

Selected Railroad Statistics - unaudited

	2020	2019	2018
Financial measures			
Key financial performance indicators ⁽¹⁾			
Total revenues (\$ millions)	13,819	14,917	14,321
Freight revenues (\$ millions)	13,218	14,198	13,548
Operating income (\$ millions)	4,777	5,593	5,493
Adjusted operating income (\$ millions) ⁽²⁾	5,263	5,708	5,520
Net income (\$ millions)	3,562	4,216	4,328
Adjusted net income (\$ millions) ⁽²⁾	3,784	4,189	4,056
Diluted earnings per share (\$)	5.00	5.83	5.87
Adjusted diluted earnings per share (\$) ⁽²⁾	5.31	5.80	5.50
Free cash flow (\$ millions) ⁽³⁾	3,227	1,992	2,514
Gross property additions (\$ millions)	2,863	4,079	3,531
Share repurchases (\$ millions)	379	1,700	2,000
Dividends per share (\$)	2.30	2.15	1.82
Financial position ⁽¹⁾			
Total assets (\$ millions)	44,804	43,784	41,214
Total liabilities (\$ millions)	25,153	25,743	23,573
Shareholders' equity (\$ millions)	19,651	18,041	17,641
Financial ratios			
Operating ratio (%)	65.4	62.5	61.6
Adjusted operating ratio (%) ⁽²⁾	61.9	61.7	61.5
Adjusted debt-to-adjusted EBITDA (times) ⁽³⁾	1.98	2.02	1.94
Return on invested capital (ROIC) (%) ⁽⁴⁾	12.7	15.3	16.7
Adjusted ROIC (%) ⁽⁴⁾	13.4	15.1	15.7
Operational measures ⁽⁵⁾			
Statistical operating data			
Gross ton miles (GTMs) (millions)	455,368	482,890	490,414
Revenue ton miles (RTMs) (millions)	230,390	241,954	248,383
Carloads (thousands)	5,595	5,912	5,976
Route miles (includes Canada and the U.S.)	19,500	19,500	19,500
Employees (end of year)	24,381	25,975	25,720
Employees (average for the year)	23,786	26,733	25,423
Key operating measures			
Freight revenue per RTM (cents)	5.74	5.87	5.45
Freight revenue per carload (\$)	2,362	2,402	2,267
GTMs per average number of employees (thousands)	19,144	18,063	19,290
Operating expenses per GTM (cents)	1.99	1.93	1.80
Labor and fringe benefits expense per GTM (cents)	0.60	0.61	0.58
Diesel fuel consumed (US gallons in millions)	407.2	451.4	462.7
Average fuel price (\$/US gallon)	2.42	3.17	3.32
Fuel efficiency (US gallons of locomotive fuel consumed per 1,000 GTMs)	0.89	0.93	0.94
Train weight (tons)	9,501	9,125	9,163
Train length (feet)	8,572	8,232	8,247
Car velocity (car miles per day)	188	198	188
Through dwell (entire railroad, hours)	8.6	7.9	8.3
Through network train speed (miles per hour)	18.5	18.5	18.0
Locomotive utilization (trailing GTMs per total horsepower)	196	198	208
Safety indicators ⁽⁶⁾			
Injury frequency rate (per 200,000 person hours)	1.69	1.98	1.83
Accident rate (per million train miles)	1.74	2.11	2.02

(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 in the MD&A for an explanation of these non-GAAP measures.

(4) See the section entitled ROIC and adjusted ROIC in the MD&A for an explanation of these non-GAAP measures.

(5) 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 gross ton miles, fuel efficiency, train weight, train length, car velocity, through dwell and through network train speed are included within the Company's Management's Discussion and Analysis. Definitions of all other indicators are provided on CN's website, www.cn.ca/glossary.

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

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Management's Discussion and Analysis

This Management's Discussion and Analysis (MD&A) dated February 1, 2021, 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 2020 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 2020 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 19,500 route miles of track spans Canada and the United States of America (U.S.); the only railroad connecting Canada's Eastern and Western coasts with the U.S. South. CN's extensive network and efficient connections to all Class I railroads provide CN customers access to Canada, the U.S. and Mexico. Essential to the economy, to the customers, and to the communities it serves, CN safely transports more than 300 million tons of cargo, serving exporters, importers, retailers, farmers and manufacturers. CN and its affiliates have been contributing to community prosperity and sustainable trade since 1919. CN is committed to programs supporting social responsibility and environmental stewardship.

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, 2020, CN's largest commodity group accounted for 27% of total revenues. From a geographic standpoint, 16% of revenues relate to U.S. domestic traffic, 31% transborder traffic, 17% Canadian domestic traffic and 36% 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 23 – Segmented information* to the Company's 2020 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 a 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, as well as 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 as well as customer and shareholder value.

COVID-19 pandemic

The COVID-19 pandemic has necessitated governments, businesses and communities to take extraordinary actions to mitigate the contagion, resulting in unprecedented uncertainty arising from a severe economic contraction. During the first wave of the pandemic, government-mandated widespread closures of non-essential businesses significantly curbed customer demand for transportation services. Following this first wave, governments gradually reopened most areas of the economy, with some segments of the economy subsequently experiencing a recovery in the second half of the year. A second wave of COVID-19 cases began in late 2020 and some governments mandated business closures and other restrictions again, in addition to continued social distancing measures. The focus for CN has been on nimbly adjusting to the partial economic shutdown, and remaining alert to potential further restrictive measures, as well as the high level of uncertainty with respect to the demand environment. As an essential service provider, CN continued to execute its business continuity plans to keep employees safe and deliver for its customers, the economy and the communities in which it operates, demonstrating its key role in the integrated global supply chain.

As CN is part of an integrated global supply chain, the impact of the COVID-19 pandemic on aspects of the supply chain, including ocean carriers, ports, terminals, trucking firms, and other railroads, has a consequent impact on the Company's operations.

Starting in late March 2020, the spread of the COVID-19 pandemic resulted in significantly weaker demand for freight transportation services. During the second half of the year, demand partially recovered, with sequential improvements in volumes relative to the initial decline in the second quarter. By the fourth quarter, demand for some commodities had recovered at or above pre-pandemic levels, including intermodal, driven by a shift in consumer spending from services to goods, which CN was well-positioned to capitalize on, leveraging the acquisitions of TransX and H&R; and forest products, reflecting strong demand for lumber and panels used in home renovations and construction of new homes. The demand for less economically-sensitive products, such as export grain and fertilizers continued to remain positive compared to last year. The demand for other commodities that CN transports remained below pre-pandemic levels including finished vehicles and parts, pulp and paper, metals and minerals, plastics, chemicals and energy related commodities including petroleum crude, refined petroleum products and frac sand.

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In response to the rapid partial economic shutdown faced earlier in the year, CN undertook various actions to quickly adapt, significantly increasing its liquidity as well as enhancing its overall financial and operational resilience:

- CN adjusted its resources and costs to align with the rapid and significant reduction in demand for rail transportation services, including temporarily storing locomotives and railcars, as well as reducing headcount, and rationalizing certain local yards and mechanical shops;
- In the second half of the year, CN added resources back into the business as volumes began recovering;
- In light of anticipated lower volumes for the year, the 2020 capital expenditure program was reduced in the first quarter by a net amount of \$0.1 billion from \$3.0 billion to \$2.9 billion;
- CN paused its share repurchases between the end of March 2020 and January 2021 due to the economic circumstances; and
- CN secured \$390 million of one-year supplementary revolving credit facilities, closed a second tranche of a variable rate, 20-year term loan for US\$310 million and issued US\$600 million 30-year 2.45% Notes in the U.S. debt capital markets.

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 *Scheduled Railroading* model, which focuses on improving every process that affects delivery of customers' goods. It is a highly disciplined process whereby CN 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 train weight, train length, through network train speed, fuel efficiency, through dwell and car velocity. 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.

CN understands the importance of balancing its drive for productivity while enhancing 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 the best service innovator.

CN's focus on sustainability

Sustainability is at the heart of how the Company is building for the future; CN calls this *Delivering Responsibly*. It means moving customer goods safely and efficiently, being environmentally responsible, attracting and developing the best diverse team of railroaders, helping build safer and stronger communities, while adhering to the highest ethical standards. CN is proud of its *Delivering Responsibly* philosophy – it drives how the Company conducts its business and supports its continuing transformational journey.

An unwavering commitment to safety

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. In September 2020, CN established a new conductor training curriculum with a strong emphasis on commitment to safety. Additionally, in 2020, CN provided a year long safety leadership program to over 300 of its leaders in operating functions, with plans to provide the training to another 250 in 2021.

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In response to the COVID-19 pandemic, CN deployed its multi-phase Pandemic Plan in March and continued to institute various measures to protect its employees, customers, and the communities in which CN operates:

- CN's medical team and occupational health department, who are members of the Association of American Railroads Health Committee, have played a pivotal role in CN's pandemic planning, taking direction from the World Health Organization, as well as provincial, state and federal authorities, as required, and offering best practices shared amongst North American railroads.
- CN implemented preventative measures to ensure the safety of its employees and by extension, of its customers and communities. These measures included a work from home policy for employees not required on site, restriction of employee travel, social distancing measures at CN locations, segregating mission critical rail traffic control employees, and amplifying cleaning regimens on trains, in terminals, in crew accommodation facilities, and in offices.
- Understanding the importance of timely and reliable information, CN increased employee communications by providing frequent updates on the state of the Company's operations, as well as employee support for any questions or concerns.
- With operations spanning eight provinces, 16 states and over 2,000 communities across the Company's network, CN continued to play an important role in the communities in which it operates. CN donated over \$1 million to charities directly or indirectly affected by the economic impacts of the pandemic, such as food banks, homeless shelters, domestic violence shelters, healthcare centers, and anti-poverty organizations.

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 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.

Protecting the environment for generations to come

The Company's goal is to conduct operations with minimal environmental impact, while providing cleaner, more sustainable transportation services to customers. With approximately 85% of CN's direct Greenhouse Gas (GHG) emissions generated from rail operations, CN believes the best way to reduce its carbon footprint is by continuously improving fuel efficiency. Over the years, this focus has resulted in significant progress in decoupling volume growth from carbon emissions. CN is making a positive contribution in the fight against climate change by offering a carbon efficient and environmentally friendly way to move goods.

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 GHG emissions; increasing and building operational 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; and engaging in modal shift agreements that favor low emission transport services. 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.

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

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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.

2020 Highlights

While CN's results were adversely impacted by the COVID-19 pandemic, the Company continued to deliver for its customers, providing essential transportation services and demonstrating its key role in the integrated global supply chain. By the end of the year, the Company began recovering from pandemic related demand declines as demand for some commodities recovered at or above pre-pandemic levels in the fourth quarter, most notably in the grain and fertilizers and intermodal commodity groups.

