



BUILDING AMERICA[®]

UNION PACIFIC CORPORATION
2022 ANNUAL REPORT ON FORM 10-K

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission File Number 1-6075

UNION PACIFIC CORPORATION

(Exact name of registrant as specified in its charter)

Utah

13-2626465

(State or other jurisdiction of incorporation or organization)

(I.R.S. Employer Identification No.)

1400 Douglas Street, Omaha, Nebraska

68179

(Address of principal executive offices)

(Zip Code)

Registrant's telephone number, including area code: **(402) 544-5000**

Securities registered pursuant to Section 12(b) of the Act:

<u>Title of each Class</u>	<u>Trading Symbol</u>	<u>Name of each exchange on which registered</u>
Common Stock (Par Value \$2.50 per share)	UNP	New York Stock Exchange

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

☒ Yes ☐ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

☐ Yes ☒ No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

☒ Yes ☐ No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

☒ Yes ☐ No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large Accelerated Filer	<input checked="" type="checkbox"/>	Accelerated Filer	<input type="checkbox"/>	Non-Accelerated Filer	<input type="checkbox"/>
Smaller Reporting Company	<input type="checkbox"/>	Emerging Growth Company	<input type="checkbox"/>		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

☐

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act).

☐ Yes ☒ No

As of June 30, 2022, the aggregate market value of the registrant's Common Stock held by non-affiliates (using the New York Stock Exchange closing price) was \$131.5 billion.

The number of shares outstanding of the registrant's Common Stock as of February 3, 2023, was 611,872,981.

Documents Incorporated by Reference – Portions of the registrant's definitive Proxy Statement for the Annual Meeting of Shareholders to be held on May 18, 2023, are incorporated by reference into Part III of this report. The registrant's Proxy Statement will be filed with the Securities and Exchange Commission (SEC) within 120 days after the end of the fiscal year that this report relates pursuant to Regulation 14A.

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Fellow Shareholders:

2022 was a foundational year for Union Pacific, building and executing on our long-term growth strategy. From numerous customer wins, to preparing for and onboarding a large intermodal customer, to strategic investments in our intermodal network and transload business, we took action to create long-term value. Those successes, however, were met with some significant short-term barriers – continued global supply chain disruptions, an elevated inflationary environment, record fuel prices, challenging labor markets, and an extended labor negotiation. All of those factors had a real impact on our ability to deliver a consistent and reliable service product to our customers in 2022. They also contributed to uneven financial results for the year.

In 2022, we reported record earnings per share of \$11.21, a 13% increase versus 2021. Total volumes increased 2% versus 2021, driven by strength in industrial and bulk markets offsetting continued supply chain challenges in our premium markets. Our operating ratio was a 60.1%, a 290-basis point deterioration versus 2021 driven by inflation, operational inefficiency, and higher fuel prices. For the full year, our average fuel price per gallon increased 64%. Also notable, was a \$92 million one-time charge recorded in the third quarter for new labor agreements.

Success at Union Pacific begins with safety. In 2022, we made progress on our personal injury safety metrics, improving 18% to a five-year low and lead the industry in employee safety. We will build upon this improvement by enhancing training programs and solidifying our safety culture through ownership and personal accountability on the path to achieving our goal of world-class safety performance. We need to expand our progress from personal injuries to derailments, where we have opportunity for improvement. The ultimate goal remains returning each employee home safely at the end of the day.

In 2021, we rolled out a strategic plan we call, “**Serve, Grow, Win – Together.**” And over the past two years, we have been executing on that long-term strategy. While our 2022 progress was mixed, we advanced our position towards long-term sustainable growth through targeted capital investments, emissions reduction programs, and by leveraging technology to improve our customer's experience.

Everything we do starts with **Serve** and delivering customer-centered operational excellence. In 2022, our service product did not meet expectations. Constrained crew bases in critical locations, elevated freight car inventory levels, and continued supply chain disruptions all played a role and impacted our ability to support customers and their needs. In 2022, freight car velocity deteriorated 6% versus 2021, lowering trip plan compliance for intermodal 6 points and manifest/automotive 4 points. Similarly, our efficiency measures were impacted as locomotive productivity declined 6% and workforce productivity and train length were flat. To address constrained crew bases, we hired and trained over 1,300 new transportation employees in 2022 and have almost 600 more in the training pipeline as we enter 2023. We also amplified our customer communications to provide clear expectations and leveraged continuous improvement efforts to address discrete service issues.

A key long-term initiative for Union Pacific is to reduce our carbon footprint for the benefit of all stakeholders. For the fourth consecutive year, we achieved a best-ever fuel consumption rate, improving 1% versus 2021. In addition, we increased our biodiesel blend to over 4.5%, on track toward our 2030 target of 20%. These efforts helped our customers eliminate over 23 million metric tons of greenhouse gas emissions by choosing Union Pacific versus truck.

We continue to make significant investments in our infrastructure to support our service product. In 2022, our capital program of approximately \$3.4 billion included completing 24 siding projects, finishing the Twin Cities, MN, intermodal terminal, further expanding the West Colton, CA, intermodal terminal, modernizing over 130 locomotives, and hardening our infrastructure.

These investments support the next tenet of our strategy – **Grow**. We have the best rail franchise in North America. Our growth is powered by providing products and services that meet our customers' needs. This includes providing new services for our customers and expanding our reach through new transload facilities and intermodal terminals, which our team translated into new business wins in 2022. And those business development wins will provide a tailwind in 2023 as we navigate an uncertain economy.



Growth is also dependent on a customer experience that constantly improves and evolves. Technology plays a key role. We're integrating deeper in our customers' systems and supply chains by being the industry leader in providing application programming interfaces (API), with over 70 services available being called on over 600,000 times a day.

Successful execution of our plans to "Serve" and "Grow" leads to **Win**. For our shareholders, winning means generating strong cash returns. In 2022, we paid dividends of \$3.2 billion, which included a 10% dividend increase in the second quarter. In addition, we repurchased 27 million Union Pacific shares, decreasing our full-year average share count 5%. Combining dividends and share repurchases, Union Pacific returned \$9.4 billion to our shareholders in 2022.

"Winning" extends to all UP's stakeholders, and the value we create for each of them, which is the final piece of our strategy – **Together**. We continue to evolve our comprehensive approach to Environmental, Social, and Governance issues as laid out in "Building a Sustainable Future 2030". Ultimately, we demonstrate our commitment to this through actions. In 2022, we announced our plans to purchase battery electric locomotives for use in yard operations, executed a three-year deal to modernize 600 additional locomotives starting in 2023, issued \$600 million in green bonds, and became the first U.S. railroad to formally support the Task Force on Climate-related Financial Disclosures (TCFD). Late in the year we were added to the Dow Jones Sustainability Index and included in the JUST Capital 100. Our momentum on sustainability is real and demonstrates our position as the rail leader in the space.

The entire Union Pacific team recognizes that we fell short of expectations in 2022. But, thanks to the hard work of our exceptional workforce, we are entering 2023 positioned for success. While the year ahead has some real challenges – an uncertain economy, higher cost structure, and stakeholder trust to rebuild – the Union Pacific team is again ready to rise to the occasion. Our fundamentals for long-term success have not changed. Powered by our best-in-industry employees and franchise, a strategy built for profitable growth, and a more efficient and reliable service product, Union Pacific is poised to do great things in 2023. We can't wait to prove it to you.

A handwritten signature in black ink, appearing to read "Jon M. Davidson".

Chairman, President, and Chief Executive Officer

DIRECTORS AND SENIOR MANAGEMENT

BOARD OF DIRECTORS

William J. DeLaney

Former Chief Executive Officer –
Sysco Corporation

Board Committees:

*Audit; Compensation and Benefits
(Chair)*

David B. Dillon

Former Chairman and CEO –
The Kroger Company

Board Committees: Audit

(Chair); Compensation and Benefits

Sheri H. Edison

Former Executive Vice President
and General Counsel – Amcor plc

*Board Committees: Compensation and
Benefits; Corporate*

*Governance, Nominating, and
Sustainability*

Teresa M. Finley

Former Chief Marketing and Business
Services Officer – United Parcel
Service, Inc.

*Board Committees: Compensation and
Benefits; Finance*

Lance M. Fritz

Chairman, President, and
Chief Executive Officer –
Union Pacific Corporation and
Union Pacific Railroad Company

Deborah C. Hopkins

Former Chief Executive Officer – Citi
Ventures and Former Chief Innovation
Officer – Citi

*Board Committees: Audit; Finance
(Chair)*

Jane H. Lute

Strategic Advisor – SICPA,
North America

*Board Committees: Audit; Corporate
Governance, Nominating,
and Sustainability*

Michael R. McCarthy

Chairman – McCarthy Group, LLC;
Co-Chairman – Bridges Trust Company
Lead Independent Director

Board Committees:

*Corporate Governance, Nominating,
and Sustainability (Chair); Finance*

Jose H. Villarreal

Retired Advisor – Akin, Gump,
Strauss, Hauer, & Feld, LLP

*Board Committees: Compensation and
Benefits; Corporate*

*Governance, Nominating, and
Sustainability*

Christopher J. Williams

Chairman – Siebert Williams
Shank & Co.

Board Committees: Audit; Finance

SENIOR MANAGEMENT*

Lance M. Fritz

Chairman, President, and Chief
Executive Officer

Prentiss W. Bolin, Jr.

Vice President – External Relations

Bryan L. Clark

Vice President – Tax

Eric J. Gehringer

Executive Vice President – Operations

Jennifer L. Hamann

Executive Vice President and Chief
Financial Officer

Rahul Jalali

Senior Vice President –
Information Technologies and Chief
Information Officer

Michael V. Miller

Vice President and Treasurer

Scott D. Moore

Senior Vice President –
Corporate Relations and Chief
Administrative Officer

Clark J. Ponthier

Senior Vice President – Supply
Chain and Continuous Improvement

Craig V. Richardson

Executive Vice President, Chief
Legal Officer, and Corporate
Secretary

Kenny G. Rucker

Executive Vice President –
Marketing and Sales

Todd M. Rynaski

Senior Vice President and Chief
Accounting, Risk, and Compliance
Officer

Elizabeth F. Whited

Executive Vice President –
Sustainability and Strategy

*Senior management are elected officers of both Union Pacific Corporation and Union Pacific Railroad Company, except Messrs. Gehringer, Ponthier, and Rucker are elected officers for Union Pacific Railroad Company.

PART I

Item 1. Business

GENERAL

Union Pacific Railroad Company is the principal operating company of Union Pacific Corporation. One of America's most recognized companies, Union Pacific Railroad Company connects 23 states in the western two-thirds of the country by rail, providing a critical link in the global supply chain. The Railroad's diversified business mix includes Bulk, Industrial, and Premium. Union Pacific serves many of the fastest-growing U.S. population centers, operates from all major West Coast and Gulf Coast ports to Eastern gateways, connects with Canada's rail systems, and is the only railroad serving all six major Mexico gateways. Union Pacific provides value to its roughly 10,000 customers by delivering products in a safe, reliable, fuel-efficient, and environmentally responsible manner.

Union Pacific Corporation was incorporated in Utah in 1969 and maintains its principal executive offices at 1400 Douglas Street, Omaha, NE 68179. The telephone number at that address is (402) 544-5000. The common stock of Union Pacific Corporation is listed on the New York Stock Exchange (NYSE) under the symbol "UNP".

For purposes of this report, unless the context otherwise requires, all references herein to "Union Pacific", "UPC", "Corporation", "Company", "we", "us", and "our" shall mean Union Pacific Corporation and its subsidiaries, including Union Pacific Railroad Company, which we separately refer to as "UPRR" or the "Railroad".

STRATEGY

The Company's growth strategy focuses on growing customer value through innovative supply chain solutions and aspiring to Serve, Grow, Win – Together.

Serve: Driving operational excellence to create a safer, more reliable, and efficient service product. Precision scheduled railroading (PSR) is the foundation for delivering customer-centered operational excellence by:

1. Shifting the focus of operations from moving trains to moving cars.
2. Minimizing car dwell, car classification events, and locomotive power requirements.
3. Utilizing general-purpose trains by blending existing train service.
4. Balancing train movements to improve the utilization of resources.

We aim to move cars faster and reduce the number of times each car is touched, resulting in terminal consolidation opportunities, improved asset utilization, and fewer car classifications, which in turn leads to products getting to the market quicker and more reliably. The result is a better customer experience, which enables us to grow our market share.

Grow: By harnessing the potential of the best rail franchise in the industry, we expect to generate growth in three ways – increasing profitable carloads that fit our network and transportation plan, providing more products and services to create value for our customers, and increasing the geographic reach of our franchise through innovative supply chain solutions.

Win: Driving strong financial performance resulting in significant shareholder returns. Execution of our plans to both serve and grow, leads to higher revenues with improved margins and greater cash generation, creating long term enterprise value.

Together: Engaging our four stakeholder groups – Communities, Customers, Employees, and Shareholders. Our comprehensive approach to Environmental, Social, and Governance issues, "Building a Sustainable Future 2030," is designed to address the evolving interests of our stakeholders and is built on five areas of concentration – Building Responsible Foundations, Investing in our Workforce, Driving Sustainable Solutions, Championing Environmental Stewardship, and Strengthening our Communities.

We believe that operational excellence and an engaged workforce with deep market knowledge and strong customer relationships supports best-in-class safety, a customer experience that drives growth, and shareholder returns.

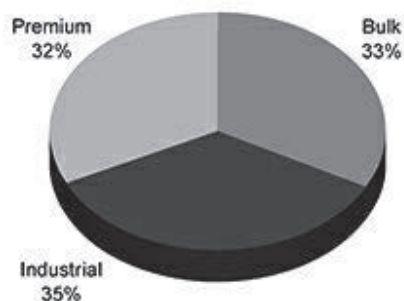
As we work to transform our railroad into the safest, most reliable, and most efficient in North America, our values continue guiding us. Our passion for performance will help us win; our high ethical standards will lead us to win in a way that supports all of our stakeholders; and our teamwork will make sure we win together.

OPERATIONS

The Railroad, along with its subsidiaries and rail affiliates, is our one reportable operating segment. Although we provide revenues by commodity group, we analyze the net financial results of the Railroad as one segment due to the integrated nature of our rail network. Additional information regarding our business and operations, including revenues, financial information and data, and other information regarding environmental matters, is presented in Risk Factors, Item 1A; Legal Proceedings, Item 3; Management's Discussion and Analysis of Financial Condition and Results of Operations, Item 7; and the Financial Statements and Supplementary Data, Item 8 (which include information regarding revenues, statements of income, and total assets).

Operations – UPRR is a Class I railroad operating in the U.S. We have 32,534 route miles, connecting Pacific Coast and Gulf Coast ports with the Midwest and Eastern U.S. gateways and providing several corridors to key Mexican gateways. We serve the western two-thirds of the country and maintain coordinated schedules with other rail carriers to move freight to and from the Atlantic Coast, the Pacific Coast, the Southeast, the Southwest, Canada, and Mexico. Export and import traffic moves through Gulf Coast, Pacific Coast, and East Coast ports and across the Mexican and Canadian borders. In 2022, we generated freight revenues totaling \$23.2 billion from the following three commodity groups:

2022 Freight Revenues



Bulk – The Company's Bulk shipments consist of grain and grain products, fertilizer, food and refrigerated, and coal and renewables. In 2022, this group generated 33% of our freight revenues. We access most major grain markets, connecting the Midwest and Western U.S. producing areas to export terminals in the Pacific Northwest and Gulf Coast ports as well as Mexico. We also serve significant domestic markets, including grain processors, animal feeders, and ethanol producers in the Midwest and West. Fertilizer movements originate in the Gulf Coast region, Midwest, Western U.S., and Canada (through interline access) for delivery to major agricultural users in those areas as well as abroad. The Railroad's network supports the transportation of coal shipments to independent and regulated power companies and industrial facilities throughout the U.S. Through interchange gateways and ports, UPRR's reach extends to Eastern U.S. utilities as well as to Mexico and other international destinations. Coal traffic originating in the Powder River Basin (PRB) area of Wyoming is the largest portion of the Railroad's coal business. Renewable shipments for customers committed to sustainability consist primarily of biomass exports and wind turbine components.

Industrial – Our extensive network facilitates the movement of numerous commodities between thousands of origin and destination points throughout North America. The Industrial group consists of several categories, including construction, industrial chemicals, plastics, forest products, specialized products (primarily waste, salt, and roofing), metals and ores, petroleum, liquid petroleum gases (LPG), soda ash, and sand. Transportation of these products accounted for 35% of our freight revenues in 2022. Commercial, residential, and governmental infrastructure investments drive shipments of steel, aggregates, cement, and wood products. Industrial and light manufacturing plants receive steel, nonferrous materials, minerals, and other raw materials.

The industrial chemicals market consists of a vast number of chemical compounds that support the manufacturing of more complex chemicals. Plastics shipments support automotive, housing, and the durable and disposable consumer goods markets. Forest product shipments include lumber and paper commodities. Lumber shipments originate primarily in the Pacific Northwest or Western Canada and move throughout the U.S. for use in new home construction and repairs and remodeling. Paper shipments primarily support packaging needs. Oil and gas drilling generates demand for raw steel, finished pipe, stone, and drilling fluid commodities. The Company's petroleum and LPG shipments are primarily impacted by refinery utilization rates, regional crude pricing differentials, pipeline capacity, and the use of asphalt for road programs. Soda ash originates in southwestern Wyoming and California, destined for chemical and glass producing markets in North America and abroad.

Premium – In 2022, Premium shipments generated 32% of Union Pacific's total freight revenues. Premium includes finished automobiles, automotive parts, and merchandise in intermodal containers, both domestic and international. International business consists of import and export traffic moving in 20 or 40-foot shipping containers, that mainly pass through West Coast ports, destined for one of the Company's many inland intermodal terminals. Domestic business includes container and trailer traffic picked up and delivered within North America for intermodal marketing companies (primarily shipper agents and logistics companies) as well as truckload carriers.

We are the largest automotive carrier west of the Mississippi River and operate or access 39 vehicle distribution centers. The Railroad's extensive franchise accesses six vehicle assembly plants and connects to West Coast ports, all six major Mexico gateways, and the Port of Houston to accommodate both import and export shipments. In addition to transporting finished vehicles, the Company provides expedited handling of automotive parts in both boxcars and intermodal containers destined for Mexico, the U.S., and Canada.

Seasonality – Some of the commodities we carry have peak shipping seasons, reflecting either or both the nature of the commodity (such as certain agricultural and food products that have specific growing and harvesting seasons) and the demand cycle for the commodity (such as intermodal traffic that generally peaks during the third quarter to meet back-to-school and holiday-related demand for consumer goods during the fourth quarter). The peak shipping seasons for these commodities can vary considerably each year depending upon various factors, including the strength of domestic and international economies and currencies; consumer demand; the strength of harvests, which can be adversely affected by severe weather; market prices for agricultural products; and supply chain disruptions.

Proud & Engaged Workforce – Our employees are central to our Serve, Grow, Win – Together strategy, and Investing in our Workforce is one of the five areas of concentration in our "Building a Sustainable Future 2030" strategy.

Our People: Our award-winning, multigenerational workforce includes talented people from all walks of life, in many stages of life. Made up of management and craft professionals, we are focused on attracting, retaining, and developing talent across our entire system.

As of December 31, 2022, the Company employed 33,179 employees. Our workforce includes five generations from Traditionalists (born before 1946) to Generation Z (born after 1998). The average age is 46.5 with average tenure of 15.8 years.

Union Pacific works with 13 major rail unions, representing approximately 83% of our workforce. Most craft professionals and more than 45 railroads participate in negotiations on a national multi-employer basis. The National Carriers Conference Committee of the National Railway Labor Conference, consisting of the top labor officers in most Class I railroads, is the bargaining committee for the industry. Railroads are governed by the Railway Labor Act (RLA), a federal statute enacted in 1926 to bring the railroads and unions to agreement without disruptions to rail transportation. The RLA includes numerous safeguards to help overcome bargaining stalemates.

The recent round of labor negotiations related to years 2020-2024 concluded in December 2022. See Management's Discussion and Analysis of Financial Condition and Results of Operations – Other Matters – Labor Agreements, Item 7, of this report for information about the conclusion of the 2020-2024 negotiations. The next round of negotiations begins on January 1, 2025, related to years 2025-2029.

Our Culture: We incorporate our commitment to safety, high ethical standards, passion for performance, and teamwork into our day-to-day operations as we service our customers.

Safety is central to everything we do at Union Pacific. Together, we are committed to cultivating a safety-focused culture, so our employees return home safely every day. To achieve this, our employees identify risks, initiate action to mitigate those risks, and have the courage to care to keep each other safe.

Our success is measured by our personal injury rate (the number of reportable injuries for every 200,000 employee-hours worked), and our derailment incident rate (the number of reportable derailment incidents per million train miles). Reportable personal injuries are defined as on duty incidents or occupational illnesses that result in employees losing time away from work, modifying or restricting their normal duties, or receiving any medical treatment above and beyond first aid. Reportable derailment incidents are defined as any occurrence where a wheel of a locomotive or rail car falls off the track that causes damage to track, equipment, or structures above the Federal Railroad Administration (FRA) reporting threshold, regardless of ownership (\$11,300 for 2022 and \$11,500 for 2023). The personal injuries and derailment incidents that meet reportable criteria are reported to the FRA.

Our 2022 personal injury rate of 0.80 improved 18% while our derailment incident rate of 2.88 increased 8% versus 2021. (See further discussion in Management's Discussion and Analysis of Financial Condition and Results of Operations, Item 7, of this report.)

Diversity, Equity, and Inclusion: Union Pacific's commitment to diversity and inclusion is based on our desire to create an environment where people can be their best, personally and professionally. From an employee's perspective, a diverse culture increases engagement, improves morale, and supports safety. From a business perspective, diversity improves the Company's decision-making, problem-solving, and strategic thinking, which translates into a competitive advantage with bottom-line results.

Union Pacific's commitment, today and for the future, is to further improve and strengthen performance through an inclusive workforce that reflects the diverse markets and communities we serve, where everyone is treated fairly, and differences are valued. To that end, Union Pacific established a goal to reach 40% people of color and double our female representation to 11% in our workforce by 2030. As of December 31, 2022, workforce representation of people of color and females was approximately 32.8% and 5.5%, respectively.

The Employee Journey: From recruitment to retirement and milestones in between, we are relentlessly focused on supporting and engaging employees throughout their Union Pacific journey. We view it as imperative to invest in our employees with meaningful benefit offerings, developmental experiences, and career opportunities.

The process begins with recruitment, where we strive to attract the most talented and diverse employees to join our team. Then, we focus on training and development, which includes programs designed to recognize potential and to help our employees grow into new roles so that we can retain our workforce over time.

Providing competitive compensation and meaningful benefits is key to attracting and retaining talented employees. Union Pacific is committed to continuously reviewing its compensation programs and comprehensive benefits programs to promote programs that are fair and competitive. Both are key to enhancing the value of working for Union Pacific and demonstrating the Company's commitment to the health and wealth of employees during their career. Benefits vary based on the applicable collective bargaining agreement or an employee's management status. The final stage of the employee journey is a fulfilling retirement, which is enabled during their UP career through our compensation and benefit programs, particularly contributions to 401(k) plans and the employee stock purchase plan (ESPP).

Our Board of Directors evaluates our non-union compensation plans and reviews recommendations from the Compensation and Benefits Committee, while collective bargaining agreements govern compensation for our union employees. The median annual compensation for all employees employed as of December 31, 2022, was \$86,778 (excluding the CEO).

Talent is critical – our ability to recruit and retain employees is directly tied to our railroad's fluidity. Without team members to dispatch or operate trains, our network struggles to provide customers efficient, reliable service.

We accelerated recruitment efforts in 2022, requiring us to evolve our hiring practices and incorporate innovative strategies. From virtual career fairs to pre-recorded video interviews, we implemented robust recruiting tools to meet candidates where they are and provide an efficient, user-friendly experience through every phase of the recruitment process.

We've also been aggressive in how we compete to attract talent in the marketplace. In particularly hard-to-fill jobs and locations, we offered hiring incentives. These incentives are a mix of travel allowances and relocation bonuses, as well as local hiring bonuses to attract applicants already residing in the communities we serve.

We continue driving inclusivity into our hiring process. We're removing bias by using software tools to confirm gender-neutral language in job postings, as well as providing video demonstrations and visual cues during physical abilities tests. Pre-recorded video interviews allow applicants to participate at a time that works best for their schedule, accommodating those who may have nontraditional schedules.

And finally, tapping into those who know us best – employee referrals played an important part in building our team. The “Great People Know Great People” employee referral program offers an incentive for each referral hired. In 2022, we hired more than 1,250 referred employees.

Further discussion can be found in our “We Are One” report available on our website.

Railroad Security – Our security efforts consist of a wide variety of measures, including employee training, engagement with our customers, training of emergency responders, and partnerships with numerous federal, state, and local government agencies. While federal law requires us to protect the confidentiality of our security plans designed to safeguard against terrorism and other security incidents, the following provides a general overview of our security initiatives.

UPRR Security Measures – We maintain a comprehensive security plan designed to both deter and respond to any potential or actual threats as they arise. The plan includes four levels of alert status, each with its own set of countermeasures. We employ our own police force, consisting of commissioned and highly-trained officers. The police are certified state law enforcement officers with investigative and arrest powers. The Union Pacific Police Department has achieved accreditation under the Commission on Accreditation for Law Enforcement Agencies, Inc. (CALEA) for complying with the highest law enforcement standards. Our employees undergo recurrent security and preparedness training as well as federally mandated hazardous materials and security training. We regularly review the sufficiency of our employee training programs. We maintain the capability to move critical operations to back-up facilities in different locations.

We operate an emergency response management center 24 hours a day. The center receives reports of emergencies, dangerous or potentially dangerous conditions, and other safety and security issues from our employees, the public, law enforcement, and other government officials. In cooperation with government officials, we monitor both threats and public events, and, as necessary, we may alter rail traffic flow at times of concern to minimize risk to communities and our operations. We comply with the hazardous materials routing rules and other requirements imposed by federal law. We design our operating plan to expedite the movement of hazardous material shipments to minimize the time rail cars remain idle at yards and terminals located in or near major population centers. Additionally, in compliance with Transportation Security Administration (TSA) regulations, we deployed information systems and instructed employees in tracking and documenting the handoff of Rail Security Sensitive Materials with customers and interchange partners.

We established a number of our own innovative safety and security-oriented initiatives ranging from various investments in technology to The Officer on Train program, which provides local law enforcement officers with the opportunity to ride with train crews to enhance their understanding of railroad operations and risks. Our staff of information security professionals continually assess cybersecurity risks and implement mitigation programs that evolve with the changing technology threat environment. To date, we have not experienced any material disruption of our operations due to a cyber threat or attack directed at us.

Cooperation with Federal, State, and Local Government Agencies – We work closely on physical and cybersecurity initiatives with government agencies, including the U.S. Department of Transportation (DOT); the Department of Homeland Security (DHS), along with its Cybersecurity & Infrastructure Security Agency (CISA) and TSA; as well as local police departments, fire departments, and other first responders. In connection with new guidance from the TSA, effective January 1, 2022, we were required to report cyber incidents to CISA. Additionally, during 2022, as required by the TSA guidance, we performed a cyber vulnerability self-assessment, submitted the results to the TSA, assembled and adopted a cyber incident response plan, and appointed cybersecurity coordinators. During 2023, we are required to comply with the second directive from the TSA, effective October 18, 2022. By February 21, 2023, we are required to develop and implement a cybersecurity implementation plan. Afterwards we need to establish a cybersecurity assessment plan that describes how the Company will proactively and regularly assess the effectiveness of cybersecurity measures as well as identify and resolve device, network, and system vulnerabilities. In conjunction with the Association of American Railroads (AAR), we sponsor Ask Rail, a mobile application that provides first responders with secure links to electronic information, including commodity and emergency response information required by emergency personnel to respond to accidents and other situations. We also participate in the National Joint Terrorism Task Force, a multi-agency effort established by the U.S. Department of Justice and the Federal Bureau of Investigation to combat and prevent terrorism.

We work with the Coast Guard, U.S. Customs and Border Protection (CBP), and the Military Transport Management Command, which monitor shipments entering the UPRR rail network at U.S. border crossings and ports. We were the first railroad in the U.S. to be named a partner in CBP's Customs-Trade Partnership Against Terrorism, a partnership designed to develop, enhance, and maintain effective security processes throughout the global supply chain.

Cooperation with Customers and Trade Associations – Through TransCAER (Transportation Community Awareness and Emergency Response), we work with the AAR, the American Chemistry Council, the American Petroleum Institute, and other chemical trade groups to provide communities with preparedness tools, including the training of emergency responders. In cooperation with the FRA and other interested groups, we are also working to develop additional improvements to tank car design that will further limit the risk of releases of hazardous materials.

