

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

Form 10-K

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

For the fiscal year ended December 31, 2022

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 1-15399



(Exact Name of Registrant as Specified in its Charter)

Delaware
(State or Other Jurisdiction of
Incorporation or Organization)

1 North Field Court, Lake Forest, Illinois
(Address of Principal Executive Offices)

36-4277050
(I.R.S. Employer
Identification No.)

60045
(Zip Code)

Registrant's telephone number, including area code: (847) 482-3000

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value \$0.01 per share	PKG	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: **None**

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 Exchange Act). Yes No

At June 30, 2022, the last day of the Registrant's most recently completed second fiscal quarter, the aggregate market value of Registrant's common equity held by non-affiliates was approximately \$12,686,128,813 based upon the closing sale price as reported on the New York Stock Exchange. This calculation of market value has been made for the purposes of this report only and should not be considered as an admission or conclusion by the Registrant that any person is in fact an affiliate of the Registrant.

On February 17, 2023, there were 89,693,421 shares of Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Specified portions of the Proxy Statement for the Registrant's 2023 Annual Meeting of Stockholders are incorporated by reference to the extent indicated in Part III of this Form 10-K.

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PART I

Item 1. BUSINESS

Packaging Corporation of America (“we,” “us,” “our,” “PCA,” or the “Company”) is the third largest producer of containerboard products and a leading producer of uncoated freesheet (UFS) paper in North America. We operate eight mills and 89 corrugated products plants and related facilities. We are headquartered in Lake Forest, Illinois and operate primarily in the United States.

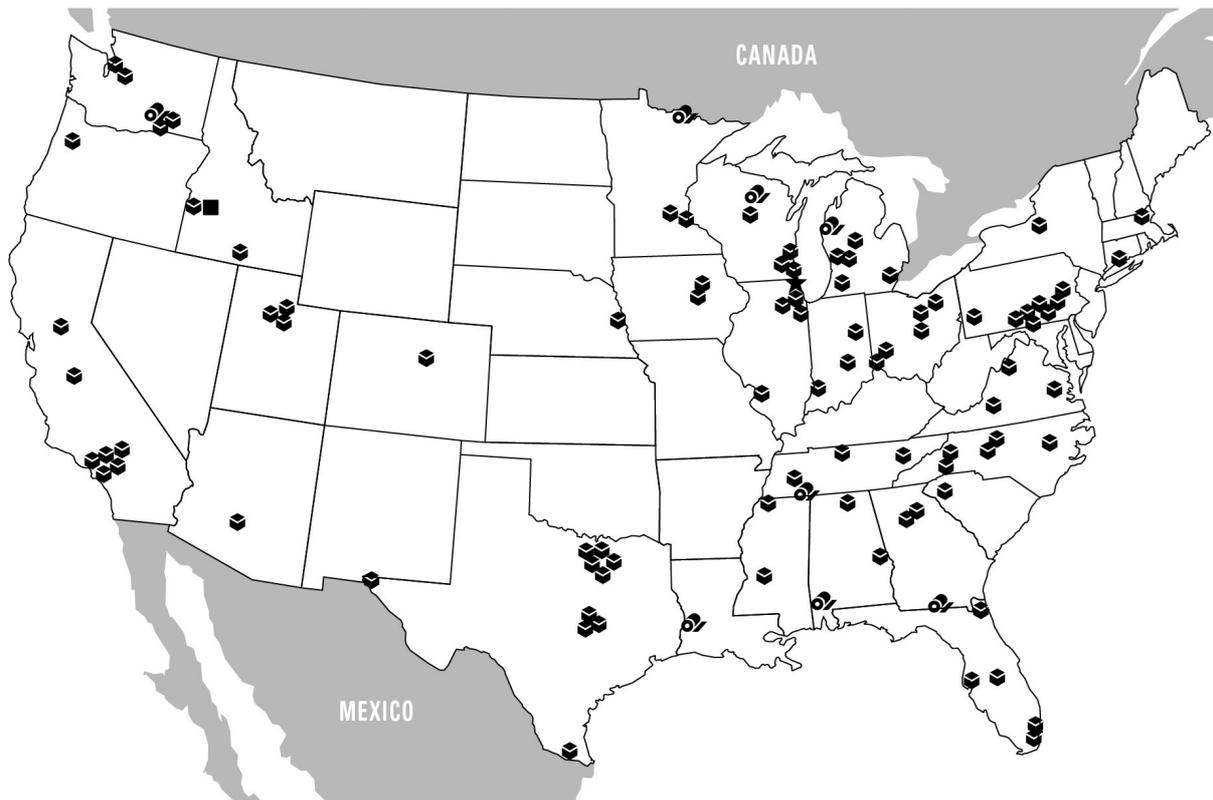
We report in three reportable segments: Packaging, Paper and Corporate and Other. For segment financial information see Note 19, Segment Information, of the Notes to Consolidated Financial Statements in “Part II, Item 8, Financial Statements and Supplementary Data” of this Form 10-K.