Financial highlights - 2020 compared to 2019

- Revenues decreased by \$1,098 million, or 7%, to \$13,819 million.
- Operating expenses decreased by \$282 million, or 3%, to \$9,042 million.
- Operating income decreased by \$816 million, or 15%, to \$4,777 million and adjusted operating income decreased by \$445 million, or 8%, to \$5,263 million. ⁽¹⁾
- Operating ratio of 65.4%, an increase of 2.9 points and adjusted operating ratio of 61.9%, an increase of 0.2 points. ⁽¹⁾
- Net income decreased by \$654 million, or 16%, to \$3,562 million and diluted earnings per share decreased by 14% to \$5.00.
- Adjusted net income decreased by \$405 million, or 10%, to \$3,784 million and adjusted diluted earnings per share decreased by 8% to \$5.31. ⁽¹⁾
- The Company generated record free cash flow of \$3,227 million, a 62% increase. ⁽²⁾
- ROIC of 12.7%, a decrease of 2.6 points and adjusted ROIC of 13.4%, a decrease of 1.7 points. ⁽³⁾
- CN achieved 10 consecutive months of record Canadian grain movements, which resulted in record revenues for the year for the Grain and fertilizers commodity group.
- An all-time record fuel efficiency of 0.89 US gallons of locomotive fuel consumed per 1,000 gross ton miles.

(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.

(3) See the section of this MD&A entitled *ROIC and adjusted ROIC* for an explanation of these non-GAAP measures.

Assets held for sale

In the second quarter of 2020, the Company committed to a plan and is actively marketing for sale for on-going rail operations, certain non-core lines in Wisconsin, Michigan and Ontario representing approximately 850 miles and has met the criteria for classification of the related assets as assets held for sale. Accordingly, a \$486 million loss (\$363 million after-tax) was recorded to adjust the carrying amount of these track and roadway assets to their estimated selling price. The carrying amount of assets held for sale of \$90 million is included in Other current assets in the Consolidated Balance Sheet as at December 31, 2020. The estimated selling price is based primarily on discounted cash flow projections. These projections are based on Level 3 inputs of the fair value hierarchy and reflect the Company's best estimate of market participants' pricing of the assets as well as the general condition of the assets. The significant assumptions in the valuation model include projected cash flows, discount rate and growth rate. Actual results could differ from the Company's estimates, but such differences are not expected to have a material impact on the fair value assessment. As at December 31, 2020, the criteria for the classification of assets held for sale continued to be met and there was no change in the Company's carrying amount of assets held for sale.

Reinvestment in the business

In 2020, CN spent approximately \$2.9 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 \$0.8 billion on strategic initiatives to increase capacity, enable growth and improve network resiliency, including line capacity upgrades and information technology initiatives, \$0.4 billion on equipment capital expenditures, including the acquisition of 41 new high-horsepower locomotives and 1,449 new grain hopper cars, and \$0.1 billion on implementation of Positive Train Control (PTC), the safety technology system mandated by the U.S. Congress.

Management's Discussion and Analysis

Acquisitions

On April 6, 2020, the Surface Transportation Board (STB) issued its decision conditionally approving the acquisition of the Massena rail line from CSX Corporation ("CSX"), which the Company announced its agreement to purchase on August 29, 2019. On June 6, 2020, CN and CSX sought reconsideration asking the STB to remove its condition which requires the parties to propose a change to the line sale agreement for the STB's review. The petitions for reconsideration remain pending for the STB's decision. The acquisition represents more than 220 miles of track between Valleyfield, Quebec, and Woodard, New York, and will allow CN to continue to expand its network and foster additional supply chain solutions.

In the first quarter of 2020, the Company completed the purchase price allocation of the Manitoba based TransX Group of Companies ("TransX") which was acquired on March 20, 2019. In the fourth quarter of 2019, the fair value of net assets acquired was adjusted to reflect the settlement of working capital as well as changes to current and deferred income tax balances. The acquisition positions CN to strengthen its intermodal business, and allows the Company to expand capacity and foster additional supply chain solutions.

In the fourth quarter of 2020, the Company completed the purchase price allocation of the intermodal temperature-controlled transportation division of the Alberta-based H&R Transport Limited ("H&R") which was acquired on December 2, 2019. 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.

Shareholder returns

The Company repurchased 3.3 million of its common shares during the year, returning \$0.4 billion to its shareholders. CN paused its share repurchases at the end of March 2020 due to the economic circumstances resulting from the COVID-19 pandemic. CN also increased its quarterly dividend per share by 7% to \$0.5750 from \$0.5375 in 2019, effective for the first quarter of 2020, and paid \$1.6 billion in dividends in 2020.

Sustainability disclosures and recognition

The Company's sustainability practices earned it a place on the Dow Jones Sustainability World and North American Indices, for the 9th and 12th consecutive year, respectively. CN has also been recognized by CDP for the 11th consecutive year and is one of only three Canadian companies to have earned a position on the *Climate A List* in 2020. 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 ranked among Corporate Knights' 2021 Global 100 Most Sustainable Corporations in the World. The Company's CDP Report, Task Force on Climate-related Financial Disclosures report, 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.

2021 Business outlook and assumptions

For 2021, the Company expects growth across a range of commodities, particularly in coal exports, intermodal traffic, petroleum crude, lumber and panels, frac sand, metals and minerals, as well as lower volumes of U.S. grain and potash.

Underpinning the 2021 business outlook, the Company assumes that North American industrial production will increase in the mid single-digit range. For the 2020/2021 crop year, the grain crop in Canada was above its three-year average and the U.S. grain crop was in line with its three-year average. The Company assumes that the 2021/2022 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 2021, 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 \$1.2 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 at \$0.2 billion in 2021, 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 491 new grain hopper cars in the first quarter of 2021.

Shareholder returns

On January 26, 2021, the Company's Board of Directors approved a new Normal Course Issuer Bid (NCIB) that allows for the repurchase of up to 14 million common shares between February 1, 2021 and January 31, 2022. 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 \$0.5750 per share in 2020 to \$0.6150 per share in 2021, effective for the first quarter. The Company expects to resume its share repurchases in the first quarter of 2021 under the new NCIB.

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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 by their nature address matters that are, to different degrees, uncertain, such as statements about the impacts of the COVID-19 pandemic on the business operations, financial results and financial position and on the global supply chain, and statements about the economic recovery and its future impact on CN. 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 - 2021 Business outlook and assumptions*.

Forward-looking statements	Key assumptions
Statements relating to revenue growth opportunities, including those referring to general economic and business conditions	<ul style="list-style-type: none">• North American and global economic growth• Long-term growth opportunities being less affected by current economic conditions• The COVID-19 pandemic gradually diminishing in intensity in the second half of 2021 following increased vaccination• No material increase in disruption of CN's operations or of the economy's supply chains as a result of the COVID-19 pandemic in the shorter term
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	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• 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 duration and effects of the COVID-19 pandemic; general economic and business conditions, particularly in the context of the COVID-19 pandemic; 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 illegal blockades of rail networks and 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.

Management's Discussion and Analysis

2020 Financial outlook

On January 28, 2020, the Company issued its 2020 financial outlook. On April 27, 2020 due to the continued global spread of the COVID-19 pandemic and consequent unprecedented economic uncertainty, the Company withdrew its 2020 outlook.

Financial highlights

In millions, except percentage and per share data	2020	2019	2018	Change	
				2020 vs 2019	2019 vs 2018
Revenues	\$ 13,819	\$ 14,917	\$ 14,321	(7%)	4%
Operating income	\$ 4,777	\$ 5,593	\$ 5,493	(15%)	2%
Adjusted operating income ⁽¹⁾	\$ 5,263	\$ 5,708	\$ 5,520	(8%)	3%
Net income	\$ 3,562	\$ 4,216	\$ 4,328	(16%)	(3%)
Adjusted net income ⁽¹⁾	\$ 3,784	\$ 4,189	\$ 4,056	(10%)	3%
Basic earnings per share	\$ 5.01	\$ 5.85	\$ 5.89	(14%)	(1%)
Adjusted basic earnings per share ⁽¹⁾	\$ 5.32	\$ 5.81	\$ 5.52	(8%)	5%
Diluted earnings per share	\$ 5.00	\$ 5.83	\$ 5.87	(14%)	(1%)
Adjusted diluted earnings per share ⁽¹⁾	\$ 5.31	\$ 5.80	\$ 5.50	(8%)	5%
Dividends declared per share	\$ 2.30	\$ 2.15	\$ 1.82	7%	18%
Total assets	\$ 44,804	\$ 43,784	\$ 41,214	2%	6%
Total long-term liabilities	\$ 21,879	\$ 21,456	\$ 20,073	(2%)	(7%)
Operating ratio ⁽²⁾	65.4%	62.5%	61.6%	(2.9)-pts	(0.9)-pts
Adjusted operating ratio ⁽¹⁾	61.9%	61.7%	61.5%	(0.2)-pts	(0.2)-pts
Free cash flow ⁽³⁾	\$ 3,227	\$ 1,992	\$ 2,514	62%	(21%)

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

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

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

2020 compared to 2019

Net income for the year ended December 31, 2020 was \$3,562 million, a decrease of \$654 million, or 16%, when compared to 2019, and diluted earnings per share decreased by 14% to \$5.00.

Operating income for the year ended December 31, 2020 decreased by \$816 million, or 15%, to \$4,777 million. The decrease mainly reflects lower volumes across most commodity groups and a loss on assets held for sale, partly offset by freight rate increases and lower fuel prices. The operating ratio, defined as operating expenses as a percentage of revenues, was 65.4% in 2020, compared to 62.5% in 2019.

Revenues for the year ended December 31, 2020 were \$13,819 million compared to \$14,917 million in 2019. The decrease of \$1,098 million, or 7%, was mainly attributable to lower volumes across most commodity groups, primarily in the second and third quarter, caused by the ongoing effects of the COVID-19 pandemic and lower applicable fuel surcharge rates, partly offset by freight rate increases as well as record shipments of Canadian grain.

Operating expenses for the year ended December 31, 2020 were \$9,042 million compared to \$9,324 million in 2019. The decrease of \$282 million, or 3%, was mainly due to lower fuel and labor costs and decreased purchased services and material expense; partly offset by a loss on assets held for sale, resulting from the Company's decision to market for sale for on-going rail operations, certain non-core lines.

The Company generated record free cash flow for the year ended December 31, 2020 of \$3,227 million compared to \$1,992 million in 2019. The increase of \$1,235 million, or 62%, was mainly due to lower property additions in 2020 compared to the record 2019 capital expenditure program, lower income tax instalment payments and a U.S. tax refund received in 2020 as a result of the CARES Act, partly offset by lower earnings excluding non-cash items.

