approach to measure current service cost and interest cost for all defined benefit pension and other postretirement benefit plans. Under the spot rate approach, individual spot discount rates along the same yield curve used in the determination of the projected benefit obligation are applied to the relevant projected cash flows at the relevant maturity.

(4) The expected long-term rate of return is determined based on expected future performance for each asset class and is weighted based on the investment policy. For 2019, the Company used a long-term rate of return assumption of 7.00% on the market-related value of plan assets to compute net periodic benefit cost (income). The Company has elected to use a market-related value of assets, whereby realized and unrealized gains/losses and appreciation/depreciation in the value of the investments are recognized over a period of five years, while investment income is recognized immediately. In 2020, the Company will maintain the expected long-term rate of return on plan assets at 7.00% to reflect management's current view of long-term investment returns.

Expected future benefit payments

The following table provides the expected benefit payments for pensions and other postretirement benefits for the next five years and the subsequent five-year period:

In millions		Pensions		Other postretirement benefits
2020	$	1,056	$	16
2021	$	1,060	$	15
2022	$	1,058	$	14
2023	$	1,053	$	14
2024	$	1,046	$	13
Years 2025 to 2029	$	5,119	$	60

Defined contribution and other plans

The Company maintains defined contribution pension plans for certain salaried employees as well as certain employees covered by collective bargaining agreements. The Company also maintains other plans including a Section 401(k) savings plan for certain U.S. based employees. The Company's contributions under these plans were expensed as incurred and, in 2019, amounted to $23 million (2018 - $22 million; 2017 - $19 million).

Contributions to multi-employer plan

Under collective bargaining agreements, the Company participates in a multi-employer benefit plan named the Railroad Employees National Early Retirement Major Medical Benefit Plan which provides certain postretirement health care benefits to certain retirees. The Company's contributions under this plan were expensed as incurred and amounted to $12 million in 2019 (2018 - $13 million; 2017 - $15 million). The annual contribution rate for the plan was $164.12 per month per active employee for 2019 (2018 - $176.16). The plan covered 445 retirees in 2019 (2018 - 461 retirees).

16 – Share capital

Authorized capital stock

The authorized capital stock of the Company is as follows:

- Unlimited number of Common Shares, without par value
- Unlimited number of Class A Preferred Shares, without par value, issuable in series
- Unlimited number of Class B Preferred Shares, without par value, issuable in series

Common shares

In millions	*December 31,*	**2019**	2018	2017
Issued common shares		**714.1**	727.3	744.6
Common shares in Share Trusts		**(1.8)**	(2.0)	(2.0)
Outstanding common shares		**712.3**	725.3	742.6

Repurchase of common shares

The Company may repurchase its common shares pursuant to a Normal Course Issuer Bid (NCIB) at prevailing market prices plus brokerage fees, or such other prices as may be permitted by the Toronto Stock Exchange. The Company may repurchase up to 22.0 million common shares between February 1, 2019 and January 31, 2020 under its NCIB. As at December 31, 2019, the Company had repurchased 12.8 million common shares under this NCIB.

The following table provides the information related to the share repurchases for the years ended December 31, 2019, 2018 and 2017:

In millions, except per share data	*Year ended December 31,*	**2019**	2018	2017
Number of common shares repurchased (1)		**14.3**	19.0	20.4
Weighted-average price per share		**$ 118.70**	$ 104.99	$ 98.27
Amount of repurchase		**$ 1,700**	$ 2,000	$ 2,000

(1) Includes repurchases in the first and second quarters of 2017, pursuant to private agreements between the Company and arm's-length third-party sellers.

See *Note 22 - Subsequent events* for information on the Company's new NCIB.

Share Trusts

The Company's Share Trusts purchase CN's common shares on the open market, which are used to deliver common shares under either the Share Units or Employee Share Investment Plans (ESIP) (see *Note 17 – Stock-based compensation*). Shares purchased by the Share Trusts are retained until the Company instructs the trustee to transfer shares to the participants. Common shares purchased by the Share Trusts are accounted for as treasury stock. The Share Trusts may sell shares on the open market to facilitate the remittance of the Company's employee tax withholding obligations.

The following table provides the information related to the share purchases and settlements by Share Trusts under the Share Units Plan for the years ended December 31, 2019, 2018 and 2017:

In millions, except per share data	*Year ended December 31,*	**2019**	2018	2017
Share purchases by Share Units Plan Share Trusts				
Number of common shares		**–**	0.4	0.5
Weighted-average price per share		**$ –**	$ 104.87	$ 102.17
Amount of purchase		**$ –**	$ 38	$ 55
Share settlements by Share Units Plan Share Trusts				
Number of common shares		**0.5**	0.4	0.3
Weighted-average price per share		**$ 88.23**	$ 84.53	$ 77.99
Amount of settlement		**$ 45**	$ 31	$ 24

For the year ended December 31, 2019, the ESIP Share Trusts purchased 0.3 million common shares for $33 million at a weighted-average price of $118.83 per share.

17 – Stock-based compensation

The Company has various stock-based compensation plans for eligible employees. A description of the major plans is provided herein.

The following table provides the stock-based compensation expense for awards under all plans, as well as the related tax benefit and excess tax benefit recognized in income, for the years ended December 31, 2019, 2018 and 2017:

In millions	*Year ended December 31,*	**2019**	2018	2017
Share Units Plan		**$ 26**	$ 38	$ 55
Voluntary Incentive Deferral Plan (VIDP)		**4**	—	7
Stock option awards		**12**	12	13
Employee Share Investment Plan (ESIP)		**15**	40	36
Total stock-based compensation expense		**$ 57**	$ 90	$ 111
Income tax impacts of stock-based compensation				
Tax benefit recognized in income		**$ 12**	$ 21	$ 29
Excess tax benefit recognized in income		**$ 23**	$ 13	$ 13

Share Units Plan

The objective of the Share Units Plan is to enhance the Company's ability to attract and retain talented employees and to provide alignment of interests between such employees and the shareholders of the Company. Under the Share Units Plan, the Company grants performance share unit (PSU) awards.