Production and Shipments

The following table summarizes the Packaging segment's containerboard production and corrugated products shipments and the Paper segment's UFS production.

		First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year
Containerboard Production (thousand tons)	2022	1,233	1,256	1,116	961	4,566
	2021	1,195	1,193	1,256	1,243	4,887
	2020	1,047	1,072	1,048	1,174	4,341
Corrugated Products Shipments (billion square feet)	2022	16.8	16.5	15.4	14.7	63.4
	2021	16.4	16.5	16.4	16.4	65.7
	2020	15.3	15.1	16.0	16.4	62.8
UFS Production (thousand tons)	2022	126	127	123	130	506
	2021	145	149	148	130	572
	2020	224	148	129	147	648

Below is a map of our locations:



- ★ Corporate Headquarters
- ⬇️ Converting Facilities
- ⚡ Mills
- Administrative Office

Packaging

Packaging Products

Our containerboard mills produce linerboard and corrugating medium, which are papers primarily used in the production of corrugated products. Our corrugated products manufacturing plants produce a wide variety of corrugated packaging products, including conventional shipping containers used to protect and transport manufactured goods, multi-color boxes and displays with strong visual appeal that help to merchandise the packaged product in retail locations, and honeycomb protective packaging. In addition, we are a large producer of packaging for meat, fresh fruit and vegetables, processed food, beverages, and other industrial and consumer products. Our products are sustainable and are produced from renewable raw materials, predominately using energy derived from biogenic fuels in our production processes and are recyclable at end-of-life.

During the year ended December 31, 2022, our Packaging segment produced 4.6 million tons of containerboard at our mills. Our corrugated products manufacturing plants sold 63.4 billion square feet (BSF) of corrugated products. The Packaging segment's net sales to third parties totaled \$7.8 billion in 2022.

Facilities

We manufacture containerboard, which includes a variety of performance and specialty grades, at our containerboard mills. Total annual containerboard capacity was approximately 5.0 million tons as of December 31, 2022. We also produce corrugated and protective packaging products at 89 manufacturing locations. The following provides more details of our primary operating facilities:

Counce. Our Counce, Tennessee mill produces kraft linerboard on two machines. The mill can produce basis weights from 26 lb. to 90 lb.

DeRidder. Our DeRidder, Louisiana mill produces kraft linerboard on its No. 1 machine and kraft linerboard and corrugating medium on its No. 3 machine. The mill can produce linerboard in basis weights of 26 lb. to 69 lb. and medium in basis weights of 23 lb. to 33 lb.

Valdosta. Our Valdosta, Georgia mill produces kraft linerboard on one machine. The mill can produce basis weights from 35 lb. to 96 lb.

Tomahawk. Our Tomahawk, Wisconsin mill produces corrugating medium on two machines. The mill can produce basis weights from 23 lb. to 47 lb.