Management's Discussion and Analysis

Operating highlights

The following table lists key measures of the Company's operating performance, for the purpose of measuring the efficiency and effectiveness of train operations:

	2020	2019	2018	Change	
				Favorable/(Unfavorable) 2020 vs 2019	2019 vs 2018
Gross ton miles (GTMs) (millions) ⁽¹⁾	455,368	482,890	490,414	(6%)	(2%)
Train weight (tons) ⁽²⁾	9,501	9,125	9,163	4%	—%
Train length (feet) ⁽³⁾	8,572	8,232	8,247	4%	—%
Through network train speed (miles per hour) ⁽⁴⁾	18.5	18.5	18.0	—%	3%
Fuel efficiency (US gallons of locomotive fuel consumed per 1,000 GTMs) ⁽⁵⁾	0.89	0.93	0.94	4%	1%
Through dwell (entire railroad, hours) ⁽⁶⁾	8.6	7.9	8.3	(8%)	5%
Car velocity (car miles per day) ⁽⁷⁾	188	198	188	(5%)	5%

- (1) GTMs: The workload performed by system trains in hauling freight or equipment. GTMs are calculated by multiplying the trailing weight by the distance the train moved. A larger number is an indicator of more traffic (and thus more revenue) being moved.
- (2) Train weight: An efficiency measurement on how much tonnage each mainline train handles on average as it crosses the network. Calculated as the total of GTMs and divided by total train miles, this measure provides insight on how well each train was maximized in terms of its capacity to move traffic. This operating measure was formerly named Train productivity.
- (3) Train length: An efficiency measurement on average trailing length of each mainline train on the network. Calculated as the total of car foot miles (the sum of car length multiplied by miles travelled for each trailing car) divided by total train miles, this measure provides insight on how well each train was maximized in terms of its capacity to move traffic.
- (4) Through network train speed: A measure of the line-haul movement from origin to destination, including time at terminals. The average speed is calculated by dividing train miles by total hours operated, excluding yard and local trains, passenger trains, maintenance of way trains, and foreign trains. This measure represents the fluidity of trains on the network, with a higher value also indicating a more fluid network.
- (5) Fuel efficiency: This measure represents how efficient the Company is in the generation and utilization of locomotive horsepower in freight train operations, with a lower number indicating improved performance. Fuel efficiency is defined as US gallons of locomotive fuel consumed per 1,000 GTMs.
- (6) Through dwell: The average time a car resides within terminal boundaries expressed in hours. The measurement begins with a customer release, received interchange, or train arrival event and ends with a customer placement (actual or constructive), delivered or offered in interchange, or train departure event. This excludes stored, bad ordered, maintenance of way cars, or cars with dwell greater than 10 days. This measure represents the efficiency of handling cars within the terminal, with a lower value indicating higher performance.
- (7) Car velocity: The average miles per day traveled by loaded and empty cars (including all active cars whether private, foreign or CN owned) on company lines. This measure represents the fluidity of cars on the network, calculated by the sum of miles each car traveled divided by the sum of all of the cars' active time, with a higher value indicating a smoother and more fluid operation.

For the year ended December 31, 2020, when compared to 2019, GTMs were negatively impacted by the COVID-19 pandemic. In response to the reduction in volumes, the Company increased efficiencies with increased Train weight and Train length, which negatively impacted Through dwell, Car velocity, and Through network train speed. However, this allowed the Company to achieve an all-time record Fuel efficiency.

For the year ended December 31, 2019, when compared to 2018, GTMs were negatively impacted by the weakening economic environment and a conductor strike in the fourth quarter of 2019. However, with capacity improvements enabling fluidity, Through dwell, Car velocity, Through network train speed, as well as Fuel efficiency, had all improved.

Non-GAAP measures

This MD&A makes reference to non-GAAP measures including adjusted performance measures, constant currency, return on invested capital (ROIC) and adjusted ROIC, free cash flow, and adjusted debt-to-adjusted earnings before interest, income taxes, depreciation and amortization (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*, *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, 2020, the Company reported adjusted net income of \$3,784 million, or \$5.31 per diluted share, which excludes a loss of \$486 million, or \$363 million after-tax (\$0.51 per diluted share) in the second quarter, resulting from the Company's decision to market for sale for on-going rail operations, certain non-core lines in Wisconsin, Michigan and Ontario, and a current income tax recovery of \$141 million (\$0.20 per diluted share) in the first quarter resulting from the enactment of the *Coronavirus Aid, Relief, and Economic Security (CARES) Act*, a U.S. tax-and-spending package aimed at providing additional stimulus to address the economic impact of the COVID-19 pandemic.

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).

Management's Discussion and Analysis

The following table provides a reconciliation of net income and earnings per share in accordance with GAAP, as reported for the years ended December 31, 2020, 2019 and 2018, to the non-GAAP adjusted performance measures presented herein:

<i>In millions, except per share data</i>	<i>Year ended December 31,</i>		
	2020	2019	2018
Net income	\$ 3,562	\$ 4,216	\$ 4,328
<i>Adjustments:</i>			
Operating expenses	486	115	27
Other income	—	—	(338)
Income tax expense (recovery) ⁽¹⁾	(264)	(142)	39
Adjusted net income	\$ 3,784	\$ 4,189	\$ 4,056
Basic earnings per share	\$ 5.01	\$ 5.85	\$ 5.89
<i>Impact of adjustments, per share</i>	0.31	(0.04)	(0.37)
Adjusted basic earnings per share	\$ 5.32	\$ 5.81	\$ 5.52
Diluted earnings per share	\$ 5.00	\$ 5.83	\$ 5.87
<i>Impact of adjustments, per share</i>	0.31	(0.03)	(0.37)
Adjusted diluted earnings per share	\$ 5.31	\$ 5.80	\$ 5.50

(1) Includes the tax impact of: (i) adjustments based on the nature of the item for tax purposes and related tax rates in the applicable jurisdiction; or (ii) tax law changes and rate enactments.

The following table provides a reconciliation of operating income and operating ratio in accordance with GAAP, as reported for the years ended December 31, 2020, 2019 and 2018, to the non-GAAP adjusted performance measures presented herein:

<i>In millions, except percentage</i>	<i>Year ended December 31,</i>		
	2020	2019	2018
Operating income	\$ 4,777	\$ 5,593	\$ 5,493
<i>Operating expense adjustments:</i>			
Depreciation expense	—	84	—
Employee termination benefits and severance costs	—	31	27
Loss on assets held for sale	486	—	—
Total operating expense adjustments	486	115	27
Adjusted operating income	\$ 5,263	\$ 5,708	\$ 5,520
Operating ratio	65.4%	62.5%	61.6%
<i>Impact of adjustment</i>	(3.5)-pts	(0.8)-pts	(0.1)-pts
Adjusted operating ratio	61.9%	61.7%	61.5%

Management's Discussion and Analysis

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:

<i>In millions, except percentage</i>	<i>As at and for the year ended December 31,</i>		
	2020	2019	2018
Net income	\$ 3,562	\$ 4,216	\$ 4,328
Interest expense	554	538	489
Tax on interest expense ⁽¹⁾	(120)	(120)	(116)
Return	\$ 3,996	\$ 4,634	\$ 4,701
Average total shareholders' equity	\$ 18,846	\$ 17,841	\$ 17,149
Average long-term debt	11,931	11,626	10,067
Average current portion of long-term debt	1,420	1,557	1,632
Less: Average cash, cash equivalents, restricted cash and restricted cash equivalents	(844)	(674)	(656)
Average invested capital	\$ 31,353	\$ 30,350	\$ 28,192
ROIC	12.7%	15.3%	16.7%
Adjusted net income ⁽²⁾	\$ 3,784	\$ 4,189	\$ 4,056
Interest expense	554	538	489
Adjusted tax on interest expense ⁽³⁾	(137)	(131)	(120)
Adjusted return	\$ 4,201	\$ 4,596	\$ 4,425
Average invested capital	\$ 31,353	\$ 30,350	\$ 28,192
Adjusted ROIC	13.4%	15.1%	15.7%

(1) The effective tax rate for 2020 used to calculate the tax on interest expense was 21.6% (2019 - 22.3%; 2018 - 23.8%).

(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 2020 used to calculate the adjusted tax on interest expense was 24.8% (2019 - 24.4%; 2018 - 24.5%).

Management's Discussion and Analysis

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 \$1.34 and \$1.33 per US\$1.00, for the years ended December 31, 2020 and 2019, respectively.

On a constant currency basis, the Company's net income for the year ended December 31, 2020 would have been lower by \$13 million (\$0.02 per diluted share).

Revenues

<i>In millions, unless otherwise indicated</i>	<i>Year ended December 31,</i>	2020	2019	% Change	% Change at constant currency
Freight revenues	\$	13,218	\$ 14,198	(7%)	(7%)
Other revenues		601	719	(16%)	(17%)
Total revenues	\$	13,819	\$ 14,917	(7%)	(8%)
Freight revenues					
Petroleum and chemicals	\$	2,631	\$ 3,052	(14%)	(14%)
Metals and minerals		1,409	1,643	(14%)	(15%)
Forest products		1,700	1,808	(6%)	(7%)
Coal		527	658	(20%)	(20%)
Grain and fertilizers		2,609	2,392	9%	9%
Intermodal		3,751	3,787	(1%)	(1%)
Automotive		591	858	(31%)	(31%)
Total freight revenues	\$	13,218	\$ 14,198	(7%)	(7%)
Revenue ton miles (RTMs) (<i>millions</i>)		230,390	241,954	(5%)	(5%)
Freight revenue/RTM (<i>cents</i>)		5.74	5.87	(2%)	(3%)
Carloads (<i>thousands</i>)		5,595	5,912	(5%)	(5%)
Freight revenue/carload (\$)		2,362	2,402	(2%)	(2%)

Revenues for the year ended December 31, 2020, totaled \$13,819 million compared to \$14,917 million in 2019. The decrease of \$1,098 million, or 7%, was mainly attributable to lower volumes across most commodity groups, primarily in the second and third quarter, caused by the ongoing effects of the COVID-19 pandemic and lower applicable fuel surcharge rates, partly offset by freight rate increases as well as record shipments of Canadian grain. Fuel surcharge revenues decreased by \$330 million in 2020, mainly as a result of lower applicable fuel surcharge rates and lower volumes.

In 2020, RTMs, measuring the weight and distance of freight transported by the Company, declined by 5% relative to 2019. Freight revenue per RTM decreased by 2% in 2020 when compared to 2019, mainly driven by lower applicable fuel surcharge rates, partly offset by freight rate increases.

Petroleum and chemicals

	<i>Year ended December 31,</i>	2020	2019	% Change	% Change at constant currency
Revenues (<i>millions</i>)	\$	2,631	\$ 3,052	(14%)	(14%)
RTMs (<i>millions</i>)		43,556	53,989	(19%)	(19%)
Revenue/RTM (<i>cents</i>)		6.04	5.65	7%	6%
Carloads (<i>thousands</i>)		597	688	(13%)	(13%)

Management's Discussion and Analysis

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, 2020, revenues for this commodity group decreased by \$421 million, or 14%, when compared to 2019, mainly due to lower volumes of petroleum crude, chemicals and plastic products, refined petroleum products and natural gas liquids due to the COVID-19 pandemic, partly offset by liquidated damages relating to volume commitments under customer contracts.

Revenue per RTM increased by 7% in 2020 when compared to 2019, mainly due to the decrease in the average length of haul and liquidated damages relating to volume commitments under customer contracts.

Percentage of commodity group revenues	2020	2019
Chemicals and plastics	41 %	36 %
Refined petroleum products	40 %	38 %
Crude and condensate	15 %	22 %
Sulfur	4 %	4 %

Metals and minerals

	<i>Year ended December 31,</i>	2020	2019	% Change	% Change at constant currency
Revenues (<i>millions</i>)	\$	1,409	\$ 1,643	(14%)	(15%)
RTMs (<i>millions</i>)		21,561	25,449	(15%)	(15%)
Revenue/RTM (<i>cents</i>)		6.53	6.46	1%	—%
Carloads (<i>thousands</i>)		935	1,008	(7%)	(7%)

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, 2020, revenues for this commodity group decreased by \$234 million, or 14%, when compared to 2019, mainly due to reduced shipments of frac sand and semi-finished steel products due to the COVID-19 pandemic.

Revenue per RTM increased by 1% in 2020 when compared to 2019, mainly due to a decrease in the average length of haul.