PSU-ROIC awards vest dependent upon the attainment of a target level of return on invested capital (ROIC), as defined by the award agreement, over the plan period of three years. Such performance vesting criteria results in a performance vesting factor that ranges from 0% to 200% depending on the level of ROIC attained. Payout is conditional upon the attainment of a minimum share price, calculated using the average of the last three months of the plan period.

PSU-TSR awards vest dependent upon the attainment of a total shareholder return (TSR) market condition over the plan period of three years. Such performance vesting criteria result in a performance vesting factor that ranges from 0% to 200% depending on the Company's TSR relative to a Class I Railways peer group and components of the S&P/TSX 60 Index.

PSUs are settled in common shares of the Company, subject to the attainment of their respective vesting conditions, by way of disbursement from the Share Trusts (see *Note 16 – Share capital*). The number of shares remitted to the participant upon settlement is equal to the number of PSUs awarded multiplied by the performance vesting factor less shares withheld to satisfy the participant's withholding tax requirement.

For the 2017 grant, the level of ROIC attained resulted in a performance vesting factor of 169%, and the level of TSR attained resulted in a performance vesting factor of 100% for the plan period ended December 31, 2019. The total fair value of the equity settled PSU awards that vested in 2019 was $45 million (2018 - $42 million; 2017 - $43 million). As the respective vesting conditions under each plan and the minimum share price condition for the PSU-ROIC awards were met at December 31, 2019, settlement of approximately 0.4 million shares, net of withholding taxes, is expected to occur in the first quarter of 2020.

The following table provides a summary of the activity related to PSU awards:

	PSUs-ROIC [1]			PSUs-TSR [2]		
	Units	Weighted-average grant date fair value		Units	Weighted-average grant date fair value	
	In millions			*In millions*		
Outstanding at December 31, 2018	1.1	$	46.10	0.4	$	100.93
Granted	0.4	$	70.76	0.1	$	128.20
Settled [3]	(0.4)	$	35.11	(0.2)	$	95.31
Forfeited	(0.1)	$	61.12	—	$	116.24
Outstanding at December 31, 2019	**1.0**	**$**	**58.35**	**0.3**	**$**	**112.08**
Nonvested at December 31, 2018	0.7	$	52.18	0.3	$	104.14
Granted	0.4	$	70.76	0.1	$	128.20
Vested [4]	(0.4)	$	53.19	(0.2)	$	103.36
Forfeited	(0.1)	$	61.12	—	$	116.24
Nonvested at December 31, 2019	**0.6**	**$**	**61.29**	**0.2**	**$**	**117.04**

(1) The grant date fair value of equity settled PSUs-ROIC granted in 2019 of $26 million is calculated using a lattice-based valuation model. As at December 31, 2019, total unrecognized compensation cost related to all outstanding awards was $15 million and is expected to be recognized over a weighted-average period of 1.6 years.

(2) The grant date fair value of equity settled PSUs-TSR granted in 2019 of $16 million is calculated using a Monte Carlo simulation model. As at December 31, 2019, total unrecognized compensation cost related to all outstanding awards was $9 million and is expected to be recognized over a weighted-average period of 1.6 years.

(3) Equity settled PSUs-ROIC granted in 2016 met the minimum share price condition for settlement and attained a performance vesting factor of 200%. Equity settled PSUs-TSR granted in 2016 attained a performance vesting factor of 100%. In the first quarter of 2019, these awards were settled, net of the remittance of the participants' withholding tax obligation of $50 million, by way of disbursement from the Share Trusts of 0.5 million common shares.

(4) These awards are expected to be settled in the first quarter of 2020.

The following table provides the assumptions used in the valuation of PSU-ROIC awards:

	PSUs-ROIC [1]		
Year of grant	**2019**	2018	2017
Assumptions			
Stock price *($)* [2]	**110.41**	97.77	91.91
Expected stock price volatility *(%)* [3]	**17**	18	19
Expected term *(years)* [4]	**3.0**	3.0	3.0
Risk-free interest rate *(%)* [5]	**1.75**	1.92	0.98
Dividend rate *($)* [6]	**2.15**	1.82	1.65
Weighted-average grant date fair value *($)*	**70.76**	50.77	53.19

(1) Assumptions used to determine fair value of the equity settled PSU-ROIC awards are on the grant date.

(2) Represents the closing share price on the grant date.

(3) Based on the historical volatility of the Company's stock over a period commensurate with the expected term of the award.

(4) Represents the period of time that awards are expected to be outstanding.

(5) Based on the implied yield available on zero-coupon government issues with an equivalent term commensurate with the expected term of the awards.

(6) Based on the annualized dividend rate.

Voluntary Incentive Deferral Plan

The Company's Voluntary Incentive Deferral Plan (VIDP) provides eligible senior management employees the opportunity to elect to receive their annual incentive bonus payment in deferred share units (DSU) up to specific deferral limits. A DSU is equivalent to a common share of the Company and also earns dividends when normal cash dividends are paid on common shares. The number of DSUs received by each participant is established at the time of deferral. For each participant, the Company will grant a further 25% of the amount elected in DSUs, which will vest over a period of four years. The election to receive eligible incentive payments in DSUs is no longer available to a participant when the value of the participant's vested DSUs is sufficient to meet the Company's stock ownership guidelines.