Filer City. Our Filer City, Michigan mill produces corrugating medium on three machines. The mill can produce basis weights from 20 lb. to 47 lb.

Wallula. Our Wallula, Washington mill produces corrugating medium on its No. 2 machine and kraft linerboard on its No. 3 machine. The mill can produce medium in basis weights from 23 lb. to 33 lb. and linerboard in basis weights from 31 lb. to 52 lb.

Jackson. Our Jackson, Alabama mill produces kraft linerboard on its No. 3 machine and corrugating medium on its No. 1 machine. The mill can produce linerboard in basis weights from 22 lb. to 34 lb. and medium in basis weights from 23 lb. to 33 lb.

Before October 2020, Jackson had historically operated as a UFS paper mill, with its results of operations reported in our Paper segment. Beginning in October 2020, operating results for the Jackson mill are included in both the Packaging and Paper segments. During the fourth quarter of 2020, in order to meet strong packaging demand and maintain appropriate inventory levels, we temporarily began producing linerboard on the No. 3 machine and, in the first quarter of 2021, we announced the discontinuation of producing uncoated freesheet paper grades on the machine and the permanent conversion of the machine to produce linerboard. Beginning in the third quarter of 2021, we began producing corrugating medium on the No. 1 machine.

As of December 31, 2022, we operated 89 corrugated manufacturing and protective packaging operations, a technical and development center, 10 regional design centers, a rotogravure printing operation, and a complement of packaging supplies and distribution centers. Of the 89 manufacturing facilities, 58 are combining operations, commonly called corrugated plants, which manufacture corrugated sheets and finished corrugated packaging products, 30 are sheet plants, which procure combined sheets and manufacture finished corrugated packaging products, and one is a corrugated sheet-only manufacturer.

Corrugated products plants tend to be located in close proximity to customers to minimize freight costs. Each of our plants serves a market radius of approximately 150 miles. Our sheet plants are generally located in close proximity to our larger corrugated plants, which enables us to offer additional services and converting capabilities such as small volume and quick turnaround items.

Major Raw Materials Used

Fiber supply. Fiber is the largest raw material cost to manufacture containerboard. We consume both virgin wood fiber and recycled fiber in our containerboard mills, and all of our fiber comes from renewable resources. Our mill system has the capability to shift a portion of its fiber consumption between softwood, hardwood, and recycled sources. All of our mills can utilize virgin wood fiber and all of our mills, other than the Valdosta mill, can utilize some recycled fiber in their containerboard production. Our corrugated manufacturing operations generate recycled fiber as a by-product from the manufacturing process, which is consumed by our mills. In 2022, our usage of recycled fiber, net of internal generation, represents 17% of our containerboard production.

We procure wood fiber through leases of cutting rights, long-term supply agreements, and market purchases and believe we have adequate sources of fiber supply for the foreseeable future.

As part of our renewable virgin fiber sourcing efforts, we participate in the Sustainable Forestry Initiative® (SFI), the Programme for the Endorsement of Forest Certification (PEFC), as well as the Forest Stewardship Council® (FSC®), and we are certified under their sourcing and chain of custody standards. These standards are aimed at ensuring the long-term health and conservation of forestry resources. We are committed to sourcing wood fiber through environmentally, socially, and economically sustainable practices and promoting resource and conservation stewardship ethics.

Energy supply. Energy at our packaging mills is obtained through self-generated or purchased fuels and electricity. Fuel sources include by-products of the containerboard manufacturing and pulping process (including black liquor and wood waste), natural gas, purchased wood waste, and other purchased fuels. Each of our mills self-generates process steam requirements from by-products (black liquor and wood waste), as well as from the various purchased fuels. The process steam is used throughout the production process and also to generate electricity.