Percentage of commodity group revenues	2020	2019
Metals	31 %	30 %
Minerals	28 %	27 %
Energy materials	21 %	26 %
Iron ore	20 %	17 %

Forest products

	<i>Year ended December 31,</i>	2020	2019	% Change	% Change at constant currency
Revenues (<i>millions</i>)	\$	1,700	\$ 1,808	(6%)	(7%)
RTMs (<i>millions</i>)		25,602	27,187	(6%)	(6%)
Revenue/RTM (<i>cents</i>)		6.64	6.65	—%	(1%)
Carloads (<i>thousands</i>)		342	375	(9%)	(9%)

Management's Discussion and Analysis

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, 2020, revenues for this commodity group decreased by \$108 million, or 6%, when compared to 2019, mainly due to lower volumes across a broad range of forest products and lower applicable fuel surcharge rates, partly offset by freight rate increases.

Revenue per RTM remained flat in 2020 when compared to 2019.

Percentage of commodity group revenues	2020	2019
Lumber	39 %	38 %
Pulp	30 %	30 %
Paper	17 %	18 %
Panels	14 %	14 %

Coal

	<i>Year ended December 31,</i>	2020	2019	% Change	% Change at constant currency
Revenues (<i>millions</i>)	\$	527	\$ 658	(20%)	(20%)
RTMs (<i>millions</i>)		16,173	17,653	(8%)	(8%)
Revenue/RTM (<i>cents</i>)		3.26	3.73	(13%)	(13%)
Carloads (<i>thousands</i>)		289	335	(14%)	(14%)

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, 2020, revenues for this commodity group decreased by \$131 million, or 20%, when compared to 2019, mainly due to lower volumes of U.S. thermal coal exports via the Gulf Coast due to competitive market pricing as well as reduced domestic shipments to U.S. utilities and Canadian metallurgical coal via west coast ports due to the COVID-19 pandemic; partly offset by higher Canadian thermal coal exports via west coast ports.

Revenue per RTM decreased by 13% in 2020 when compared to 2019, mainly due to an increase in the average length of haul.

Percentage of commodity group revenues	2020	2019
Canadian coal - export	49 %	40 %
Petroleum coke	25 %	22 %
U.S. coal - domestic	17 %	19 %
U.S. coal - export	9 %	19 %

Management's Discussion and Analysis

Grains and fertilizers

	Year ended December 31,	2020	2019	% Change	% Change at constant currency
Revenues (<i>millions</i>)	\$	2,609	\$ 2,392	9%	9%
RTMs (<i>millions</i>)		61,736	55,597	11%	11%
Revenue/RTM (<i>cents</i>)		4.23	4.30	(2%)	(2%)
Carloads (<i>thousands</i>)		663	619	7%	7%

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, 2020, revenues for this commodity group increased by \$217 million, or 9%, when compared to 2019, mainly due to record Canadian grain volumes and freight rate increases, partly offset by lower applicable fuel surcharge rates.

Revenue per RTM decreased by 2% in 2020 when compared to 2019, mainly due to an increase in the average length of haul and lower applicable fuel surcharge rates; partly offset by freight rate increases.

Percentage of commodity group revenues	2020	2019
Canadian grain - regulated	47 %	42 %
U.S. grain - domestic	18 %	19 %
Canadian grain - commercial	11 %	13 %
Fertilizers - potash	10 %	10 %
Fertilizers - other	9 %	10 %
U.S. grain - exports	5 %	6 %

Intermodal

	Year ended December 31,	2020	2019	% Change	% Change at constant currency
Revenues (<i>millions</i>)	\$	3,751	\$ 3,787	(1%)	(1%)
RTMs (<i>millions</i>)		59,165	58,344	1%	1%
Revenue/RTM (<i>cents</i>)		6.34	6.49	(2%)	(3%)
Carloads (<i>thousands</i>)		2,582	2,618	(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 retail, wholesale and logistics provider 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, located near ports and large urban centers, 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 as well as global trade patterns. Revenues for TransX and H&R are included in this commodity group within the domestic market.

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For the year ended December 31, 2020, revenues for this commodity group decreased by \$36 million, or 1%, when compared to 2019, mainly due to lower applicable fuel surcharge rates and lower international container volumes via the ports of Prince Rupert and Montreal, as well as reduced shipments for domestic logistic providers; partly offset by higher international container traffic via the Ports of Vancouver and New Orleans, as well as increased domestic retail shipments.

Revenue per RTM decreased by 2% in 2020 when compared to 2019, mainly due to lower applicable fuel surcharge rates.

Percentage of commodity group revenues	2020	2019
International	67 %	68 %
Domestic	33 %	32 %

Automotive

	<i>Year ended December 31,</i>	2020	2019	% Change	% Change at constant currency
Revenues (<i>millions</i>)	\$	591	\$ 858	(31%)	(31%)
RTMs (<i>millions</i>)		2,597	3,735	(30%)	(30%)
Revenue/RTM (<i>cents</i>)		22.76	22.97	(1%)	(1%)
Carloads (<i>thousands</i>)		187	269	(30%)	(30%)

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, 2020, revenues for this commodity group decreased by \$267 million, or 31%, when compared to 2019, mainly due to lower volumes of finished vehicles due to the COVID-19 pandemic, including the temporary shutdown of assembly plants and production between April and June, as well as lower applicable fuel surcharge rates.

Revenue per RTM decreased by 1% in 2020 when compared to 2019, mainly due to lower applicable fuel surcharge rates.

Percentage of commodity group revenues	2020	2019
Finished vehicles	92 %	93 %
Auto parts	8 %	7 %

Other revenues

	<i>Year ended December 31,</i>	2020	2019	% Change	% Change at constant currency
Revenues (<i>millions</i>)	\$	601	\$ 719	(16%)	(17%)

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, 2020, Other revenues decreased by \$118 million, or 16%, when compared to 2019, mainly due to lower revenues from vessels and automotive logistics due to the COVID-19 pandemic.

Percentage of other revenues	2020	2019
Vessels and docks	45 %	47 %
Other non-rail services	46 %	44 %
Other revenues	9 %	9 %

Management's Discussion and Analysis

Operating expenses

Operating expenses for the year ended December 31, 2020, amounted to \$9,042 million compared to \$9,324 million in 2019. The decrease of \$282 million, or 3%, was mainly due to lower fuel and labor costs and decreased purchased services and material expense; partly offset by a loss on assets held for sale, resulting from the Company's decision to market for sale for on-going rail operations, certain non-core lines.

<i>In millions</i>	<i>Year ended December 31,</i>	2020	2019	% Change	% Change at constant currency
Labor and fringe benefits	\$	2,723	\$ 2,922	7%	7%
Purchased services and material		2,152	2,267	5%	5%
Fuel		1,152	1,637	30%	30%
Depreciation and amortization		1,589	1,562	(2%)	(1%)
Equipment rents		432	444	3%	4%
Casualty and other		508	492	(3%)	(2%)
Loss on assets held for sale		486	—	N/A	N/A
<i>Total operating expenses</i>	\$	9,042	\$ 9,324	3%	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 decreased by \$199 million, or 7%, in 2020 when compared to 2019. The decrease was primarily due to lower average headcount and the impact of the 2019 employee termination benefits and severance costs related to a workforce reduction program; partly offset by general wage increases, higher incentive compensation, and higher pension expense.

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 decreased by \$115 million, or 5%, in 2020 when compared to 2019. The decrease was mainly due to lower costs for services purchased from outside contractors and lower material costs, driven by lower volumes.

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 \$485 million, or 30%, in 2020 when compared to 2019. The decrease was primarily due to the favorable impact of lower fuel prices, lower volumes due to decreased workload, as measured by GTMs, as well as fuel efficiency gains, achieving a new record fuel efficiency.

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 \$27 million, or 2%, in 2020 when compared to 2019. The increase was mainly due to a higher depreciable asset base resulting from increased capital expenditures in recent years, partly offset by the impact of the 2019 expense of \$84 million related to costs previously capitalized for a PTC back office system following the deployment of a replacement system.

Management's Discussion and Analysis

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 \$12 million, or 3%, in 2020 when compared to 2019. The decrease was primarily due to lower rail car lease costs driven by lower volumes, as well as lower car hire expense; partly offset by higher locomotive horsepower-hour expense.

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 \$16 million, or 3%, in 2020 when compared to 2019. The increase was mainly due to lower recoveries of costs from passenger trains using CN's system and higher property taxes, partly offset by lower travel expenses and legal provisions.

Loss on assets held for sale

In the second quarter of 2020, the Company recorded a loss of \$486 million on assets held for sale, resulting from the Company's decision to market for sale for on-going rail operations, certain non-core lines in Wisconsin, Michigan and Ontario. See *Note 5 - Assets held for sale* to the Company's 2020 Annual Consolidated Financial Statements for information on the valuation of assets held for sale.

Other income and expenses

Interest expense

In 2020, Interest expense was \$554 million compared to \$538 million in 2019. The increase was mainly due to a higher average level of debt, partly offset by a lower weighted-average interest rate.

Other components of net periodic benefit income

In 2020, Other components of net periodic benefit income was \$315 million compared to \$321 million in 2019. The decrease was mainly due to higher amortization of net actuarial loss, partly offset by lower interest cost.

Other income

In 2020, Other income was \$6 million compared to \$53 million in 2019, primarily due to lower gains on sale of land.

Income tax expense

The enactment of the Tax Cuts and Jobs Act ("U.S. Tax Reform") in 2017 brought about significant tax law changes, which included a reduction to the U.S. federal corporate income tax rate from 35% to 21% and allowed the immediate capital expensing of new investments in certain qualified depreciable assets which will be phased down starting in 2023. The U.S. Tax Reform also introduced the creation of a 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 Reforms, 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 also expected to impact the Company's income tax provisions and tax payments in future years.

On March 27, 2020, the U.S. government enacted the CARES Act, which included corporate income tax measures allowing U.S. federal net operating losses (NOLs) arising in tax years 2018, 2019, and 2020 to be fully carried back to each of the five tax years preceding the tax year of the NOL.

In 2020, the Company recorded an income tax expense of \$982 million compared to an income tax expense of \$1,213 million in 2019. Included in the 2020 figure was a current income tax recovery of \$141 million recorded in the first quarter, resulting from the enactment of the CARES Act; the Company reclassified its 2019 deferred income tax asset of \$213 million on the NOL that arose in 2019, to a current income tax receivable and recorded a current income tax recovery of \$141 million to reflect an amount recoverable at the higher U.S. federal corporate income tax rate of 35% applicable to pre-2018 tax years. 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 2020 was 21.6% compared to 22.3% in 2019. Excluding the aforementioned income tax recoveries, the effective tax rate for 2020 was 24.7% compared to 24.4% in 2019.

For 2021, the Company anticipates the estimated annual effective tax rate to be approximately 25.0%.

Management's Discussion and Analysis

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 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.

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).

Revenues

<i>In millions, unless otherwise indicated</i>	<i>Year ended December 31,</i>				<i>% Change</i>	<i>% Change at constant currency</i>
	2019	2018				
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) (<i>millions</i>)	241,954	248,383		(3%)	(3%)	
Freight revenue/RTM (<i>cents</i>)	5.87	5.45		8%	6%	
Carloads (<i>thousands</i>)	5,912	5,976		(1%)	(1%)	
Freight revenue/carload (<i>\$</i>)	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.

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In 2019, RTMs 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%

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.

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%)

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.

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%)

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.

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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%)

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.

Grain 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%)

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.

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%)

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.