Equity settled awards

DSUs are settled in common shares of the Company at the time of cessation of employment by way of an open market purchase by the Company. The number of shares remitted to the participant is equal to the number of DSUs awarded less shares withheld to satisfy the participant's withholding tax requirement.

Cash settled awards

The value of each participant's DSUs is payable in cash at the time of cessation of employment.

The following table provides a summary of the activity related to DSU awards:

	Equity settled DSUs (1)			Cash settled DSUs (2)
	Units		Weighted-average grant date fair value	Units
	In millions			*In millions*
Outstanding at December 31, 2018	0.8	$	79.23	0.2
Granted	0.1	$	113.59	—
Settled (3)	(0.2)	$	81.22	(0.1)
Outstanding at December 31, 2019 (4)	**0.7**	**$**	**81.91**	**0.1**

(1) The grant date fair value of equity settled DSUs granted in 2019 of $4 million is calculated using the Company's stock price on the grant date. As at December 31, 2019, the aggregate intrinsic value of all equity settled DSUs outstanding amounted to $77 million.

(2) The fair value of cash settled DSUs as at December 31, 2019 is based on the intrinsic value. As at December 31, 2019, the liability for all cash settled DSUs was $16 million (2018 - $19 million). The closing stock price used to determine the liability was $117.47. The total fair value of cash settled DSU awards vested in 2019, 2018 and 2017 was $nil.

(3) For the year ended December 31, 2019 the Company purchased 0.1 million common shares for the settlement of equity settled DSUs, net of the remittance of the participants' withholding tax obligation of $11 million.

(4) The total fair value of equity settled DSU awards vested, the number of units outstanding that were nonvested, unrecognized compensation cost and the remaining recognition period for cash and equity settled DSUs have not been quantified as they relate to a minimal number of units.

Stock option awards

The Company's stock option plan allows for eligible employees to acquire common shares of the Company upon vesting at a price equal to the market value of the common shares at the grant date. The options issued by the Company are conventional options that vest over a period of time. The right to exercise options generally accrues over a period of four years of continuous employment. Options are not generally exercisable during the first 12 months after the date of grant and expire after 10 years. As at December 31, 2019, 14.9 million common shares remained authorized for future issuances under these plans.

During the year ended December 31, 2019, the Company granted 0.9 million (2018 - 1.1 million; 2017 - 1.0 million) stock options.

The following table provides the activity of stock option awards during 2019, and for options outstanding and exercisable at December 31, 2019, the weighted-average exercise price:

	Options outstanding		**Nonvested options**	
	Number of options	Weighted-average exercise price	Number of options	Weighted-average grant date fair value
	In millions		*In millions*	
Outstanding at December 31, 2018 (1)	4.2	$ 79.73	2.3	$ 13.84
Granted (2)	0.9	$ 110.94	0.9	$ 16.34
Forfeited/Cancelled	(0.2)	$ 102.49	(0.2)	$ 15.43
Exercised (3)	(1.1)	$ 68.15	N/A	N/A
Vested (4)	N/A	N/A	(0.9)	$ 13.31
Outstanding at December 31, 2019 (1)	**3.8**	**$ 86.89**	**2.1**	**$ 15.00**
Exercisable at December 31, 2019 (1)	**1.7**	**$ 72.22**	**N/A**	**N/A**

(1) Stock options with a US dollar exercise price have been translated to Canadian dollars using the foreign exchange rate in effect at the balance sheet date.

(2) The grant date fair value of options awarded in 2019 of $15 million ($16.34 per option) is calculated using the Black-Scholes option-pricing model. As at December 31, 2019, total unrecognized compensation cost related to all outstanding awards was $10 million and is expected to be recognized over a weighted-average period of 2.5 years.

(3) The total intrinsic value of options exercised in 2019 was $53 million (2018 - $78 million; 2017 - $62 million). The cash received upon exercise of options in 2019 was $77 million (2018 - $103 million; 2017 - $58 million) and the related excess tax benefit realized in 2019 was $3 million (2018 - $3 million and 2017 - $ 5 million).

(4) The grant date fair value of options vested in 2019 was $12 million (2018 - 12 million and 2017 - $10 million).

The following table provides the number of stock options outstanding and exercisable as at December 31, 2019 by range of exercise price and their related intrinsic value, and for options outstanding, the weighted-average years to expiration. The table also provides the aggregate intrinsic value for in-the-money stock options, which represents the value that would have been received by option holders had they exercised their options on December 31, 2019 at the Company's closing stock price of $117.47.

	Options outstanding				**Options exercisable**		
	Number of options	Weighted-average years to expiration	Weighted-average exercise price	Aggregate intrinsic value	Number of options	Weighted-average exercise price	Aggregate intrinsic value
Range of exercise prices	*In millions*			*In millions*	*In millions*		*In millions*
$ 27.33 - $ 45.00	0.2	1.5	$ 35.95	$ 16	0.2	$ 35.95	$ 16
$ 45.01 - $ 65.00	0.4	3.3	$ 54.93	24	0.4	$ 54.93	24
$ 65.01 - $ 85.00	0.8	5.7	$ 74.77	35	0.6	$ 76.01	24
$ 85.01 - $ 105.00	1.5	7.4	$ 95.00	33	0.5	$ 93.17	12
$ 105.01 - $ 126.35	0.9	9.1	$ 110.77	6	—	$ 115.48	—
Balance at December 31, 2019 (1)	**3.8**	**6.7**	**$ 86.89**	**$ 114**	**1.7**	**$ 72.22**	**$ 76**

(1) Stock options with a US dollar exercise price have been translated to Canadian dollars using the foreign exchange rate in effect at the balance sheet date. The weighted-average years to expiration of exercisable stock options was 5 years.