Sustainable Future – Union Pacific believes it is important that we act as environmental stewards, reducing emissions and supporting the transition to a more sustainable future. While we work to further reduce our environmental footprint, it is important to note that railroads already are one of the most fuel-efficient means of transportation. According to the AAR, moving freight by rail instead of truck reduces greenhouse gas (GHG) emissions by up to 75%. Building on rail's relative emissions benefits over other modes of transportation, we are taking additional actions to reduce our emissions. These actions are described in our Climate Action Plan on our website.

Competition – see *"We Face Competition from Other Railroads and Other Transportation Providers"* in the Risk Factors in Item 1A of this report.

Key Suppliers – see *"We Are Dependent on Certain Key Suppliers of Locomotives and Rail"* in the Risk Factors in Item 1A of this report.

Available Information – Our Internet website is www.up.com. We make available free of charge on our website (under the "Investors" caption link) our Annual Reports on Form 10-K; our Quarterly Reports on Form 10-Q; our current reports on Form 8-K; our proxy statements; Forms 3, 4, and 5, filed on behalf of our directors and certain executive officers; and amendments to such reports filed or furnished pursuant to the Securities Exchange Act of 1934, as amended (the Exchange Act). We provide these reports and statements as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. We also make available on our website previously filed SEC reports and exhibits via a link to EDGAR on the SEC's Internet site at www.sec.gov. Additionally, our corporate governance materials, including By-Laws, Board Committee charters, governance guidelines and policies, and codes of conduct and ethics for directors, officers, and employees are available on our website. From time to time, the corporate governance materials on our website may be updated as necessary to comply with rules issued by the SEC and the NYSE or as desirable to promote the effective and efficient governance of our Company. Any security holder wishing to receive, without charge, a copy of any of our SEC filings or corporate governance materials should send a written request to: Secretary, Union Pacific Corporation, 1400 Douglas Street, Omaha, NE 68179.

References to our website address, the "We Are One" report, and the Climate Action Plan, in this report, including references in Management's Discussion and Analysis of Financial Condition and Results of Operations, Item 7, are provided as a convenience and do not constitute, and should not be deemed, an incorporation by reference of the information contained on, or available through, the website. Therefore, such information should not be considered part of this report.

GOVERNMENTAL AND ENVIRONMENTAL REGULATION

Governmental Regulation – Our operations are subject to a variety of federal, state, and local regulations, generally applicable to all businesses. (See also the discussion of certain regulatory proceedings in Legal Proceedings, Item 3.)

The operations of the Railroad are subject to the regulations of the FRA and other federal and state agencies as well as the regulatory jurisdiction of the Surface Transportation Board (STB). The STB has jurisdiction over rates charged on certain regulated rail traffic; common carrier service of regulated traffic; freight car compensation; transfer, extension, or abandonment of rail lines; and acquisition of control of rail common carriers. The STB continues its efforts to explore expanding rail regulation and is reviewing proposed rulemaking in various areas, including reciprocal switching and commodity exemptions, and has finalized rules creating new procedures for smaller rate complaints that are being reviewed in appellate courts. The STB also continues to explore changes to the methodology for determining railroad revenue adequacy and the possible uses of revenue adequacy in regulating railroad rates. The STB posts quarterly reports on rate reasonableness cases, maintains a database on service complaints, and has the authority to initiate investigations, among other things.

DOT, the Occupational Safety and Health Administration, the Pipeline and Hazardous Materials Safety Administration, and DHS, along with other federal agencies, have jurisdiction over certain aspects of safety, movement of hazardous materials and hazardous waste, emissions requirements, and equipment standards. Additionally, various state and local agencies have jurisdiction over disposal of hazardous waste and seek to regulate movement of hazardous materials in ways not preempted by federal law.

Environmental Regulation – We are subject to extensive federal and state environmental statutes and regulations pertaining to public health and the environment. The statutes and regulations are administered and monitored by the Environmental Protection Agency (EPA) and by various state environmental agencies. The primary laws affecting our operations are the Resource Conservation and Recovery Act, regulating the management and disposal of solid and hazardous wastes; the Comprehensive Environmental Response, Compensation, and Liability Act, regulating the cleanup of contaminated properties; the Clean Air Act, regulating air emissions; and the Clean Water Act, regulating wastewater discharges.

Information concerning environmental claims and contingencies and estimated remediation costs is set forth in Management's Discussion and Analysis of Financial Condition and Results of Operations – Critical Accounting Estimates – Environmental, Item 7, and Note 17 to the Financial Statements and Supplementary Data, Item 8.

Item 1A. Risk Factors

The following discussion addresses significant factors, events, and uncertainties that make an investment in our securities risky and provides important information for the understanding of our "forward-looking statements," which are discussed immediately preceding Item 7A of this Form 10-K and elsewhere. The risk factors set forth in this Item 1A should be read in conjunction with the rest of the information included in this report, including Management's Discussion and Analysis of Financial Condition and Results of Operations, Item 7, and Financial Statements and Supplementary Data, Item 8.

We urge you to consider carefully the factors described below and the risks that they present for our operations as well as the risks addressed in other reports and materials that we file with the SEC and the other information included or incorporated by reference in this Form 10-K. When the factors, events, and contingencies described below or elsewhere in this Form 10-K materialize, our business, reputation, financial condition, results of operations, cash flows, or prospects can be materially adversely affected. In such case, the trading price of our common stock could decline and you could lose part or all of your investment. Additional risks and uncertainties not currently known to us or that we currently deem immaterial may also materially adversely affect our business, reputation, financial condition, results of operations, cash flows, and prospects.

Strategic and Operational Risks

We Must Manage Fluctuating Demand for Our Services and Network Capacity – Significant reductions in demand for rail services with respect to one or more commodities or changes in consumer preferences that affect the businesses of our customers can lead to increased costs associated with resizing our operations, including higher unit operating costs and costs for the storage of locomotives, rail cars, and other equipment; workforce adjustments; and other related activities, which could have a material adverse effect on our results of operations, financial condition, and liquidity. If there is significant demand for our services that exceeds the designed capacity of our network or shifts in traffic flow that are contrary to the designed capacity of our network, we may experience network difficulties, including congestion and reduced velocity, that could compromise the level of service we provide to our customers. This level of demand may also compound the impact of weather and weather-related events on our operations and velocity. Although we continue to work to improve our transportation plan, add capacity, improve operations at our yards and other facilities, and improve our ability to address surges in demand for any reason with adequate resources, we cannot be sure that these measures will fully or adequately address any service shortcomings resulting from demand exceeding our planned capacity. We may experience other operational or service difficulties related to network capacity, dramatic and unplanned fluctuations in our customers' demand for rail service with respect to one or more commodities or operating regions, or other events that could negatively impact our operational efficiency, which could all have a material adverse effect on our results of operations, financial condition, and liquidity.

We Transport Hazardous Materials – We transport certain hazardous materials and other materials, including crude oil, ethanol, and toxic inhalation hazard (TIH) materials, such as chlorine, that pose certain risks in the event of a release or combustion. Additionally, U.S. laws impose common carrier obligations on railroads that require us to transport certain hazardous materials regardless of risk or potential exposure to loss. A rail accident or other incident or accident on our network, at our facilities, or at the facilities of our customers involving the release or combustion of hazardous materials could involve significant costs and claims for personal injury, property damage, and environmental penalties and remediation in excess of our insurance coverage for these risks, which could have a material adverse effect on our results of operations, financial condition, and liquidity.

We Rely on Technology and Technology Improvements in Our Business Operations – We rely on information technology in all aspects of our business, including technology systems operated by us or under control of third-parties. If we do not have sufficient capital or do not deploy sufficient capital in a timely manner to acquire, develop, or implement new technology or maintain or upgrade current systems, such as Positive Train Control (PTC) or the latest version of our transportation control systems, we may suffer a rail service outage or competitive disadvantage within the rail industry and with companies providing other modes of transportation service, which could have a material adverse effect on our results of operations, financial condition, and liquidity.

We Are Subject to Cybersecurity Risks – We rely on information technology in all aspects of our business, including technology systems operated by us (whether created by us or purchased), under control of third-parties, and open-source software. Although we devote significant resources to protect our technology systems and proprietary data, we have experienced and will likely continue to experience varying degrees of cyber incidents in the normal course of business. There can be no assurance that the systems we have designed to identify, prevent, or limit the effects of cyber incidents or attacks will be sufficient to prevent or detect such incidents or attacks, or to avoid a material adverse impact on our systems after such incidents or attacks do occur. Furthermore, due to the rising numbers and increasing sophistication of cyber-attacks, an increasingly complex information technology supply chain, and the nature of zero-day exploits, we may be unable to anticipate or implement adequate preventative measures to prevent a security breach, including by ransomware, human error, or other cyber-attack methods, from materially disrupting our systems or the systems of third-parties upon which we rely. A successful cyber-attack that results in significant service interruption; safety failure; other operational difficulties; unauthorized access to (or the loss of access to) competitively sensitive, confidential, or other critical data or systems; loss of customers; financial losses; regulatory fines; and misuse or corruption of critical data and proprietary information, could have a material adverse impact on our results of operations, financial condition, and liquidity. We may experience security breaches that could remain undetected for an extended period and, therefore, have a greater impact on the services we offer. Additionally, we may be exposed to increased cybersecurity risk because we are a component of the critical U.S. infrastructure.

Severe Weather Could Result in Significant Business Interruptions and Expenditures – As a railroad with a vast network, we are exposed to severe weather conditions and other natural phenomena, including earthquakes, hurricanes, fires, floods, mudslides or landslides, extreme temperatures, avalanches, and significant precipitation, and climate change may cause or contribute to the severity or frequency of such weather conditions. Line outages and other interruptions caused by these conditions can adversely affect our entire rail network, potentially negatively affecting revenues, costs, and liabilities, despite efforts we undertake to plan for these events. Our revenues can also be adversely affected by severe weather that causes damage and disruptions to our customers. These impacts caused by severe weather could have a material adverse effect on our results of operations, financial condition, and liquidity.

A Significant Portion of Our Revenues Involves Transportation of Commodities to and from International Markets – Although revenues from our operations are attributable to transportation services provided in the U.S., a significant portion of our revenues involves the transportation of commodities to and from international markets, including Mexico, Canada, and Southeast Asia, by various carriers and, at times, various modes of transportation. Significant and sustained interruptions of trade with Mexico, Canada, or countries in Southeast Asia, including China, could adversely affect customers and other entities that, directly or indirectly, purchase or rely on rail transportation services in the U.S. as part of their operations, and any such interruptions could have a material adverse effect on our results of operations, financial condition, and liquidity. Any one or more of the following could cause a significant and sustained interruption of trade with Mexico, Canada, or countries in Southeast Asia: (a) a deterioration of security for international trade and businesses; (b) the adverse impact of new laws, rules, and regulations or the interpretation of laws, rules, and regulations by government entities, courts, or regulatory bodies, including the United States-Mexico-Canada Agreement (USMCA) and a “Phase One” trade agreement with China; (c) actions of taxing authorities that affect our customers doing business in foreign countries; (d) any significant adverse economic developments, such as extended periods of high inflation, material disruptions in the banking sector or in the capital markets of these foreign countries, and significant changes in the valuation of the currencies of these foreign countries that could materially affect the cost or value of imports or exports; (e) shifts in patterns of international trade that adversely affect import and export markets; (f) a material reduction in foreign direct investment in these countries; and (g) public health crises, including the outbreak of pandemic or contagious disease, such as the coronavirus and its variant strains (COVID).

We Are Dependent on Certain Key Suppliers of Locomotives and Rail – Due to the capital-intensive nature and sophistication of locomotive equipment, parts, and maintenance, potential new suppliers face high barriers to entry. Therefore, if one of the domestic suppliers of locomotives discontinues manufacturing locomotives, supplying parts, or providing maintenance for any reason, including bankruptcy or insolvency or the inability to manufacture locomotives that meet efficiency or regulatory emissions standards, we could experience significant cost increases and reduced availability of the locomotives that are necessary for our operations. Additionally, we utilize a limited number of steel producers that meet our specifications. Rail is critical to our operations for rail replacement programs, maintenance, and for adding additional network capacity, new rail and storage yards, and expansions of existing facilities. This industry similarly has high barriers to entry, and if one of these suppliers discontinues operations for any reason, including bankruptcy or insolvency, we could experience both significant cost increases for rail purchases and difficulty obtaining sufficient rail for maintenance and other projects. Changes to trade agreements or policies that result in increased tariffs on goods imported into the United States could also result in significant cost increases for rail purchases and difficulty obtaining sufficient rail.

Workforce Risks

Strikes or Work Stoppages Could Adversely Affect Our Operations – The U.S. Class I railroads are party to collective bargaining agreements with various labor unions. The majority of our employees belong to labor unions and are subject to these agreements. Disputes over the terms of these agreements or our potential inability to negotiate acceptable contracts with these unions can lead to, among other things, strikes, work stoppages, slowdowns, or lockouts, which could cause a significant disruption of our operations and have a material adverse effect on our results of operations, financial condition, and liquidity. Additionally, future national labor agreements, or renegotiation of labor agreements or provisions of labor agreements, could compromise our service reliability or significantly increase our costs for health care, wages, and other benefits, which could have a material adverse impact on our results of operations, financial condition, and liquidity. Labor disputes, work stoppages, slowdowns, or lockouts at loading/unloading facilities, ports, or other transport access points could compromise our service reliability and have a material adverse impact on our results of operations, financial condition, and liquidity. Labor disputes, work stoppages, slowdowns, or lockouts by employees of our customers or our suppliers could compromise our service reliability and have a material adverse impact on our results of operations, financial condition, and liquidity.

The Availability of Qualified Personnel Could Adversely Affect Our Operations – Changes in demographics, training requirements, and pandemic illnesses or restrictions could negatively affect the availability of qualified personnel for us, our customers, and throughout the supply chain. Our ability to quickly react to other factors that affect our ability to attract and retain employees may be restricted due to limited flexibility to make unilateral changes to collective bargaining agreements, which cover the majority of our workforce. Unpredictable increases in demand for rail services and a lack of network fluidity may exacerbate our risks, which could have a negative impact on our operational efficiency and otherwise have a material adverse effect on our results of operations, financial condition, and liquidity.

Legal and Regulatory Risks

We Are Subject to Significant Governmental Regulation – We are subject to governmental regulation by a significant number of federal, state, and local authorities covering a variety of health, safety, labor, environmental, economic (as discussed below), tax, and other matters. Many laws and regulations require us to obtain and maintain various licenses, permits, and other authorizations, and we cannot guarantee that we will continue to be able to do so. Our failure to comply with applicable laws and regulations could have a material adverse effect on us. Governments or regulators may change the legislative or regulatory frameworks that we operate in without providing us any recourse to address any adverse effects on our business, including, without limitation, regulatory determinations or rules regarding dispute resolution, increasing the amount of our traffic subject to common carrier regulation, business relationships with other railroads, use of embargoes, calculation of our cost of capital or other inputs relevant to computing our revenue adequacy, the prices we charge, changes in tax rates, enactment of new tax laws, and revision in tax regulations. Significant legislative activity in Congress or regulatory activity by the STB could expand regulation of railroad operations and pricing for rail services, which could reduce capital spending on our rail network, facilities, and equipment, and have a material adverse effect on our results of operations, financial condition, and liquidity.

We May Be Subject to Various Claims and Lawsuits That Could Result in Significant Expenditures – As a railroad with operations in densely populated urban areas and a vast rail network, we are exposed to the potential for various claims and litigation related to labor and employment, personal injury, property damage, environmental liability, and other matters. Any material changes to litigation trends or a catastrophic rail accident or series of accidents involving any or all of property damage, personal injury, and environmental liability that exceed our insurance coverage for such risks could have a material adverse effect on our results of operations, financial condition, and liquidity.

We Are Subject to Significant Environmental Laws and Regulations – Due to the nature of the railroad business, our operations are subject to extensive federal, state, and local environmental laws and regulations concerning, among other things, emissions to the air; discharges to waters; handling, storage, transportation, and disposal of waste and other materials; and hazardous material or petroleum releases. We generate and transport hazardous and non-hazardous waste in our operations. Environmental liability can extend to previously owned or operated properties, leased properties, properties owned by third-parties, as well as properties we currently own. Environmental liabilities have arisen and may also arise from claims asserted by adjacent landowners or other third-parties in toxic tort litigation. We have been and may be subject to allegations or findings that we have violated, or are strictly liable under, these laws or regulations. We currently have certain obligations at existing sites for investigation, remediation, and monitoring, and we likely will have obligations at other sites in the future. We maintain adequate reserves for liabilities for these obligations, but fluctuations of potential costs affect our estimates based on our experience and, as necessary, the advice and assistance of our consultants. However, actual costs may vary from our estimates due to any or all of several factors, including changes to environmental laws or interpretations of such laws, technological changes affecting investigations and remediation, the participation and financial viability of other parties responsible for any such liability, and the corrective action or change to corrective actions required to remediate any existing or future sites. We could incur significant costs as a result of any of the foregoing, and we may be required to incur significant expenses to investigate and remediate known, unknown, or future environmental contamination, which could have a material adverse effect on our results of operations, financial condition, and liquidity.

Macroeconomic and Industry Risks

We Face Competition from Other Railroads and Other Transportation Providers – We face competition from other railroads, motor carriers, ships, barges, and pipelines. Our main railroad competitor is Burlington Northern Santa Fe LLC. Its primary subsidiary, BNSF Railway Company (BNSF), operates parallel routes in many of our main traffic corridors. In addition, we operate in corridors served by other railroads and motor carriers. Motor carrier competition exists in all three of our commodity groups. Because of the proximity of our routes to major inland and Gulf Coast waterways, barges can be particularly competitive, especially for grain and bulk commodities in certain areas where we operate. In addition to price competition, we face competition with respect to transit times, quality, and reliability of service from motor carriers and other railroads. Motor carriers in particular can have an advantage over railroads with respect to transit times and timeliness of service. However, railroads are much more fuel-efficient than trucks, which reduces the impact of transporting goods on the environment and public infrastructure, and we have been making efforts to convert truck traffic to rail. Additionally, we must build or acquire and maintain our rail system, while trucks, barges, and maritime operators are able to use public rights-of-way maintained by public entities. Any of the following could also affect the competitiveness of our transportation services for some or all of our commodities, which could have a material adverse effect on our results of operations, financial condition, and liquidity: (a) improvements or expenditures materially increasing the quality or reducing the costs of these alternative modes of transportation, such as autonomous or more fuel efficient trucks, (b) legislation that eliminates or significantly increases the size or weight limitations applied to motor carriers, or (c) legislation or regulatory changes that impose operating restrictions on railroads or that adversely affect the profitability of some or all railroad traffic. Many movements face product or geographic competition where our customers can use different products (e.g., natural gas instead of coal, sorghum instead of corn) or commodities from different locations (e.g., grain from states or countries that we do not serve, crude oil from different regions). Sourcing different commodities or different locations allows shippers to substitute different carriers and such competition may reduce our volume or constrain prices. Additionally, any future consolidation of the rail industry could materially affect our competitive environment.

We May Be Affected by Climate Change and Market or Regulatory Responses to Climate Change – Climate change, including the impact of global warming and transition risks involving policy, legal risks, and market risks, could have a material adverse effect on our results of operations, financial condition, and liquidity over both a long-term and near-term basis. Restrictions, caps, taxes, or other controls on emissions of GHGs, including diesel exhaust, could significantly increase our operating costs. Restrictions on emissions could also affect our customers that (a) use commodities that we carry to produce energy, (b) use significant amounts of energy in producing or delivering the commodities we carry, or (c) manufacture or produce goods that consume significant amounts of energy or burn fossil fuels, including chemical producers, farmers and food producers, and automakers and other manufacturers. Significant cost increases, government regulation, or changes of consumer preferences for goods or services relating to alternative sources of energy, emissions reductions, and GHG emissions could materially affect the markets for the commodities we carry and demand for our services, which in turn could have a material adverse effect on our results of operations, financial condition, and liquidity. Government incentives encouraging the use of alternative sources of energy also could affect certain of our customers and the markets for certain of the commodities we carry in an unpredictable manner that could alter our traffic patterns, including, for example, increasing royalties charged to producers of PRB coal by the U.S. Department of Interior and the impacts of ethanol incentives on farming and ethanol producers. We could face increased costs related to defending and resolving legal claims and other litigation related to climate change and the alleged impact of our operations on climate change. Violent weather caused by climate change, including hurricanes, fires, floods, extreme temperatures, avalanches, and significant precipitation could cause line outages and other interruptions to our infrastructure. Any of these factors, individually or in operation with one or more of the other factors, or other unpredictable impacts of climate change could reduce the amount of traffic we handle and have a material adverse effect on our results of operations, financial condition, and liquidity. While we work to implement our Climate Action Plan, our efforts to achieve emission reduction targets could significantly increase our operational costs and capital expenditures.

Our Business, Financial Condition, and Results of Operations have been Adversely Affected, and in the Future, Could be Materially Adversely Affected by Pandemics or Other Public Health Crises – Pandemics, epidemics, and other outbreaks of disease can have significant and widespread impacts. As we saw during the peaks of the COVID pandemic, outbreaks of disease can cause a global slowdown of economic activity (including the decrease in demand for a broad variety of goods), disruptions in global supply chains, and significant volatility and disruption of financial markets, resulting further in adverse effects on workforces, customers, and regional and local economies. The impact of pandemics or public health crises on our results of operations and financial condition may depend on numerous evolving factors, including, but not limited to: governmental, business, and individuals' actions that have been and continue to be taken in response to a global pandemic or other public health crises (including restrictions on travel and transport, workforce pressures, social distancing, and shelter-in-place orders); the effect of a pandemic or other public health crises on economic activity and actions taken in response; the effect on our customers and their demand for our services; the effect of a pandemic or other public health crises on the credit-worthiness of our customers; national or global supply chain challenges or disruption; facility closures; commodity cost volatility; general macroeconomic uncertainty in key global markets and financial market volatility; global economic conditions and levels of economic growth; and the pace of recovery as the pandemic subsides as well as response to a potential reoccurrence. Further, a pandemic or other public health crises, and the volatile regional and global economic conditions stemming from such an event, could also precipitate and aggravate the other risk factors that we identify, which could materially adversely affect our business, financial condition, results of operations (including revenues and profitability), and/or stock price. Additionally, a pandemic or other public health crises also may affect our operating and financial results in a manner that is not presently known to us or that we currently do not consider to present significant risks to our operations.

Financial Risks

We Are Affected By Fluctuating Fuel Prices – Fuel costs constitute a significant portion of our transportation expenses. Diesel fuel prices can be subject to dramatic fluctuations, and significant price increases could have a material adverse effect on our operating results. Although we currently are able to recover a significant amount of our fuel expenses from our customers through revenues from fuel surcharges, we cannot be certain that we will always be able to mitigate rising or elevated fuel costs through our fuel surcharges. Additionally, future market conditions or legislative or regulatory activities could adversely affect our ability to apply fuel surcharges or adequately recover increased fuel costs through fuel surcharges. As fuel prices fluctuate, our fuel surcharge programs trail such fluctuations in fuel price by approximately two months, and may be a significant source of quarter-over-quarter and year-over-year volatility, particularly in periods of rapidly changing prices. International, political, and economic factors, events and conditions, including the start of the Russian-Ukraine conflict in late February 2022, affect the volatility of fuel prices and supplies. Weather can also affect fuel supplies and limit domestic refining capacity. A severe shortage of, or disruption to, domestic fuel supplies could have a material adverse effect on our results of operations, financial condition, and liquidity. Alternatively, lower fuel prices could have a positive impact on the economy by increasing consumer discretionary spending that potentially could increase demand for various consumer products we transport. However, lower fuel prices could have a negative impact on other commodities we transport, such as coal and domestic drilling-related shipments, which could have a material adverse effect on our results of operations, financial condition, and liquidity.

We Rely on Capital Markets – Due to the significant capital expenditures required to operate and maintain a safe and efficient railroad, we rely on the capital markets to provide some of our capital requirements. We utilize long-term debt instruments, bank financing, and commercial paper, and we pledge certain amount of our receivables as collateral for credit. Significant instability or disruptions of the capital markets, including, among other things, current rising interest rates in the credit markets, or deterioration of our financial condition due to internal or external factors could restrict or prohibit our access to, and significantly increase the cost of, commercial paper and other financing sources, including bank credit facilities and the issuance of long-term debt, including corporate bonds. A significant deterioration of our financial condition could result in a reduction of our credit rating to below investment grade, which could restrict us from utilizing our current receivables securitization facility (Receivables Facility). This may also limit our access to external sources of capital and significantly increase the costs of short and long-term debt financing.

General Risk Factors

We Are Affected by General Economic Conditions – Prolonged, severe adverse domestic and global macroeconomic conditions or disruptions of financial and credit markets, including, for example, the recessionary fears and high inflation we are seeing in the current economic environment, may affect the producers and consumers of the commodities we carry and may have a material adverse effect on our access to liquidity, results of operations, and financial condition.

We May Be Affected by Acts of Terrorism, War, or Risk of War – Our rail lines, facilities, and equipment, including rail cars carrying hazardous materials, could be direct targets or indirect casualties of terrorist attacks. Terrorist attacks, or other similar events, any government response thereto, and war or risk of war may adversely affect our results of operations, financial condition, and liquidity. In addition, insurance premiums for some or all of our current coverages could increase dramatically, or certain coverages may not be available to us in the future.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

We employ a variety of assets in the management and operation of our rail business. Our rail network covers 23 states in the western two-thirds of the U.S.



TRACK

Our rail network includes 32,534 route miles. We own 26,121 miles and operate on the remainder pursuant to trackage rights or leases. The following table describes track miles:

<i>As of December 31,</i>	2022	2021
Route	32,534	32,452
Other main line	7,113	7,093
Passing lines and turnouts	3,454	3,412
Switching and classification yard lines	8,853	8,887
Total miles	51,954	51,844

HEADQUARTERS BUILDING

We own our headquarters building in Omaha, Nebraska. The facility has 1.2 million square feet of space that can accommodate approximately 4,000 employees.

HARRIMAN DISPATCHING CENTER

The Harriman Dispatching Center (HDC), located in Omaha, Nebraska, is our primary dispatching facility. It is linked to regional dispatching and locomotive management facilities at various locations along our network. HDC employees coordinate moves of locomotives and trains, manage traffic and train crews on our network, and coordinate interchanges with other railroads. Generally, around 500 employees work on-site in the facility. In the event of a disruption of operations at HDC due to a cyber-attack, flooding or severe weather, pandemic outbreak, or other event, we maintain the capability to conduct critical operations at back-up facilities in different locations.

RAIL FACILITIES

In addition to our track structure, we operate numerous facilities, including terminals for intermodal and other freight; rail yards for building trains (classification yards), switching, storage-in-transit (the temporary storage of customer goods in rail cars prior to shipment), and other activities; offices to administer and manage our operations; dispatching centers to direct traffic on our rail network; crew on duty locations for train crews along our network; and shops and other facilities for fueling, maintenance, and repair of locomotives and repair and maintenance of rail cars and other equipment. The following table includes the major yards and terminals on our system:

<i>Major Classification Yards</i>	<i>Major Intermodal Terminals</i>
North Platte, Nebraska	Joliet (Global 4), Illinois
Englewood (Houston), Texas	Global II (Chicago), Illinois
North Little Rock, Arkansas	East Los Angeles, California
Livonia, Louisiana	Mesquite, Texas
West Colton, California	Lathrop, California
Fort Worth, Texas	LATC (Los Angeles), California
Houston, Texas	ICTF (Los Angeles), California
Roseville, California	Marion, Arkansas

RAIL EQUIPMENT

Our equipment includes owned and leased locomotives and rail cars; heavy maintenance equipment and machinery; other equipment and tools in our shops, offices, and facilities; and vehicles for maintenance, transportation of crews, and other activities. As of December 31, 2022, we owned or leased the following units of equipment:

	<i>Owned</i>	<i>Leased</i>	<i>Total</i>	<i>Average Age (yrs.)</i>
<i>Locomotives</i>				
Multiple purpose	6,083	1,038	7,121	23.4
Switching	149	-	149	42.7
Other	15	53	68	42.5
Total locomotives	6,247	1,091	7,338	N/A

				<i>Average</i>
<i>Freight cars</i>	<i>Owned</i>	<i>Leased</i>	<i>Total</i>	<i>Age (yrs.)</i>
Covered hoppers	13,360	9,714	23,074	22.1
Open hoppers	4,926	779	5,705	35.8
Gondolas	6,188	4,060	10,248	24.2
Boxcars	2,598	6,877	9,475	38.2
Refrigerated cars	2,496	1,371	3,867	22.4
Flat cars	2,248	1,450	3,698	32.4
Other	-	312	312	31.4
Total freight cars	31,816	24,563	56,379	N/A

				<i>Average</i>
<i>Highway revenue equipment</i>	<i>Owned</i>	<i>Leased</i>	<i>Total</i>	<i>Age (yrs.)</i>
Containers	48,180	1,356	49,536	11.4
Chassis	29,703	19,616	49,319	12.0
Total highway revenue equipment	77,883	20,972	98,855	N/A

We continuously assess our need for equipment to run an efficient and reliable network. Many factors cause us to adjust the size of our active fleets, including changes in carload volume, weather events, seasonality, customer preferences, and operational efficiency initiatives. As some of these factors are difficult to assess or can change rapidly, we maintain a surge fleet to remain agile. Without the surge fleet, our ability to react quickly is hindered as equipment suppliers are limited and lead times to acquire equipment are long and may be in excess of a year. We believe our locomotive and freight car fleets are appropriately sized to meet our current and future business requirements. These fleets serve as the most reliable and efficient equipment to facilitate growth without additional acquisitions. Locomotive and freight car in service utilization percentages for the year ended December 31, 2022, were 70% and 78%, respectively.