Management's Discussion and Analysis

Automotive

	Year ended December 31,				% Change at constant currency
	2019	2018		% Change	
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%

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.

Other revenues

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

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.

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,				% Change at constant currency
	2019	2018		% Change	
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 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 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.

Management's Discussion and Analysis

Fuel

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 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 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 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.

Management's Discussion and Analysis

Summary of quarterly financial data

In millions, except per share data	2020 Quarters				2019 Quarters			
	Fourth	Third	Second	First	Fourth	Third	Second	First
Revenues	\$ 3,656	\$ 3,409	\$ 3,209	\$ 3,545	\$ 3,584	\$ 3,830	\$ 3,959	\$ 3,544
Operating income ⁽¹⁾	\$ 1,411	\$ 1,366	\$ 785	\$ 1,215	\$ 1,218	\$ 1,613	\$ 1,682	\$ 1,080
Net income ⁽¹⁾	\$ 1,021	\$ 985	\$ 545	\$ 1,011	\$ 873	\$ 1,195	\$ 1,362	\$ 786
Basic earnings per share ⁽¹⁾	\$ 1.44	\$ 1.39	\$ 0.77	\$ 1.42	\$ 1.22	\$ 1.66	\$ 1.89	\$ 1.08
Diluted earnings per share ⁽¹⁾	\$ 1.43	\$ 1.38	\$ 0.77	\$ 1.42	\$ 1.22	\$ 1.66	\$ 1.88	\$ 1.08
Dividends per share	\$ 0.5750	\$ 0.5750	\$ 0.5750	\$ 0.5750	\$ 0.5375	\$ 0.5375	\$ 0.5375	\$ 0.5375

(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, competitive forces in the transportation marketplace and the effects of the COVID-19 pandemic beginning in the second quarter of 2020 (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 2020

Fourth quarter 2020 net income was \$1,021 million, an increase of \$148 million, or 17%, when compared to the same period in 2019, and diluted earnings per share increased by 17% to \$1.43.

Operating income for the quarter ended December 31, 2020 increased by \$193 million, or 16%, to \$1,411 million, when compared to the same period in 2019. The increase mainly reflects lower fuel costs, freight rate increases and the impact of the November 2019 conductor strike; partly offset by lower applicable fuel surcharge rates. The operating ratio was 61.4% in the fourth quarter of 2020 compared to 66.0% in the fourth quarter of 2019.

Revenues for the fourth quarter of 2020 increased by \$72 million, or 2%, to \$3,656 million, when compared to the same period in 2019. The increase was mainly attributable to record shipments of Canadian grain, increased shipments of U.S. grain, higher international container traffic via the Port of Vancouver and freight rate increases; partly offset by lower applicable fuel surcharge rates and lower volumes of petroleum crude. Fuel surcharge revenues decreased by \$92 million in the fourth quarter of 2020, mainly due to lower applicable fuel surcharge rates. RTMs in the fourth quarter of 2020 increased by 10% when compared to the same period in 2019. Freight revenue per RTM decreased by 6% in the fourth quarter of 2020 when compared to the same period in 2019, mainly driven by an increase in the average length of haul, changes in business mix and lower applicable fuel surcharge rates; partly offset by freight rate increases.

Operating expenses for the fourth quarter of 2020 decreased by \$121 million, or 5%, to \$2,245 million, when compared to the same period in 2019. The decrease was mainly due to lower fuel costs as well as lower purchased services and materials expense.

Management's Discussion and Analysis

Financial position

The following tables provide an analysis of the Company's balance sheet as at December 31, 2020 as compared to 2019. 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, 2020 and 2019, the foreign exchange rates were \$1.2725 and \$1.2990 per US\$1.00, respectively.

<i>In millions</i>	<i>December 31,</i>	2020	2019	Variance	Explanation of variance
Total assets	\$	44,804	\$ 43,784	\$ 1,020	
Cash and cash equivalents and restricted cash and cash equivalents		1,100	588	512	Refer to the Consolidated Statements of Cash Flows of the Company's 2020 Annual Consolidated Financial Statements.
Other current assets, excluding cash and cash equivalents and restricted cash and cash equivalents		2,002	2,242	(240)	Decrease primarily due to a \$159 million decrease in accounts receivable and a \$134 million decrease in income taxes receivable, partly offset by \$90 million of assets classified as held for sale.
Properties		40,069	39,669	400	See the section of this MD&A entitled <i>Liquidity and capital resources - Investing activities</i> , increase primarily due to property additions of \$2,863 million, partly offset by depreciation of \$1,583 million, assets held for sale of \$576 million and foreign exchange of \$368 million.
Operating lease right-of-use-assets		435	520	(85)	Decrease primarily due to the return of leases that were coming to maturity in 2020.
Pension asset		777	336	441	Increase primarily due to actual returns and employer contributions, partly offset by actuarial losses arising from the reduction in the year-end discount rate from 3.10% to 2.55%, as well as interest cost and service cost.
Intangible assets, goodwill and other		421	429	(8)	Decrease primarily due to the amortization of intangibles and the change in fair value of the net assets acquired in the 2019 acquisition of TransX which resulted in a decrease to goodwill.
Total liabilities and Shareholders' equity	\$	44,804	\$ 43,784	\$ 1,020	
Accounts payable and other excluding current portion of operating lease liabilities		2,257	2,235	22	Increase primarily due to a long term deferred revenue contract classified as short term, partly offset by an overall decrease in various accruals.
Deferred income taxes		8,271	7,844	427	Increase primarily due to a deferred income tax expense of \$487 million recorded in Net income which included \$213 million from the enactment of the CARES Act, a deferred income tax expense of \$67 million recorded in Other comprehensive income, both of which were mostly attributable to new temporary differences generated during the year, partly offset by \$95 million in foreign exchange.
Other liabilities and deferred credits		534	634	(100)	Decrease mainly due to a long term deferred revenue contract classified as short term.
Pension and other postretirement benefits		767	733	34	Increase primarily due to actuarial losses arising from the decrease in year-end discount rates as well as interest cost, partly offset by actual returns.
Total long-term debt, including the current portion		12,906	13,796	(890)	See the section of this MD&A entitled <i>Liquidity and capital resources - Financing activities</i> , overall decrease primarily due to higher debt repayments than issuances in 2020, partly offset by \$203 million in foreign exchange.
Operating lease liabilities including the current portion		418	501	(83)	Decrease primarily due to the return of leases that were coming to maturity in 2020.
Total shareholders' equity		19,651	18,041	1,610	Refer to the Consolidated Statements of Changes in Shareholders' Equity of the Company's 2020 Annual Consolidated Financial Statements.

Management's Discussion and Analysis

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 unsecured revolving credit facilities, 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 instalments, 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, 2020 and 2019, the Company had Cash and cash equivalents of \$569 million and \$64 million, respectively; Restricted cash and cash equivalents of \$531 million and \$524 million, respectively; and a working capital deficit of \$172 million and \$1,457 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. Additional information is provided in *Note 12 – Leases* to the Company's 2020 Annual Consolidated Financial Statements.

Available financing sources

Shelf prospectus and registration statement

On February 11, 2020, the Company filed a new shelf prospectus with Canadian securities regulators and a registration statement with the United States Securities and Exchange Commission (SEC), pursuant to which CN may issue up to \$6.0 billion of debt securities in the Canadian and U.S. capital markets over the 25 months from the filing date. This shelf prospectus and registration statement replaced CN's previous shelf prospectus and registration statement that expired on March 13, 2020. On May 1, 2020, under its current shelf prospectus and registration statement, the Company issued US\$600 million (\$837 million) 2.45% Notes due 2050 in the U.S. capital markets, which resulted in net proceeds of \$810 million. As at December 31, 2020, the remaining capacity of this shelf prospectus and registration statement was \$5.2 billion. Access to the Canadian and U.S. capital markets under the shelf prospectus and registration statement is dependent on market conditions.

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 facilities

The Company has a revolving credit facility of \$2.0 billion that 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 provides for an additional \$500 million subject to the consent of individual lenders. The credit facility is available for general corporate purposes, including backstopping the Company's commercial paper programs. As at December 31, 2020 and 2019, the Company had no outstanding borrowings under this revolving credit facility.

Management's Discussion and Analysis

On March 27, 2020, the Company entered into a \$250 million one year revolving credit facility agreement. The credit facility is available for working capital and general corporate purposes and provides for borrowings at various interest rates, plus a margin. On May 19, 2020, the Company entered into a supplement to the original agreement to increase the credit facility to \$390 million. As at December 31, 2020, the Company had no outstanding borrowings under this revolving credit facility and there were no draws in 2020.

Non-revolving credit facility

The Company has a US\$300 million, non-revolving term loan credit facility agreement for financing or refinancing the purchase of equipment, which was available to be drawn upon through March 31, 2020. On March 27, 2020, the Company entered into loan supplements to the original agreement for an additional principal amount of US\$310 million, which is available to be drawn through March 31, 2021. Term loans made under this facility have a tenor of 20 years, bear interest at a variable rate, are repayable in equal quarterly instalments, are prepayable at any time without penalty, and are secured by rolling stock.

As at December 31, 2020, the Company had outstanding borrowings of US\$289 million (\$368 million) and had US\$310 million available under this non-revolving term loan facility. As at December 31, 2019, the Company had no outstanding borrowings and had US\$300 million available under this non-revolving term loan facility.

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. The maximum aggregate principal amount of commercial paper that could be issued is \$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, 2020 and 2019, the Company had total commercial paper borrowings of US\$44 million (\$56 million) and US\$983 million (\$1,277 million), respectively, presented in Current portion of long-term debt on the Consolidated Balance Sheets.

Accounts receivable securitization program

The Company has an agreement to sell an undivided co-ownership interest in a revolving pool of accounts receivable to unrelated trusts for maximum cash proceeds of \$450 million. On February 27, 2020, the Company extended the term of its agreement by two years to February 1, 2023. 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 facilities and commercial paper program, and/or access to capital markets.

As at December 31, 2020, the Company had no borrowings under the accounts receivable securitization program. As at December 31, 2019, the Company had borrowings under the accounts receivable securitization program 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 Sheets.

Bilateral letter of credit facilities

The Company has a series of committed and uncommitted bilateral letter of credit facility agreements. On June 11, 2020, the Company extended the maturity date of certain committed bilateral letter of credit facility agreements to April 28, 2023. 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, 2020, the Company had outstanding letters of credit of \$421 million (2019 - \$424 million) under the committed facilities from a total available amount of \$492 million (2019 - \$459 million) and \$165 million (2019 - \$149 million) under the uncommitted facilities.

As at December 31, 2020, included in Restricted cash and cash equivalents was \$424 million (2019 - \$429 million) and \$100 million (2019 - \$90 million) pledged as collateral under the committed and uncommitted bilateral letter of credit facilities, respectively.

Management's Discussion and Analysis

Additional information relating to the Company's financing sources is provided in Note 15 – Debt to the Company's 2020 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

The Company's credit ratings remained unchanged from 2019.