The following table provides the assumptions used in the valuation of stock option awards:

Year of grant	**2019**	2018	2017
Assumptions			
Grant price *($)*	**110.94**	98.05	92.16
Expected stock price volatility *(%)* (1)	**18**	18	20
Expected term *(years)* (2)	**5.5**	5.5	5.5
Risk-free interest rate *(%)* (3)	**1.75**	2.08	1.24
Dividend rate *($)* (4)	**2.15**	1.82	1.65
Weighted-average grant date fair value *($)*	**16.34**	15.34	14.44

(1) Based on the historical volatility of the Company's stock over a period commensurate with the expected term of the award.

(2) Represents the period of time that awards are expected to be outstanding. The Company uses historical data to predict option exercise behavior.

(3) Based on the implied yield available on zero-coupon government issues with an equivalent term commensurate with the expected term of the awards.

(4) Based on the annualized dividend rate.

Stock price volatility

The Company's liability for the cash settled VIDP is marked-to-market at each period-end and varies with the Company's share price. Fluctuations in the Company's share price cause volatility to stock-based compensation expense as recorded in Net income. The Company does not currently hold any derivative financial instruments to manage this exposure.

Employee Share Investment Plan

The Company has an Employee Share Investment Plan (ESIP) giving eligible employees the opportunity to subscribe for up to 10% of their gross salaries to purchase shares of the Company's common stock on the open market and to have the Company invest, on the employees' behalf, a further 35% of the amount invested by the employees, up to 6% of their gross salaries.

Beginning January 1, 2019, Company contributions to the ESIP, which consist of shares purchased on the open market, are subject to a one-year vesting period and are forfeited should certain participant contributions be sold or disposed of prior to vesting. Company contributions to the ESIP are held in Share Trusts until vesting, at which time shares are delivered to the employee.

The following table provides a summary of the activity related to the ESIP for 2019:

	ESIP
	Shares
	In millions
Unvested contributions, December 31, 2018	—
Company contributions (1)	0.3
Unvested contributions, December 31, 2019	**0.3**

(1) The weighted average fair value of the shares contributed was $118.83.

The following table provides the number of participants holding shares, the total number of ESIP shares purchased on behalf of employees, including the Company's contributions for the years ended December 31, 2019, 2018 and 2017:

Year ended December 31,	**2019**	2018	2017
Number of participants holding shares	**21,674**	22,185	19,642
Total number of ESIP shares purchased on behalf of employees *(millions)*	**1.5**	1.8	1.7

18 – Accumulated other comprehensive loss

In millions	Foreign currency translation adjustments	Pension and other postretirement benefit plans	Total before tax	Income tax recovery (expense) (1)	Total net of tax
Balance at December 31, 2016	$ (247)	$ (2,898)	$ (3,145)	$ 787	$ (2,358)
Other comprehensive income (loss) before reclassifications:					
Foreign exchange loss on translation of net investment in foreign operations	(701)		(701)	—	(701)
Foreign exchange gain on translation of US dollar-denominated debt designated as a hedge of the net investment in foreign operations	504		504	(67)	437
Actuarial loss arising during the year		(408)	(408)	110	(298)
Amounts reclassified from Accumulated other comprehensive loss:					
Amortization of net actuarial loss		179	179 (2)	(47) (3)	132
Amortization of prior service costs		5	5 (2)	(1) (3)	4
Other comprehensive loss	(197)	(224)	(421)	(5)	(426)
Balance at December 31, 2017	(444)	(3,122)	(3,566)	782	(2,784)
Other comprehensive income (loss) before reclassifications:					
Foreign exchange gain on translation of net investment in foreign operations	1,038		1,038	—	1,038
Foreign exchange loss on translation of US dollar-denominated debt designated as a hedge of the net investment in foreign operations	(635)		(635)	86	(549)
Actuarial loss arising during the year		(969)	(969)	262	(707)
Prior service credit arising during the year		6	6	(2)	4
Amounts reclassified from Accumulated other comprehensive loss:					
Amortization of net actuarial loss		198	198 (2)	(54) (3)	144
Amortization of prior service costs		3	3 (2)	— (3)	3
Settlement loss arising during the year		3	3 (2)	(1) (3)	2
Other comprehensive income (loss)	403	(759)	(356)	291	(65)
Balance at December 31, 2018	(41)	(3,881)	(3,922)	1,073	(2,849)
Other comprehensive income (loss) before reclassifications:					
Foreign exchange loss on translation of net investment in foreign operations	(636)		(636)	—	(636)
Foreign exchange gain on translation of US dollar-denominated debt designated as a hedge of the net investment in foreign operations	380		380	(52)	328
Actuarial loss arising during the year		(600)	(600)	155	(445)
Amounts reclassified from Accumulated other comprehensive loss:					
Amortization of net actuarial loss		152	152 (2)	(39) (3)	113
Amortization of prior service costs		3	3 (2)	(1) (3)	2
Settlement loss arising during the year		5	5 (2)	(1) (3)	4
Other comprehensive income (loss)	(256)	(440)	(696)	62	(634)
Balance at December 31, 2019	**$ (297)**	**$ (4,321)**	**$ (4,618)**	**$ 1,135**	**$ (3,483)**

(1) The Company releases stranded tax effects from Accumulated other comprehensive loss to Net income upon the liquidation or termination of the related item.

(2) Reclassified to Other components of net periodic benefit income in the Consolidated Statements of Income and included in net periodic benefit cost. See Note 15 - Pensions and other postretirement benefits.

(3) Included in Income tax recovery (expense) in the Consolidated Statements of Income.

19 – Major commitments and contingencies

Purchase commitments

As at December 31, 2019, the Company had fixed and variable commitments to purchase rail, information technology services and licenses, locomotives, wheels, engineering services, railroad ties, rail cars, as well as other equipment and services with a total estimated cost of $1,621 million. Costs of variable commitments were estimated using forecasted prices and volumes.