CAPITAL EXPENDITURES

Our rail network requires significant annual capital investments for replacement, improvement, and expansion. These investments enhance safety, support the transportation needs of our customers, improve our operational efficiency, and support emission reduction initiatives outlined in our Climate Action Plan. Additionally, we add new equipment to our fleet to replace older equipment and to support growth and customer demand.

2022 Capital Program – During 2022, our capital program totaled approximately \$3.4 billion. (See the cash capital investments table in Management's Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital Resources, Item 7, of this report.)

2023 Capital Plan – In 2023, we expect our capital plan to be approximately \$3.6 billion, up 6% from 2022. (See further discussion of our 2023 capital plan in Management's Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital Resources, Item 7, of this report.)

OTHER

Equipment Encumbrances – Equipment with a carrying value of approximately \$903 million and \$1.2 billion at December 31, 2022 and 2021, respectively, served as collateral for finance leases and other types of equipment obligations in accordance with the secured financing arrangements utilized to acquire or refinance such railroad equipment.

Environmental Matters – Certain of our properties are subject to federal, state, and local laws and regulations governing the protection of the environment. (See discussion within this report of environmental issues in Business – Governmental and Environmental Regulation, Item 1; Management's Discussion and Analysis of Financial Condition and Results of Operations – Critical Accounting Estimates – Environmental, Item 7; and Note 17 to the Financial Statements and Supplementary Data, Item 8.)

Item 3. Legal Proceedings

From time to time, we are involved in legal proceedings, claims, and litigation that occur in connection with our business. We routinely assess our liabilities and contingencies in connection with these matters based upon the latest available information and, when necessary, we seek input from our third-party advisors when making these assessments. Consistent with SEC rules and requirements, we describe below material pending legal proceedings (other than ordinary routine litigation incidental to our business), material proceedings known to be contemplated by governmental authorities, other proceedings arising under federal, state, or local environmental laws and regulations (including governmental proceedings involving potential fines, penalties, or other monetary sanctions in excess of \$1,000,000), and such other pending matters that we may determine to be appropriate.

ENVIRONMENTAL MATTERS

We receive notices from the EPA and state environmental agencies alleging that we are or may be liable under federal or state environmental laws for remediation costs at various sites throughout the U.S., including sites on the Superfund National Priorities List or state superfund lists. We cannot predict the ultimate impact of these proceedings and suits because of the number of potentially responsible parties involved, the degree of contamination by various wastes, the scarcity and quality of volumetric data related to many of the sites, and the speculative nature of remediation costs.

Information concerning environmental claims and contingencies and estimated remediation costs is set forth in this report in Management's Discussion and Analysis of Financial Condition and Results of Operations – Critical Accounting Estimates – Environmental, Item 7, and Note 17 to the Financial Statements and Supplementary Data, Item 8.

OTHER MATTERS

Antitrust Litigation – As we reported in our Quarterly Report on Form 10-Q for the quarter ended June 30, 2007, 20 rail shippers (many of whom were represented by the same law firms) filed virtually identical antitrust lawsuits in various federal district courts against us and four other Class I railroads in the U.S. Currently, UPRR and three other Class I railroads are the named defendants in the lawsuits. The original plaintiff filed the first of these claims in the U.S. District Court in New Jersey on May 14, 2007. These suits alleged that the named railroads engaged in price-fixing by establishing common fuel surcharges for certain rail traffic.

On August 16, 2019, the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) affirmed the decision of U.S. District Court for the District of Columbia (U.S. District Court) denying class certification (the Certification Denial). Only five plaintiffs remain in this multidistrict litigation (MDL) originally filed in 2007, which remains pending. They are proceeding on a consolidated basis in the U.S. District Court before the Honorable Paul L. Friedman (MDL I). Since the Certification Denial, approximately 111 lawsuits have been filed in federal court based on claims identical to those alleged in the class certification case. The Judicial Panel on Multidistrict Litigation consolidated these suits for pretrial proceedings in the U.S. District Court before the Honorable Beryl A. Howell (MDL II).

On February 19, 2021, the court denied our motion to exclude plaintiffs' alleged evidence of conspiracy under a federal statute designed to incent and protect railroad communications made to further interline service (i.e., where two railroads are in the route). On May 17, 2022, the DC Circuit reversed the trial court and largely adopted the railroads' interpretation of the statute, although no individual evidentiary rulings were made.

We also filed a motion for summary judgment on May 14, 2021, in the MDL I proceedings, and the briefing was completed in September 2021. A hearing has not been scheduled on the motion.

As we reported in our Current Report on Form 8-K, filed on June 10, 2011, the Railroad received a complaint filed in the U.S. District Court for the District of Columbia on June 7, 2011, by Oxbow Carbon & Minerals LLC and related entities (Oxbow). Just as it did in the MDL proceedings, Union Pacific filed a motion for summary judgment on May 14, 2021, and no hearing has been scheduled.

We continue to deny the allegations that our fuel surcharge programs violate the antitrust laws or any other laws. We believe that these lawsuits are without merit, and we will vigorously defend our actions. Therefore, we currently believe that these matters will not have a material adverse effect on any of our results of operations, financial condition, and liquidity.

Item 4. Mine Safety Disclosures

Not applicable.

Information About Our Executive Officers and Principal Executive Officers of Our Subsidiaries

The Board of Directors typically elects and designates our executive officers on an annual basis at the board meeting held in conjunction with the Annual Meeting of Shareholders, and they hold office until their successors are elected. Executive officers also may be elected and designated throughout the year, as the Board of Directors considers appropriate. There are no family relationships among the officers, nor is there any arrangement or understanding between any officer and any other person pursuant to officer selection. The following table sets forth certain information current as of February 10, 2023, relating to the executive officers.

Name	Position	Age	Business Experience During
			Past Five Years
Lance M. Fritz	Chairman, President, and Chief Executive Officer of UPC and the Railroad	60	Current Position
Jennifer L. Hamann	Executive Vice President and Chief Financial Officer of UPC and the Railroad	55	[1]
Craig V. Richardson	Executive Vice President, Chief Legal Officer, and Corporate Secretary of UPC and the Railroad	61	[2]
Kenny G. Rocker	Executive Vice President – Marketing and Sales of the Railroad	51	[3]
Todd M. Rynaski	Senior Vice President and Chief Accounting, Risk, and Compliance Officer of UPC and the Railroad	52	[4]
Eric J. Gehringer	Executive Vice President – Operations of the Railroad	43	[5]
Elizabeth F. Whited	Executive Vice President – Sustainability and Strategy of UPC and the Railroad	57	[6]

[1] Ms. Hamann was elected Executive Vice President and Chief Financial Officer of UPC and the Railroad effective January 1, 2020. She previously served as Senior Vice President – Finance (April 2019 – December 2019) and Vice President – Planning & Analysis (October 2017 – March 2019).

[2] Mr. Richardson was elected Executive Vice President, Chief Legal Officer, and Corporate Secretary of UPC and the Railroad effective December 8, 2020. He most recently served as Vice President – Commercial and Regulatory Law since 2015.

[3] Mr. Rocker was elected Executive Vice President – Marketing and Sales of the Railroad effective August 15, 2018. Mr. Rocker previously served at the Railroad as Vice President – Marketing and Sales – Industrial team (October 2016 – August 2018).

[4] Mr. Rynaski was elected Senior Vice President and Chief Accounting, Risk, and Compliance Officer of UPC and the Railroad effective July 1, 2022. Mr. Rynaski previously served as Vice President and Controller (September 2015 – June 2022).

[5] Mr. Gehringer was elected Executive Vice President – Operations of the Railroad effective January 1, 2021. Mr. Gehringer previously served as Senior Vice President – Transportation (July 2020 – December 2020), Vice President – Mechanical and Engineering (January 2020 – July 2020), Vice President – Engineering (March 2018 – January 2020), and Assistant Vice President – Engineering (September 2016 – March 2018).

[6] Ms. Whited was elected Executive Vice President – Sustainability and Strategy of UPC and the Railroad effective February 3, 2022. She previously served as Executive Vice President and Chief Human Resources Officer (August 2018 – February 2022) and Executive Vice President and Chief Marketing Officer (December 2016 – August 2018).

PART II

Item 5. Market for the Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities

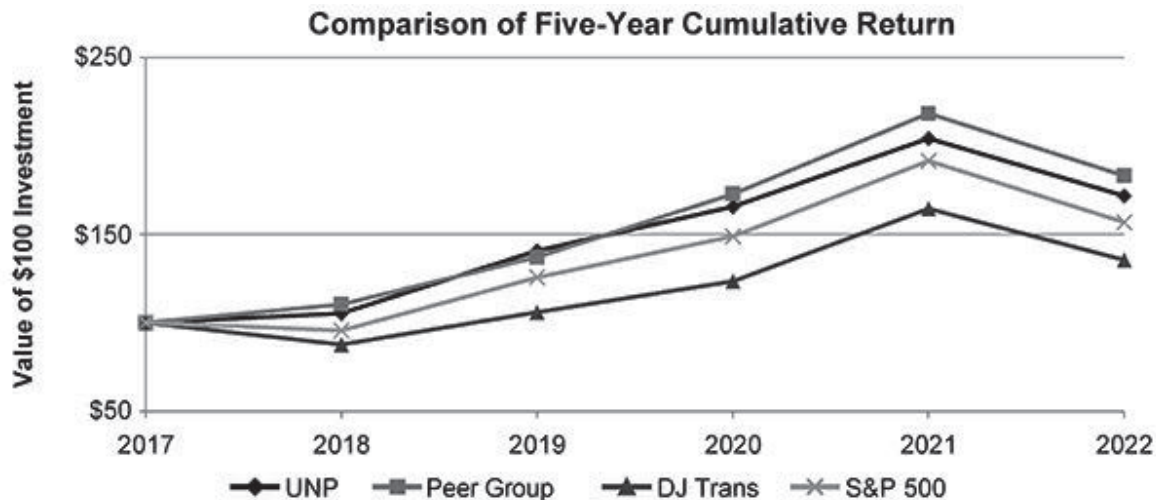
Our common stock is traded on the NYSE under the symbol "UNP".

At February 3, 2023, there were 611,872,981 shares of common stock outstanding and 28,959 common shareholders of record. On that date, the closing price of the common stock on the NYSE was \$210.29. We paid dividends to our common shareholders during each of the past 123 years.

Comparison Over One- and Three-Year Periods – The following table presents the cumulative total shareholder returns, assuming reinvestment of dividends, over one- and three-year periods for the Corporation (UNP), a peer group index (comprised of CSX Corporation and Norfolk Southern Corporation), the Dow Jones Transportation Index (DJ Trans), and the Standard & Poor's 500 Stock Index (S&P 500).

<i>Period</i>	<i>UNP</i>	<i>Peer Group</i>	<i>DJ Trans</i>	<i>S&P 500</i>
1 Year (2022)	(15.9)%	(16.1)%	(17.6)%	(18.1)%
3 Year (2020 - 2022)	22.0	33.6	27.9	24.7

Five-Year Performance Comparison – The following graph provides an indicator of cumulative total shareholder returns for the Corporation as compared to the peer group index (described above), the DJ Trans, and the S&P 500. The graph assumes that \$100 was invested in the common stock of Union Pacific Corporation and each index on December 31, 2017, and that all dividends were reinvested. The information below is historical in nature and is not necessarily indicative of future performance.



Purchases of Equity Securities – During 2022, we repurchased 27,374,826 shares of our common stock at an average price of \$231.51. The following table presents common stock repurchases during each month for the fourth quarter of 2022:

<i>Period</i>	<i>Total Number of Shares Purchased [a]</i>	<i>Average Price Paid Per Share</i>	<i>Total Number of Shares Purchased as Part of a Publicly Announced Plan or Program</i>	<i>Maximum Number of Shares Remaining Under the Plan or Program [b]</i>
Oct. 1 through Oct. 31	1,985,868	\$ 196.40	1,985,704	85,423,274
Nov. 1 through Nov. 30	1,235,296	206.48	1,234,889	84,188,385
Dec. 1 through Dec. 31	281,092	213.45	281,074	83,907,311
Total	3,502,256	\$ 201.32	3,501,667	N/A

[a] Total number of shares purchased during the quarter includes approximately 589 shares delivered or attested to UPC by employees to pay stock option exercise prices, satisfy excess tax withholding obligations for stock option exercises or vesting of retention units, and pay withholding obligations for vesting of retention shares.

[b] Effective April 1, 2022, our Board of Directors authorized the repurchase of up to 100 million shares of our common stock by March 31, 2025, replacing our previous repurchase program. These repurchases may be made on the open market or through other transactions. Our management has sole discretion with respect to determining the timing and amount of these transactions.

Item 6. [Reserved]

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion should be read in conjunction with the Consolidated Financial Statements and applicable notes to the Financial Statements and Supplementary Data, Item 8, and other information in this report, including Risk Factors set forth in Item 1A and Critical Accounting Estimates and Cautionary Information at the end of this Item 7. The following section generally discusses 2022 and 2021 items and year-to-year comparisons between 2022 and 2021. Discussions of 2020 items and year-to-year comparisons between 2021 and 2020 that are not included in this Form 10-K can be found in "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7, of the Company's Annual Report on Form 10-K for the fiscal year ended December 31, 2021.

The Railroad, along with its subsidiaries and rail affiliates, is our one reportable business segment. Although revenues are analyzed by commodity, we analyze the net financial results of the Railroad as one segment due to the integrated nature of the rail network.

EXECUTIVE SUMMARY

2022 Results

- **Safety** – Union Pacific is dedicated to maintaining a safe and healthy workplace. Throughout 2022, we continued to use our Total Safety Culture, Courage to Care, COMMIT (Coaching, Observing, Mentoring, and Motivating with Integrity and Trust), and Peer to Peer programs throughout our operations to enhance employee safety and engagement. In addition, based on the evaluation of a third-party expert on the effectiveness of these programs completed in 2021, we are implementing engagement improvements to enhance our safety culture. These initiatives include defining and setting standards for employee interactions, corrective actions and follow up, and root cause analysis. As a result of these efforts, our reportable personal injury incidents rate per 200,000 employee-hours of 0.80 decreased 18% from 2021. We also continued to adapt to the evolving environment due to COVID and other illnesses. Safety procedures and policies are refined based on Centers for Disease Control and Prevention (CDC) guidelines.

We continued to refine our proprietary software to evaluate train and route characteristics to enable proactive intervention by our Operating Practices Command Center to prevent derailments. In addition, we increased the replacement of freight car wheels and took steps to address human factor yard derailments related to switch alignment. Despite these efforts, our reportable derailment incident rate per million train miles increased 8% year-over-year.

- **Network Operations** – Throughout 2022, our network was congested in several key corridors, which hindered our ability to handle all of the demand in several markets. To address this congestion, we aggressively hired and graduated 1,302 new train, engine, and yard employees; temporarily relocated train, engine, and yard employees to areas with the greatest need; added locomotives to the fleet in select locations; and reduced freight car inventory, relative to carloads, from our network. Due to this congestion, our operating metrics deteriorated year-over-year. Freight car velocity decreased due to increased terminal dwell and higher operating car inventory levels, which drove lower train speeds. Additional details on these metrics are discussed in Other Operating/Performance and Financial Statistics of this Item 7.
- **Freight Revenues** – Freight revenues increased 14% year-over-year to \$23.2 billion driven by higher fuel surcharge revenues, core pricing gains, and a 2% increase in volume. Volume increases were driven by strong production and inventory replenishment in the automotive industry, increased demand for coal due to higher natural gas prices, and continued strength in the industrial markets driven by rock, sand, and plastics. These gains were partially offset by declines in international intermodal, parcel, grain, and petroleum products.
- **Financial Results** – Higher fuel prices, operational challenges, inflation, increased volume-related costs, and a one-time charge for the labor agreements reached with our labor unions (See Labor Agreements in Other Matters in this Item 7 of Part II), drove a 20% increase in operating expenses. Partially offsetting these increases were lower weather-related expenses in 2022 compared to 2021, when we incurred additional costs associated with Winter Storm Uri and wildfires in California. Increased revenues, due to higher fuel surcharge revenues, improved pricing, additional volume, and intermodal accessorial charges, more than offset the increased expenses producing operating income of \$9.9 billion, a 6% increase over 2021. Our operating ratio was 60.1%, deteriorating 2.9 points from 2021. Net income of \$7.0 billion translated into earnings of \$11.21 per diluted share, up 13% from 2021.
- **Fuel Prices** – The onset of the Russia-Ukraine conflict in late February 2022 drove crude oil prices above \$100 a barrel, where it remained elevated until mid-2022, driving an increase in our average fuel price. While our average fuel price declined 8% in the fourth quarter from the second quarter high of \$4.03, our average price in the fourth quarter was 46% higher than the fourth quarter of 2021.

Our average price of diesel fuel for the full year of 2022 was \$3.65 per gallon, an increase of 64% from 2021. The higher price resulted in increased operating expenses of \$1.3 billion (excluding any impact from year-over-year volume increases). Gross ton-miles increased 3%, which also drove higher fuel expense. Partially offsetting these increases was a 1% improvement in our fuel consumption rate to a new full year record low.

- **Liquidity** – We are continually evaluating our financial condition and liquidity. On December 31, 2022, we had \$973 million of cash and cash equivalents. Despite the challenging year, we generated \$9.4 billion of cash provided by operating activities, yielding free cash flow of \$2.7 billion after reductions of \$3.5 billion for cash used in investing activities and \$3.2 billion in dividends. We repurchased \$6.3 billion of our shares. We have been, and we expect to continue to be, in compliance with our debt covenants. We have \$2.0 billion of credit available under our revolving credit facility and up to \$700 million undrawn on our Receivables Facility. As of December 31, 2022, none of the revolving credit facility was drawn. Additional details are discussed in Liquidity and Capital Resources of this Item 7.

Free cash flow is defined as cash provided by operating activities less cash used in investing activities and dividends paid. Free cash flow is not considered a financial measure under GAAP by SEC Regulation G and Item 10 of SEC Regulation S-K and may not be defined and calculated by other companies in the same manner. We believe free cash flow is important to management and investors in evaluating our financial performance and measures our ability to generate cash without additional external financing. Free cash flow should be considered in addition to, rather than as a substitute for, cash provided by operating activities. The following table reconciles cash provided by operating activities (GAAP measure) to free cash flow (non-GAAP measure):

<i>Millions</i>	2022	2021	2020
Cash provided by operating activities	\$ 9,362	\$ 9,032	\$ 8,540
Cash used in investing activities	(3,471)	(2,709)	(2,676)
Dividends paid	(3,159)	(2,800)	(2,626)
Free cash flow	\$ 2,732	\$ 3,523	\$ 3,238

2023 Outlook

- Safety** – Operating a safe railroad benefits all our constituents: employees, customers, shareholders, and the communities we serve. We will continue using a comprehensive safety management system approach utilizing technology, hazard identification and risk assessments, employee engagement, training, quality control, and targeted capital investments. We will continually evaluate and adjust deployment of Total Safety Culture, Courage to Care, COMMIT, and Peer to Peer resources throughout our operations, which allows us to identify and implement best practices for employee and operational safety. In addition, our Operating Practices Command Center will continue the implementation of predictive technology to reduce variability by seeking to identify causes of mainline service interruptions and develop solutions, in addition to assisting employees with understanding best practices for handling trains. We will continue our efforts to utilize data to identify and mitigate exposure to risk, detect rail defects, improve or close crossings, and educate the public and law enforcement agencies about crossing safety through a combination of our own programs (including risk assessment strategies), industry programs, and local community activities across the network. We also are dedicated to maintaining a healthy workplace and continue monitoring the COVID case levels, modifying our policies as needed to protect employees and minimize the risk of workplace transmission.
- Network Operations** – In 2023, we strive to increase reliability of our service product, reduce variability in network operations, and improve resource availability, including actively hiring additional train, engine, and yard employees. Further train length initiatives allow us to efficiently add incremental volume growth to our existing train network. We will continue to make capital investments targeted to improve operational performance, handle more volume, and increase efficiency, requiring fewer locomotives, freight cars, and other critical resources.
- Financial Expectations** – We expect volume to outpace industrial production growth in 2023 due to our business development efforts bringing new customers to our railroad. In the current environment, we expect continued operating ratio improvement driven by pricing in excess of inflation, improving our service product, and better leveraging our resources. We expect to generate strong cash flow from operating activities allowing us to continue our industry leading dividend payout ratio and commit excess cash to our share repurchase programs. Macroeconomic uncertainties remain in 2023 that could have a material impact on our 2023 financial and operating results. Regardless of external factors, we will focus on providing our customers consistent and reliable service; efficiently managing operations; seeking new business opportunities; and protecting our employees, customers, and communities.
- Market Conditions** – Current forecasts for industrial production indicate negative growth in 2023. The macroeconomic uncertainty, high inflationary environment, and disruptions in supply chains will continue to impact our shipments. In addition, other factors, such as changes in domestic and foreign monetary policy (including rising interest rates), may affect economic activity and demand for rail transportation; natural gas prices, weather conditions, and demand for other energy sources may impact the coal market; crude oil prices and spreads may drive demand for petroleum products and drilling materials; available truck capacity could impact our intermodal business; and international trade agreements could promote or hinder trade.

- **Fuel Prices** – Projections for crude oil and natural gas continue to fluctuate in the current economic environment. We could again see volatile fuel prices during 2023, as they are sensitive to global and U.S. domestic demand, refining capacity, geopolitical events, weather conditions, and other factors. As prices fluctuate, there will be a timing impact on earnings, as our fuel surcharge programs trail increases or decreases in fuel price by approximately two months.

Significant changes in fuel prices could have an impact on consumer discretionary spending, impacting demand for various consumer products we transport. Alternatively, those changes could have an inverse impact on commodities such as coal, petroleum products, and domestic drilling-related shipments. Increased diesel fuel prices also impact our competitive position versus trucks. As prices rise, the demand for more fuel-efficient rail transportation also rises, but at a slower rate.

- **Capital Plan** – In 2023, we expect our capital plan to be approximately \$3.6 billion, up 6% from 2022 as we make investments to support our growth strategy. We will continue to harden our infrastructure, replace older assets, and improve the safety and resilience of the network. In addition, the plan includes investments in growth-related projects to drive more carloads to the network, certain ramps to efficiently handle volumes from new and existing intermodal customers, continuous modernization of our locomotive fleet, and projects intended to improve operational efficiency. The capital plan may be revised if business conditions warrant or if new laws or regulations affect our ability to generate sufficient returns on these investments. (See further discussion in this Item 7 under Liquidity and Capital Resources – Capital Plan.)

RESULTS OF OPERATIONS

Operating Revenues

<i>Millions</i>	2022	2021	2020	% Change 2022 v 2021	% Change 2021 v 2020
Freight revenues	\$ 23,159	\$ 20,244	\$ 18,251	14%	11%
Other subsidiary revenues	884	741	743	19	-
Accessorial revenues	779	752	473	4	59
Other	53	67	66	(21)	2
Total	\$ 24,875	\$ 21,804	\$ 19,533	14%	12%

We generate freight revenues by transporting products from our three commodity groups. Freight revenues vary with volume (carloads) and average revenue per car (ARC). Changes in price, traffic mix, and fuel surcharges drive ARC. Customer incentives, which are primarily provided for shipping to/from specific locations or based on cumulative volumes, are recorded as a reduction to operating revenues. Customer incentives that include variable consideration based on cumulative volumes are estimated using the expected value method, which is based on available historical, current, and forecasted volumes, and recognized as the related performance obligation is satisfied. We recognize freight revenues over time as shipments move from origin to destination. The allocation of revenues between reporting periods is based on the relative transit time in each reporting period with expenses recognized as incurred.

Other subsidiary revenues (primarily logistics and commuter rail operations) are generally recognized over time as shipments move from origin to destination. The allocation of revenues between reporting periods is based on the relative transit time in each reporting period with expenses recognized as incurred. Accessorial revenues are recognized at a point in time as performance obligations are satisfied.

Freight revenues increased 14% year-over-year to \$23.2 billion driven by higher fuel surcharge revenues, core pricing gains, and a 2% increase in volume. Volume increases were driven by strong production and inventory replenishment in the automotive industry, increased demand for coal due to higher natural gas prices, and continued strength in the industrial markets driven by rock, sand, and plastics. These gains were partially offset by declines in international intermodal, parcel, grain, and petroleum products.

Our fuel surcharge programs generated freight revenues of \$3.7 billion and \$1.7 billion in 2022 and 2021, respectively. Fuel surcharge revenues in 2022 increased \$2.0 billion because of a 64% increase in fuel price and a 2% increase in carloadings.

In 2022, other subsidiary revenues increased compared to 2021 primarily driven by higher fuel surcharge and an increase in automotive parts shipments due to market demand and contract wins at our Loup subsidiary. Accessorial revenues increased in 2022 compared to 2021 driven by increased intermodal accessorial charges tied to global supply chain disruptions. Other revenues decreased year-over-year.

The following tables summarize the year-over-year changes in freight revenues, revenue carloads, and ARC by commodity type:

Freight Revenues				% Change	% Change
<i>Millions</i>	2022	2021	2020	2022 v 2021	2021 v 2020
Grain & grain products	\$ 3,598	\$ 3,181	\$ 2,829	13%	12 %
Fertilizer	712	697	660	2	6
Food & refrigerated	1,093	998	937	10	7
Coal & renewables	2,134	1,780	1,534	20	16
Bulk	7,537	6,656	5,960	13	12
Industrial chemicals & plastics	2,158	1,943	1,845	11	5
Metals & minerals	2,196	1,811	1,580	21	15
Forest products	1,465	1,357	1,160	8	17
Energy & specialized markets	2,386	2,212	2,037	8	9
Industrial	8,205	7,323	6,622	12	11
Automotive	2,257	1,761	1,680	28	5
Intermodal	5,160	4,504	3,989	15	13
Premium	7,417	6,265	5,669	18	11
Total	\$ 23,159	\$ 20,244	\$ 18,251	14%	11%

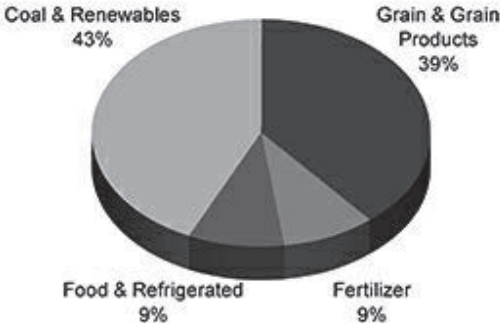
Revenue Carloads				% Change	% Change
<i>Thousands</i>	2022	2021	2020	2022 v 2021	2021 v 2020
Grain & grain products	798	805	745	(1)%	8%
Fertilizer	190	201	193	(5)	4
Food & refrigerated	187	189	185	(1)	2
Coal & renewables	885	819	797	8	3
Bulk	2,060	2,014	1,920	2	5
Industrial chemicals & plastics	637	606	587	5	3
Metals & minerals	785	697	646	13	8
Forest products	241	250	220	(4)	14
Energy & specialized markets	552	559	539	(1)	4
Industrial	2,215	2,112	1,992	5	6
Automotive	778	701	692	11	1
Intermodal [a]	3,116	3,211	3,149	(3)	2
Premium	3,894	3,912	3,841	-	2
Total	8,169	8,038	7,753	2%	4%

Average Revenue per Car				% Change	% Change
	2022	2021	2020	2022 v 2021	2021 v 2020
Grain & grain products	\$ 4,509	\$ 3,953	\$ 3,797	14%	4%
Fertilizer	3,749	3,470	3,427	8	1
Food & refrigerated	5,844	5,279	5,047	11	5
Coal & renewables	2,410	2,173	1,926	11	13
Bulk	3,658	3,305	3,104	11	6
Industrial chemicals & plastics	3,388	3,207	3,144	6	2
Metals & minerals	2,797	2,598	2,445	8	6
Forest products	6,092	5,424	5,269	12	3
Energy & specialized markets	4,320	3,956	3,780	9	5
Industrial	3,704	3,467	3,324	7	4
Automotive	2,902	2,511	2,427	16	3
Intermodal [a]	1,656	1,403	1,267	18	11
Premium	1,905	1,601	1,476	19	8
Average	\$ 2,835	\$ 2,519	\$ 2,354	13%	7%

[a] For intermodal shipments, each container or trailer equals one carload.