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

<i>In millions</i>	<i>Year ended December 31,</i>		<i>2020</i>		<i>2019</i>	<i>Variance</i>
Net cash provided by operating activities	\$	6,165	\$	5,923	\$	242
Net cash used in investing activities		(2,946)		(4,190)		1,244
Net cash used in financing activities		(2,707)		(1,903)		(804)
Effect of foreign exchange fluctuations on cash, cash equivalents, restricted cash, and restricted cash equivalents		–		(1)		1
<i>Net increase (decrease) in cash, cash equivalents, restricted cash, and restricted cash equivalents</i>		512		(171)		683
Cash, cash equivalents, restricted cash, and restricted cash equivalents, beginning of year		588		759		(171)
<i>Cash, cash equivalents, restricted cash, and restricted cash equivalents, end of year</i>	\$	1,100	\$	588	\$	512

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 in accordance with GAAP, as reported for the years ended December 31, 2020, 2019 and 2018, to the non-GAAP free cash flow presented herein:

<i>In millions</i>	<i>Year ended December 31,</i>		<i>2020</i>		<i>2019</i>	<i>2018</i>
Net cash provided by operating activities	\$	6,165	\$	5,923	\$	5,918
Net cash used in investing activities		(2,946)		(4,190)		(3,404)
<i>Net cash provided before financing activities</i>		3,219		1,733		2,514
<i>Adjustment: Acquisitions, net of cash acquired</i> ⁽¹⁾		8		259		–
<i>Free cash flow</i>	\$	3,227	\$	1,992	\$	2,514

(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.

Management's Discussion and Analysis

Operating activities

Net cash provided by operating activities increased by \$242 million in 2020 mainly due to lower income tax instalment payments and a U.S. tax refund received in 2020 as a result of the CARES Act, partly offset by lower earnings excluding non-cash items.

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, 2020 and 2019 of \$115 million and \$128 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 Company expects to make total cash contributions of approximately \$135 million for all pension plans in 2021.

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 17 – Pensions and other postretirement benefits* to the Company's 2020 Annual Consolidated Financial Statements.

Income tax payments

The Company is required to make scheduled instalment payments as prescribed by the tax authorities. In Canada, the Company's domestic jurisdiction, tax instalments 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 2020, net income tax payments were \$353 million (2019 - \$822 million). The decrease was mainly due to the \$329 million income tax refund received in the fourth quarter of 2020 related to the carryback of U.S. federal net operating losses permitted under the CARES Act, and lower required instalment payments in Canada.

For 2021, the Company's net income tax payments are expected to be approximately \$800 million. Excluding the aforementioned U.S. income tax refund, the increase is primarily due to higher required instalment payments in Canada.

Investing activities

Net cash used in investing activities decreased by \$1,244 million in 2020, mainly as a result of lower property additions in 2020 compared to the record 2019 capital expenditure program and the Company's acquisitions of TransX and H&R in 2019.

Property additions

<i>In millions</i>	<i>Year ended December 31,</i>		2020	2019
Track and roadway ⁽¹⁾		\$	1,842	\$ 2,262
Rolling stock			478	999
Buildings			103	87
Information technology			301	421
Other			139	310
<i>Gross property additions</i>			2,863	4,079
<i>Less: Finance leases ⁽²⁾</i>			–	214
<i>Property additions ⁽³⁾</i>		\$	2,863	\$ 3,865

(1) In 2020, approximately 76% (2019 - 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 2020 (2019 - 11%).

(2) Includes re-measurement of finance leases.

(3) Includes \$141 million associated with the U.S. federal government legislative PTC implementation in 2020 (2019 - \$227 million).

Disposal of property

In 2020 and 2019, there were no significant disposals of property. Additional information relating to disposals of property is provided in *Note 6 – Other income* to the Company's 2020 Annual Consolidated Financial Statements.

Acquisitions

On December 2, 2019, the Company acquired H&R for a total purchase price of \$105 million, consisting of \$95 million cash paid on the closing date and subsequent consideration of \$10 million mostly related to funds withheld for the indemnification of claims, of which \$2 million remains to be paid.

Management's Discussion and Analysis

The 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 now final.

The Company's Consolidated Balance Sheets include 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 and 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 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 \$134 million and goodwill of \$58 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 now final.

The Company's Consolidated Balance Sheets include 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 2020 Annual Consolidated Financial Statements.

2021 Capital expenditure program

In 2021, 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, as well as bridge improvements and other general asset maintenance;
- \$1.2 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; and
- \$0.2 billion on equipment capital expenditures, 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 491 new grain hopper cars in the first quarter of 2021.

Financing activities

Net cash used in financing activities increased by \$804 million in 2020, primarily driven by higher net repayment of debt; partly offset by lower repurchases of common shares.

Debt financing activities

Debt financing activities in 2020 included the following:

- On May 1, 2020, issuance of US\$600 million (\$837 million) 2.45% Notes due 2050 in the U.S. capital markets, which resulted in net proceeds of \$810 million;
- On February 3, 2020, repayment of US\$300 million (\$397 million) 2.40% Notes due 2020 upon maturity;
- On February 3, 2020, issuance of US\$300 million (\$397 million) equipment loan under the non-revolving credit facility;
- On December 1, 2020, issuance of US\$25 million (\$32 million) equipment loan;
- Repayment of equipment loan under the non-revolving credit facility of \$15 million;
- Net repayment of commercial paper of \$1,273 million;
- Proceeds from borrowings under the accounts receivable securitization program of \$450 million;
- Repayment of borrowings under the accounts receivable securitization program of \$650 million;
- Proceeds from borrowings under revolving credit facility agreement of \$100 million;
- Repayment of borrowings under revolving credit facility agreement of \$100 million; and
- Repayment of finance leases of \$59 million.

Management's Discussion and Analysis

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 borrowings under the accounts receivable securitization program of \$420 million;
- Repayment of borrowings under the accounts receivable securitization program of \$220 million; and
- Repayment of finance leases of \$162 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 15 – Debt* to the Company's 2020 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 Toronto Stock Exchange (TSX). The Company repurchased 2.0 million common shares under its NCIB effective between February 1, 2020 and January 31, 2021, which allowed for the repurchase of up to 16.0 million common shares.

Previous NCIBs allowed for the repurchase of up to 22.0 million common shares between February 1, 2019 and January 31, 2020, and up to 5.5 million common shares between October 30, 2018 and January 31, 2019.

The following table provides the information related to the share repurchases for the years ended December 31, 2020, 2019 and 2018:

<i>In millions, except per share data</i>	<i>Year ended December 31,</i>		2020	2019	2018	Total NCIB
February 2020 - January 2021 NCIB						
Number of common shares			2.0	N/A	N/A	2.0
Weighted-average price per share ⁽¹⁾	\$		113.56	N/A	N/A	\$ 113.56
Amount of repurchase ⁽¹⁾	\$		226	N/A	N/A	\$ 226
February 2019 - January 2020 NCIB						
Number of common shares			1.3	12.8	N/A	14.1
Weighted-average price per share ⁽¹⁾	\$		122.38	\$ 120.03	N/A	\$ 120.24
Amount of repurchase ⁽¹⁾	\$		153	\$ 1,547	N/A	\$ 1,700
October 2018 - January 2019 NCIB						
Number of common shares			N/A	1.5	2.6	4.1
Weighted-average price per share ⁽¹⁾			N/A	\$ 106.78	\$ 109.92	\$ 108.82
Amount of repurchase ⁽¹⁾			N/A	\$ 153	\$ 293	\$ 446
Total for the year						
Number of common shares			3.3	14.3	19.0 ⁽²⁾	
Weighted-average price per share ⁽¹⁾	\$		116.97	\$ 118.70	\$ 104.99 ⁽²⁾	
Amount of repurchase ⁽¹⁾	\$		379	\$ 1,700	\$ 2,000 ⁽²⁾	

(1) Includes brokerage fees.

(2) Includes 2018 repurchases from the October 2017 - October 2018 NCIB, which consisted of 16.4 million common shares, a weighted-average price per share of \$104.19 and an amount of repurchase of \$1,707 million.

On January 26, 2021, the Board of Directors of the Company approved a new NCIB, which allows for the repurchase of up to 14 million common shares between February 1, 2021 and January 31, 2022. The Company expects to resume its share repurchases in the first quarter of 2021 under the new NCIB.

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.

Management's Discussion and Analysis

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 18 – Share capital* to the Company's 2020 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 and the ESIP for the years ended December 31, 2020, 2019 and 2018:

<i>In millions, except per share data</i>	<i>Year ended December 31,</i>		2020		2019		2018	
Share purchases by Share Units Plan Share Trusts								
Number of common shares			–		–			0.4
Weighted-average price per share	\$		–	\$	–	\$		104.87
Amount of purchase	\$		–	\$	–	\$		38
Share purchases by ESIP Share Trusts								
Number of common shares			0.1		0.3			N/A
Weighted-average price per share	\$		123.03	\$	118.83			N/A
Amount of purchase	\$		14	\$	33			N/A
Total purchases	\$		14	\$	33	\$		38

<i>In millions, except per share data</i>	<i>Year ended December 31,</i>		2020		2019		2018	
Share settlements by Share Units Plan Share Trusts								
Number of common shares			0.4		0.5			0.4
Weighted-average price per share	\$		88.23	\$	88.23	\$		84.53
Amount of settlement	\$		35	\$	45	\$		31
Share settlements by ESIP Share Trusts								
Number of common shares			0.2		–			N/A
Weighted-average price per share	\$		118.04	\$	–			N/A
Amount of settlements	\$		27	\$	–			N/A
Total settlements	\$		62	\$	45	\$		31

Dividends paid

During 2020, the Company paid quarterly dividends of \$0.5750 per share amounting to \$1,634 million, compared to \$1,544 million, at the rate of \$0.5375 per share, in 2019. For 2021, the Company's Board of Directors approved an increase of 7% to the quarterly dividend to common shareholders, from \$0.5750 per share in 2020 to \$0.6150 per share in 2021.

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, 2020:

<i>In millions</i>	Total	2021	2022	2023	2024	2025	2026 & thereafter
Debt obligations ⁽¹⁾	\$ 12,832	\$ 840	\$ 329	\$ 203	\$ 459	\$ 364	\$ 10,637
Interest on debt obligations	9,824	518	500	486	478	465	7,377
Finance lease obligations ⁽²⁾	75	71	1	–	–	–	3
Operating lease obligations ⁽³⁾	464	118	84	61	41	35	125
Purchase obligations ⁽⁴⁾	1,324	962	128	124	55	54	1
Other long-term liabilities ⁽⁵⁾	696	66	54	48	40	53	435
Total contractual obligations	\$ 25,215	\$ 2,575	\$ 1,096	\$ 922	\$ 1,073	\$ 971	\$ 18,578

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

(2) Includes \$1 million of imputed interest.

(3) Includes \$70 million related to renewal options reasonably certain to be exercised and \$46 million of imputed interest.

(4) Includes fixed and variable commitments for rail, wheels, information technology services and licenses, engineering services, locomotives, 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.

Management's Discussion and Analysis

Adjusted debt-to-adjusted EBITDA multiple

Management believes that the adjusted debt-to-adjusted 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 in accordance with GAAP, as reported for the years ended December 31, 2020, 2019 and 2018, to the adjusted measures presented herein, which have been used to calculate the non-GAAP adjusted debt-to-adjusted EBITDA multiple:

<i>In millions, unless otherwise indicated</i>	<i>As at and for the year ended December 31,</i>		
	2020	2019	2018
Debt	\$ 12,906	\$ 13,796	\$ 12,569
<i>Adjustments:</i>			
Operating lease liabilities, including current portion ⁽¹⁾	418	501	579
Pension plans in deficiency	553	521	477
Adjusted debt	\$ 13,877	\$ 14,818	\$ 13,625
Net income	\$ 3,562	\$ 4,216	\$ 4,328
Interest expense	554	538	489
Income tax expense	982	1,213	1,354
Depreciation and amortization	1,589	1,562	1,329
EBITDA	6,687	7,529	7,500
<i>Adjustments:</i>			
Loss on assets held for sale	486	—	—
Other income	(6)	(53)	(376)
Other components of net periodic benefit income	(315)	(321)	(302)
Operating lease cost ⁽¹⁾	143	171	218
Adjusted EBITDA	\$ 6,995	\$ 7,326	\$ 7,040
Adjusted debt-to-adjusted EBITDA multiple (times)	1.98	2.02	1.94

(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 Note 12 - Leases to the Company's 2020 Annual Consolidated Financial Statements 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.