Contingencies

In the normal course of business, the Company becomes involved in various legal actions seeking compensatory and occasionally punitive damages, including actions brought on behalf of various purported classes of claimants and claims relating to employee and third-party personal injuries, occupational disease and property damage, arising out of harm to individuals or property allegedly caused by, but not limited to, derailments or other accidents.

Canada

Employee injuries are governed by the workers' compensation legislation in each province whereby employees may be awarded either a lump sum or a future stream of payments depending on the nature and severity of the injury. As such, the provision for employee injury claims is discounted. In the provinces where the Company is self-insured, costs related to employee work-related injuries are accounted for based on actuarially developed estimates of the ultimate cost associated with such injuries, including compensation, health care and third-party administration costs. An actuarial study is generally performed at least on a triennial basis. For all other legal actions, the Company maintains, and regularly updates on a case-by-case basis, provisions for such items when the expected loss is both probable and can be reasonably estimated based on currently available information.

In 2019, 2018 and 2017 the Company recorded a decrease of $7 million, and an increase of $4 million and $2 million, respectively, to its provision for personal injuries in Canada as a result of actuarial valuations for employee injury claims.

As at December 31, 2019, 2018 and 2017, the Company's provision for personal injury and other claims in Canada was as follows:

In millions	**2019**	2018	2017
Beginning of year	**$ 207**	$ 183	$ 183
Accruals and other	**29**	52	38
Payments	**(29)**	(28)	(38)
End of year	**$ 207**	$ 207	$ 183
Current portion - End of year	**$ 55**	$ 60	$ 40

United States

Personal injury claims by the Company's employees, including claims alleging occupational disease and work-related injuries, are subject to the provisions of the *Federal Employers' Liability Act* (FELA). Employees are compensated under FELA for damages assessed based on a finding of fault through the U.S. jury system or through individual settlements. As such, the provision is undiscounted. With limited exceptions where claims are evaluated on a case-by-case basis, the Company follows an actuarial-based approach and accrues the expected cost for personal injury, including asserted and unasserted occupational disease claims, and property damage claims, based on actuarial estimates of their ultimate cost. An actuarial study is performed annually.

For employee work-related injuries, including asserted occupational disease claims, and third-party claims, including grade crossing, trespasser and property damage claims, the actuarial valuation considers, among other factors, the Company's historical patterns of claims filings and payments. For unasserted occupational disease claims, the actuarial valuation includes the projection of the Company's experience into the future considering the potentially exposed population. The Company adjusts its liability based upon management's assessment and the results of the study. On an ongoing basis, management reviews and compares the assumptions inherent in the latest actuarial valuation with the current claim experience and, if required, adjustments to the liability are recorded.

Due to the inherent uncertainty involved in projecting future events, including events related to occupational diseases, which include but are not limited to, the timing and number of actual claims, the average cost per claim and the legislative and judicial environment, the Company's future payments may differ from current amounts recorded.

In 2019, the Company recorded an increase of $2 million to its provision for U.S. personal injury and other claims attributable to third-party claims, occupational disease claims and non-occupational disease claims pursuant to the 2019 actuarial valuation. In 2018 and 2017, actuarial valuations resulted in an increase of $13 million and $15 million, respectively. The prior years' adjustments from the actuarial valuations were mainly attributable to non-occupational disease claims, third-party claims and occupational disease claims reflecting changes in the Company's estimates of unasserted claims and costs related to asserted claims. The Company has an ongoing risk mitigation strategy focused on reducing the frequency and severity of claims through injury prevention and containment; mitigation of claims; and lower settlements of existing claims.

As at December 31, 2019, 2018 and 2017, the Company's provision for personal injury and other claims in the U.S. was as follows:

In millions		**2019**		2018		2017
Beginning of year	**$**	**139**	$	116	$	118
Accruals and other		**44**		41		46
Payments		**(31)**		(28)		(41)
Foreign exchange		**(7)**		10		(7)
End of year	**$**	**145**	$	139	$	116
Current portion - End of year	**$**	**36**	$	37	$	25

Although the Company considers such provisions to be adequate for all its outstanding and pending claims, the final outcome with respect to actions outstanding or pending at December 31, 2019, or with respect to future claims, cannot be reasonably determined. When establishing provisions for contingent liabilities the Company considers, where a probable loss estimate cannot be made with reasonable certainty, a range of potential probable losses for each such matter, and records the amount it considers the most reasonable estimate within the range. However, when no amount within the range is a better estimate than any other amount, the minimum amount in the range is accrued. For matters where a loss is reasonably possible but not probable, a range of potential losses cannot be estimated due to various factors which may include the limited availability of facts, the lack of demand for specific damages and the fact that proceedings were at an early stage. Based on information currently available, the Company believes that the eventual outcome of the actions against the Company will not, individually or in the aggregate, have a material adverse effect on the Company's financial position. However, due to the inherent inability to predict with certainty unforeseeable future developments, there can be no assurance that the ultimate resolution of these actions will not have a material adverse effect on the Company's results of operations, financial position or liquidity.

Environmental matters

The Company's operations are subject to numerous federal, provincial, state, municipal and local environmental laws and regulations in Canada and the U.S. concerning, among other things, emissions into the air; discharges into waters; the generation, handling, storage, transportation, treatment and disposal of waste, hazardous substances, and other materials; decommissioning of underground and aboveground storage tanks; and soil and groundwater contamination. A risk of environmental liability is inherent in railroad and related transportation operations; real estate ownership, operation or control; and other commercial activities of the Company with respect to both current and past operations.