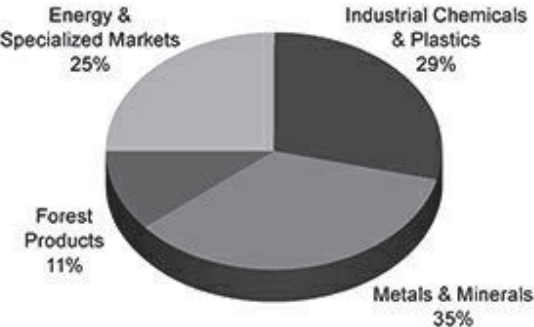
Bulk – Bulk includes shipments of grain and grain products, fertilizer, food and refrigerated, and coal and renewables. Freight revenues from bulk shipments increased in 2022 compared to 2021 due to higher fuel surcharge revenues, core pricing gains, and volume increases, partially offset by negative mix from increased coal shipments and decreased grain shipments. Volume grew 2% compared to 2021 driven by increases in coal and renewable shipments due to higher natural gas prices and contract wins, partially offset by declines in grain and grain products shipments as network constraints increased shuttle cycle times for our grain traffic.

2022 Bulk Carloads



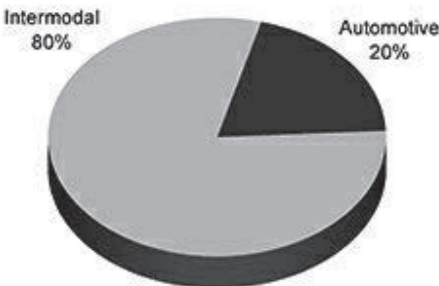
Industrial – Industrial includes shipments of industrial chemicals and plastics, metals and minerals, forest products, and energy and specialized markets. Freight revenues from industrial shipments increased in 2022 versus 2021 due to higher fuel surcharge revenues, volume increases, and core pricing gains, partially offset by negative mix of traffic from increased short haul rock shipments and decreased petroleum. Volume increased 5% compared to 2021. The growth was driven by metals and minerals due to strong demand for sand and rock as well as new business wins, expansions, and market demand for industrial chemicals and plastics. Many of our customers in the Gulf Coast experienced Winter Storm Uri disruptions for an extended period causing a significant impact on industrial chemicals and plastics and metals and minerals industries in the first quarter of 2021. The 2021 weather events coupled with strong demand in 2022 drove the year-over-year increase for the impacted commodities. Partially offsetting some of the growth was a decline in petroleum shipments, within the energy and specialized markets commodity line, primarily due to regulatory challenges in Mexico markets.

2022 Industrial Carloads



Premium – Premium includes shipments of finished automobiles, automotive parts, and merchandise in intermodal containers, both domestic and international. Freight revenues from premium shipments increased driven by higher fuel surcharges, core pricing gains, and positive mix of traffic, partially offset by a slight decline in volume. Automotive shipments increased 11% compared to 2021 driven by an increase in finished vehicle shipments and automotive parts as the automotive industry continued to recover from the shortage of semiconductors and the 2021 weather disruptions in the first quarter. Premium volume was flat compared to 2021 as the increased automotive shipments, domestic intermodal contract wins, and market strength due to tight truck capacity earlier in the year were more than offset by ongoing international supply chain disruptions and the soft market demand in the fourth quarter for domestic and parcel shipments.

2022 Premium Carloads

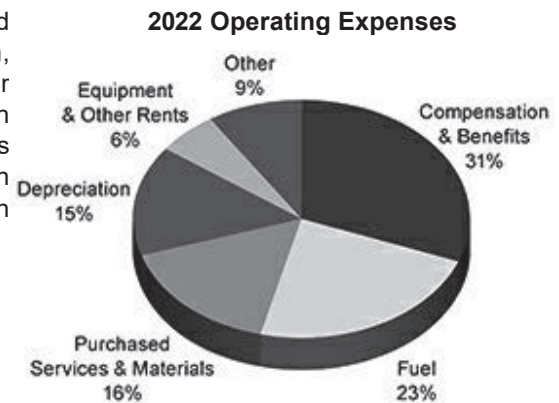


Mexico Business – Each of our commodity groups includes revenues from shipments to and from Mexico. Revenues from Mexico business were \$2.7 billion in 2022, up 14% compared to 2021, driven by higher fuel surcharge revenues, core pricing gains, and positive mix of traffic, partially offset by a 1% decline in volume. The volume decrease was driven by lower intermodal and petroleum shipments, partially offset by increases in automotive parts and steel shipments.

Operating Expenses

<i>Millions</i>	2022	2021	2020	% Change 2022 v 2021	% Change 2021 v 2020
Compensation and benefits	\$ 4,645	\$ 4,158	\$ 3,993	12%	4%
Fuel	3,439	2,049	1,314	68	56
Purchased services and materials	2,442	2,016	1,962	21	3
Depreciation	2,246	2,208	2,210	2	-
Equipment and other rents	898	859	875	5	(2)
Other	1,288	1,176	1,345	10	(13)
Total	\$ 14,958	\$ 12,466	\$ 11,699	20%	7%

Operating expenses increased \$2.5 billion, or 20%, in 2022 compared to 2021 driven by higher fuel prices, operational inefficiencies, inflation, increased volume-related costs, and a one-time charge for the labor agreements reached with our labor unions (See Labor Agreements in Other Matters in this Item 7 of Part II). Partially offsetting these increases were lower weather-related expenses in 2022 compared to 2021, which included costs associated with Winter Storm Uri and wildfires in California.



Compensation and Benefits – Compensation and benefits include wages, payroll taxes, health and welfare costs, pension costs, and incentive costs. In 2022, expenses increased 12% compared to 2021, due to wage inflation, increased employee levels to address congestion across the system and increased carload volumes, and a one-time charge for the labor agreements reached with our labor unions (See Labor Agreements in Other Matters in this Item 7 of Part II). The year-over-year comparison was positively impacted by the 2021 weather-related expenses.

Fuel – Fuel includes locomotive fuel and gasoline for highway and non-highway vehicles and heavy equipment. Locomotive diesel fuel prices, which averaged \$3.65 per gallon (including taxes and transportation costs) in 2022, compared to \$2.23 per gallon in 2021, increased expenses \$1.3 billion (excluding any impact from increased volume year-over-year). Gross ton-miles increased 3% driving higher fuel expense. Partially offsetting this increase was a 1% improvement to a record low fuel consumption rate in 2022, computed as gallons of fuel consumed divided by gross ton-miles.

Purchased Services and Materials – Expense for purchased services and materials includes the costs of services purchased from outside contractors and other service providers (including equipment maintenance and contract expenses incurred by our subsidiaries for external transportation services); materials used to maintain the Railroad's lines, structures, and equipment; costs of operating facilities jointly used by UPRR and other railroads; transportation and lodging for train crew employees; trucking and contracting costs for intermodal containers; leased automobile maintenance expenses; and tools and supplies. Purchased services and materials increased 21% in 2022 compared to 2021 driven by higher locomotive maintenance expenses due to a larger active fleet to assist in recovering the network, inflation, increased drayage costs incurred by our Loup subsidiary, and volume-related costs. The year-over-year comparison was positively impacted by the 2021 weather-related expenses.

Depreciation – The majority of depreciation relates to road property, including rail, ties, ballast, and other track material. Depreciation expense was up 2% in 2022 compared to 2021.

Equipment and Other Rents – Equipment and other rents expense primarily includes rental expense that the Railroad pays for freight cars owned by other railroads or private companies; freight car, intermodal, and locomotive leases; and office and other rent expenses, offset by equity income from certain equity method investments. Equipment and other rents expense increased 5% compared to 2021 due to higher volume and network congestion. Higher equity income partially offset some of these increases.

Other – Other expenses include state and local taxes; freight, equipment, and property damage; utilities; insurance; personal injury; environmental; employee travel; telephone and cellular; computer software; bad debt; and other general expenses. Other expenses increased 10% in 2022 compared to 2021 driven by casualty expenses, including higher personal injury expense and damaged freight; increased business travel costs; and higher state and local taxes, partially offset by higher equity income.

Non-Operating Items

Millions	2022	2021	2020	% Change 2022 v 2021	% Change 2021 v 2020
Other income, net	\$ 426	\$ 297	\$ 287	43%	3%
Interest expense	(1,271)	(1,157)	(1,141)	10	1
Income tax expense	(2,074)	(1,955)	(1,631)	6	20

Other Income, net – Other income increased in 2022 compared to 2021 driven by higher real estate income and net periodic pension benefits, partially offset by a \$36 million gain from the sale of an investment in a technology company in 2021 and higher environmental remediation expense at non-operating sites. Real estate sales in 2022 included a \$79 million gain from a land sale to the Illinois State Toll Highway Authority and a \$35 million gain from a land sale to the Colorado Department of Transportation. Real estate sales in 2021 included a \$50 million gain from a sale to the Colorado Department of Transportation.

Interest Expense – Interest expense increased in 2022 compared to 2021 due to an increased weighted-average debt level of \$32.1 billion in 2022 from \$28.3 billion in 2021, partially offset by a lower effective interest rate of 4.0% in 2022 compared to 4.1% in 2021.

Income Tax Expense – Income tax expense increased in 2022 compared to 2021 due to higher pre-tax income, partially offset by reductions of \$95 million in deferred tax expense from Nebraska, Iowa, Arkansas, and Idaho reducing their corporate income tax rates. 2021 income tax expense included reductions of \$32 million in deferred tax expense from Nebraska, Oklahoma, Idaho, Louisiana, and Arkansas reducing their corporate income tax rates. Our effective tax rates for 2022 and 2021 were 22.9% and 23.1%, respectively.

OTHER OPERATING/PERFORMANCE AND FINANCIAL STATISTICS

We report a number of key performance measures weekly to the STB. We provide this data on our website at www.up.com/investor/aar-stb_reports/index.htm.

Operating/Performance Statistics

Management continuously monitors these key operating metrics to evaluate our operational efficiency and asset utilization in striving to provide a consistent, reliable service product to our customers.

Railroad performance measures are included in the table below:

	2022	2021	2020	% Change 2022 v 2021	% Change 2021 v 2020
Gross ton-miles (GTMs) (billions)	843.4	817.9	771.8	3%	6%
Revenue ton-miles (billions)	420.8	411.3	385.0	2	7
Freight car velocity (daily miles per car) [a]	191	203	221	(6)	(8)
Average train speed (miles per hour) [a]	23.8	24.6	25.9	(3)	(5)
Average terminal dwell time (hours) [a]	24.4	23.7	22.7	3	4
Locomotive productivity (GTMs per horsepower day)	125	133	137	(6)	(3)
Train length (feet)	9,329	9,334	8,798	-	6
Intermodal car trip plan compliance (%) [b]	67	73	81	(6) pts	(8) pts
Manifest/Automotive car trip plan compliance (%) [b]	59	63	71	(4) pts	(8) pts
Workforce productivity (car miles per employee)	1,036	1,038	947	-	10
Total employees (average)	30,717	29,905	30,960	3	(3)
Operating ratio (%)	60.1	57.2	59.9	2.9 pts	(2.7) pts

[a] As reported to the STB.

[b] Methodology used to report (described below) is not comparable with the reporting to the STB under docket number EP 770.

Gross and Revenue Ton-Miles – Gross ton-miles are calculated by multiplying the weight of loaded and empty freight cars by the number of miles hauled. Revenue ton-miles are calculated by multiplying the weight of freight by the number of tariff miles. In 2022, gross ton-miles and revenue ton-miles increased 3% and 2%, respectively, compared to 2021, driven by a 2% increase in carloadings. Changes in commodity mix drove the variance in year-over-year increases between gross ton-miles, revenue ton-miles, and carloads (higher increases in coal, which are generally heavier).

Freight Car Velocity – Freight car velocity measures the average daily miles per car on our network. The two key drivers of this metric are the speed of the train between terminals (average train speed) and the time a rail car spends at the terminals (average terminal dwell time). Freight car velocity, average train speed, and average terminal dwell deteriorated compared to 2021 as excess operating car inventory levels and hiring challenges decreased network fluidity.

Locomotive Productivity – Locomotive productivity is gross ton-miles per average daily locomotive horsepower. Locomotive productivity decreased 6% in 2022 compared to 2021 driven by an increase in our average active fleet size as resources were deployed to alleviate network congestion and handle increased volume compared to 2021.

Train Length – Train length is the average maximum train length on a route measured in feet. Our train length remained relatively flat compared to 2021 due to lower international intermodal shipments and efforts to recover the network offsetting productivity initiatives.

Car Trip Plan Compliance – Car trip plan compliance is the percentage of cars delivered on time in accordance with our original trip plan. Our network trip plan compliance is broken into the intermodal and manifest/automotive products. Intermodal car trip plan compliance and manifest/automotive car trip plan compliance deteriorated in 2022 compared to 2021 because of crew shortages.

Workforce Productivity – Workforce productivity is average daily car miles per employee. Workforce productivity decreased slightly in 2022, as average daily car miles increased 3% and employees increased 3% compared to 2021. The 3% increase in employee levels was driven by an increase in train, engine, and yard employees to address volume increases and operational inefficiencies due to crew shortages.

Operating Ratio – Operating ratio is our operating expenses reflected as a percentage of operating revenues. Our operating ratio of 60.1% deteriorated 2.9 points compared to 2021 driven by operational inefficiencies, inflation, a one-time charge for the labor agreements reached with our labor unions (See Labor Agreements in Other Matters in this Item 7 of Part II), higher fuel prices, and other cost increases, partially offset by core pricing gains, mix of traffic, and lower weather-related expenses.

Return on Average Common Shareholders' Equity

<i>Millions, Except Percentages</i>	2022	2021	2020
Net income	\$ 6,998	\$ 6,523	\$ 5,349
Average equity	\$ 13,162	\$ 15,560	\$ 17,543
Return on average common shareholders' equity	53.2%	41.9%	30.5%

Return on Invested Capital as Adjusted (ROIC)

<i>Millions, Except Percentages</i>	2022	2021	2020
Net income	\$ 6,998	\$ 6,523	\$ 5,349
Interest expense	1,271	1,157	1,141
Interest on average operating lease liabilities	56	54	64
Taxes on interest	(304)	(280)	(282)
Net operating profit after taxes as adjusted	\$ 8,021	\$ 7,454	\$ 6,272
Average equity	\$ 13,162	\$ 15,560	\$ 17,543
Average debt	31,528	28,229	25,965
Average operating lease liabilities	1,695	1,682	1,719
Average invested capital as adjusted	\$ 46,385	\$ 45,471	\$ 45,227
Return on invested capital as adjusted	17.3%	16.4%	13.9%

ROIC is considered a non-GAAP financial measure by SEC Regulation G and Item 10 of SEC Regulation S-K and may not be defined and calculated by other companies in the same manner. We believe this measure is important to management and investors in evaluating the efficiency and effectiveness of our long-term capital investments. In addition, we currently use ROIC as a performance criterion in determining certain elements of equity compensation for our executives. ROIC should be considered in addition to, rather than as a substitute for, other information provided in accordance with GAAP. The most comparable GAAP measure is return on average common shareholders' equity. The tables above provide a reconciliation from return on average common shareholders' equity to ROIC. At December 31, 2022, 2021, and 2020, the incremental borrowing rate on operating leases was 3.3%, 3.2%, and 3.7%, respectively.

Adjusted Debt / Adjusted EBITDA

<i>Millions, Except Ratios for the Twelve Months Ended</i>	Dec. 31, 2022	Dec. 31, 2021	Dec. 31, 2020
Net income	\$ 6,998	\$ 6,523	\$ 5,349
Add:			
Income tax expense	2,074	1,955	1,631
Depreciation	2,246	2,208	2,210
Interest expense	1,271	1,157	1,141
EBITDA	\$ 12,589	\$ 11,843	\$ 10,331
Adjustments:			
Other income, net	(426)	(297)	(287)
Interest on operating lease liabilities	54	56	59
Adjusted EBITDA	\$ 12,217	\$ 11,602	\$ 10,103
Debt	\$ 33,326	\$ 29,729	\$ 26,729
Operating lease liabilities	1,631	1,759	1,604
Unfunded pension and OPEB, net of tax cost of \$0, \$0, and \$195 [a]	-	-	637
Adjusted debt	\$ 34,957	\$ 31,488	\$ 28,970
Adjusted debt / adjusted EBITDA	2.9	2.7	2.9

[a] Prior periods were recast to conform to the current year presentation, which removes the impact of pension and OPEB (other postretirement benefits) when the net amount represents a funded amount.

Adjusted debt to adjusted EBITDA (earnings before interest, taxes, depreciation, amortization, and adjustments for other income and interest on present value of operating leases) is considered a non-GAAP financial measure by SEC Regulation G and Item 10 of SEC Regulation S-K and may not be defined and calculated by other companies in the same manner. We believe this measure is important to management and investors in evaluating the Company's ability to sustain given debt levels (including leases) with the cash generated from operations. In addition, a comparable measure is used by rating agencies when reviewing the Company's credit rating. Adjusted debt to adjusted EBITDA should be considered in addition to, rather than as a substitute for, net income. The table above provides a reconciliation from net income to adjusted EBITDA and debt to adjusted debt. At December 31, 2022, 2021, and 2020, the incremental borrowing rate on operating leases was 3.3%, 3.2%, and 3.7%, respectively.

LIQUIDITY AND CAPITAL RESOURCES

We are continually evaluating our financial condition and liquidity. We analyze a wide range of economic scenarios and the impact on our ability to generate cash. These analyses inform our liquidity plans and activities outlined below and indicate we have sufficient borrowing capacity to sustain an extended period of lower volumes.

At both December 31, 2022 and 2021, we had a working capital deficit due to upcoming debt maturities. It is not unusual for us to have a working capital deficit, and we believe it is not an indication of a lack of liquidity. We also maintain adequate resources, including our credit facility and, when necessary, access the capital markets to meet foreseeable cash requirements.

During 2022, we generated \$9.4 billion of cash provided by operating activities, and issued \$5.4 billion of long-term debt. We have been, and we expect to continue to be, in compliance with our debt covenants. We increased the dividend once during 2022 paying out \$3.2 billion and repurchased shares totaling \$6.3 billion, including the completion of our \$2.2 billion accelerated share repurchase programs entered into on February 17, 2022.

Our principal sources of liquidity include cash and cash equivalents, our Receivables Facility, our revolving credit facility, as well as the availability of commercial paper and other sources of financing through the capital markets. On December 31, 2022, we had \$973 million of cash and cash equivalents, \$2.0 billion of committed credit available under our revolving credit facility, and up to \$700 million undrawn on the Receivables Facility. As of December 31, 2022, none of the revolving credit facility was drawn, and we did not draw on our revolving credit facility at any time during 2022. At December 31, 2022, we had \$100 million of the Receivables Facility drawn, \$200 million of commercial paper, and a \$100 million term loan outstanding. Our access to the Receivables Facility may be reduced or restricted if our bond ratings fall to certain levels below investment grade. If our bond rating were to deteriorate, it could have an adverse impact on our liquidity. Access to commercial paper as well as other capital market financing is dependent on market conditions. Deterioration of our operating results or financial condition due to internal or external factors could negatively impact our ability to access capital markets as a source of liquidity. Access to liquidity through the capital markets is also dependent on our financial stability. We expect that we will continue to have access to liquidity through any or all the following sources or activities: (a) increasing the utilization of our Receivables Facility, (b) issuing commercial paper, (c) entering into bank loans, outside of our revolving credit facility, or (iv) issuing bonds or other debt securities to public or private investors based on our assessment of the current condition of the credit markets. The Company's \$2.0 billion revolving credit facility is intended to support the issuance of commercial paper by UPC and also serves as an additional source of liquidity to fund short-term needs. The Company currently does not intend to make any borrowings under this facility.

As described in the notes to the Consolidated Financial Statements and as referenced in the table below, we have contractual obligations that may affect our financial condition. Based on our assessment of the underlying provisions and circumstances of our contractual obligations, other than the risks that we and other similarly situated companies face with respect to the condition of the capital markets (as described in Item 1A of Part II of this report), as of the date of this filing, there is no known trend, demand, commitment, event, or uncertainty that is reasonably likely to occur that would have a material adverse effect on our consolidated results of operations, financial condition, or liquidity. In addition, our commercial obligations, financings, and commitments are customary transactions that are like those of other comparable corporations, particularly within the transportation industry.

The following table identifies material obligations as of December 31, 2022:

Contractual Obligations Millions	Payments Due by December 31,						
	Total	2023	2024	2025	2026	2027	After 2027
Debt [a]	\$ 61,664	\$ 2,837	\$ 2,562	\$ 2,642	\$ 2,081	2,323	\$ 49,219
Purchase obligations [b]	3,241	920	818	822	275	180	226
Operating leases [c]	1,803	335	318	321	248	188	393
Other post retirement benefits [d]	396	45	40	40	40	39	192
Finance lease obligations [e]	259	76	63	44	35	30	11
Total contractual obligations	\$ 67,363	\$ 4,213	\$ 3,801	\$ 3,869	\$ 2,679	\$ 2,760	\$ 50,041

[a] Excludes finance lease obligations of \$234 million as well as unamortized discount and deferred issuance costs of (\$1,775) million. Includes an interest component of \$26,797 million.

[b] Purchase obligations include locomotive maintenance contracts; purchase commitments for fuel purchases, ties, ballast, and rail; and agreements to purchase other goods and services.

[c] Includes leases for locomotives, freight cars, other equipment, and real estate. Includes an interest component of \$172 million.

[d] Includes estimated other post retirement, medical, and life insurance payments, and payments made under the unfunded pension plan for the next ten years.

[e] Represents total obligations, including interest component of \$25 million.

Cash Flows

Millions	2022	2021	2020
Cash provided by operating activities	\$ 9,362	\$ 9,032	\$ 8,540
Cash used in investing activities	(3,471)	(2,709)	(2,676)
Cash used in financing activities	(5,887)	(7,158)	(4,902)
Net change in cash, cash equivalents, and restricted cash	\$ 4	\$ (835)	\$ 962

Operating Activities

Cash provided by operating activities increased in 2022 compared to 2021 due primarily to an increase in net income.

Cash flow conversion is defined as cash provided by operating activities less cash used in capital investments as a ratio of net income. Cash flow conversion rate is not considered a financial measure under GAAP by SEC Regulation G and Item 10 of SEC Regulation S-K and may not be defined and calculated by other companies in the same manner. We believe cash flow conversion rate is important to management and investors in evaluating our financial performance and measures our ability to generate cash without additional external financing. Cash flow conversion rate should be considered in addition to, rather than as a substitute for, cash provided by operating activities. The following table reconciles cash provided by operating activities (GAAP measure) to cash flow conversion rate (non-GAAP measure):

Millions, For the Year Ended December 31,			
	2022	2021	2020
Cash provided by operating activities	\$ 9,362	\$ 9,032	\$ 8,540
Cash used in capital investments	(3,620)	(2,936)	(2,927)
Total (a)	5,742	6,096	5,613
Net income (b)	6,998	6,523	5,349
Cash flow conversion rate (a/b)	82%	93%	105%

Investing Activities

Cash used in investing activities in 2022 increased compared to 2021 primarily driven by increased freight car and locomotive capital investments as we modernize our locomotives to move more freight efficiently and sustainably across our network.

The following tables detail cash capital investments and track statistics for the years ended December 31:

<i>Millions</i>	2022	2021	2020
Ties	\$ 544	\$ 443	\$ 507
Rail and other track material	437	507	471
Ballast	216	215	225
Other [a]	693	760	629
Total road infrastructure replacements	1,890	1,925	1,832
Line expansion and other capacity projects	276	284	332
Commercial facilities	308	243	171
Total capacity and commercial facilities	584	527	503
Locomotives and freight cars [b]	800	322	269
Technology and other	346	162	323
Total cash capital investments	\$ 3,620	\$ 2,936	\$ 2,927

[a] Other includes bridges and tunnels, signals, other road assets, and road work equipment.

[b] Locomotives and freight cars include early lease buyouts of \$70 million, \$34 million, and \$38 million in 2022, 2021, and 2020, respectively.

	2022	2021	2020
Track miles of rail replaced	542	502	468
Track miles of rail capacity expansion	44	70	83
New ties installed (thousands)	3,712	4,058	4,671
Miles of track surfaced	9,502	10,441	10,414

Capital Plan – In 2023, we expect our capital plan to be approximately \$3.6 billion, up 6% from 2022 as we make investments to support our growth strategy. We will continue to harden our infrastructure, replace older assets, and improve the safety and resiliency of the network. In addition, the plan includes investments in growth-related projects to drive more carloads to the network, certain ramps to efficiently handle volumes from new and existing intermodal customers, continuous modernization of our locomotive fleet, and projects intended to improve operational efficiency. The capital plan may be revised if business conditions warrant or if new laws or regulations affect our ability to generate sufficient returns on these investments.

Financing Activities

Cash used in financing activities decreased in 2022 compared to 2021 driven by increased debt issuances and a decrease in share repurchases, partially offset by an increase in the repayment of debt and higher dividend payments.

See Note 14 to the Financial Statements and Supplementary Data, Item 8, for a description of all our outstanding financing arrangements and significant new borrowings, and Note 18 to the Financial Statements and Supplementary Data, Item 8, for a description of our share repurchase programs.

OTHER MATTERS

Inflation – For capital-intensive companies, inflation significantly increases asset replacement costs for long-lived assets. As a result, assuming that we replace all operating assets at current price levels, depreciation charges (on an inflation-adjusted basis) would be substantially greater than historically reported amounts.

Sensitivity Analyses – The sensitivity analyses that follow illustrate the economic effect that hypothetical changes in interest and tax rates could have on our results of operations and financial condition. These hypothetical changes do not consider other factors that could impact actual results.

Interest Rates – At December 31, 2022, we had variable-rate debt representing approximately 1.2% of our total debt. If variable interest rates average one percentage point higher in 2023 than our December 31, 2022, variable rate, which was approximately 4.4%, our annual interest expense would increase by approximately \$4.0 million. This amount was determined by considering the impact of the hypothetical interest rate on the balances of our variable-rate debt at December 31, 2022.

Market risk for fixed-rate debt is estimated as the potential increase in fair value resulting from a hypothetical one percentage point decrease in interest rates as of December 31, 2022, and totals an increase of approximately \$3.5 billion to the fair value of our debt at December 31, 2022. We estimated the fair values of our fixed-rate debt by considering the impact of the hypothetical interest rates on quoted market prices and current borrowing rates.

Tax Rates – Our deferred tax assets and liabilities are measured based on current tax law. Future tax legislation, such as a change in the federal corporate tax rate, could have a material impact on our financial condition, results of operations, or liquidity. For example, a future, permanent 1% increase in our federal income tax rate would increase our deferred tax liability by approximately \$500 million. Similarly, a future, permanent 1% decrease in our federal income tax rate would decrease our deferred tax liability by approximately \$500 million.

Accounting Pronouncements – See Note 3 to the Financial Statements and Supplementary Data, Item 8.

Asserted and Unasserted Claims – See Note 17 to the Financial Statements and Supplementary Data, Item 8.

Indemnities – See Note 17 to the Financial Statements and Supplementary Data, Item 8.

Climate Change – Climate change could have an adverse impact on our operations and financial performance (see Risk Factors under Item 1A of this report), although we are currently unable to predict the manner or severity of such impact. We released our Climate Action Plan, which outlines the steps we are taking to reduce our environmental impact. This plan aligns with our corporate strategy: Serve (improve operational efficiency and minimize fuel consumption), Grow (offer sustainable supply chain solutions), Win (decarbonize our footprint and the environment) – Together (engage our stakeholders and align interests). We continue to take steps and explore opportunities to reduce our operational impact on the environment, including increased usage of renewable fuels, investments in alternative fuel technologies, using training programs and technology to reduce fuel consumption, and changing our operations to increase fuel efficiency (see "Sustainable Future" in the Operations section in Item 1 of this report).

Labor Agreements – Pursuant to the RLA, our collective bargaining agreements are subject to modification every five years. Existing agreements remain in effect until new agreements are ratified or until the RLA procedures are exhausted. The RLA procedures include mediation, potential arbitration, cooling-off periods, and the possibility of Presidential Emergency Boards and Congressional intervention. The round of negotiations that began on January 1, 2020, related to years 2020-2024 was concluded. In June 2022, the National Mediation Board released the parties from mediation, which initiated the first 30-day cooling-off period. Prior to the end of the first cooling-off period, the Biden administration appointed Presidential Emergency Board 250 (PEB) to resolve the parties' disputes. The PEB issued a report with its recommendations on August 16, 2022, initiating the second 30-day cooling-off period. Over the second cooling-off period, tentative agreements were reached with all the labor unions, averting a potential work stoppage. Nine out of thirteen agreements were ratified. For the remaining four unions that had not previously ratified, the agreements were imposed by legislation on December 2, 2022.

CRITICAL ACCOUNTING ESTIMATES

Our Consolidated Financial Statements have been prepared in accordance with GAAP. The preparation of these financial statements requires estimation and judgment that affect the reported amounts of revenues, expenses, assets, and liabilities. We base our estimates on historical experience and on various other assumptions that we believe are reasonable under the circumstances. The results form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. The following critical accounting estimates are a subset of our significant accounting policies described in Note 2 to the Financial Statements and Supplementary Data, Item 8. These critical accounting estimates affect significant areas of our financial statements and involve judgment and estimates. If these estimates differ significantly from actual results, the impact on our Consolidated Financial Statements may be material.