Management's Discussion and Analysis

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, 2020, the Company has not recorded a liability with respect to guarantees and indemnifications. Additional information relating to guarantees and indemnifications is provided in *Note 21 – Major commitments and contingencies* to the Company's 2020 Annual Consolidated Financial Statements.

Outstanding share data

As at February 1, 2021, the Company had 710.3 million common shares and 4.3 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 revolving credit facilities, 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.

Management's Discussion and Analysis

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, 2020, the Company had outstanding foreign exchange forward contracts with a notional value of US\$397 million (2019 - US\$1,088 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, 2020, the Company recorded a loss of \$3 million (2019 - loss of \$75 million; 2018 - gain of \$157 million), related to foreign exchange forward contracts. These gains and losses were largely offset by the re-measurement of US dollar-denominated monetary assets and liabilities recognized in Other income. As at December 31, 2020, the fair value of outstanding foreign exchange forward contracts included in Other current assets and Accounts payable and other was \$nil and \$18 million, respectively (2019 - \$nil and \$24 million, 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 due to their short maturity, unless otherwise specified. The fair value of derivative financial instruments, included in Other current assets and Accounts payable and other is classified as Level 2 and is used to manage the Company's exposure to foreign currency risk. The fair value is measured by discounting future cash flows using a discount rate derived from market data for financial instruments subject to similar risks and maturities.

Management's Discussion and Analysis

The fair value of assets held for sale, included in Other current assets is classified as Level 3. Additional disclosures are provided in *Note 5 – Assets held for sale* to the Company's 2020 Annual Consolidated Financial Statements.

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, 2020, the Company's debt, excluding finance leases, had a carrying amount of \$12,832 million (2019 - \$13,662 million) and a fair value of \$16,046 million (2019 - \$15,667 million).

Recent accounting pronouncements

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

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 Company adopted this standard in the first quarter of 2020 with an effective date of January 1, 2020. The adoption of this standard did not have an impact on the Company's Consolidated Financial Statements, other than the update to the Accounts receivable accounting policy in *Note 1 - Summary of significant accounting policies* to the Company's 2020 Annual Consolidated Financial Statements.

The following recent ASU issued by FASB came into effect during the current year and has not been adopted by the Company:

ASU 2020-04 Reference rate reform (Topic 848): Facilitation of the effects of reference rate reform on financial reporting

London Interbank Offered Rate (LIBOR) is a benchmark interest rate referenced in a variety of agreements that are used by all types of entities. At the end of 2021, banks will no longer be required to report information that is used to determine LIBOR. As a result, LIBOR could be discontinued. Other interest rates used globally could also be discontinued for similar reasons.

The ASU provides optional expedients and exceptions for applying generally accepted accounting principles to transactions affected by reference rate reform if certain criteria are met. These transactions include contract modifications, hedging relationships, and sale or transfer of debt securities classified as held-to-maturity.

The provisions of the ASU are effective starting on March 12, 2020; however, they will only be available until December 31, 2022, when the reference rate replacement activity is expected to be completed. The Company may apply the provisions of the ASU as of the beginning of a reporting period when the elections are made, or prospectively from the date within an interim period that includes or is subsequent to March 12, 2020. The Company currently has outstanding loans and finance lease obligations referencing LIBOR totaling approximately US\$325 million that would be affected by the provisions of this ASU. The Company is evaluating the effects that the adoption of the ASU will have on its Consolidated Financial Statements and related disclosures, and whether it will elect to apply any of the optional expedients and exceptions provided in the ASU.

The following recent ASU issued by FASB has an effective date after December 31, 2020 and has 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 has evaluated the effects that the adoption of the ASU will have on its Consolidated Financial Statements and has concluded it will not have a significant impact.

Other recently issued ASUs required to be applied for periods beginning on or after January 1, 2021 have been evaluated by the Company and are not expected to 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 2020 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, 2020, in order to fully realize all of the deferred income tax assets, the Company will need to generate future taxable income of approximately \$2.7 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.

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, 2020, the total amount of gross unrecognized tax benefits was \$92 million, before considering tax treaties and other arrangements between taxation authorities. The amount of net unrecognized tax benefits as at December 31, 2020 was \$67 million. If recognized, \$16 million of the net unrecognized tax benefits as at December 31, 2020 would affect the effective tax rate. The Company believes that it is reasonably possible that \$15 million of the net unrecognized tax benefits as at December 31, 2020 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 the pension liability, lease liabilities, net operating losses and tax credit carryforwards, 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, the pension asset and operating lease right-of-use assets. 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 \$169 million and \$141 million in 2020, respectively.

For the year ended December 31, 2020, the Company recorded an income tax expense of \$982 million, of which \$487 million was a deferred income tax expense. The current income tax expense included a recovery of \$141 million resulting from the enactment of the CARES

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Act. 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 total income tax expense of \$1,354 million, of which \$527 million was a deferred income tax expense. The Company's net deferred income tax liability as at December 31, 2020 was \$8,271 million (2019 - \$7,844 million). Additional disclosures are provided in *Note 7 – Income taxes* to the Company's 2020 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 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 \$63 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 2020, the Company completed depreciation studies for equipment properties and as a result, the Company changed the estimated service lives for various types of equipment 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, 2020, the Company recorded total depreciation expense of \$1,583 million (2019 - \$1,559 million; 2018 - \$1,327 million). As at December 31, 2020, the Company had Properties of \$40,069 million, net of accumulated depreciation of \$14,443 million (2019 - \$39,669 million, net of accumulated depreciation of \$13,912 million). Additional disclosures are provided in *Note 11 – Properties* to the Company's 2020 Annual Consolidated Financial Statements.

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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, 2020, and 2019:

<i>In millions</i>	<i>December 31,</i>		2020		2019
Pension asset		\$	777	\$	336
Pension liability		\$	553	\$	521
Other postretirement benefits liability		\$	228	\$	227

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, 2020, 2019 and 2018, the consolidated net periodic benefit cost (income) for pensions and other postretirement benefits were as follows:

<i>In millions</i>	<i>Year ended December 31,</i>		2020		2019		2018
Net periodic benefit income for pensions		\$	(141)	\$	(183)	\$	(139)
Net periodic benefit cost for other postretirement benefits		\$	3	\$	7	\$	9

As at December 31, 2020 and 2019, the projected pension benefit obligation and accumulated other postretirement benefit obligation were as follows:

<i>In millions</i>	<i>December 31,</i>		2020		2019
Projected pension benefit obligation		\$	19,499	\$	18,609
Accumulated other postretirement benefit obligation		\$	228	\$	227

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 2.55% based on bond yields prevailing at December 31, 2020 (2019 - 3.10%) 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

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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, 2020, a 0.25% decrease in the 2.55% discount rate used to determine the projected benefit obligation would have resulted in a decrease of approximately \$640 million to the funded status for pensions and would result in a decrease of approximately \$20 million to the 2021 projected net periodic benefit income. A 0.25% increase in the discount rate would have resulted in an increase of approximately \$610 million to the funded status for pensions and would result in an increase of approximately \$20 million to the 2021 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 2020, 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 2021, the Company will decrease the expected long-term rate of return on plan assets by 25 basis points to 6.75% 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 2020, the Policy was amended to implement a target asset allocation change to cash and short-term investments, and bonds and mortgages. These changes were taken into account in the determination of the Company's expected long-term rate of return assumption. In 2020, the Policy was: 2% cash and short-term investments, 41% bonds and mortgages, 1.5% emerging market debt, 1.5% private debt, 35% 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, to hedge and to 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:

	2020	2019	2018	2017	2016
Actual	12.5%	12.2%	(2.4%)	9.2%	4.4%
Market-related value	7.1%	6.1%	5.7%	9.1%	8.2%
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 2021

In 2021, the Company expects net periodic benefit income to be \$165 million (2020 - \$141 million) for all its defined benefit pension plans.

Management's Discussion and Analysis

Plan asset allocation

Based on the fair value of the assets held as at December 31, 2020, the assets of the Company's various plans are comprised of 3% in cash and short-term investments, 37% in bonds and mortgages, 2% in emerging market debt, 3% in private debt, 38% in equities, 2% in real estate, 3% in oil and gas, 3% in infrastructure, 10% in absolute return investments, 1% in alternative risk premia investments and negative 2% in investment-related liabilities. See Note 17 - Pensions and other postretirement benefits to the Company's 2020 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 2020, 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, 2020, 2019 and 2018.

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, 2019 indicated a funding excess on a going concern basis of approximately \$3.5 billion and a funding excess on a solvency basis of approximately \$0.6 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.

In November 2019, the OSFI proposed revisions to its Instruction guide for the Preparation of Actuarial Reports for Defined Benefit Pension Plans ("Guide"). In November 2020, the OSFI issued its revised Guide and informed stakeholders that some of the proposed revisions to the Guide affecting solvency valuations have been postponed until further review is conducted. If those proposed revisions were to be adopted as originally issued, they would affect actuarial valuations by reducing the solvency status of the Company's defined benefit pension plans, and could negatively impact the Company's pension funding requirements.

The Company's next actuarial valuations for funding purposes for its Canadian registered defined benefit pension plans required as at December 31, 2020 will be performed in 2021. These actuarial valuations are expected to identify a funding excess on a going concern basis of approximately \$3.4 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 2021. The Company expects cash from operations and its other sources of financing to be sufficient to meet its 2021 funding obligations.

Management's Discussion and Analysis

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:

<i>In millions</i>	<i>December 31, 2020</i>	CN Pension Plan	BC Rail Pension Plan	U.S. and other plans	Total
Plan assets by category					
Cash and short-term investments	\$	575	\$ 12	\$ 7	\$ 594
Bonds		6,655	391	171	7,217
Mortgages		21	—	—	21
Emerging market debt		398	6	2	406
Private debt		561	12	2	575
Public equities		7,034	113	134	7,281
Private equities		296	6	1	303
Real estate		371	8	2	381
Oil and gas		634	13	2	649
Infrastructure		557	11	3	571
Absolute return		1,851	30	8	1,889
Alternative risk premia		187	3	1	191
<i>Total investments</i>		19,140	605	333	20,078
Investment-related liabilities ⁽¹⁾		(432)	(7)	(2)	(441)
Other ⁽²⁾		66	4	16	86
<i>Total plan assets</i>	\$	18,774	\$ 602	\$ 347	\$ 19,723
Projected benefit obligation at end of year	\$	18,075	\$ 524	\$ 900	\$ 19,499
Company contributions in 2020	\$	70	\$ —	\$ 23	\$ 93
Employee contributions in 2020	\$	59	\$ —	\$ —	\$ 59

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

(2) Other consists of operating assets of \$262 million and liabilities of \$176 million required to administer the Trusts' investment assets and the plans' benefit and funding activities.