Known existing environmental concerns

The Company is or may be liable for remediation costs at individual sites, in some cases along with other potentially responsible parties, associated with actual or alleged contamination. The ultimate cost of addressing these known contaminated sites cannot be definitively established given that the estimated environmental liability for any given site may vary depending on the nature and extent of the contamination; the nature of anticipated response actions, taking into account the available clean-up techniques; evolving regulatory standards governing environmental liability; and the number of potentially responsible parties and their financial viability. As a result, liabilities are recorded based on the results of a four-phase assessment conducted on a site-by-site basis. A liability is initially recorded when environmental assessments occur, remedial efforts are probable, and when the costs, based on a specific plan of action in terms of the technology to be used and the extent of the corrective action required, can be reasonably estimated. The Company estimates the costs related to a particular site using cost scenarios established by external consultants based on the extent of contamination and expected costs for remedial efforts. In the case of multiple parties, the Company accrues its allocable share of liability taking into account the Company's alleged responsibility, the number of potentially responsible parties and their ability to pay their respective share of the liability. Adjustments to initial estimates are recorded as additional information becomes available.

The Company's provision for specific environmental sites is undiscounted and includes costs for remediation and restoration of sites, as well as monitoring costs. Environmental expenses, which are classified as Casualty and other in the Consolidated Statements of Income, include amounts for newly identified sites or contaminants as well as adjustments to initial estimates. Recoveries of environmental remediation costs from other parties are recorded as assets when their receipt is deemed probable.

As at December 31, 2019, 2018 and 2017, the Company's provision for specific environmental sites was as follows:

In millions		**2019**		2018		2017
Beginning of year	**$**	**61**	$	78	$	86
Accruals and other		**31**		16		16
Payments		**(34)**		(34)		(23)
Foreign exchange		**(1)**		1		(1)
End of year	**$**	**57**	$	61	$	78
Current portion - End of year	**$**	**38**	$	39	$	57

The Company anticipates that the majority of the liability at December 31, 2019 will be paid out over the next five years. Based on the information currently available, the Company considers its provisions to be adequate.

Unknown existing environmental concerns

While the Company believes that it has identified the costs likely to be incurred for environmental matters based on known information, the discovery of new facts, future changes in laws, the possibility of releases of hazardous materials into the environment and the Company's ongoing efforts to identify potential environmental liabilities that may be associated with its properties may result in the identification of additional environmental liabilities and related costs. The magnitude of such additional liabilities and the costs of complying with future environmental laws and containing or remediating contamination cannot be reasonably estimated due to many factors, including:

- the lack of specific technical information available with respect to many sites;
- the absence of any government authority, third-party orders, or claims with respect to particular sites;
- the potential for new or changed laws and regulations and for development of new remediation technologies and uncertainty regarding the timing of the work with respect to particular sites; and
- the determination of the Company's liability in proportion to other potentially responsible parties and the ability to recover costs from any third parties with respect to particular sites.

Therefore, the likelihood of any such costs being incurred or whether such costs would be material to the Company cannot be determined at this time. There can thus be no assurance that liabilities or costs related to environmental matters will not be incurred in the future, or will not have a material adverse effect on the Company's financial position or results of operations in a particular quarter or fiscal year, or that the Company's liquidity will not be adversely impacted by such liabilities or costs, although management believes, based on current information, that the costs to address environmental matters will not have a material adverse effect on the Company's financial position or liquidity. Costs related to any unknown existing or future contamination will be accrued in the period in which they become probable and reasonably estimable.

Future occurrences

In railroad and related transportation operations, it is possible that derailments or other accidents, including spills and releases of hazardous materials, may occur that could cause harm to human health or to the environment. As a result, the Company may incur costs in the future, which may be material, to address any such harm, compliance with laws and other risks, including costs relating to the performance of clean-ups, payment of environmental penalties and remediation obligations, and damages relating to harm to individuals or property.

Regulatory compliance

The Company may incur significant capital and operating costs associated with environmental regulatory compliance and clean-up requirements, in its railroad operations and relating to its past and present ownership, operation or control of real property. Operating expenses related to regulatory compliance activities for environmental matters for the year ended December 31, 2019 amounted to $25 million (2018 - $22 million; 2017 - $20 million). In addition, based on the results of its operations and maintenance programs, as well as ongoing environmental audits and other factors, the Company plans for specific capital improvements on an annual basis. Certain of these improvements help ensure facilities, such as fueling stations, waste water and storm water treatment systems, comply with environmental standards and include new construction and the updating of existing systems and/or processes. Other capital expenditures relate to assessing and remediating certain impaired properties. The Company's environmental capital expenditures for the year ended December 31, 2019 amounted to $25 million (2018 - $19 million; 2017 - $21 million).

Guarantees and indemnifications

In the normal course of business, the Company enters into agreements that may involve providing guarantees or indemnifications to third parties and others, which may extend beyond the term of the agreements. These include, but are not limited to, standby letters of credit, surety and other bonds, and indemnifications that are customary for the type of transaction or for the railway business.

As at December 31, 2019, the Company had outstanding letters of credit of $424 million (2018 - $410 million) under the committed bilateral letter of credit facilities and $149 million (2018 - $137 million) under the uncommitted bilateral letter of credit facilities, and surety and other bonds of $169 million (2018 - $160 million), all issued by financial institutions with investment grade credit ratings to third parties to indemnify them in the event the Company does not perform its contractual obligations.

As at December 31, 2019, the maximum potential liability under these guarantee instruments was $742 million (2018 - $707 million), of which $681 million (2018 - $659 million) related to other employee benefit liabilities and workers' compensation and $61 million (2018 - $48 million) related to other liabilities. The guarantee instruments expire at various dates between 2020 and 2022.