Personal Injury – See Note 17 to the Financial Statements and Supplementary Data, Item 8, and *"We May Be Subject to Various Claims and Lawsuits That Could Result in Significant Expenditures"* in the Risk Factors, Item 1A.

Our personal injury liability is subject to uncertainty due to unasserted claims, timing and outcome of claims, and evolving trends in litigation. There were no material changes to the assumptions used in the latest actuarial analysis.

Our personal injury liability balance and claims activity was as follows:

	2022	2021	2020
Ending liability balance at December 31 (millions)	\$ 361	\$ 325	\$ 270
Open claims, beginning balance	2,027	1,897	1,985
New claims	2,747	2,719	2,577
Settled or dismissed claims	(2,738)	(2,589)	(2,665)
Open claims, ending balance at December 31	2,036	2,027	1,897

Environmental Costs – See Note 17 to the Financial Statements and Supplementary Data, Item 8; *"We Are Subject to Significant Environmental Laws and Regulations"* in the Risk Factors, Item 1A; and Environmental Matters in the Legal Proceedings, Item 3.

Our environmental liability is subject to several factors such as type of remediation, nature and volume of contaminate, and number and financial viability of other potentially responsible parties, as well as uncertainty due to unknown alleged contamination, evolving trends in remediation techniques and final remedies, and changes in laws and regulations.

Our environmental liability balance and site activity was as follows:

	2022	2021	2020
Ending liability balance at December 31 (millions)	\$ 253	\$ 243	\$ 233
Open sites, beginning balance	376	373	360
New sites	69	105	96
Closed sites	(92)	(102)	(83)
Open sites, ending balance at December 31	353	376	373

Property and Depreciation – See Note 11 to the Financial Statements and Supplementary Data, Item 8.

Assets purchased or constructed throughout the year are capitalized if they meet applicable minimum units of property.

Estimated service lives of depreciable railroad property may vary over time due to changes in physical use, technology, asset strategies, and other factors that will have an impact on the retirement profiles of our assets. We are not aware of any specific factors that are reasonably likely to significantly change the estimated service lives of our assets. Actual use and retirement of our assets may vary from our current estimates, which would impact the amount of depreciation expense recognized in future periods.

Changes in estimated useful lives of our assets due to the results of our depreciation studies could significantly impact future periods' depreciation expense and have a material impact on our Consolidated Financial Statements. If the estimated useful lives of all depreciable assets were increased by one year, annual depreciation expense would decrease by approximately \$69 million. If the estimated useful lives of all depreciable assets were decreased by one year, annual depreciation expense would increase by approximately \$73 million. We are projecting an increase in our depreciation expense of approximately 3% in 2023 versus 2022. This is driven by an increase in our projected depreciable asset base.

During the last three fiscal years, no gains or losses were recognized due to the retirement of depreciable railroad properties.

Pension Plans – See Note 5 to the Financial Statements and Supplementary Data, Item 8.

The critical assumptions used to measure pension obligations and expenses are the discount rates and expected rate of return on pension assets.

We evaluate our critical assumptions at least annually, and selected assumptions are based on the following factors:

- We measure the service cost and interest cost components of our net periodic pension benefit/cost by using individual spot rates matched with separate cash flows for each future year. Discount rates are based on a Mercer yield curve of high-quality corporate bonds (rated AA by a recognized rating agency).
- Expected return on plan assets is based on our asset allocation mix and our historical return, taking into consideration current and expected market conditions.

The following tables present the key assumptions used to measure net periodic pension benefit/cost for 2023 and the estimated impact on 2023 net periodic pension benefit/cost relative to a change in those assumptions:

Assumptions	
Discount rate for benefit obligations	5.21%
Discount rate for interest on benefit obligations	5.14%
Discount rate for service cost	5.18%
Discount rate for interest on service cost	5.21%
Expected return on plan assets	5.25%

Sensitivities	<i>Increase in Expense Pension</i>
<i>Millions</i>	
0.25% decrease in discount rates	\$ 15
0.25% decrease in expected return on plan assets	\$ 12

The following table presents the net periodic pension benefit/cost for the years ended December 31:

<i>Millions</i>	<i>Est. 2023</i>	<i>2022</i>	<i>2021</i>	<i>2020</i>
Net periodic pension (benefit)/cost	\$ (6)	\$ 9	\$ 85	\$ 50

CAUTIONARY INFORMATION

Certain statements in this report, and statements in other reports or information filed or to be filed with the SEC (as well as information included in oral statements or other written statements made or to be made by us), are, or will be, forward-looking statements as defined by the Securities Act of 1933 and the Securities Exchange Act of 1934. These forward-looking statements and information include, without limitation, statements in the Chairman's letter preceding Part I; statements regarding planned capital expenditures under the caption "2023 Capital Plan" in Item 2 of Part I; and statements and information set forth under the captions "2023 Outlook"; "Liquidity and Capital Resources" in Item 7 of Part II regarding our capital plan, share repurchase programs, contractual obligations, "Pension Benefits", and "Other Matters" in this Item 7 of Part II. Forward-looking statements and information also include any other statements or information in this report (including information incorporated herein by reference) regarding: potential impacts of public health crises, including the outbreak of pandemic or contagious disease, such as COVID; the Russian Ukraine conflict on our business operations, financial results, liquidity, and financial position, and on the world economy (including our customers, employees, and supply chains), including as a result of fluctuations in volume and carloadings; closing of customer manufacturing, distribution or production facilities; expectations as to operational or service improvements; expectations as to hiring challenges; availability of employees; expectations regarding the effectiveness of steps taken or to be taken to improve operations, service, infrastructure improvements, and transportation plan modifications (including those discussed in response to increased traffic); expectations as to cost savings, revenue growth, and earnings; the time by which goals, targets, or objectives will be achieved; projections, predictions, expectations, estimates, or forecasts as to our business, financial, and operational results, future economic performance, and general economic conditions; proposed new products and services; estimates of costs relating to environmental remediation and restoration; estimates and expectations regarding tax matters; expectations that claims, litigation, environmental costs, commitments, contingent liabilities, labor negotiations or agreements, cyber-attacks or other matters will not have a material adverse effect on our consolidated results of operations, financial condition, or liquidity and any other similar expressions concerning matters that are not historical facts. Forward-looking statements may be identified by their use of forward-looking terminology, such as "believes," "expects," "may," "should," "would," "will," "intends," "plans," "estimates," "anticipates," "projects" and similar words, phrases, or expressions.

Forward-looking statements should not be read as a guarantee of future performance, results or outcomes, and will not necessarily be accurate indications of the times that, or by which, such performance, results or outcomes will be achieved. Forward-looking statements and information are subject to risks and uncertainties that could cause actual performance or results to differ materially from those expressed in the statements and information. Forward-looking statements and information reflect the good faith consideration by management of currently available information, and may be based on underlying assumptions believed to be reasonable under the circumstances. However, such information and assumptions (and, therefore, such forward-looking statements and information) are or may be subject to variables or unknown or unforeseeable events or circumstances that management has little or no influence or control, and many of these risks and uncertainties are currently amplified by and may continue to be amplified by, or in the future may be amplified by, among other things, macroeconomic conditions. The Risk Factors in Item 1A of this report could affect our future results and could cause those results or other outcomes to differ materially from those expressed or implied in any forward-looking statements or information. To the extent circumstances require or we deem it otherwise necessary, we will update or amend these risk factors in a Form 10-Q, Form 8-K, or subsequent Form 10-K. All forward-looking statements are qualified by, and should be read in conjunction with, these Risk Factors.

Forward-looking statements speak only as of the date the statement was made. We assume no obligation to update forward-looking information to reflect actual results, changes in assumptions, or changes in other factors affecting forward-looking information. If we do update one or more forward-looking statements, no inference should be drawn that we will make additional updates with respect thereto or with respect to other forward-looking statements.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

Information concerning market risk sensitive instruments is set forth under Management's Discussion and Analysis of Financial Condition and Results of Operations – Other Matters, Item 7.

Item 8. Financial Statements and Supplementary Data

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of Union Pacific Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated statements of financial position of Union Pacific Corporation and Subsidiary Companies (the "Corporation") as of December 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, changes in common shareholders' equity, and cash flows for each of the three years in the period ended December 31, 2022, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Corporation as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Corporation's internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 10, 2023, expressed an unqualified opinion on the Corporation's internal control over financial reporting.

Basis for Opinion

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

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

Critical Audit Matter

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

Capitalization of Properties — Refer to Notes 2 and 11 to the financial statements

Critical Audit Matter Description

The Corporation's operations are highly capital intensive and their large network of assets turns over on a continuous basis. Each year, the Corporation develops a capital program for both the replacement of assets and for the acquisition or construction of new assets. In determining whether costs should be capitalized, the Corporation exercises significant

judgment in determining whether expenditures meet the applicable minimum units of property criteria and extend the useful life, improve the safety of operations, or improve the operating efficiency of existing assets. The Corporation capitalizes all costs of capital projects necessary to make assets ready for their intended use and because a portion of the Corporation's assets are self-constructed, management also exercises significant judgment in determining the amount of material, labor, work equipment, and indirect costs that qualify for capitalization. Properties, net were \$56,038 million as of December 31, 2022 and, during 2022, the Corporation's capital investments were \$3.6 billion.

We identified the capitalization of property as a critical audit matter because of the significant judgment exercised by management in determining whether costs meet the criteria for capitalization. This, in turn, required a high degree of auditor judgment when performing audit procedures to evaluate whether the criteria to capitalize costs were met and to evaluate sufficiency of audit evidence to support management's conclusions.

How the Critical Audit Matter Was Addressed in the Audit

Our procedures related to capitalization of property included the following, among others:

- We tested the effectiveness of controls over the Corporation's determination of whether costs related to the Corporation's capital investments should be capitalized or expensed.
- We evaluated the Corporation's capitalization policy in accordance with accounting principles generally accepted in the United States of America.
- For a selection of capital projects, we performed the following:
 - Obtained the Corporation's evaluation of each project and determined whether the amount of costs to be capitalized met the criteria for capitalization as outlined within the Corporation's policy by unit of property.
 - Obtained supporting documentation that the project met the applicable minimum units of property criteria and was approved, and evaluated whether the project extended the useful life of an existing asset, improved the safety of operations, or improved the operating efficiency of existing assets.
- For a selection of capitalized costs during the year, we performed the following:
 - Evaluated whether the individual cost selected met the criteria for capitalization.
 - Evaluated whether the selection was accurately recorded at the appropriate amount based on the evidence obtained.

The logo for Deloitte & Touche LLP, featuring the firm's name in a stylized, cursive script.

Omaha, Nebraska
February 10, 2023

We have served as the Corporation's auditor since 1967.

CONSOLIDATED STATEMENTS OF INCOME

Union Pacific Corporation and Subsidiary Companies

Millions, Except Per Share Amounts, for the Years Ended December 31,	2022	2021	2020
Operating revenues:			
Freight revenues	\$ 23,159	\$ 20,244	\$ 18,251
Other revenues	1,716	1,560	1,282
Total operating revenues	24,875	21,804	19,533
Operating expenses:			
Compensation and benefits	4,645	4,158	3,993
Fuel	3,439	2,049	1,314
Purchased services and materials	2,442	2,016	1,962
Depreciation	2,246	2,208	2,210
Equipment and other rents	898	859	875
Other	1,288	1,176	1,345
Total operating expenses	14,958	12,466	11,699
Operating income	9,917	9,338	7,834
Other income, net (Note 6)	426	297	287
Interest expense	(1,271)	(1,157)	(1,141)
Income before income taxes	9,072	8,478	6,980
Income tax expense (Note 7)	(2,074)	(1,955)	(1,631)
Net income	\$ 6,998	\$ 6,523	\$ 5,349
Share and Per Share (Note 8):			
Earnings per share - basic	\$ 11.24	\$ 9.98	\$ 7.90
Earnings per share - diluted	\$ 11.21	\$ 9.95	\$ 7.88
Weighted average number of shares - basic	622.7	653.8	677.3
Weighted average number of shares - diluted	624.0	655.4	679.1

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

Union Pacific Corporation and Subsidiary Companies

Millions, for the Years Ended December 31,	2022	2021	2020
Net income	\$ 6,998	\$ 6,523	\$ 5,349
Other comprehensive income/(loss):			
Defined benefit plans	280	723	(231)
Foreign currency translation	52	(44)	(6)
Total other comprehensive income/(loss) [a]	332	679	(237)
Comprehensive income	\$ 7,330	\$ 7,202	\$ 5,112

[a] Net of deferred taxes of (\$92) million, (\$237) million, and \$75 million during 2022, 2021, and 2020, respectively.

The accompanying notes are an integral part of these Consolidated Financial Statements.

CONSOLIDATED STATEMENTS OF FINANCIAL POSITION

Union Pacific Corporation and Subsidiary Companies

<i>Millions, Except Share and Per Share Amounts as of December 31,</i>	2022	2021
Assets		
Current assets:		
Cash and cash equivalents	\$ 973	\$ 960
Short-term investments (Note 13)	46	46
Accounts receivable, net (Note 10)	1,891	1,722
Materials and supplies	741	621
Other current assets	301	202
Total current assets	3,952	3,551
Investments	2,375	2,241
Properties, net (Note 11)	56,038	54,871
Operating lease assets (Note 16)	1,672	1,787
Other assets	1,412	1,075
Total assets	\$ 65,449	\$ 63,525
Liabilities and Common Shareholders' Equity		
Current liabilities:		
Accounts payable and other current liabilities (Note 12)	\$ 3,842	\$ 3,578
Debt due within one year (Note 14)	1,678	2,166
Total current liabilities	5,520	5,744
Debt due after one year (Note 14)	31,648	27,563
Operating lease liabilities (Note 16)	1,300	1,429
Deferred income taxes (Note 7)	13,033	12,675
Other long-term liabilities	1,785	1,953
Commitments and contingencies (Note 17)		
Total liabilities	53,286	49,364
Common shareholders' equity:		
Common shares, \$2.50 par value, 1,400,000,000 authorized; 1,112,623,886 and 1,112,440,400 issued; 612,393,321 and 638,841,656 outstanding, respectively	2,782	2,781
Paid-in-surplus	5,080	4,979
Retained earnings	58,887	55,049
Treasury stock	(54,004)	(47,734)
Accumulated other comprehensive loss (Note 9)	(582)	(914)
Total common shareholders' equity	12,163	14,161
Total liabilities and common shareholders' equity	\$ 65,449	\$ 63,525

The accompanying notes are an integral part of these Consolidated Financial Statements.

CONSOLIDATED STATEMENTS OF CASH FLOWS

Union Pacific Corporation and Subsidiary Companies

Millions, for the Years Ended December 31,	2022	2021	2020
Operating Activities			
Net income	\$ 6,998	\$ 6,523	\$ 5,349
Adjustments to reconcile net income to cash provided by operating activities:			
Depreciation	2,246	2,208	2,210
Deferred and other income taxes	262	154	340
Gain on non-operating asset dispositions	(176)	(98)	(115)
Other operating activities, net	24	42	490
Changes in current assets and liabilities:			
Accounts receivable, net	(169)	(217)	90
Materials and supplies	(120)	17	113
Other current assets	5	31	(34)
Accounts payable and other current liabilities	565	184	(73)
Income and other taxes	(273)	188	170
Cash provided by operating activities	9,362	9,032	8,540
Investing Activities			
Capital investments	(3,620)	(2,936)	(2,927)
Proceeds from asset sales	194	178	149
Maturities of short-term investments (Note 13)	46	94	141
Purchases of short-term investments (Note 13)	(46)	(70)	(136)
Other investing activities, net	(45)	25	97
Cash used in investing activities	(3,471)	(2,709)	(2,676)
Financing Activities			
Share repurchase programs (Note 18)	(6,282)	(7,291)	(3,705)
Debt issued (Note 14)	6,080	4,201	4,004
Dividends paid	(3,159)	(2,800)	(2,626)
Debt repaid	(2,291)	(1,299)	(2,053)
Net issued/(paid) commercial paper (Note 14)	(205)	325	(127)
Debt exchange (Note 14)	-	(270)	(328)
Other financing activities, net	(30)	(24)	(67)
Cash used in financing activities	(5,887)	(7,158)	(4,902)
Net change in cash, cash equivalents, and restricted cash	4	(835)	962
Cash, cash equivalents, and restricted cash at beginning of year	983	1,818	856
Cash, cash equivalents, and restricted cash at end of year	\$ 987	\$ 983	\$ 1,818
Supplemental Cash Flow Information			
Non-cash investing and financing activities:			
Capital investments accrued but not yet paid	\$ 152	\$ 263	\$ 166
Term loan renewals (Note 14)	-	100	250
Cash paid during the year for:			
Income taxes, net of refunds	\$ (2,060)	\$ (1,658)	\$ (1,214)
Interest, net of amounts capitalized	(1,156)	(1,087)	(1,050)

The accompanying notes are an integral part of these Consolidated Financial Statements.

CONSOLIDATED STATEMENTS OF CHANGES IN COMMON SHAREHOLDERS' EQUITY

Union Pacific Corporation and Subsidiary Companies

<i>Millions</i>	<i>Common Shares</i>	<i>Treasury Shares</i>	<i>Common Shares</i>	<i>Paid-in- Surplus</i>	<i>Retained Earnings</i>	<i>Treasury Stock</i>	<i>AOCI [a]</i>	<i>Total</i>
Balance at January 1, 2020	1,112.0	(419.9)	\$ 2,780	\$ 4,523	\$ 48,605	\$(36,424)	\$(1,356)	\$ 18,128
Net income			-	-	5,349	-	-	5,349
Other comprehensive income/(loss)			-	-	-	-	(237)	(237)
Conversion, stock option exercises, forfeitures, ESPP, and other	0.2	1.1	1	31	-	19	-	51
Share repurchase programs (Note 18)	-	(22.1)	-	310	-	(4,015)	-	(3,705)
Cash dividends declared (\$3.88 per share)	-	-	-	-	(2,628)	-	-	(2,628)
Balance at December 31, 2020	1,112.2	(440.9)	\$ 2,781	\$ 4,864	\$ 51,326	\$(40,420)	\$(1,593)	\$ 16,958
Net income			-	-	6,523	-	-	6,523
Other comprehensive income/(loss)			-	-	-	-	679	679
Conversion, stock option exercises, forfeitures, ESPP, and other	0.2	0.6	-	91	-	1	-	92
Share repurchase programs (Note 18)	-	(33.3)	-	24	-	(7,315)	-	(7,291)
Cash dividends declared (\$4.29 per share)	-	-	-	-	(2,800)	-	-	(2,800)
Balance at December 31, 2021	1,112.4	(473.6)	\$ 2,781	\$ 4,979	\$ 55,049	\$(47,734)	\$ (914)	\$ 14,161
Net income			-	-	6,998	-	-	6,998
Other comprehensive income/(loss)			-	-	-	-	332	332
Conversion, stock option exercises, forfeitures, ESPP, and other	0.2	0.5	1	113	-	-	-	114
Share repurchase programs (Note 18)	-	(27.1)	-	(12)	-	(6,270)	-	(6,282)
Cash dividends declared (\$5.08 per share)	-	-	-	-	(3,160)	-	-	(3,160)
Balance at December 31, 2022	1,112.6	(500.2)	\$ 2,782	\$ 5,080	\$ 58,887	\$(54,004)	\$ (582)	\$ 12,163

[a] AOCI = Accumulated Other Comprehensive Income/Loss (Note 9)

The accompanying notes are an integral part of these Consolidated Financial Statements.

NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

Union Pacific Corporation and Subsidiary Companies

For purposes of this report, unless the context otherwise requires, all references herein to "Union Pacific", "Corporation", "Company", "UPC", "we", "us", and "our" mean Union Pacific Corporation and its subsidiaries, including Union Pacific Railroad Company, which will be separately referred to herein as "UPRR" or the "Railroad".

1. Nature of Operations

Operations and Segmentation – We are a Class I railroad operating in the U.S. Our network includes 32,534 route miles, connecting Pacific Coast and Gulf Coast ports with the Midwest and Eastern U.S. gateways and providing several corridors to key Mexican and Canadian gateways. We own 26,121 miles and operate on the remainder pursuant to trackage rights or leases. We serve the western two-thirds of the country and maintain coordinated schedules with other rail carriers for the handling of freight to and from the Atlantic Coast, the Pacific Coast, the Southeast, the Southwest, Canada, and Mexico. Export and import traffic is moved through Gulf Coast and Pacific Coast ports and across the Mexican and Canadian borders.

The Railroad, along with its subsidiaries and rail affiliates, is our one reportable operating segment. Although we provide and analyze revenues by commodity group, we treat the financial results of the Railroad as one segment due to the integrated nature of our rail network. Our operating revenues are primarily derived from contracts with customers for the transportation of freight from origin to destination. The following table represents a disaggregation of our freight and other revenues:

<i>Millions</i>	2022	2021	2020
Bulk	\$ 7,537	\$ 6,656	\$ 5,960
Industrial	8,205	7,323	6,622
Premium	7,417	6,265	5,669
Total freight revenues	\$ 23,159	\$ 20,244	\$ 18,251
Other subsidiary revenues	884	741	743
Accessorial revenues	779	752	473
Other	53	67	66
Total operating revenues	\$ 24,875	\$ 21,804	\$ 19,533

Although our revenues are principally derived from customers domiciled in the U.S., the ultimate points of origination or destination for some products we transport are outside the U.S. Each of our commodity groups includes revenues from shipments to and from Mexico. Included in the above table are freight revenues from our Mexico business which amounted to \$2.7 billion in 2022, \$2.4 billion in 2021, and \$2.1 billion in 2020.

Basis of Presentation – The Consolidated Financial Statements are presented in accordance with accounting principles generally accepted in the U.S. (GAAP) as codified in the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC).

2. Significant Accounting Policies

Principles of Consolidation – The Consolidated Financial Statements include the accounts of Union Pacific Corporation and all of its subsidiaries. Investments in affiliated companies (20% to 50% owned) are accounted for using the equity method of accounting. All intercompany transactions are eliminated. We currently have no less than majority-owned investments that require consolidation under variable interest entity requirements.

Cash, Cash Equivalents, and Restricted Cash – Cash equivalents consist of investments with original maturities of three months or less. Amounts included in restricted cash represent those required to be set aside by contractual agreement.

The following table provides a reconciliation of cash, cash equivalents, and restricted cash reported within the Consolidated Statements of Financial Position that sum to the total of the same such amounts shown on the Consolidated Statements of Cash Flows:

<i>Millions</i>	2022	2021	2020
Cash and cash equivalents	\$ 973	\$ 960	\$ 1,799
Restricted cash equivalents in other current assets	10	19	7
Restricted cash equivalents in other assets	4	4	12
Total cash, cash equivalents, and restricted cash equivalents	\$ 987	\$ 983	\$ 1,818

Accounts Receivable – Accounts receivable includes receivables reduced by an allowance for doubtful accounts. The allowance is based upon historical losses, credit worthiness of customers, and current economic conditions. Receivables not expected to be collected in one year and the associated allowances are classified as other assets in our Consolidated Statements of Financial Position.

Investments – Investments represent our investments in affiliated companies (20% to 50% owned) that are accounted for under the equity method of accounting, and investments in companies (less than 20% owned) accounted for at fair value when there is a readily determined fair value or at cost minus impairment when there are not readily determinable fair values. Our portion of income/loss on equity method investments that are integral to our operations are recorded in operating expenses. Realized and unrealized gains and losses on investments that are not integral to our operations are recorded in other income.

Materials and Supplies – Materials and supplies are carried at the lower of average cost or net realizable value.

Property and Depreciation – Properties and equipment are carried at cost and are depreciated on a straight-line basis over their estimated service lives, which are measured in years, except for rail in high-density traffic corridors (i.e., all rail lines except for those lines subject to abandonment, yard tracks, and switching tracks), where lives are measured in millions of gross tons per mile of track. We use the group method of depreciation where all items with similar characteristics, use, and expected lives are grouped together in asset classes and are depreciated using composite depreciation rates. The group method of depreciation treats each asset class as a pool of resources, not as singular items. We determine the estimated service lives of depreciable railroad assets by means of depreciation studies. Under the group method of depreciation, no gain or loss is recognized when depreciable property is retired or replaced in the ordinary course of business.

Impairment of Long-lived Assets – We review long-lived assets, including identifiable intangibles, for impairment when events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. If impairment indicators are present and the estimated future undiscounted cash flows are less than the carrying value of the long-lived assets, the carrying value is reduced to the estimated fair value.

Revenue Recognition – Freight revenues are derived from contracts with customers. We account for a contract when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance, and collectability of consideration is probable. Our contracts include private agreements, private rate/letter quotes, public circulars/tariffs, and interline/foreign agreements. The performance obligation in our contracts is typically delivering a specific commodity from a place of origin to a place of destination and our commitment begins with the tendering and acceptance of a freight bill of lading and is satisfied upon delivery at destination. We consider each freight shipment to be a distinct performance obligation.

We recognize freight revenues over time as freight moves from origin to destination. The allocation of revenues between reporting periods is based on the relative transit time in each reporting period with expenses recognized as incurred. Outstanding performance obligations related to freight moves in transit totaled \$194 million at December 31, 2022, and \$169 million at December 31, 2021, and are expected to be recognized in the following quarter as we satisfy our remaining performance obligations and deliver freight to destination. The transaction price is generally specified in a contract and may be dependent on the commodity, origin/destination, and route. Customer incentives, which are primarily provided for shipping to/from specific locations or based on cumulative volumes, are recorded as a reduction to operating revenues. Customer incentives that include variable consideration based on cumulative volumes are estimated using the expected value method, which is based on available historical, current, and forecasted volumes, and recognized as the related performance obligation is satisfied.

Under typical payment terms, our customers pay us after each performance obligation is satisfied and there are no material contract assets or liabilities associated with our freight revenues. Outstanding freight receivables are presented in our Consolidated Statements of Financial Position as accounts receivable, net.

Freight revenues related to interline transportation services that involve other railroads are reported on a net basis. The portion of the gross amount billed to customers that is remitted by the Company to another party is not reflected as freight revenues.

Other revenues consist primarily of revenues earned by our other subsidiaries (primarily logistics and commuter rail operations) and accessorial revenues. Other subsidiary revenues are generally recognized over time as shipments move from origin to destination. The allocation of revenues between reporting periods is based on the relative transit time in each reporting period with expenses recognized as incurred. Accessorial revenues are recognized at a point in time as performance obligations are satisfied.

Translation of Foreign Currency – Our portion of the assets and liabilities related to foreign investments are translated into U.S. dollars at the exchange rates in effect at the balance sheet date. Revenues and expenses are translated at the average rates of exchange prevailing during the year. Unrealized gains or losses are reflected within common shareholders' equity as accumulated other comprehensive income or loss.

Fair Value Measurements – We use a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value into three broad levels. The level in the fair value hierarchy within which the fair value measurement in its entirety falls is determined based on the lowest level input that is significant to the fair value measurement in its entirety. These levels include:

Level 1: Quoted market prices in active markets for identical assets or liabilities.

Level 2: Observable market-based inputs or unobservable inputs that are corroborated by market data.

Level 3: Unobservable inputs that are not corroborated by market data.

We have applied fair value measurements to our short-term investments, certain equity investments, pension plan assets, and short- and long-term debt.

Stock-Based Compensation – We issue treasury shares to cover stock option exercises, stock unit vestings, and ESPP shares, while new shares are issued when retention shares are granted.

We measure and recognize compensation expense for all stock-based awards made to employees, including stock options and ESPP awards. Compensation expense is based on the fair value of the awards as measured at the grant date and is expensed ratably over the service period of the awards (generally the vesting period). The fair value of retention awards is the closing stock price on the date of grant, the fair value of stock options is determined by using the Black-Scholes option pricing model, and the fair value of ESPP awards is based on the Company contribution match.

Earnings Per Share – Basic earnings per share are calculated on the weighted-average number of common shares outstanding during each period. Diluted earnings per share include shares issuable upon exercise of outstanding stock options and stock-based awards where the conversion of such instruments would be dilutive.

Income Taxes – We account for income taxes by recording taxes payable or refundable for the current year and deferred tax assets and liabilities for the expected future tax consequences of events that are reported in different periods for financial reporting and income tax purposes. The majority of our deferred tax assets relate to expenses that already have been recorded for financial reporting purposes but not deducted for tax purposes. The majority of our deferred tax liabilities relate to differences between the tax bases and financial reporting amounts of our land and depreciable property, due to accelerated tax depreciation (including bonus depreciation), revaluation of assets in purchase accounting transactions, and differences in capitalization methods. These expected future tax consequences are measured based on current tax law; the effects of future tax legislation are not anticipated.

When appropriate, we record a valuation allowance against deferred tax assets to reflect that these tax assets may not be realized. In determining whether a valuation allowance is appropriate, we consider whether it is more likely than not that all or some portion of our deferred tax assets will not be realized, based on management's judgments using available evidence for purposes of estimating whether future taxable income will be sufficient to realize a deferred tax asset.