Additional disclosures are provided in Note 17 – Pensions and other postretirement benefits to the Company's 2020 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 2020, 2019 and 2018 the Company recorded a decrease of \$13 million and \$7 million, and an increase of \$4 million, respectively, to its provision for personal injuries in Canada as a result of actuarial valuations for employee injury claims.

Management's Discussion and Analysis

As at December 31, 2020, 2019 and 2018, the Company's provision for personal injury and other claims in Canada was as follows:

<i>In millions</i>	2020		2019		2018	
Beginning of year	\$	207	\$	207	\$	183
Accruals and other		31		29		52
Payments		(32)		(29)		(28)
<i>End of year</i>	\$	206	\$	207	\$	207
Current portion - End of year	\$	68	\$	55	\$	60

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 2020, the Company recorded a decrease of \$10 million to its provision for U.S. personal injury and other claims attributable to non-occupational disease claims, third-party claims and occupational disease claims pursuant to the 2020 actuarial valuation. In 2019 and 2018, actuarial valuations resulted in an increase of \$2 million and \$13 million, respectively. The prior years' adjustments from the actuarial valuations were mainly attributable to third-party claims, non-occupational disease 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, 2020, 2019 and 2018, the Company's provision for personal injury and other claims in the U.S. was as follows:

<i>In millions</i>	2020		2019		2018	
Beginning of year	\$	145	\$	139	\$	116
Accruals and other		28		44		41
Payments		(29)		(31)		(28)
Foreign exchange		(3)		(7)		10
<i>End of year</i>	\$	141	\$	145	\$	139
Current portion - End of year	\$	41	\$	36	\$	37

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 would result in an increase or decrease in the liability recorded of approximately \$1 million and 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 \$3 million.

Management's Discussion and Analysis

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, 2020, 2019 and 2018, the Company's provision for specific environmental sites was as follows:

<i>In millions</i>	2020	2019	2018
Beginning of year	\$ 57	\$ 61	\$ 78
Accruals and other	44	31	16
Payments	(42)	(34)	(34)
Foreign exchange	—	(1)	1
End of year	\$ 59	\$ 57	\$ 61
Current portion - End of year	\$ 46	\$ 38	\$ 39

The Company anticipates that the majority of the liability at December 31, 2020 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.

Management's Discussion and Analysis

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, 2020 amounted to \$25 million (2019 - \$25 million; 2018 - \$22 million). For 2021, the Company expects to incur operating expenses relating to environmental matters in the same range as 2020. 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, 2020 amounted to \$20 million (2019 - \$25 million; 2018 - \$19 million). For 2021, the Company expects to incur capital expenditures relating to environmental matters in the same range as 2020.

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.

Pandemic risk and economic downturn

Severe disruptions in regional economies and the world economy can be caused by the outbreak of a contagious illness, such as the current COVID-19 pandemic. The transmission of COVID-19 and efforts to contain its spread have resulted in international, national and local border closings, travel restrictions, significant disruptions to business operations, supply chains, customer activity and demand, service cancellations, reductions and other changes, significant challenges in healthcare service preparation and delivery, and quarantines, as well as considerable general concern and uncertainty, all of which have negatively affected the economic environment and may in the future have further and larger impacts. It is not possible to predict what additional measures and restrictions will be imposed by governmental authorities and the period in time during which those measures and restrictions will apply. Prolonged border closings and economic and supply chain disruptions could further materially affect the Company's financial results and operations. The COVID-19 pandemic could also further and significantly impact freight demand and commodity prices in connection with the ensuing economic downturn, supply shortages, trade disruption, temporary staff shortages and temporary closures of facilities in geographic locations more importantly impacted by the outbreak. The scope and severity of such disruptions and their impact on the Company's financial results and operations have been, and are expected to continue to be material.

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.

Management's Discussion and Analysis

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 in general, 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, 2020, 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.

Management's Discussion and Analysis

Labor negotiations

As at December 31, 2020, CN employed a total of 17,645 employees in Canada, of which 12,585, or 71%, were unionized employees and 6,736 employees in the U.S., of which 5,624, or 83%, 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

There are no material collective agreements in Canada that are open for negotiation at this time. 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 February 1, 2021, 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 agreements in place have various moratorium provisions, which preserve the status quo with respect to 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, with the exception of two employee groups working at PCD covering fewer than 35 employees. The next national bargaining round has commenced.

Regulation

In order to facilitate the continued movement of goods during the COVID-19 pandemic, regulatory agencies in the U.S. and Canada have issued waivers or exemptions to railway companies providing relief from the strict application of some regulations. These reliefs were provided to facilitate social distancing and compliance with other constraints associated with the COVID-19 pandemic that would prevent railways from complying with requirements in a manner consistent with existing provisions.

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 *Passenger Rail Investment and Improvement Act of 2008* (PRIIA) required Amtrak and the Federal Railroad Administration (FRA) to jointly promulgate the PRIIA performance standards. The prior metrics were vacated and the arbitration provision in the statute was severed by the U.S. Court of Appeals for the District of Columbia. On November 16, 2020, the FRA adopted metrics for measuring performance. As part of PRIIA, U.S. Congress authorized the STB to investigate any railroad over whose track Amtrak operates that fails to meet the performance standards under PRIIA and the STB is authorized to assess damages against the host railroad.

Management's Discussion and Analysis

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, which was concluded in January 2020. This case remains pending at the STB.

On April 30, 2020, the STB adopted a final rule and policy statement relating to demurrage and proposed supplemental rules relating to demurrage invoices.

On June 23, 2020, the STB withdrew its proposal to change its existing methodology for determining the rail industry's cost of capital.

On August 3, 2020, the STB issued a final rule to adopt a streamlined approach for pleading market dominance in a case challenging the reasonableness of a railroad's rate. Several shipper associations have sought reconsideration.

On September 30, 2020, the STB requested public comment concerning a new proposed approach that could be used to consider whether to revoke existing commodity exemptions and instead subject those commodities to STB regulation.

On November 25, 2020, the STB announced that it is instituting a rulemaking on a proposal by five Class I railroads to modify the STB's rules to create a new, voluntary small rate case arbitration program.

On December 30, 2020, the STB instituted a rulemaking proceeding to consider a petition by three Class I railroads to change the Board's procedures for determining annually which Class I railroads are revenue adequate by examining the railroads in comparison to the performance of S&P 500 companies. The Board requested comments on the petition as well as responses to specific questions posed by the Board.

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 also subject 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 January 4, 2021, Transport Canada informed the public that it intends to modify the Grade Crossings Regulations so that low-risk crossings do not need to meet all requirements. Transport Canada also intends to extend the November 2021 deadline by one year for high-risk grade crossings and by three years for all other crossings.

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.

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 and 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 came into force on 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 came into force on June 1, 2020. CN is in compliance with these requirements.

On November 6, 2020, the Minister issued a new order restricting the speed of key trains carrying dangerous goods based on cold temperature conditions, instead of restricting their speed based on a winter date range as stated in the previously issued order on April 1, 2020. The maximum speed of the trains also depend on the safety measures implemented by railway companies to be detailed into a Winter Operation Risk Mitigation Plan and on the type of railway signal and traffic control systems present on the railway networks which take into account the substantial investments made to equip main line tracks with automated signaling technology, on which the vast majority of CN's traffic is handled. Considering that speed restrictions applicable to a single category of trains nevertheless affect the speed of all trains operating on a rail network, this revised approach will enable CN to maintain normal speed operations unless the conditions require speed restrictions in the interest of safety.

Management's Discussion and Analysis

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 it is fitted with prescribed recording instruments and the prescribed information is recorded, collected and preserved. These changes are not yet in force as the *Locomotive Voice and Video Recorder Regulations* ("LVVR Regulations") detailing their conditions were published by Transport Canada on September 2, 2020 but will only come into force two years later on September 2, 2022. The LVVR Regulations require railway companies to procure and install LVVR equipment within two years of coming into force. The LVVR Regulations also 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 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. The draft rules proposed by the Canadian rail industry were filed with the Minister on September 11, 2020. On November 25, 2020, the Minister approved the new *Duty and Rest Period Rules for Operating Employees* subject to conditions which clarified some aspects of the Rules. The majority of the provisions applicable to CN will come into effect on May 25, 2023.

On October 6, 2020, Transport Canada issued new *Passenger Rail Security Regulations*, with their provisions coming into force in sequence. These regulations 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 and security inspections by July 6, 2021, the designation of a rail security coordinator and security incident reporting by October 6, 2021 and security plan training and security exercises by January 6, 2022.

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. In 2019, CN initiated PTC revenue operation on its remaining subdivisions where PTC is required and began interoperability testing with tenant railroads. In 2020, the Company completed interoperability testing with tenant railroads that operate on the Company's PTC-equipped tracks pursuant to regulations. On June 29, 2020, CN submitted its Request for Amendment to the PTC Safety Plan. On November 18, 2020, CN submitted its Request for Amendment to its PTC Implementation Plan, as per FRA's request. On December 11, 2020, FRA approved CN's request and certified CN's PTC system. CN has completed the federal requirements to implement PTC by the deadline of December 31, 2020. Noncompliance with these or other laws and regulations may subject the Company to fines, penalties and/or service interruptions. PTC may result in reduced operational efficiency and service levels.

On February 18, 2020, the FRA issued a final rule that requires each Class I railroad and certain shortline railroads to develop a Railroad Risk Reduction Program in a written plan that will be reviewed and approved by the FRA and will be subject to audit. Written plans must be submitted by August 2021. On April 10, 2020, the AAR sought reconsideration from the FRA on certain aspects of the final rule. On May 8, 2020, the FRA denied AAR's request for reconsideration of the implementation deadlines. On November 16, 2020, the FRA decided the remaining issues in the requests for reconsideration and agreed to reconsider provisions of the rules relating to whether contractors would be deemed directly affected employees.

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.

Management's Discussion and Analysis

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, 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 cyclical 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.

Management's Discussion and Analysis

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.

In November 2019, the OSFI proposed revisions to its Instruction guide for the Preparation of Actuarial Reports for Defined Benefit Pension Plans ("Guide"). In November 2020, the OSFI issued its revised Guide and informed stakeholders that some of the proposed revisions to the Guide affecting solvency valuations have been postponed until further review is conducted. If those proposed revisions were to be adopted as originally issued, they would affect actuarial valuations by reducing the solvency status of the Company's defined benefit pension plans, and could negatively impact the Company's pension funding requirements.

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, hackers 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. and 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). On August 24, 2020, the WTO ruled that US duties on Canadian softwood lumber are inconsistent with the WTO obligations of the United States and on November 24, 2020, the US Department of Commerce concluded their first administrative review of Canadian lumber countervailing and antidumping duties, reducing the average rate of duties.

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. All three countries have ratified the agreement which came into force on July 1, 2020.

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.

Management's Discussion and Analysis

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, as well as 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 its own network, including illegal blockades, as well as of other transportation links such as ports and other railroads which interchange with the Company. A significant prolonged service disruption of CN's network or 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.

Management's Discussion and Analysis

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.

Management's Discussion and Analysis

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, 2020, have concluded that the Company's disclosure controls and procedures were effective.

During the fourth quarter ended December 31, 2020, 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, 2020, 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, 2020, and issued Management's Report on Internal Control over Financial Reporting dated February 1, 2021 to that effect.