As at December 31, 2019, the Company had not recorded a liability with respect to guarantees as the Company did not expect to make any payments under its guarantees.

General indemnifications

In the normal course of business, the Company provides indemnifications, customary for the type of transaction or for the railway business, in various agreements with third parties, including indemnification provisions where the Company would be required to indemnify third parties and others. During the year, the Company entered into various contracts with third parties for which an indemnification was provided. Due to the nature of the indemnification clauses, the maximum exposure for future payments cannot be reasonably determined. To the extent of any actual claims under these agreements, the Company maintains provisions for such items, which it considers to be adequate. As at December 31, 2019, the Company had not recorded a liability with respect to any indemnifications.

20 – Financial instruments

Risk management

In the normal course of business, the Company is exposed to various risks from its use of financial instruments. To manage these risks, the Company follows a financial risk management framework, which is monitored and approved by the Company's Finance Committee, with a goal of maintaining a strong balance sheet, optimizing earnings per share and free cash flow, financing its operations at an optimal cost of capital and preserving its liquidity. The Company has limited involvement with derivative financial instruments in the management of its risks and does not hold or issue them for trading or speculative purposes.

Foreign currency risk

The Company conducts its business in both Canada and the U.S. and as a result, is affected by currency fluctuations. Changes in the exchange rate between the Canadian dollar and the US dollar affect the Company's revenues and expenses. To manage foreign currency risk, the Company designates US dollar-denominated debt of the parent company as a foreign currency hedge of its net investment in foreign operations. As a result, from the dates of designation, foreign exchange gains and losses on translation of the Company's US dollar-denominated debt are recorded in Accumulated other comprehensive loss, which minimizes volatility of earnings resulting from the conversion of US dollar-denominated debt into the Canadian dollar.

The Company also enters into foreign exchange forward contracts to manage its exposure to foreign currency risk. As at December 31, 2019, the Company had outstanding foreign exchange forward contracts with a notional value of US$1,088 million (2018 - US$1,465 million). Changes in the fair value of foreign exchange forward contracts, resulting from changes in foreign exchange rates, are recognized in Other income in the Consolidated Statement of Income as they occur. For the year ended December 31, 2019, the Company recorded a loss of $75 million (2018 - gain of $157 million; 2017 - loss of $72 million) related to foreign exchange forward contracts. These gains or losses were largely offset by the re-measurement of US dollar-denominated monetary assets and liabilities recognized in Other income. As at December 31, 2019, the fair value of outstanding foreign exchange forward contracts included in Other current assets and Accounts payable and other was $nil and $24 million, respectively (2018 - $67 million and $nil, respectively).

Interest rate risk

The Company is exposed to interest rate risk, which is the risk that the fair value or future cash flows of a financial instrument will vary as a result of changes in market interest rates. Such risk exists in relation to the Company's debt. The Company mainly issues fixed-rate debt, which exposes the Company to variability in the fair value of the debt. The Company also issues debt with variable interest rates, which exposes the Company to variability in interest expense.

To manage interest rate risk, the Company manages its borrowings in line with liquidity needs, maturity schedule, and currency and interest rate profile. In anticipation of future debt issuances, the Company may use derivative instruments such as forward rate agreements. The Company does not currently hold any significant derivative instruments to manage its interest rate risk.

Fair value of financial instruments

The financial instruments that the Company measures at fair value on a recurring basis in periods subsequent to initial recognition are categorized into the following levels of the fair value hierarchy based on the degree to which inputs are observable:

- Level 1: Inputs are quoted prices for identical instruments in active markets
- Level 2: Significant inputs (other than quoted prices included in Level 1) are observable
- Level 3: Significant inputs are unobservable

The carrying amounts of Cash and cash equivalents and Restricted cash and cash equivalents approximate fair value. These financial instruments include highly liquid investments purchased three months or less from maturity, for which the fair value is determined by reference to quoted prices in active markets.

The carrying amounts of Accounts receivable, Other current assets, and Accounts payable and other approximate fair value. The fair value of these financial instruments is not determined using quoted prices, but rather from market observable information. The fair value of derivative financial instruments, classified as Level 2, used to manage the Company's exposure to foreign currency risk and included in Other current assets and Accounts payable and other is measured by discounting future cash flows using a discount rate derived from market data for financial instruments subject to similar risks and maturities.

The carrying amount of the Company's debt does not approximate fair value. The fair value is estimated based on quoted market prices for the same or similar debt instruments, as well as discounted cash flows using current interest rates for debt with similar terms, company rating, and remaining maturity. The Company classifies debt as Level 2. As at December 31, 2019, the Company's debt, excluding finance leases, had a carrying amount of $13,662 million (2018 - $12,540 million) and a fair value of $15,667 million (2018 - $13,287 million).

21 – Segmented information

The Company manages its operations as one business segment over a single network that spans vast geographic distances and territories, with operations in Canada and the U.S. Financial information reported at this level, such as revenues, operating income, and cash flow from operations, is used by the Company's management, including its chief operating decision-maker, in evaluating financial and operational performance and allocating resources across CN's network.

The Company's strategic initiatives, which drive its operational direction, are developed and managed centrally by management and are communicated to its regional activity centers (the Western Region and Eastern Region). The Company's management is responsible for, among others, CN's marketing strategy, the management of large customer accounts, overall planning and control of infrastructure and rolling stock, the allocation of resources, and other functions such as financial planning, accounting and treasury.

The role of each region is to manage the day-to-day service requirements within their respective territories and control direct costs incurred locally. Such cost control is required to ensure that pre-established efficiency standards set at the corporate level are met. The regions execute the overall corporate strategy and operating plan established by the Company's management, as the regions' management of throughput and control of direct costs does not serve as the platform for the Company's decision-making process. Approximately 95% of the Company's freight revenues are from national accounts for which freight traffic spans North America and touches various commodity groups. As a result, the Company does not manage revenues on a regional basis since a large number of the movements originate in one region and pass through and/or terminate in another region.