We recognize tax benefits that are more likely than not to be sustained upon examination by tax authorities. The amount recognized is measured as the largest amount of benefit that is greater than 50 percent likely to be realized upon settlement. A liability for “unrecognized tax benefits” is recorded for any tax benefits claimed in our tax returns that do not meet these recognition and measurement standards.

Leases – We determine if an arrangement is or contains a lease at inception. Operating lease assets and operating lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. When an implicit rate is not available, we use a collateralized incremental borrowing rate for operating leases based on the information available at commencement date, including lease term, in determining the present value of future payments. The operating lease asset also includes any lease payments made and excludes lease incentives and initial direct costs incurred. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that the option will be exercised. Operating leases are included in operating lease assets, accounts payable and other current liabilities, and operating lease liabilities on our Consolidated Statements of Financial Position. Finance leases are included in properties, net, debt due within one year, and debt due after one year on our Consolidated Statements of Financial Position. Operating lease expense is recognized on a straight-line basis over the lease term and primarily reported in equipment and other rents and financing lease expense is recorded as depreciation and interest expense in our Consolidated Statements of Income.

We have lease agreements with lease and non-lease components, and we have elected to not separate lease and non-lease components for all classes of underlying assets. Leases with an initial term of 12 months or less are not recorded on our Consolidated Statements of Financial Position. Leases with initial terms in excess of 12 months are recorded as operating or financing leases in our Consolidated Statements of Financial Position.

Pension Benefits – In order to measure the expense associated with pension benefits, we must make various assumptions including discount rates used to value certain liabilities, expected return on plan assets used to fund these expenses, compensation increases, employee turnover rates, and anticipated mortality rates. The assumptions used by us are based on our historical experience as well as current facts and circumstances. We use an actuarial analysis to measure the expense and liability associated with these benefits.

Personal Injury – The cost of injuries to employees and others on our property is charged to expense based on estimates of the ultimate cost and number of incidents each year. We use an actuarial analysis to measure the expense and liability, including unasserted claims. Our personal injury liability is not discounted to present value due to the uncertainty surrounding the timing of future payments. Legal fees and incidental costs are expensed as incurred.

Environmental – When environmental issues have been identified with respect to property currently or formerly owned, leased, or otherwise used in the conduct of our business, we perform, with the assistance of our consultants, environmental assessments on such property. We expense the cost of the assessments as incurred. We accrue the cost of remediation where our obligation is probable and such costs can be reasonably estimated. We do not discount our environmental liabilities when the timing of the anticipated cash payments is not fixed or readily determinable. Legal fees and incidental costs are expensed as incurred.

Use of Estimates – The preparation of our Consolidated Financial Statements in conformity with GAAP requires management to make estimates and assumptions that affect certain reported assets and liabilities, the disclosure of certain contingent assets and liabilities as of the date of the Consolidated Financial Statements, as well as the reported amounts of revenues and expenses during the reporting period. Actual future results may differ from such estimates.

3. Accounting Pronouncements

In November 2021, the FASB issued Accounting Standards Update No. (ASU) 2021-10, *Government Assistance (Topic 832): Disclosures by Business Entities about Government Assistance*, which requires business entities to provide certain disclosures when they have received government assistance and use a grant or contribution accounting model by analogy to other accounting guidance. The ASU was effective January 1, 2022, and had no material impact on our consolidated financial statements and related disclosures.

In March 2020, the FASB issued ASU 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting*, which provides optional expedients and exceptions for applying GAAP principles to contracts, hedging relationships, and other transactions that reference London Interbank Offered Rate (LIBOR) or another reference rate expected to be discontinued due to reference rate reform. In December 2022, the FASB issued ASU 2022-06, *Reference Rate Reform (Topic 848): Deferral of the Sunset Date of Topic 848*, which extended the adoption date. This guidance was effective beginning on March 12, 2020, and can be adopted on a prospective basis no later than December 31, 2024, with early adoption permitted. The Company early adopted the ASU, and it did not have an impact on our consolidated financial statements.

4. Stock Options and Other Stock Plans

In April 2000, the shareholders approved the Union Pacific Corporation 2000 Directors Plan (Directors Plan) whereby 2,200,000 shares of our common stock were reserved for issuance to our non-employee directors. Under the Directors Plan, each non-employee director, upon his or her initial election to the Board of Directors, received a grant of 4,000 retention shares or retention stock units. In July 2018, the Board of Directors eliminated the retention grant for directors newly elected in 2018 and all future years. As of December 31, 2022, 20,000 restricted shares were outstanding under the Directors Plan.

The Union Pacific Corporation 2004 Stock Incentive Plan (2004 Plan) was approved by shareholders in April 2004. The 2004 Plan reserved 84,000,000 shares of our common stock for issuance, plus any shares subject to awards made under previous plans that were outstanding on April 16, 2004, and became available for regrant pursuant to the terms of the 2004 Plan. Under the 2004 Plan, non-qualified stock options, stock appreciation rights, retention shares, stock units, and incentive bonus awards may be granted to eligible employees of the Corporation and its subsidiaries. Non-employee directors are not eligible for awards under the 2004 Plan. As of December 31, 2022, 14,408 stock options were outstanding under the 2004 Plan. We no longer grant any stock options or other stock or unit awards under this plan.

The Union Pacific Corporation 2013 Stock Incentive Plan (2013 Plan) was approved by shareholders in May 2013. The 2013 Plan reserved 78,000,000 shares of our common stock for issuance, plus any shares subject to awards made under previous plans as of February 28, 2013, that are subsequently cancelled, expired, forfeited, or otherwise not issued under previous plans. Under the 2013 Plan, non-qualified stock options, incentive stock options, retention shares, stock units, and incentive bonus awards may be granted to eligible employees of the Corporation and its subsidiaries. Non-employee directors are not eligible for awards under the 2013 Plan. As of December 31, 2022, 1,300,270 stock options and 658,730 retention shares and stock units were outstanding under the 2013 Plan. We no longer grant any stock options or other stock or unit awards under this plan.

The Union Pacific Corporation 2021 Stock Incentive Plan (2021 Plan) was approved by shareholders in May 2021. The 2021 Plan reserved 23,000,000 shares of our common stock for issuance, plus any shares subject to awards made under previous plans as of December 31, 2020, that are subsequently cancelled, expired, forfeited, or otherwise not issued under previous plans. Under the 2021 Plan, non-qualified stock options, incentive stock options, retention shares, stock units, and incentive bonus awards may be granted to eligible employees of the Corporation and its subsidiaries. Non-employee directors are not eligible for awards under the 2021 Plan. As of December 31, 2022, 659,135 stock options and 707,361 retention shares were outstanding under the 2021 Plan.

The Union Pacific Corporation 2021 Employee Stock Purchase Plan (2021 ESPP) was approved by shareholders in May 2021. The 2021 ESPP reserved 10,000,000 shares of our common stock for issuance. Under the 2021 ESPP, eligible employees of the Corporation and its subsidiaries may elect to purchase shares with a Company match award. Non-employee directors are not eligible for awards under the 2021 ESPP. As of December 31, 2022, 364,281 shares were issued under the 2021 ESPP.

Pursuant to the above plans 33,185,971; 34,011,624; and 69,867,405; shares of our common stock were authorized and available for grant at December 31, 2022, 2021, and 2020, respectively.

Stock-Based Compensation – We have several stock-based compensation plans where employees receive nonvested stock options, nonvested retention shares, and nonvested stock units. We refer to the nonvested shares and stock units collectively as “retention awards”. Employees also are able to participate in our ESPP.

Information regarding stock-based compensation appears in the table below:

<i>Millions</i>	2022	2021	2020
Stock-based compensation, before tax:			
Stock options	\$ 14	\$ 15	\$ 15
Retention awards	68	66	58
ESPP	17	7	-
Total stock-based compensation, before tax	\$ 99	\$ 88	\$ 73
Excess income tax benefits from equity compensation plans	\$ 21	\$ 26	\$ 55

Stock Options – Stock options are granted at the closing price on the date of grant, have 10-year contractual terms, and vest no later than 3 years from the date of grant. None of the stock options outstanding at December 31, 2022, are subject to performance or market-based vesting conditions.

The table below shows the annual weighted-average assumptions used for Black-Scholes valuation purposes:

<i>Weighted-Average Assumptions</i>	2022	2021	2020
Risk-free interest rate	1.6%	0.4%	1.5%
Dividend yield	1.9%	1.9%	2.1%
Expected life (years)	4.4	4.6	4.9
Volatility	28.7%	28.3%	23.4%
Weighted-average grant-date fair value of options granted	\$ 51.92	\$ 39.97	\$ 32.20

The risk-free rate is based on the U.S. Treasury yield curve in effect at the time of grant; the expected dividend yield is calculated as the ratio of dividends paid per share of common stock to the stock price on the date of grant; the expected life is based on historical and expected exercise behavior; and expected volatility is based on the historical volatility of our stock price over the expected life of the stock option.

A summary of stock option activity during 2022 is presented below:

	<i>Options (thous.)</i>	<i>Weighted-Average Exercise Price</i>	<i>Weighted-Average Remaining Contractual Term (yrs.)</i>	<i>Aggregate Intrinsic Value (millions)</i>
Outstanding at January 1, 2022	2,106	\$ 149.84	6.3	\$ 215
Granted	328	244.35	N/A	N/A
Exercised	(421)	124.60	N/A	N/A
Forfeited or expired	(39)	214.72	N/A	N/A
Outstanding at December 31, 2022	1,974	\$ 169.64	6.0	\$ 86
Vested or expected to vest at December 31, 2022	1,954	\$ 169.12	6.0	\$ 85
Options exercisable at December 31, 2022	1,308	\$ 144.09	4.9	\$ 82

At December 31, 2022, there was \$16 million of unrecognized compensation expense related to nonvested stock options, which is expected to be recognized over a weighted-average period of 1.0 year. Additional information regarding stock option exercises appears in the following table:

<i>Millions</i>	2022	2021	2020
Intrinsic value of stock options exercised	\$ 53	\$ 84	\$ 120
Cash received from option exercises	27	58	95
Treasury shares repurchased for employee payroll taxes	(8)	(15)	(24)
Income tax benefit realized from option exercises	8	16	28
Aggregate grant-date fair value of stock options vested	13	14	15

Retention Awards – Retention awards are granted at no cost to the employee, vest over periods lasting up to 4 years, and dividends and dividend equivalents are paid to participants during the vesting periods.

Changes in our retention awards during 2022 were as follows:

	<i>Shares (thous.)</i>	<i>Weighted-Average Grant- Date Fair Value</i>
Nonvested at January 1, 2022	1,287	\$ 165.10
Granted	252	241.37
Vested	(410)	126.26
Forfeited	(60)	191.98
Nonvested at December 31, 2022	1,069	\$ 196.47

At December 31, 2022, there was \$87 million of total unrecognized compensation expense related to nonvested retention awards, which is expected to be recognized over a weighted-average period of 1.5 years.

Performance Retention Awards – In February 2022, our Board of Directors approved performance stock unit grants. The basic terms of these performance stock units are identical to those granted in February 2021, except for different annual return on invested capital (ROIC) and operating income growth (OIG) performance targets. The OIG performance targets compare to companies in the S&P 100 Industrials Index plus the Class I railroads. We define ROIC as net operating profit adjusted for interest expense (including interest on average operating lease liabilities) and taxes on interest divided by average invested capital adjusted for average operating lease liabilities.

The February 2022 stock units awarded to selected employees are subject to continued employment for 37 months, the attainment of certain levels of ROIC, and the relative three-year OIG. We expense two-thirds of the fair value of the units that are probable of being earned based on our forecasted ROIC over the 3-year performance period, and with respect to the third year of the plan, the remaining one-third of the fair value is subject to the relative three-year OIG. We measure the fair value of performance stock units based upon the closing price of the underlying common stock as of the date of grant. Dividend equivalents are accumulated during the service period and paid to participants only after the units are earned.

The February 2020 performance stock unit grants expense recognition and basic terms were similar to the February 2022 grant except the relative OIG targets were a modifier as compared to companies included in the S&P 500 Industrials Index. The modifier can be up to +/- 25% of the award earned based on the ROIC achieved.

Changes in our performance retention awards during 2022 were as follows:

	<i>Shares (thous.)</i>	<i>Weighted-Average Grant- Date Fair Value</i>
Nonvested at January 1, 2022	641	\$ 173.03
Granted	209	244.35
Vested	(56)	162.64
Unearned	(163)	161.57
Forfeited	(37)	211.96
Nonvested at December 31, 2022	594	\$ 199.82

At December 31, 2022, there was \$20 million of total unrecognized compensation expense related to nonvested performance retention awards, which is expected to be recognized over a weighted-average period of 1.1 years. This expense is subject to achievement of the performance measures established for the performance stock unit grants.

Employee Stock Purchase Plan - Our ESPP started in July 2021. Employee and Company contributions are used to issue treasury shares the month after employee contributions are withheld based on the settlement date closing price. The Company matches 40% contributed by the employee up to a maximum employee contribution of 5% of monthly salary (limited to \$15,000 annually). We expense the Company contributions in the month the employee services were rendered (i.e., the month the employee contributions were withheld).

5. Retirement Plans

Pension Benefits

We provide defined benefit retirement income to eligible non-union employees through qualified and non-qualified (supplemental) pension plans. Qualified and non-qualified pension benefits are based on years of service and the highest compensation during the latest years of employment, with specific reductions made for early retirements. Non-union employees hired on or after January 1, 2018, are no longer eligible for pension benefits, but are eligible for an enhanced 401(k) benefit as described below in other retirement programs.

Funded Status

We are required by GAAP to separately recognize the overfunded or underfunded status of our pension plans as an asset or liability. The funded status represents the difference between the projected benefit obligation (PBO) and the fair value of the plan assets. Our non-qualified (supplemental) pension plan is unfunded by design. The PBO of the pension plans is the present value of benefits earned to date by plan participants, including the effect of assumed future compensation increases. Plan assets are measured at fair value. We use a December 31 measurement date for plan assets and obligations for all our retirement plans.

Changes in our PBO and plan assets were as follows for the years ended December 31:

Funded Status		
<i>Millions</i>	2022	2021
Projected Benefit Obligation		
Projected benefit obligation at beginning of year	\$ 5,296	\$ 5,658
Service cost	93	110
Interest cost	123	104
Actuarial (gain)/loss	(1,557)	(346)
Gross benefits paid	(230)	(230)
Projected benefit obligation at end of year	\$ 3,725	\$ 5,296
Plan Assets		
Fair value of plan assets at beginning of year	\$ 5,554	\$ 5,016
Actual (loss)/return on plan assets	(992)	737
Non-qualified plan benefit contributions	31	31
Gross benefits paid	(230)	(230)
Fair value of plan assets at end of year	\$ 4,363	\$ 5,554
Funded status at end of year	\$ 638	\$ 258

Actuarial gains that decreased the PBO were driven by an increase in 2022 discount rates from 2.80% to 5.21%.

Amounts recognized in the statement of financial position as of December 31, 2022 and 2021, consist of:

<i>Millions</i>	2022	2021
Noncurrent assets	\$ 1,033	\$ 807
Current liabilities	(31)	(31)
Noncurrent liabilities	(364)	(518)
Net amounts recognized at end of year	\$ 638	\$ 258

Pre-tax amounts recognized in accumulated other comprehensive income/loss consist of \$493 million and \$851 million net actuarial loss as of December 31, 2022 and 2021, respectively.

Pre-tax changes recognized in other comprehensive income/loss as of December 31, 2022, 2021, and 2020, were as follows:

<i>Millions</i>	2022	2021	2020
Net actuarial (loss)/gain	\$ 272	\$ 813	\$ (408)
Amortization of:			
Actuarial loss	86	141	104
Total	\$ 358	\$ 954	\$ (304)

Underfunded Accumulated Benefit Obligation – The accumulated benefit obligation (ABO) is the present value of benefits earned to date, assuming no future compensation growth. The underfunded accumulated benefit obligation represents the difference between the ABO and the fair value of plan assets.

The following table discloses only the PBO, ABO, and fair value of plan assets for pension plans where the accumulated benefit obligation is in excess of the fair value of the plan assets as of December 31:

Underfunded Accumulated Benefit Obligation			
<i>Millions</i>		2022	2021
Projected benefit obligation	\$	394	\$ 549
Accumulated benefit obligation	\$	382	\$ 513
Fair value of plan assets		-	-
Underfunded accumulated benefit obligation	\$	(382)	\$ (513)

The ABO for all defined benefit pension plans was \$3.5 billion and \$4.9 billion at December 31, 2022 and 2021, respectively.

Assumptions – The weighted-average actuarial assumptions used to determine benefit obligations at December 31:

<i>Percentages</i>	2022	2021
Discount rate	5.21%	2.80%
Compensation increase	4.10%	4.30%

Expense

Pension expense is determined based upon the annual service cost of benefits (the actuarial cost of benefits earned during a period) and the interest cost on those liabilities, less the expected return on plan assets. The expected long-term rate of return on plan assets is applied to a calculated value of plan assets that recognizes changes in fair value over a 5-year period. This practice is intended to reduce year-to-year volatility in pension expense, but it can have the effect of delaying the recognition of differences between actual returns on assets and expected returns based on long-term rate of return assumptions. Differences in actual experience in relation to assumptions are not recognized in net income immediately, but are deferred in accumulated other comprehensive income/loss and, if necessary, amortized as pension expense.

The components of our net periodic pension benefit/cost were as follows for the years ended December 31:

<i>Millions</i>	2022	2021	2020
Net Periodic Pension Cost:			
Service cost	\$ 93	\$ 110	\$ 91
Interest cost	123	104	137
Expected return on plan assets	(293)	(270)	(282)
Amortization of:			
Actuarial loss	86	141	104
Net periodic pension cost	\$ 9	\$ 85	\$ 50

Assumptions – The weighted-average actuarial assumptions used to determine expense were as follows:

<i>Percentages</i>	2022	2021	2020
Discount rate for benefit obligations	2.80%	2.42%	3.26%
Discount rate for interest on benefit obligations	2.40%	1.90%	2.89%
Discount rate for service cost	2.91%	2.61%	3.42%
Discount rate for interest on service cost	2.86%	2.53%	3.36%
Expected return on plan assets	6.25%	6.25%	7.00%
Compensation increase	4.10%	4.40%	4.10%

We measure the service cost and interest cost components of our net periodic pension benefit/cost by using individual spot discount rates matched with separate cash flows for each future year. The discount rates were based on a yield curve of high-quality corporate bonds. The expected return on plan assets is based on our asset allocation mix and our historical return, taking into account current and expected market conditions. The actual return/(loss) on pension plan assets, net of fees, was approximately (18%) in 2022, 15% in 2021, and 16% in 2020.

Cash Contributions

The following table details cash contributions, if any, for the qualified and non-qualified (supplemental) pension plans:

<i>Millions</i>		<i>Qualified</i>	<i>Non-qualified</i>
2022	\$	-	\$ 31
2021		-	31

Our policy with respect to funding the qualified pension plans is to fund at least the minimum required by law and not more than the maximum amount deductible for tax purposes.

The non-qualified pension plans are not funded and are not subject to any minimum regulatory funding requirements. Benefit payments for each year represent supplemental pension payments. We anticipate our 2023 supplemental pension payments will be made from cash generated from operations.

Benefit Payments

The following table details expected benefit payments for the years 2023 through 2032:

<i>Millions</i>	
2023	\$ 230
2024	228
2025	227
2026	228
2027	229
Years 2028 - 2032	1,172

Asset Allocation Strategy

Our pension plan asset allocation at December 31, 2022 and 2021, and target allocation for 2023, are as follows:

	<i>Target</i>	<i>Percentage of Plan Assets</i>	
	<i>Allocation 2023</i>	<i>December 31,</i>	
		2022	2021
Equity securities	20% to 30%	48%	57%
Debt securities	70% to 80%	51	42
Real estate	0% to 2%	1	1
Total		100%	100%

The pension plan investments are held in a master trust. The investment strategy for pension plan assets is to maintain a broadly diversified portfolio designed to achieve our target average long-term rate of return of 5.25%. While we believe we can achieve a long-term average rate of return of 5.25%, we cannot be certain that the portfolio will perform to our expectations. Assets are strategically allocated among equity, debt, and other investments in order to achieve a diversification level that reduces fluctuations in investment returns. Asset allocation target ranges for equity, debt, and other portfolios are evaluated at least every three years with the assistance of an independent consulting firm. Actual asset allocations are monitored monthly, and rebalancing actions are executed at least quarterly, as needed.

Since 2020, the asset allocation targets for equity and debt have been adjusted annually to move from equity to debt as a de-risking measure. The current target endpoint for this de-risking is 25% equity and 75% debt in 2023. Equity risks are balanced by investing a significant portion of the plans' assets in high-quality debt securities. The average credit rating of the debt portfolio was A+ at both December 31, 2022 and 2021. The debt portfolio is also broadly diversified and invested primarily in U.S. Treasury, mortgage, and corporate securities. The weighted-average maturity of the debt portfolio was 21 years and 20 years at December 31, 2022 and 2021, respectively.

The investment of pension plan assets in securities issued by UPC is explicitly prohibited by the plan for both the equity and debt portfolios, other than through index fund holdings.

Fair Value Measurements

The pension plan assets are valued at fair value. The following is a description of the valuation methodologies used for the investments measured at fair value, including the general classification of such instruments pursuant to the valuation hierarchy.

Temporary Cash Investments – These investments consist of U.S. dollars and foreign currencies held in master trust accounts at The Northern Trust Company (the Trustee). Foreign currencies held are reported in terms of U.S. dollars based on currency exchange rates readily available in active markets. U.S. dollars and foreign currencies are classified as Level 1 investments.

Registered Investment Companies – Registered Investment Companies are entities primarily engaged in the business of investing in securities and are registered with the SEC. The plan's holdings of Registered Investment Companies include both public and private fund vehicles. The public vehicles are exchange-traded funds (stocks), which are classified as Level 1 investments. The private vehicles (bonds) do not have published pricing and are valued using Net Asset Value (NAV).

Federal Government Securities – Federal Government Securities consist of bills, notes, bonds, and other fixed income securities issued directly by the U.S. Treasury or by government-sponsored enterprises. These assets are valued using a bid evaluation process with bid data provided by independent pricing sources. Federal Government Securities are classified as Level 2 investments.

Bonds and Debentures – Bonds and debentures consist of debt securities issued by U.S. and non-U.S. corporations as well as state and local governments. These assets are valued using a bid evaluation process with bid data provided by independent pricing sources. Corporate, state, and municipal bonds and debentures are classified as Level 2 investments.

Corporate Stock – This investment category consists of common and preferred stock issued by U.S. and non-U.S. corporations. Most common shares are traded actively on exchanges and price quotes for these shares are readily available. Common stock is classified as a Level 1 investment. Preferred shares included in this category are valued using a bid evaluation process with bid data provided by independent pricing sources. Preferred stock is classified as a Level 2 investment.

Venture Capital and Buyout Partnerships – This investment category is comprised of interests in limited partnerships that invest primarily in privately-held companies. Due to the private nature of the partnership investments, pricing inputs are not readily observable. Asset valuations are developed by the general partners that manage the partnerships. These valuations are based on the application of public market multiples to private company cash flows, market transactions that provide valuation information for comparable companies, and other methods. The fair value recorded by the plan is calculated using each partnership's NAV.

Real Estate Funds – Most of the plan's real estate investments are primarily interests in private real estate investment trusts, partnerships, limited liability companies, and similar structures. Valuations for the holdings in this category are not based on readily observable inputs and are primarily derived from property appraisals. The fair value recorded by the plan is calculated using the NAV for each investment.

Collective Trust and Other Funds – Collective trust and other funds are comprised of shares or units in commingled funds and limited liability companies that are not publicly traded. The underlying assets in these entities (U.S. stock funds, non-U.S. stock funds, commodity funds, hedge funds, and short-term investment funds) are publicly traded on exchanges and price quotes for the assets held by these funds are readily available. The fair value recorded by the plan is calculated using NAV for each investment.

As of December 31, 2022, the pension plan assets measured at fair value on a recurring basis were as follows:

<i>Millions</i>	<i>Quoted Prices in Active Markets for Identical Inputs (Level 1)</i>	<i>Significant Other Observable Inputs (Level 2)</i>	<i>Significant Unobservable Inputs (Level 3)</i>	<i>Total</i>
Plan assets at fair value:				
Temporary cash investments	\$ 1	\$ -	\$ -	\$ 1
Registered investment companies [a]	6	-	-	6
Federal government securities	-	803	-	803
Bonds and debentures	-	1,069	-	1,069
Corporate stock	1,104	7	-	1,111
Total plan assets at fair value	\$ 1,111	\$ 1,879	\$ -	\$ 2,990
Plan assets at NAV:				
Registered investment companies [b]				68
Venture capital and buyout partnerships				611
Real estate funds				37
Collective trust and other funds				622
Total plan assets at NAV			\$	1,338
Other assets/(liabilities) [c]				35
Total plan assets			\$	4,363

As of December 31, 2021, the pension plan assets measured at fair value on a recurring basis were as follows:

<i>Millions</i>	<i>Quoted Prices in Active Markets for Identical Inputs (Level 1)</i>	<i>Significant Other Observable Inputs (Level 2)</i>	<i>Significant Unobservable Inputs (Level 3)</i>	<i>Total</i>
Plan assets at fair value:				
Temporary cash investments	\$ 9	\$ -	\$ -	\$ 9
Registered investment companies [a]	10	-	-	10
Federal government securities	-	742	-	742
Bonds and debentures	-	1,116	-	1,116
Corporate stock	1,980	10	-	1,990
Total plan assets at fair value	\$ 1,999	\$ 1,868	\$ -	\$ 3,867
Plan assets at NAV:				
Registered investment companies [b]				185
Venture capital and buyout partnerships				710
Real estate funds				48
Collective trust and other funds				756
Total plan assets at NAV			\$	1,699
Other assets/(liabilities) [c]				(12)
Total plan assets			\$	5,554

[a] Registered investment companies measured at fair value are stock investments.

[b] Registered investment companies measured at NAV include bond investments.

[c] Includes accrued receivables, net payables, and pending broker settlements.

The master trust's investments in limited partnerships and similar structures (used to invest in private equity and real estate) are valued at fair value based on their proportionate share of the partnerships' fair value as recorded in the limited partnerships' audited financial statements. The limited partnerships allocate gains, losses, and expenses to the partners based on the ownership percentage as described in the partnership agreements. At December 31, 2022 and 2021, the master trust had future commitments for additional contributions to private equity partnerships totaling \$91 million and \$115 million, respectively, and to real estate partnerships and funds totaling \$5 million and \$7 million, respectively.

Other Retirement Programs

Other Postretirement Benefits – We provide medical and life insurance benefits for eligible retirees hired before January 1, 2004. These benefits are funded as medical claims and life insurance premiums are paid. OPEB expense is determined based upon the annual service cost of benefits and the interest cost on those liabilities, less the expected return on plan assets. Our OPEB liability was \$134 million and \$165 million at December 31, 2022 and 2021, respectively. OPEB net periodic (benefit)/cost was (\$2) million in 2022, (\$3) million in 2021, and (\$1) million in 2020.

401(k)/Thrift Plan – For non-union employees hired prior to January 1, 2018, and eligible union employees for whom we make matching contributions, we provide a defined contribution plan (401(k)/thrift plan). We match 50% for each dollar contributed by employees up to the first 6% of compensation contributed. For non-union employees hired on or after January 1, 2018, we match 100% for each dollar, up to the first 6% of compensation contributed, in addition to contributing an annual amount of 3% of the employee's annual base salary. Our plan contributions were \$24 million in 2022, \$21 million in 2021, and \$19 million in 2020.

Railroad Retirement System – All Railroad employees are covered by the Railroad Retirement System (the System). Contributions made to the System are expensed as incurred and amounted to approximately \$586 million in 2022, \$550 million in 2021, and \$569 million in 2020.

Collective Bargaining Agreements – Under collective bargaining agreements, we participate in multi-employer benefit plans that provide certain postretirement health care and life insurance benefits for eligible union employees. Premiums paid under these plans are expensed as incurred and amounted to \$20 million in 2022, \$30 million in 2021, and \$30 million in 2020.

6. Other Income

Other income included the following for the years ended December 31:

Millions	2022	2021	2020
Real estate income [a] [b]	\$ 381	\$ 263	\$ 264
Net periodic pension benefit/(costs)	84	25	41
Environmental remediation and restoration	(47)	(17)	(30)
Gain from sale of investment	-	36	-
Other [a]	8	(10)	12
Total	\$ 426	\$ 297	\$ 287

[a] Prior periods have been reclassified to conform to the current period disclosure.

[b] 2022 includes a \$79 million gain from a land sale to the Illinois State Toll Highway Authority and a \$35 million gain from a sale to the Colorado Department of Transportation. 2021 includes a \$50 million gain from a sale to the Colorado Department of Transportation. 2020 includes a \$69 million gain from a land and permanent easement sale to the Illinois State Toll Highway Authority.

7. Income Taxes

Components of income tax expense were as follows for the years ended December 31:

<i>Millions</i>	2022	2021	2020
Current tax expense:			
Federal	\$ 1,465	\$ 1,446	\$ 1,026
State	340	347	259
Foreign	7	8	6
Total current tax expense	1,812	1,801	1,291
Deferred and other tax expense/(benefit):			
Federal	320	199	295
State [a]	(59)	(44)	45
Foreign	1	(1)	-
Total deferred and other tax expense	262	154	340
Total income tax expense	\$ 2,074	\$ 1,955	\$ 1,631

[a] In 2022, Nebraska, Iowa, Arkansas, and Idaho enacted corporate income tax legislation that resulted in a \$95 million reduction of our deferred tax expense. In 2021, Nebraska, Oklahoma, Idaho, Louisiana, and Arkansas enacted corporate income tax legislation that resulted in a \$32 million reduction of our deferred tax expense.

For the years ended December 31, reconciliations between statutory and effective tax rates are as follows:

<i>Tax Rate Percentages</i>	2022	2021	2020
Federal statutory tax rate	21.0%	21.0%	21.0%
State statutory rates, net of federal benefits	3.6	3.7	3.7
Deferred tax adjustments	(1.0)	(0.6)	(0.1)
Dividends received deduction	(0.5)	(0.5)	(0.5)
Excess tax benefits from equity compensation plans	(0.2)	(0.3)	(0.8)
Other	-	(0.2)	0.1
Effective tax rate	22.9%	23.1%	23.4%

Deferred income tax assets/(liabilities) were comprised of the following at December 31:

<i>Millions</i>	2022	2021
Deferred income tax liabilities:		
Property	\$ (12,910)	\$ (12,657)
Operating lease assets	(411)	(441)
Other	(591)	(534)
Total deferred income tax liabilities	(13,912)	(13,632)
Deferred income tax assets:		
Operating lease liabilities	401	434
Accrued casualty costs	164	157
Accrued wages	50	45
Stock compensation	26	26
Retiree benefits	-	39
Other	238	256
Total deferred income tax assets	879	957
Net deferred income tax liability	\$ (13,033)	\$ (12,675)

In 2022 and 2021, there were no valuation allowances against deferred tax assets.

A reconciliation of changes in unrecognized tax benefits liabilities/(assets) from the beginning to the end of the reporting period is as follows:

<i>Millions</i>	2022	2021	2020
Unrecognized tax benefits at January 1	\$ 38	\$ 74	\$ 64
Decreases for positions taken in prior years	(4)	(24)	(19)
Increases for positions taken in current year	3	3	18
Lapse of statutes of limitations	(3)	(1)	(1)
Refunds from/(payments to) and settlements with taxing authorities	-	(12)	-
Increases/(decreases) for interest and penalties	-	(3)	5
Increases for positions taken in prior years	-	1	7
Unrecognized tax benefits at December 31	\$ 34	\$ 38	\$ 74

We recognize interest and penalties as part of income tax expense. Total accrued liabilities/(receivables) for interest and penalties were (\$3) million and (\$1) million at December 31, 2022 and 2021, respectively. Total interest and penalties recognized as part of income tax expense/(benefit) were (\$2) million for 2022, (\$5) million for 2021, and \$5 million for 2020.

Several state tax authorities are examining our state income tax returns for years 2018 through 2021.

We do not expect our unrecognized tax benefits to change significantly in the next 12 months. The portion of our unrecognized tax benefits that relates to permanent changes in tax and interest would reduce our effective tax rate, if recognized. The remaining unrecognized tax benefits relate to tax positions for which only the timing of the benefit is uncertain. The unrecognized tax benefits that would reduce our effective tax rate are \$31 million for 2022, \$31 million for 2021, and \$52 million for 2020.

8. Earnings Per Share

The following table provides a reconciliation between basic and diluted earnings per share for the years ended December 31:

<i>Millions, Except Per Share Amounts</i>	2022	2021	2020
Net income	\$ 6,998	\$ 6,523	\$ 5,349
Weighted-average number of shares outstanding:			
Basic	622.7	653.8	677.3
Dilutive effect of stock options	0.6	0.8	0.8
Dilutive effect of retention shares and units	0.7	0.8	1.0
Diluted	624.0	655.4	679.1
Earnings per share – basic	\$ 11.24	\$ 9.98	\$ 7.90
Earnings per share – diluted	\$ 11.21	\$ 9.95	\$ 7.88

Common stock options totaling 0.3 million, 0.2 million, and 0.3 million for 2022, 2021, and 2020, respectively, were excluded from the computation of diluted earnings per share because the exercise prices of these stock options exceeded the average market price of our common stock for the respective periods, and the effect of their inclusion would be anti-dilutive.

9. Accumulated Other Comprehensive Income/Loss

Reclassifications out of accumulated other comprehensive income/loss were as follows (net of tax):

<i>Millions</i>	<i>Defined benefit plans</i>	<i>Foreign currency translation</i>	<i>Total</i>
Balance at January 1, 2022	\$ (658)	\$ (256)	\$ (914)
Other comprehensive income/(loss) before reclassifications	-	52	52
Amounts reclassified from accumulated other comprehensive income/(loss) [a]	280	-	280
Net year-to-date other comprehensive income/(loss), net of taxes of (\$92) million	280	52	332
Balance at December 31, 2022	\$ (378)	\$ (204)	\$ (582)
Balance at January 1, 2021	\$ (1,381)	\$ (212)	\$ (1,593)
Other comprehensive income/(loss) before reclassifications	-	(44)	(44)
Amounts reclassified from accumulated other comprehensive income/(loss) [a]	723	-	723
Net year-to-date other comprehensive income/(loss), net of taxes of (\$237) million	723	(44)	679
Balance at December 31, 2021	\$ (658)	\$ (256)	\$ (914)

[a] The accumulated other comprehensive income/loss reclassification components are 1) prior service cost/credit and 2) net actuarial loss which are both included in the computation of net periodic pension benefit/cost. See Note 5 Retirement Plans for additional details.

10. Accounts Receivable

Accounts receivable includes freight and other receivables reduced by an allowance for doubtful accounts. At both December 31, 2022 and 2021, our accounts receivable were reduced by \$10 million. Receivables not expected to be collected in one year and the associated allowances are classified as other assets in our Consolidated Statements of Financial Position. At December 31, 2022 and 2021, receivables classified as other assets were reduced by allowances of \$58 million and \$51 million, respectively.

Receivables Securitization Facility – On July 29, 2022, the Railroad completed the renewal of the receivables securitization facility (the Receivables Facility). The new \$800 million, 3-year facility replaces the prior \$800 million facility and matures in July 2025. Under the Receivables Facility, the Railroad sells most of its eligible third-party receivables to Union Pacific Receivables, Inc. (UPRI), a consolidated, wholly-owned, bankruptcy-remote subsidiary that may subsequently transfer, without recourse, an undivided interest in accounts receivable to investors. The investors have no recourse to the Railroad's other assets except for customary warranty and indemnity claims. Creditors of the Railroad do not have recourse to the assets of UPRI.

The amount recorded under the Receivables Facility was \$100 million and \$300 million at December 31, 2022 and 2021, respectively. The Receivables Facility was supported by \$1.6 billion and \$1.3 billion of accounts receivable as collateral at December 31, 2022 and 2021, respectively, which, as a retained interest, is included in accounts receivable, net in our Consolidated Statements of Financial Position.

The outstanding amount the Railroad maintains under the Receivables Facility may fluctuate based on current cash needs. The maximum allowed under the Receivables Facility is \$800 million with availability directly impacted by eligible receivables, business volumes, and credit risks, including receivables payment quality measures such as default and dilution ratios. If default or dilution ratios increase one percent, the allowable outstanding amount under the Receivables Facility would not materially change.

The costs of the Receivables Facility include interest, which will vary based on prevailing benchmark and commercial paper rates, program fees paid to participating banks, commercial paper issuance costs, and fees of participating banks for unused commitment availability. The costs of the Receivables Facility are included in interest expense and were \$10 million, \$4 million, and \$7 million for 2022, 2021, and 2020, respectively.

11. Properties

The following tables list the major categories of property and equipment as well as the weighted-average estimated useful life for each category (in years):

<i>Millions, Except Estimated Useful Life As of December 31, 2022</i>		<i>Cost</i>	<i>Accumulated Depreciation</i>	<i>Net Book Value</i>	<i>Estimated Useful Life</i>
Land	\$	5,344	\$ N/A	\$ 5,344	N/A
Road:					
Rail and other track material		18,419	7,096	11,323	43
Ties		11,676	3,699	7,977	34
Ballast		6,222	1,950	4,272	34
Other roadway [a]		22,411	4,970	17,441	47
Total road		58,728	17,715	41,013	N/A
Equipment:					
Locomotives		9,166	3,606	5,560	18
Freight cars		2,562	898	1,664	23
Work equipment and other		1,253	473	780	17
Total equipment		12,981	4,977	8,004	N/A
Technology and other		1,254	525	729	12
Construction in progress		948	-	948	N/A
Total	\$	79,255	\$ 23,217	\$ 56,038	N/A

<i>Millions, Except Estimated Useful Life As of December 31, 2021</i>		<i>Cost</i>	<i>Accumulated Depreciation</i>	<i>Net Book Value</i>	<i>Estimated Useful Life</i>
Land	\$	5,339	\$ N/A	\$ 5,339	N/A
Road:					
Rail and other track material		17,980	6,844	11,136	44
Ties		11,364	3,516	7,848	34
Ballast		6,070	1,852	4,218	34
Other roadway [a]		21,593	4,657	16,936	47
Total road		57,007	16,869	40,138	N/A
Equipment:					
Locomotives		9,371	3,779	5,592	17
Freight cars		2,227	822	1,405	24
Work equipment and other		1,161	411	750	18
Total equipment		12,759	5,012	7,747	N/A
Technology and other		1,209	523	686	12
Construction in progress		961	-	961	N/A
Total	\$	77,275	\$ 22,404	\$ 54,871	N/A

[a] Other roadway includes grading, bridges and tunnels, signals, buildings, and other road assets.

Property and Depreciation – Our railroad operations are highly capital-intensive, and our large base of homogeneous, network-type assets turns over on a continuous basis. Each year we develop a capital program for the replacement of assets and for the acquisition or construction of assets that enable us to enhance our operations or provide new service offerings to customers. We currently have more than 60 depreciable asset classes, and we may increase or decrease the number of asset classes due to changes in technology, asset strategies, or other factors.

We determine the estimated service lives of depreciable railroad assets by means of depreciation studies. We perform depreciation studies at least every 3 years for equipment and every 6 years for track assets (i.e., rail and other track material, ties, and ballast) and other road property. Our depreciation studies take into account the following factors:

- Statistical analysis of historical patterns of use and retirements of each of our asset classes,
- Evaluation of any expected changes in current operations and the outlook for continued use of the assets,
- Evaluation of technological advances and changes to maintenance practices, and
- Expected salvage to be received upon retirement.

For rail in high-density traffic corridors, we measure estimated service lives in millions of gross tons per mile of track. It has been our experience that the lives of rail in high-density traffic corridors are closely correlated to usage (i.e., the amount of weight carried over the rail). The service lives also vary based on rail weight, rail condition (e.g., new or secondhand), and rail type (e.g., straight or curve). Our depreciation studies for rail in high-density traffic corridors consider each of these factors in determining the estimated service lives. For rail in high-density traffic corridors, we calculate depreciation rates annually by dividing the number of gross ton-miles carried over the rail (i.e., the weight of loaded and empty freight cars, locomotives, and maintenance of way equipment transported over the rail) by the estimated service lives of the rail measured in millions of gross tons per mile. For all other depreciable assets, we compute depreciation based on the estimated service lives of our assets as determined from the analysis of our depreciation studies. Changes in the estimated service lives of our assets and their related depreciation rates are implemented prospectively.

Under the group method of depreciation, the historical cost (net of salvage) of depreciable property that is retired or replaced in the ordinary course of business is charged to accumulated depreciation and no gain or loss is recognized. The historical cost of certain track assets is estimated by multiplying the current replacement cost of track assets by a historical index factor derived from (a) inflation indices published by the Bureau of Labor Statistics and (b) the estimated useful lives of the assets as determined by our depreciation studies. The indices were selected because they closely correlate with the major costs of the properties comprising the applicable track asset classes. Because of the number of estimates inherent in the depreciation and retirement processes and because it is impossible to precisely estimate each of these variables until a group of property is completely retired, we continually monitor the estimated service lives of our assets and the accumulated depreciation associated with each asset class to ensure our depreciation rates are appropriate. In addition, we determine if the recorded amount of accumulated depreciation is deficient (or in excess) of the amount indicated by our depreciation studies. Any deficiency (or excess) is amortized as a component of depreciation expense over the remaining service lives of the applicable classes of assets.

For retirements of depreciable railroad properties that do not occur in the normal course of business, a gain or loss may be recognized if the retirement meets each of the following three conditions: (a) is unusual, (b) is material in amount, and (c) varies significantly from the retirement profile identified through our depreciation studies. A gain or loss is recognized in other income when we sell land or dispose of assets that are not part of our railroad operations.

We review construction in progress assets that have not yet been placed into service, for impairment when events or changes in circumstances indicate that the carrying amount of a long-lived asset or assets may not be recoverable. If impairment indicators are present and the estimated future undiscounted cash flows are less than the carrying value of construction in progress assets when grouped with other assets and liabilities at the lowest level where identifiable cash flows are largely independent, the carrying value is reduced to the estimated fair value.

When we purchase an asset, we capitalize all costs necessary to make the asset ready for its intended use. However, many of our assets are self-constructed. A large portion of our capital expenditures is for replacement of existing track assets and other road properties, which is typically performed by our employees, and for track line expansion and other capacity projects. Costs that are directly attributable to capital projects (including overhead costs) are capitalized. Direct costs that are capitalized as part of self-constructed assets include material, labor, and work equipment. Indirect costs are capitalized if they clearly relate to the construction of the asset.

Costs incurred that extend the useful life of an asset, improve the safety of our operations, or improve operating efficiency are capitalized, while normal repairs and maintenance are expensed as incurred. These costs are allocated using appropriate statistical bases. Total expense for repairs and maintenance incurred was \$2.4 billion for 2022, \$2.1 billion for 2021, and \$2.0 billion for 2020.

Assets held under finance leases are recorded at the lower of the net present value of the minimum lease payments or the fair value of the leased asset at the inception of the lease. Amortization expense is computed using the straight-line method over the shorter of the estimated useful lives of the assets or the period of the related lease.

12. Accounts Payable and Other Current Liabilities

<i>Millions</i>	<i>Dec. 31, 2022</i>	<i>Dec. 31, 2021</i>
Compensation-related accruals [a]	\$ 938	\$ 654
Accounts payable	784	752
Income and other taxes payable	628	823
Interest payable	379	330
Current operating lease liabilities (Note 16)	331	330
Accrued casualty costs	242	187
Equipment rents payable	109	98
Other [a]	431	404
Total accounts payable and other current liabilities	\$ 3,842	\$ 3,578

[a] Prior periods have been reclassified to conform to the current period disclosure.

13. Financial Instruments

Short-Term Investments – All of the Company's short-term investments consist of time deposits and government agency securities. These investments are considered Level 2 investments and are valued at amortized cost, which approximates fair value. As of both December 31, 2022 and 2021, the Company had \$46 million of short-term investments. All short-term investments have a maturity of less than one year and are classified as held-to-maturity.

Fair Value of Financial Instruments – The fair value of our short- and long-term debt was estimated using a market value price model, which utilizes applicable U.S. Treasury rates along with current market quotes on comparable debt securities. All of the inputs used to determine the fair market value of the Corporation's long-term debt are Level 2 inputs and obtained from an independent source. At December 31, 2022, the fair value of total debt was \$28.1 billion, approximately \$5.2 billion less than the carrying value. At December 31, 2021, the fair value of total debt was \$32.9 billion, approximately \$3.2 billion more than the carrying value. The fair value of the Corporation's debt is a measure of its current value under present market conditions. The fair value of our cash equivalents approximates their carrying value due to the short-term maturities of these instruments.

14. Debt

Total debt as of December 31, 2022 and 2021, is summarized below:

<i>Millions</i>	<i>2022</i>	<i>2021</i>
Notes and debentures, 2.2% to 7.1% due through February 14, 2072	\$ 33,658	\$ 29,508
Equipment obligations, 2.6% to 6.2% due through January 2, 2031	809	848
Finance leases, 3.1% to 8.0% due through December 10, 2028	234	336
Commercial paper, 3.3% to 4.7% due through January 17, 2023	200	400
Receivables Facility (Note 10)	100	300
Term loans - floating rate, due August 31, 2023	100	100
Unamortized discount and deferred issuance costs	(1,775)	(1,763)
Total debt	33,326	29,729
Less: current portion	(1,678)	(2,166)
Total long-term debt	\$ 31,648	\$ 27,563

Debt Maturities – The following table presents aggregate debt maturities as of December 31, 2022, excluding market value adjustments:

<i>Millions</i>	
2023	\$ 1,681
2024	1,434
2025	1,528
2026	1,015
2027	1,285
Thereafter	28,158
Total principal	35,101
Unamortized discount and deferred issuance costs	(1,775)
Total debt	\$ 33,326

Equipment Encumbrances – Equipment with a carrying value of approximately \$903 million and \$1.2 billion at December 31, 2022 and 2021, respectively, served as collateral for finance leases and other types of equipment obligations in accordance with the secured financing arrangements utilized to acquire or refinance such railroad equipment.

Debt Redemption – On April 15, 2022, we redeemed all \$750 million of outstanding 4.163% notes due July 15, 2022, at a redemption price equal to 100% of the principal amount of the notes plus accrued and unpaid interest.

Debt Exchange - On April 6, 2021, we exchanged approximately \$1.7 billion of various outstanding notes and debentures due between 2028 and 2065 (Existing Notes) for \$701 million of 2.891% notes due April 6, 2036 (New 2036 Notes) and \$1.0 billion of 3.799% notes due April 6, 2071 (New 2071 Notes), plus cash consideration of approximately \$257 million in addition to \$14 million for accrued and unpaid interest on the Existing Notes. In accordance with ASC 470-50-40, *Debt-Modifications and Extinguishments-Derecognition*, this transaction was accounted for as a debt exchange, as the exchanged debt instruments are not considered to be substantially different. The cash consideration was recorded as an adjustment to the carrying value of debt, and the balance of the unamortized discount and issue costs from the Existing Notes is being amortized as an adjustment of interest expense over the terms of the new notes. No gain or loss was recognized as a result of the exchange. Costs related to the debt exchange that were payable to parties other than the debt holders totaled approximately \$13 million and were included in interest expense during 2021.

Credit Facilities – During 2022, we replaced our \$2.0 billion revolving credit facility, which was scheduled to expire on June 8, 2023, with a new \$2.0 billion facility that expires May 20, 2027 (the Facility). The Facility is based on substantially similar terms as those in the previous credit facility as described below. At December 31, 2022, we had \$2.0 billion of credit available under our revolving credit facility, which is designated for general corporate purposes and supports the issuance of commercial paper. Credit facility withdrawals totaled \$0 during 2022. Commitment fees and interest rates payable under the Facility are similar to fees and rates available to comparably rated, investment-grade borrowers. The Facility allows for borrowings at floating rates based on Term Secured Overnight Financing Rate (SOFR), plus a spread, depending upon credit ratings for our senior unsecured debt. The Facility, requires UPC to maintain a debt-to-EBITDA (earnings before interest, taxes, depreciation, and amortization) coverage ratio.

The definition of debt used for purposes of calculating the debt-to-EBITDA coverage ratio includes, among other things, certain credit arrangements, finance leases, guarantees, unfunded and vested pension benefits under Title IV of ERISA, and unamortized debt discount and deferred debt issuance costs. At December 31, 2022, the Company was in compliance with the debt-to-EBITDA coverage ratio, which allows us to carry up to \$46.9 billion of debt (as defined in the Facility), and we had \$35.1 billion of debt (as defined in the Facility) outstanding at that date. The Facility does not include any other financial restrictions, credit rating triggers (other than rating-dependent pricing), or any other provision that could require us to post collateral. The Facility also includes a \$150 million cross-default provision and a change-of-control provision.

During 2022, we issued \$3.2 billion and repaid \$3.4 billion of commercial paper with maturities ranging from 7 to 88 days. As of December 31, 2022 and 2021, we had \$200 million and \$400 million of commercial paper outstanding, respectively. Our revolving credit facility supports our outstanding commercial paper balances, and, unless we change the terms of our commercial paper program, our aggregate issuance of commercial paper will not exceed the amount of borrowings available under the Facility.

Shelf Registration Statement and Significant New Borrowings – On February 3, 2022, the Board of Directors renewed its authorization for the Company to issue up to \$12.0 billion of debt securities under the Company's current three-year shelf registration filed on February 10, 2021. This reauthorization replaces the original Board authorization, which had \$2.5 billion in remaining authority. Under our shelf registration, we may issue, from time to time any combination of debt securities, preferred stock, common stock, or warrants for debt securities or preferred stock in one or more offerings.

During 2022, we issued the following unsecured, fixed-rate debt securities under our shelf registration:

<i>Date</i>	<i>Description of Securities</i>
February 14, 2022	\$1.25 billion of 2.800% Notes due February 14, 2032
	\$0.50 billion of 3.375% Notes due February 14, 2042
	\$1.25 billion of 3.500% Notes due February 14, 2053
	\$0.50 billion of 3.850% Notes due February 14, 2072
September 9, 2022	\$0.90 billion of 4.500% Notes due January 20, 2033
	\$0.60 billion of 4.950% Notes due September 9, 2052
	\$0.40 billion of 5.150% Notes due January 20, 2063

The net proceeds of the 4.950% Notes due September 9, 2052, will be used to finance or refinance, in whole or in part, new or existing eligible projects with environmental benefits. We used the net proceeds from all other offerings listed for general corporate purposes, including the repurchase of common stock pursuant to our share repurchase programs. All debt securities listed include change-of-control provisions. At December 31, 2022, we had remaining authority to issue up to \$6.6 billion of debt securities under our shelf registration.

Receivables Securitization Facility – As of December 31, 2022 and 2021, we recorded \$100 million and \$300 million, respectively, of borrowings under our Receivables Facility, as secured debt. (See further discussion of our receivables securitization facility in Note 10.)

15. Variable Interest Entities

We have entered into various lease transactions in which the structure of the leases contain variable interest entities (VIEs). These VIEs were created solely for the purpose of doing lease transactions (principally involving railroad equipment and facilities) and have no other activities, assets, or liabilities outside of the lease transactions. Within these lease arrangements, we have the right to purchase some or all of the assets at fixed prices. Depending on market conditions, fixed-price purchase options available in the leases could potentially provide benefits to us; however, these benefits are not expected to be significant.

We maintain and operate the assets based on contractual obligations within the lease arrangements, which set specific guidelines consistent within the railroad industry. As such, we have no control over activities that could materially impact the fair value of the leased assets. We do not hold the power to direct the activities of the VIEs and, therefore, do not control the ongoing activities that have a significant impact on the economic performance of the VIEs. Additionally, we do not have the obligation to absorb losses of the VIEs or the right to receive benefits of the VIEs that could potentially be significant to the VIEs.

We are not considered to be the primary beneficiary and do not consolidate these VIEs because our actions and decisions do not have the most significant effect on the VIE's performance and our fixed-price purchase options are not considered to be potentially significant to the VIEs. The future minimum lease payments associated with the VIE leases totaled \$958 million as of December 31, 2022, and are recorded as operating lease liabilities at present value in our Consolidated Statements of Financial Position.

16. Leases

We lease certain locomotives, freight cars, and other property for use in our rail operations.

The following are additional details related to our lease portfolio:

<i>Millions</i>	<i>Classification</i>	<i>Dec. 31, 2022</i>	<i>Dec. 31, 2021</i>
Assets			
Operating leases	Operating lease assets	\$ 1,672	\$ 1,787
Finance leases	Properties, net [a]	310	366
Total leased assets		\$ 1,982	\$ 2,153
Liabilities			
Current			
Operating	Accounts payable and other current liabilities	\$ 331	\$ 330
Finance	Debt due within one year	67	92
Noncurrent			
Operating	Operating lease liabilities	1,300	1,429
Finance	Debt due after one year	167	244
Total lease liabilities		\$ 1,865	\$ 2,095

[a] Finance lease assets are recorded net of accumulated amortization of \$658 million and \$687 million as of December 31, 2022 and 2021, respectively.

The lease cost components are classified as follows:

<i>Millions</i>	<i>Dec 31, 2022</i>	<i>Dec 31, 2021</i>
Operating lease cost [a]	\$ 338	\$ 303
Short-term lease cost	18	25
Variable lease cost	13	11
Finance lease cost		
Amortization of leased assets [b]	52	69
Interest on lease liabilities [c]	12	20
Net lease cost	\$ 433	\$ 428

[a] Operating lease cost is primarily reported in equipment and other rents in our Consolidated Statements of Income.

[b] Amortization of leased assets is reported in depreciation in our Consolidated Statements of Income.

[c] Interest on lease liabilities is reported in interest expense in our Consolidated Statements of Income.

The following table presents aggregate lease maturities as of December 31, 2022:

<i>Millions</i>	<i>Operating Leases</i>	<i>Finance Leases</i>	<i>Total</i>
2023	\$ 335	\$ 76	\$ 411
2024	318	63	381
2025	321	44	365
2026	248	35	283
2027	188	30	218
After 2027	393	11	404
Total lease payments	\$ 1,803	\$ 259	\$ 2,062
Less: Interest	172	25	197
Present value of lease liabilities	\$ 1,631	\$ 234	\$ 1,865

The following table presents the weighted average remaining lease term and discount rate:

	Dec. 31, 2022
Weighted-average remaining lease term (years)	
Operating leases	6.4
Finance leases	4.2
Weighted-average discount rate (%)	
Operating leases	3.3
Finance leases	4.7

The following table presents other information related to our operating and finance leases for the years ended December 31:

<i>Millions</i>	2022	2021
Cash paid for amounts included in the measurement of lease liabilities		
Operating cash flows from operating leases	\$ 319	\$ 292
Investing cash flows from operating leases	31	27
Operating cash flows from finance leases	15	26
Financing cash flows from finance leases	91	106
Leased assets obtained in exchange for finance lease liabilities	-	-
Leased assets obtained in exchange for operating lease liabilities	173	442

17. Commitments and Contingencies

Asserted and Unasserted Claims – Various claims and lawsuits are pending against us and certain of our subsidiaries. We cannot fully determine the effect of all asserted and unasserted claims on our consolidated results of operations, financial condition, or liquidity. We have recorded a liability where asserted and unasserted claims are considered probable and where such claims can be reasonably estimated. We currently do not expect that any known lawsuits, claims, environmental costs, commitments, contingent liabilities, or guarantees will have a material adverse effect on our consolidated results of operations, financial condition, or liquidity after taking into account liabilities and insurance recoveries previously recorded for these matters.

Personal Injury – The Federal Employers' Liability Act (FELA) governs compensation for work-related accidents. Under FELA, damages are assessed based on a finding of fault through litigation or out-of-court settlements. We offer a comprehensive variety of services and rehabilitation programs for employees who are injured at work.

Approximately 93% of the recorded liability is related to asserted claims and approximately 7% is related to unasserted claims at December 31, 2022. Because of the uncertainty surrounding the ultimate outcome of personal injury claims, it is reasonably possible that future costs to settle these claims may range from approximately \$361 million to \$397 million. We record an accrual at the low end of the range as no amount of loss within the range is more probable than any other. Estimates can vary over time due to evolving trends in litigation.

Our personal injury liability activity was as follows:

<i>Millions</i>	2022	2021	2020
Beginning balance	\$ 325	\$ 270	\$ 265
Current year accruals	107	93	72
Changes in estimates for prior years	55	48	(3)
Payments	(126)	(86)	(64)
Ending balance at December 31	\$ 361	\$ 325	\$ 270
Current portion, ending balance at December 31	\$ 84	\$ 64	\$ 60

Environmental Costs – We are subject to federal, state, and local environmental laws and regulations. We have identified 353 sites where we are or may be liable for remediation costs associated with alleged contamination or for violations of environmental requirements. This includes 31 sites that are the subject of actions taken by the U.S. government, including 20 that are currently on the Superfund National Priorities List. Certain federal legislation imposes joint and several liability for the remediation of identified sites; consequently, our ultimate environmental liability may include costs relating to activities of other parties, in addition to costs relating to our own activities at each site.