The regions also demonstrate common characteristics in each of the following areas:

- each region's sole business activity is the transportation of freight over the Company's extensive rail network;
- the regions service national accounts that extend over the Company's various commodity groups and across its rail network;
- the services offered by the Company stem predominantly from the transportation of freight by rail with the goal of optimizing the rail network as a whole; and
- the Company and its subsidiaries, not its regions, are subject to regulatory regimes in both Canada and the U.S.

For the years ended December 31, 2019, 2018, and 2017, no major customer accounted for more than 10% of total revenues and the largest freight customer represented approximately 3% of total annual freight revenues.

The following tables provide information by geographic area:

In millions	*Year ended December 31,*	**2019**		2018		2017
Revenues						
Canada	**$**	**10,167**	$	9,610	$	8,794
U.S.		**4,750**		4,711		4,247
Total revenues	**$**	**14,917**	$	14,321	$	13,041
Net income						
Canada	**$**	**3,131**	$	3,163	$	2,857
U.S.		**1,085**		1,165		2,627
Total net income	**$**	**4,216**	$	4,328	$	5,484

In millions	*December 31,*	**2019**		2018
Properties				
Canada	**$**	**21,482**	$	19,737
U.S.		**18,187**		18,036
Total properties	**$**	**39,669**	$	37,773

22 – Subsequent events

Normal course issuer bid

On January 28, 2020, the Board of Directors of the Company approved a new NCIB, which allows for the repurchase of up to 16 million common shares between February 1, 2020 and January 31, 2021.

Non-revolving credit facility

On January 24, 2020, the Company requested a borrowing of US$300 million under its non-revolving credit facility. The funds are expected to be received on February 3, 2020.

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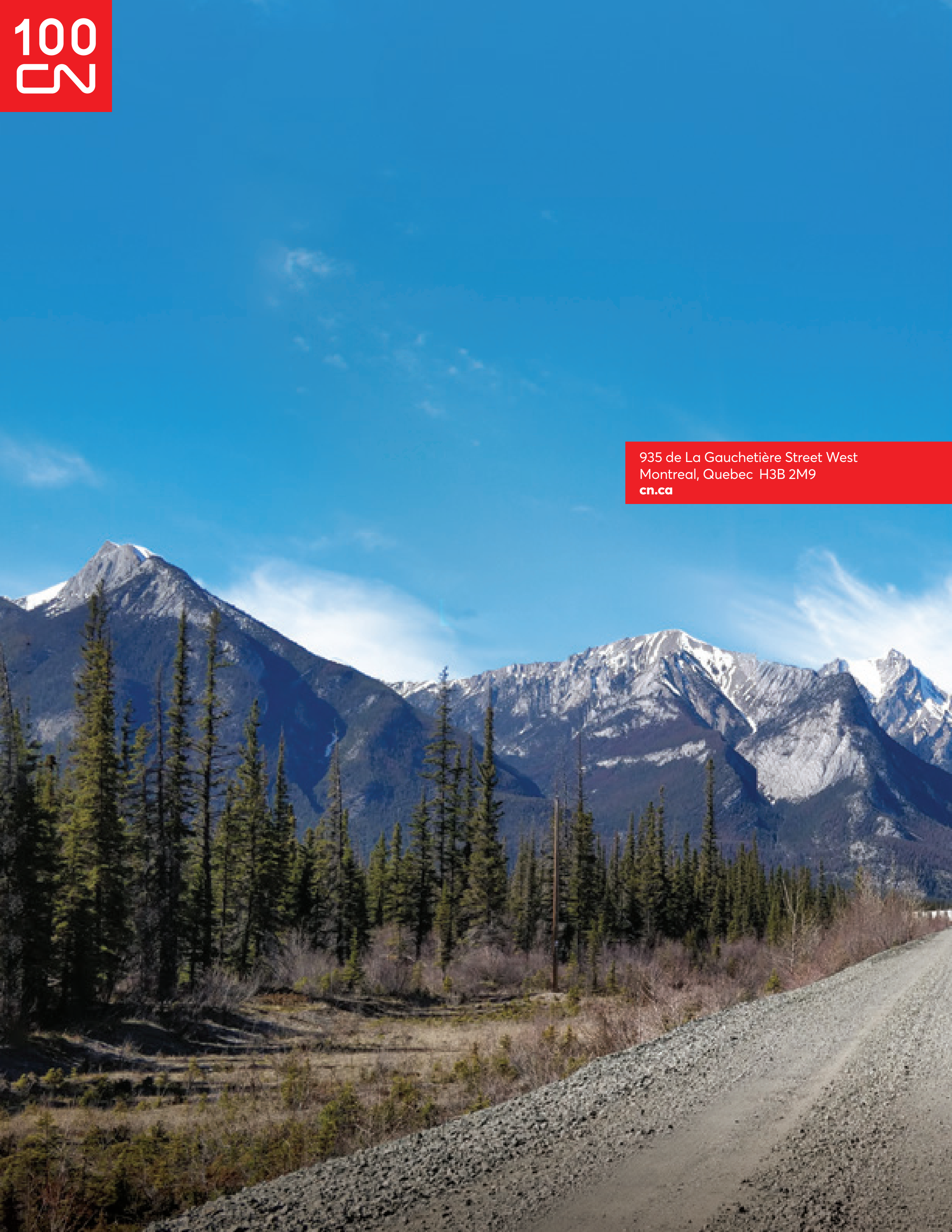

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