Our environmental liability activity was as follows:

<i>Millions</i>	2022	2021	2020
Beginning balance	\$ 243	\$ 233	\$ 227
Accruals	84	69	76
Payments	(74)	(59)	(70)
Ending balance at December 31	\$ 253	\$ 243	\$ 233
Current portion, ending balance at December 31	\$ 67	\$ 60	\$ 65

The environmental liability includes future costs for remediation and restoration of sites, as well as ongoing monitoring costs, but excludes any anticipated recoveries from third-parties. Cost estimates are based on information available for each site, financial viability of other potentially responsible parties, and existing technology, laws, and regulations. The ultimate liability for remediation is difficult to determine because of the number of potentially responsible parties, site-specific cost sharing arrangements with other potentially responsible parties, the degree of contamination by various wastes, the scarcity and quality of volumetric data related to many of the sites, and the speculative nature of remediation costs. Estimates of liability may vary over time due to changes in federal, state, and local laws governing environmental remediation. Current obligations are not expected to have a material adverse effect on our consolidated results of operations, financial condition, or liquidity.

Insurance – The Company has a consolidated, wholly-owned captive insurance subsidiary (the Captive), that provides insurance coverage for certain risks including FELA claims and property coverage that are subject to reinsurance. The Captive entered into annual reinsurance treaty agreements that insure workers compensation, general liability, auto liability, and FELA risk. The Captive cedes a portion of its FELA exposure through the treaty and assumes a proportionate share of the entire risk. The Captive receives direct premiums, which are netted against the Company's premium costs in other expenses in the Consolidated Statements of Income. The treaty agreements provide for certain protections against the risk of treaty participants' non-performance, and we do not believe our exposure to treaty participants' non-performance is material at this time. We record both liabilities and reinsurance receivables using an actuarial analysis based on historical experience in our Consolidated Statements of Financial Position. Effective January 2019, the Captive insurance subsidiary no longer participates in the reinsurance treaty agreement. The Company established a trust in the fourth quarter of 2018 for the purpose of providing collateral as required under the reinsurance treaty agreement for prior years' participation.

Indemnities – Our maximum potential exposure under indemnification arrangements, including certain tax indemnifications, can range from a specified dollar amount to an unlimited amount, depending on the nature of the transactions and the agreements. Due to uncertainty as to whether claims will be made or how they will be resolved, we cannot reasonably determine the probability of an adverse claim or reasonably estimate any adverse liability or the total maximum exposure under these indemnification arrangements. We do not have any reason to believe that we will be required to make any material payments under these indemnity provisions.

18. Share Repurchase Programs

Effective April 1, 2022, our Board of Directors authorized the repurchase of up to 100 million shares of our common stock by March 31, 2025. As of December 31, 2022, we repurchased a total of 16.1 million shares of our common stock under the 2022 authorization. These repurchases may be made on the open market or through other transactions. Our management has sole discretion with respect to determining the timing and amount of these transactions.

Our previous authorization, which was effective April 1, 2019, through March 31, 2022, was approved by our Board of Directors for up to 150 million shares of common stock. As of March 31, 2022, we repurchased a total of 83.3 million shares of our common stock under the 2019 authorization.

The table below represents shares repurchased under repurchase programs during 2022 and 2021:

	Number of Shares Purchased		Average Price Paid [a]	
	2022	2021	2022	2021
First quarter [b]	11,014,201	6,691,421	\$249.95	\$ 209.50
Second quarter [c]	3,100,683	12,204,409	232.87	222.46
Third quarter [d]	9,490,339	8,604,239	221.52	210.31
Fourth quarter	3,501,667	5,837,551	201.33	233.71
Total	27,106,890	33,337,620	\$231.76	\$ 218.69
Remaining number of shares that may be repurchased under current authority	83,907,311			

[a] In the period of the final settlement, the average price paid under the accelerated share repurchase programs is calculated based on the total program value less the value assigned to the initial delivery of shares. The average price of the completed 2022 and 2021 accelerated share repurchase programs was \$248.32 and \$217.56, respectively.

[b] Includes 7,012,232 shares repurchased in 2022 under accelerated share repurchase programs.

[c] Includes an incremental 1,847,185 shares received upon final settlement in 2022 and 7,209,156 shares repurchased in 2021 under accelerated share repurchase programs.

[d] Includes an incremental 1,983,859 shares received upon final settlement in 2021 under accelerated share repurchase programs.

Management's assessments of market conditions and other pertinent factors guide the timing and volume of all repurchases. We expect to fund any share repurchases under this program through cash generated from operations, the sale or lease of various operating and non-operating properties, debt issuances, and cash on hand. Open market repurchases are recorded in treasury stock at cost, which includes any applicable commissions and fees.

Accelerated Share Repurchase Programs – The Company has established accelerated share repurchase programs (ASRs) with financial institutions to repurchase shares of our common stock. These ASRs have been structured so that at the time of commencement, we pay a specified amount to the financial institutions and receive an initial delivery of shares. Additional shares may be received at the time of settlement. The final number of shares to be received is based on the volume weighted average price of the Company's common stock during the ASR term, less a discount and subject to potential adjustments pursuant to the terms of such ASR.

On February 18, 2022, the Company received 7,012,232 shares of its common stock repurchased under ASRs for an aggregate of \$2.2 billion. Upon settlement of these ASRs in the second quarter of 2022, we received 1,847,185 additional shares.

On May 26, 2021, the Company received 7,209,156 shares of its common stock repurchased under ASRs for an aggregate of \$2.0 billion. Upon settlement of these ASRs in the third quarter of 2021, we received 1,983,859 additional shares.

ASRs are accounted for as equity transactions, and at the time of receipt, shares are included in treasury stock at fair market value as of the corresponding initiation or settlement date. The Company reflects shares received as a repurchase of common stock in the weighted average common shares outstanding calculation for basic and diluted earnings per share.

19. Related Parties

UPRR and other North American railroad companies jointly own TTX Company (TTX). UPRR has a 37.03% economic and voting interest in TTX while the other North American railroads own the remaining interest. In accordance with ASC 323 *Investments - Equity Method and Joint Venture*, UPRR applies the equity method of accounting to our investment in TTX.

TTX is a rail car pooling company that owns rail cars and intermodal wells to serve North America's railroads. TTX assists railroads in meeting the needs of their customers by providing rail cars in an efficient, pooled environment. All railroads have the ability to utilize TTX rail cars through car hire by renting rail cars at stated rates.

UPRR had \$1.7 billion and \$1.6 billion recognized as investments related to TTX in our Consolidated Statements of Financial Position as of December 31, 2022 and 2021, respectively. TTX car hire expenses of \$402 million in 2022, \$375 million in 2021, and \$375 million in 2020 are included in equipment and other rents in our Consolidated Statements of Income. In addition, UPRR had accounts payable to TTX of \$68 million and \$57 million at December 31, 2022 and 2021, respectively.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

As of the end of the period covered by this report, the Corporation carried out an evaluation, under the supervision and with the participation of the Corporation's management, including the Corporation's Chief Executive Officer (CEO) and Executive Vice President and Chief Financial Officer (CFO), of the effectiveness of the design and operation of the Corporation's disclosure controls and procedures pursuant to Exchange Act Rules 13a-15 and 15d-15. In designing and evaluating the disclosure controls and procedures, management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. Based upon that evaluation, the CEO and the CFO concluded that, as of the end of the period covered by this report, the Corporation's disclosure controls and procedures were effective to provide reasonable assurance that information required to be disclosed in our Exchange Act reports is recorded, processed, summarized, and reported within the time periods specified by the SEC, and that such information is accumulated and communicated to management, including the CEO and CFO, as appropriate, to allow timely decisions regarding required disclosure.

Additionally, the CEO and CFO determined that there were no changes to the Corporation's internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) during the last fiscal quarter that materially affected, or are reasonably likely to materially affect, the Corporation's internal control over financial reporting.

MANAGEMENT'S ANNUAL REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Union Pacific Corporation and Subsidiary Companies (the Corporation) is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)). The Corporation's internal control system was designed to provide reasonable assurance to the Corporation's management and Board of Directors regarding the preparation and fair presentation of published financial statements.

All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

The Corporation's management assessed the effectiveness of the Corporation's internal control over financial reporting as of December 31, 2022. In making this assessment, it used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in *Internal Control – Integrated Framework (2013)*. Based on our assessment, management believes that, as of December 31, 2022, the Corporation's internal control over financial reporting is effective based on those criteria.

The Corporation's independent registered public accounting firm has issued an attestation report on the effectiveness of the Corporation's internal control over financial reporting. This report appears on the next page.

February 9, 2023

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and Board of Directors of Union Pacific Corporation

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Union Pacific Corporation and Subsidiary Companies (the "Corporation") as of December 31, 2022, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Corporation maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2022, of the Corporation and our report dated February 10, 2023, expressed an unqualified opinion on those financial statements.

Basis for Opinion

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

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

Definition and Limitations of Internal Control over Financial Reporting

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

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



Omaha, Nebraska
February 10, 2023

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III**Item 10. Directors, Executive Officers, and Corporate Governance****(a) Directors of Registrant.**

Information as to the names, ages, positions, and offices with UPC, terms of office, periods of service, business experience during the past five years, and certain other directorships held by each director or person nominated to become a director of UPC is set forth in the Election of Directors segment of the Proxy Statement and is incorporated herein by reference.

Information concerning our Audit Committee and the independence of its members, along with information about the audit committee financial expert(s) serving on the Audit Committee, is set forth in the Audit Committee segment of the Proxy Statement and is incorporated herein by reference.

(b) Executive Officers of Registrant.

Information concerning the executive officers of UPC and its subsidiaries is presented in Part I of this report under Information About Our Executive Officers and Principal Executive Officers of Our Subsidiaries.

(c) Delinquent Section 16(a) Reports.

Information concerning compliance with Section 16(a) of the Securities Exchange Act of 1934 is set forth in the Section 16(a) Beneficial Ownership Reporting Compliance segment of the Proxy Statement and is incorporated herein by reference.

(d) Code of Ethics for Chief Executive Officer and Senior Financial Officers of Registrant.

The Board of Directors of UPC has adopted the UPC Code of Ethics for the Chief Executive Officer and Senior Financial Officers (the Code). A copy of the Code may be found on the Internet at our website www.up.com/investor/governance. We intend to disclose any amendments to the Code or any waiver from a provision of the Code on our website.

Item 11. Executive Compensation

Information concerning compensation received by our directors and our named executive officers is presented in the Compensation Discussion and Analysis, Summary Compensation Table, Grants of Plan-Based Awards in Fiscal Year 2022, Outstanding Equity Awards at 2022 Fiscal Year-End, Option Exercises and Stock Vested in Fiscal Year 2022, Pension Benefits at 2022 Fiscal Year-End, Nonqualified Deferred Compensation at 2022 Fiscal Year-End, Potential Payments Upon Termination or Change in Control and Director Compensation in Fiscal Year 2022 segments of the Proxy Statement and is incorporated herein by reference. Additional information regarding compensation of directors, including Board committee members, is set forth in the By-Laws of UPC and the Stock Unit Grant and Deferred Compensation Plan for the Board of Directors, both of which are included as exhibits to this report. Information regarding the Compensation and Benefits Committee is set forth in the Compensation Committee Interlocks and Insider Participation and Compensation Committee Report segments of the Proxy Statement and is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Information as to the number of shares of our equity securities beneficially owned by each of our directors and nominees for director, our named executive officers, our directors and executive officers as a group, and certain beneficial owners is set forth in the Security Ownership of Certain Beneficial Owners and Management segment of the Proxy Statement and is incorporated herein by reference.

The following table summarizes the equity compensation plans under which UPC common stock may be issued as of December 31, 2022:

	(a)	(b)	(c)
<i>Plan Category</i>	<i>Number of securities to be issued upon exercise of outstanding options, warrants and rights</i>	<i>Weighted-average exercise price of outstanding options, warrants and rights</i>	<i>Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))</i>
Equity compensation plans approved by security holders	2,337,851 [1] \$	169.63 [2]	33,185,971 [2]
Total	2,337,851 \$	169.63	33,185,971

[1] Includes 364,038 retention units that do not have an exercise price. Does not include 1,022,053 retention shares that have been issued and are outstanding.

[2] Does not include the retention units or retention shares described above in footnote 1.

[3] Includes 9,635,719 shares available for issuance under the 2021 Employee Stock Purchase Plan, 22,176,052 shares available for issuance under the 2021 Stock Incentive Plan and 1,374,200 shares available for issuance under the 2000 Directors Plan.

Item 13. Certain Relationships and Related Transactions, and Director Independence

Information on related transactions is set forth in the Certain Relationships and Related Transactions and Compensation Committee Interlocks and Insider Participation segments of the Proxy Statement and is incorporated herein by reference. We do not have any relationship with any outside third-party that would enable such a party to negotiate terms of a material transaction that may not be available to, or available from, other parties on an arm's-length basis.

Information regarding the independence of our directors is set forth in the Director Independence segment of the Proxy Statement and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services

Information concerning the fees billed by our independent registered public accounting firm and the nature of services comprising the fees for each of the two most recent fiscal years in each of the following categories: (a) audit fees, (b) audit-related fees, (c) tax fees, and (d) all other fees, is set forth in the Independent Registered Public Accounting Firm's Fees and Services segment of the Proxy Statement and is incorporated herein by reference.

Information concerning our Audit Committee's policies and procedures pertaining to pre-approval of audit and non-audit services rendered by our independent registered public accounting firm is set forth in the Audit Committee segment of the Proxy Statement and is incorporated herein by reference.

PART IV

Item 15. Exhibit and Financial Statement Schedules

(a) Financial Statements, Financial Statement Schedules, and Exhibits:

(1) Financial Statements

The financial statements filed as part of this filing are listed on the index to the Financial Statements and Supplementary Data, Item 8, on page 41.

(2) Financial Statement Schedules

Schedules have been omitted because they are not applicable or not required or the information required to be set forth therein is included in the Financial Statements and Supplementary Data, Item 8, or notes thereto.

(3) Exhibits

Exhibits are listed in the exhibit index beginning on page 77. The exhibits include management contracts, compensatory plans and arrangements required to be filed as exhibits to the Form 10-K by Item 601 (10) (iii) of Regulation S-K.

UNION PACIFIC CORPORATION **Exhibit Index**

<u>Exhibit No.</u>	<u>Description</u>
<u>Filed with this Statement</u>	
10(a)†	Form of Performance Stock Unit Agreement dated February 9, 2023.
10(b)†	Form of Non-Qualified Stock Option Agreement for Executives dated February 9, 2023.
21	List of the Corporation's significant subsidiaries and their respective states of incorporation.
23	Independent Registered Public Accounting Firm's Consent.
24	Powers of attorney executed by the directors of UPC.
31(a)	Certifications Pursuant to Rule 13a-14(a), of the Exchange Act, as Adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 - Lance M. Fritz.
31(b)	Certifications Pursuant to Rule 13a-14(a), of the Exchange Act, as Adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 –Jennifer L. Hamann.
32	Certifications Pursuant to 18 U.S.C. Section 1350, as Adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 - Lance M. Fritz and Jennifer L. Hamann.
101	The following financial and related information from Union Pacific Corporation's Annual Report on Form 10-K for the year ended December 31, 2022 (filed with the SEC on February 10, 2023), formatted in Inline Extensible Business Reporting Language (iXBRL) includes (a) Consolidated Statements of Income for the years ended December 31, 2022, 2021, and 2020, (b) Consolidated Statements of Comprehensive Income for the years ended December 31, 2022, 2021, and 2020, (c) Consolidated Statements of Financial Position at December 31, 2022 and 2021, (d) Consolidated Statements of Cash Flows for the years ended December 31, 2022, 2021, and 2020, (e) Consolidated Statements of Changes in Common Shareholders' Equity for the years ended December 31, 2022, 2021, and 2020, and (f) the Notes to the Consolidated Financial Statements.
104	Cover Page Interactive Data File, formatted in Inline XBRL (contained in Exhibit 101).
<u>Incorporated by Reference</u>	
3(a)	Restated Articles of Incorporation of UPC, as amended and restated through June 27, 2011, and as further amended May 15, 2014, are incorporated herein by reference to Exhibit 3(a) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended June 30, 2014.
3(b)	By-Laws of UPC, as amended, effective November 19, 2015, are incorporated herein by reference to Exhibit 3.2 to the Corporation's Current Report on Form 8-K dated November 19, 2015.
4(a)	Description of securities registered under Section 12 of the Exchange Act is incorporated herein by reference to Exhibit 4(a) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2019.
4(b)	Indenture, dated as of December 20, 1996, between UPC and Wells Fargo Bank, National Association, as successor to Citibank, N.A., as Trustee, is incorporated herein by reference to Exhibit 4.1 to UPC's Registration Statement on Form S-3 (No. 333-18345).

- 4(c) Indenture, dated as of April 1, 1999, between UPC and The Bank of New York, as successor to JP Morgan Chase Bank, formerly The Chase Manhattan Bank, as Trustee, is incorporated herein by reference to Exhibit 4.2 to UPC's Registration Statement on Form S-3 (No. 333-75989).
- 4(d) Form of 2.800% Note due 2032 is incorporated by reference to Exhibit 4.1 to the Corporation's Current Report on Form 8-K dated February 14, 2022.
- 4(e) Form of 3.375% Note due 2042 is incorporated by reference to Exhibit 4.2 to the Corporation's Current Report on Form 8-K dated February 14, 2022.
- 4(f) Form of 3.500% Note due 2053 is incorporated by reference to Exhibit 4.3 to the Corporation's Current Report on Form 8-K dated February 14, 2022.
- 4(g) Form of 3.850% Note due 2072 is incorporated by reference to Exhibit 4.4 to the Corporation's Current Report on Form 8-K dated February 14, 2022.
- 4(h) Form of 4.500% Note due 2033 is incorporated herein by reference to Exhibit 4.1 to the Corporation's Current Report on Form 8-K dated September 9, 2022.
- 4(i) Form of 4.950% Note due 2052 is incorporated herein by reference to Exhibit 4.2 to the Corporation's Current Report on Form 8-K dated September 9, 2022.
- 4(j) Form of 5.150% Note due 2063 is incorporated herein by reference to Exhibit 4.3 to the Corporation's Current Report on Form 8-K dated September 9, 2022.

Certain instruments evidencing long-term indebtedness of UPC are not filed as exhibits because the total amount of securities authorized under any single such instrument does not exceed 10% of the Corporation's total consolidated assets. UPC agrees to furnish the Commission with a copy of any such instrument upon request by the Commission.

- 10(c)† Union Pacific Corporation Key Employee Continuity Plan, as amended December 10, 2021, is incorporated herein by reference to Exhibit 10(c) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2021.
- 10(d)† Supplemental Thrift Plan (409A Grandfathered Component) of Union Pacific Corporation, as amended March 1, 2013, is incorporated herein by reference to Exhibit 10(d) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2013.
- 10(e)† Supplemental Thrift Plan (409A Non-Grandfathered Component) of Union Pacific Corporation, as amended January 1, 2018, is incorporated herein by reference to Exhibit 10(d) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2017.
- 10(f)† Supplemental Pension Plan for Officers and Managers (409A Grandfathered Component) of Union Pacific Corporation and Affiliates, as amended February 1, 2013, and March 1, 2013 is incorporated herein by reference to Exhibit 10(f) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2013.
- 10(g)† Supplemental Pension Plan for Officers and Managers (409A Non-Grandfathered Component) of Union Pacific Corporation and Affiliates, as amended December 9, 2020, is incorporated herein by reference to Exhibit 10(d) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2020.
- 10(h)† Deferred Compensation Plan (409A Grandfathered Component) of Union Pacific Corporation, as amended March 1, 2013, is incorporated herein by reference to Exhibit 10(b) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2013.
- 10(i)† Deferred Compensation Plan (409A Non-Grandfathered Component) of Union Pacific Corporation, as amended December 9, 2020, is incorporated herein by reference to Exhibit 10(c) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2020.

10(j)†	Union Pacific Corporation 2000 Directors Plan, effective as of April 21, 2000, as amended November 16, 2006, January 30, 2007 and January 1, 2009 is incorporated herein by reference to Exhibit 10(j) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2008.
10(k)†	Union Pacific Corporation Stock Unit Grant and Deferred Compensation Plan for the Board of Directors (409A Non-Grandfathered Component), effective as of January 1, 2009 is incorporated herein by reference to Exhibit 10(k) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2008.
10(l)†	Union Pacific Corporation Stock Unit Grant and Deferred Compensation Plan for the Board of Directors (409A Grandfathered Component), as amended and restated in its entirety, effective as of January 1, 2009 is incorporated herein by reference to Exhibit 10(l) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2008.
10(m)†	UPC 2004 Stock Incentive Plan amended March 1, 2013, is incorporated herein by reference to Exhibit 10(g) to the Corporation's Quarterly Report on Form 10-Q for the quarter ended March 31, 2013.
10(n)†	Union Pacific Corporation Policy for Recoupment of Incentive Compensation, effective January 1, 2020 is incorporated herein by reference to Exhibit 10(c) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2019.
10(o)†	Union Pacific Corporation 2013 Stock Incentive Plan, effective May 16, 2013, as amended effective as of January 1, 2020 is incorporated herein by reference to Exhibit 10(d) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2019.
10(p)†	Union Pacific Corporation Executive Incentive Plan, effective May 5, 2005, amended and restated effective January 1, 2020 is incorporated herein by reference to Exhibit 10(e) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2019.
10(q)†	Union Pacific Corporation 2021 Stock Incentive Plan, effective as of May 13, 2021 is incorporated by reference to Exhibit 99.1 to the Corporation's Form S-8 dated May 25, 2021.
10(r)	Amended and Restated Registration Rights Agreement, dated as of July 12, 1996, among UPC, UP Holding Company, Inc., Union Pacific Merger Co. and Southern Pacific Rail Corporation (SP) is incorporated herein by reference to Annex J to the Joint Proxy Statement/Prospectus included in Post-Effective Amendment No. 2 to UPC's Registration Statement on Form S-4 (No. 33-64707).
10(s)	Agreement, dated September 25, 1995, among UPC, UPRR, Missouri Pacific Railroad Company (MPRR), SP, Southern Pacific Transportation Company (SPT), The Denver & Rio Grande Western Railroad Company (D&RGW), St. Louis Southwestern Railway Company (SLSRC) and SPCSL Corp. (SPCSL), on the one hand, and Burlington Northern Railroad Company (BN) and The Atchison, Topeka and Santa Fe Railway Company (Santa Fe), on the other hand, is incorporated by reference to Exhibit 10.11 to UPC's Registration Statement on Form S-4 (No. 33-64707).
10(t)	Supplemental Agreement, dated November 18, 1995, between UPC, UPRR, MPRR, SP, SPT, D&RGW, SLSRC and SPCSL, on the one hand, and BN and Santa Fe, on the other hand, is incorporated herein by reference to Exhibit 10.12 to UPC's Registration Statement on Form S-4 (No. 33-64707).
10(u)†	Form of Non-Qualified Stock Option Agreement for Executives is incorporated herein by reference to Exhibit 10(c) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2013.

10(v)†	Form of 2020 Long Term Plan Stock Unit Agreement is incorporated herein by reference to Exhibit 10(a) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2019.
10(w)†	Form of 2021 Long Term Plan Stock Unit Agreement is incorporated herein by reference to Exhibit 10(a) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2020.
10(x)†	Form of 2022 Long Term Plan Stock Unit Agreement is incorporated herein by reference to Exhibit 10(a) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2021.
10(y)†	Executive Incentive Plan (2005) – Deferred Compensation Program, dated December 21, 2005 is incorporated herein by reference to Exhibit 10(g) to the Corporation's Annual Report on Form 10-K for the year ended December 31, 2005.

† Indicates a management contract or compensatory plan or arrangement.

Item 16. Form 10-K Summary

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized, on this 10th day of February, 2023.

UNION PACIFIC CORPORATION

By /s/ Lance M. Fritz
Lance M. Fritz,
Chairman, President, and
Chief Executive Officer
Union Pacific Corporation

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below, on this 10th day of February, 2023, by the following persons on behalf of the registrant and in the capacities indicated.

PRINCIPAL EXECUTIVE OFFICER AND DIRECTOR:

By /s/ Lance M. Fritz
Lance M. Fritz,
Chairman, President, and
Chief Executive Officer
Union Pacific Corporation

PRINCIPAL FINANCIAL OFFICER:

By /s/ Jennifer L. Hamann
Jennifer L. Hamann
Executive Vice President and
Chief Financial Officer

PRINCIPAL ACCOUNTING OFFICER:

By /s/ Todd M. Rynaski
Todd M. Rynaski,
Senior Vice President and
Chief Accounting, Risk, and
Compliance Officer

DIRECTORS:

William J. DeLaney*
David B. Dillon*
Sheri H. Edison*
Teresa M. Finley
Deborah C. Hopkins*

Jane H. Lute*
Michael R. McCarthy*
Jose H. Villarreal*
Christopher J. Williams*

* By /s/ Craig V. Richardson
Craig V. Richardson, Attorney-in-fact

SIGNIFICANT SUBSIDIARIES OF UNION PACIFIC CORPORATION

<u>Name of Corporation</u>	<u>State of Incorporation</u>
Union Pacific Railroad Company	Delaware

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Post-Effective Amendment No.1 to Registration Statement No. 33-12513, Registration Statement No. 33-53968, Registration Statement No. 33-49785, Registration Statement No. 33-49849, Registration Statement No. 333-10797, Registration Statement No. 333-88709, Registration Statement No. 333-42768, Registration Statement No. 333-106707, Registration Statement No. 333-106708, Registration Statement No. 333-105714, Registration Statement No. 333-105715, Registration Statement No. 333-116003, Registration Statement No. 333-132324, Registration Statement No. 333-155708, Registration Statement No. 333-170209, Registration Statement No. 333-170208, Registration Statement No. 333-188671, Registration Statement No. 333-260789, Registration Statement No. 333-260788, and Registration Statement No. 333-256460 on Form S-8, Registration Statement No. 333-214407, Registration Statement No. 333-236860, Registration Statement No. 333-258422, and Registration Statement No. 333-252948 on Form S-4, and Registration Statement No. 333-201958, Registration Statement No. 333-222979, and Registration Statement No. 333-252947 on Form S-3 of our reports dated February 10, 2023, relating to the consolidated financial statements of Union Pacific Corporation and Subsidiary Companies (the Corporation), and the effectiveness of the Corporation's internal control over financial reporting, appearing in this Annual Report on Form 10-K for the year ended December 31, 2022.



Omaha, Nebraska
February 10, 2023

UNION PACIFIC CORPORATION
Powers of Attorney

Each of the undersigned directors of Union Pacific Corporation, a Utah corporation (the Company), do hereby appoint each of Lance M. Fritz and Craig V. Richardson his or her true and lawful attorney-in-fact and agent, to sign on his or her behalf the Company's Annual Report on Form 10-K, for the year ended December 31, 2022, and any and all amendments thereto, and to file the same, with all exhibits thereto, with the Securities and Exchange Commission.

IN WITNESS WHEREOF, the undersigned have executed this Power of Attorney as of February 9, 2023.

/s/ William J. DeLaney

William J. DeLaney

/s/ David B. Dillon

David B. Dillon

/s/ Sheri H. Edison

Sheri H. Edison

/s/ Teresa M. Finley

Teresa M. Finley

/s/ Deborah C. Hopkins

Deborah C. Hopkins

/s/ Jane H. Lute

Jane H. Lute

/s/ Michael R. McCarthy

Michael R. McCarthy

/s/ Jose H. Villarreal

Jose H. Villarreal

/s/ Christopher J. Williams

Christopher J. Williams

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER

I, Lance M. Fritz, certify that:

1. I have reviewed this annual report on Form 10-K of Union Pacific Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 10, 2023

/s/ Lance M. Fritz
Lance M. Fritz
Chairman, President, and
Chief Executive Officer

CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER

I, Jennifer L. Hamann, certify that:

1. I have reviewed this annual report on Form 10-K of Union Pacific Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 10, 2023

/s/ Jennifer L. Hamann
Jennifer L. Hamann
Executive Vice President and
Chief Financial Officer

**CERTIFICATION OF CHIEF EXECUTIVE OFFICER PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the accompanying Annual Report of Union Pacific Corporation (the Corporation) on Form 10-K for the period ending December 31, 2022, as filed with the Securities and Exchange Commission on the date hereof (the Report), I, Lance M. Fritz, Chairman, President, and Chief Executive Officer of the Corporation, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 that:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Corporation.

By: /s/ Lance M. Fritz
Lance M. Fritz
Chairman, President, and
Chief Executive Officer
Union Pacific Corporation

February 10, 2023

A signed original of this written statement required by Section 906 has been provided to the Corporation and will be retained by the Corporation and furnished to the Securities and Exchange Commission or its staff upon request.

**CERTIFICATION OF CHIEF FINANCIAL OFFICER PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

In connection with the accompanying Annual Report of Union Pacific Corporation (the Corporation) on Form 10-K for the period ending December 31, 2022, as filed with the Securities and Exchange Commission on the date hereof (the Report), I, Jennifer L. Hamann, Executive Vice President and Chief Financial Officer of the Corporation, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 that:

- (1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Corporation.

By: /s/ Jennifer L. Hamann
Jennifer L. Hamann
Executive Vice President and
Chief Financial Officer
Union Pacific Corporation

February 10, 2023

A signed original of this written statement required by Section 906 has been provided to the Corporation and will be retained by the Corporation and furnished to the Securities and Exchange Commission or its staff upon request.

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