In 2022, our packaging mills consumed about 80 million MMBTUs of fuel to produce both steam and electricity. Of the 80 million MMBTUs consumed, about 63% was from mill-generated biogenic fuels that are by-products of our containerboard manufacturing and pulping process and 37% was from purchased fuels. Of the purchased fuels, 73% was from natural gas, 25% was from purchased wood waste and 2% was from other purchased fuels.

Chemical supply. We consume various chemicals in the production of containerboard, including caustic soda, starch, sulfuric acid, soda ash, and lime. Most of our chemicals are purchased under contracts, which are bid or negotiated periodically.

Sales, Marketing, and Distribution

Our corrugated products are sold through our direct sales and marketing organization, independent brokers, and distribution partners. We have sales representatives and a sales manager at most of our corrugated manufacturing operations and also have corporate account managers who serve customer accounts with a national presence. Additionally, our design centers maintain an on-site dedicated graphics sales force. In addition to direct sales and marketing personnel, we utilize new product development engineers and product graphics and design specialists. These individuals are located at both the corrugated plants and the design centers. General marketing support is provided at our corporate headquarters.

Our containerboard sales group is responsible for linerboard and corrugating medium order processing and supply to our corrugated plants, to outside domestic customers, and to export customers. These personnel also coordinate and execute all containerboard trade agreements with other containerboard manufacturers.

Containerboard produced in our mills is primarily shipped by rail or truck. Our corrugated products are delivered by truck due to our large number of customers and their demand for timely service. Our corrugated manufacturing operations typically serve customers within a 150-mile radius. We experienced higher freight costs in 2022 due to truck and driver shortages and limited boxcar availability, as well as fuel surcharges.

Customers

We sell containerboard and corrugated products to approximately 15,000 customers in approximately 31,000 locations. About 70% of our corrugated products sales are to regional and local accounts, which are broadly diversified across industries and geographic locations. The remaining 30% of our corrugated products customer base consists primarily of national accounts that have multiple locations and are served by a number of PCA plants. No single customer exceeds 10% of segment sales.

The primary end-use markets in the United States for corrugated products are shown below as reported in the 2021 Fibre Box Association annual report:

Food, beverages, and agricultural products	48 %
Retail and wholesale trade	22 %
Paper and other products	10 %
Chemical, plastic, and rubber products	10 %
Miscellaneous manufacturing	10 %

Competition

As of December 31, 2022, we were the third largest producer of containerboard products in North America, according to industry sources and our own estimates. According to industry sources, corrugated products are produced by about 445 U.S. companies operating approximately 1,150 plants. The primary basis for competition for most of our packaging products includes quality, service, price, product design, and innovation. Most corrugated products are manufactured to the customer's specifications. Corrugated producers generally sell within a 150-mile radius of their plants and compete with other corrugated producers in their local region. Competition in our corrugated products operations tends to be regional, although we also face competition from competitors with significant national account presence.

On a national level, our primary competitors are International Paper, WestRock Company, and Georgia-Pacific LLC. However, with our strategic focus on regional and local accounts, we also compete with many smaller, independent producers.

Paper

We are a leading producer of UFS in North America, according to industry sources and our own estimates. We manufacture and sell papers, including both commodity and specialty papers, which may have custom or specialized features such as colors, coatings, high brightness, and recycled content. Our papers consist of communication papers, including cut-size office papers, and printing and converting papers. Our products are sustainable and are produced from renewable raw materials, predominately using energy derived from biogenic fuels in our production processes and are recyclable at end-of-life.

Facilities

We currently have one paper mill located in International Falls, Minnesota that produces both commodity and specialty papers on two paper machines. The mill has the capacity to produce approximately 500,000 tons annually.

Major Raw Materials Used

Fiber supply. Fiber is the largest raw material cost in this segment. We consume wood fiber, recycled fiber, and purchased pulp. We purchase wood fiber through contracts and open-market purchase, and we purchase recycled fiber and pulp from third parties pursuant to contractual agreements.

As part of our renewable virgin fiber sourcing efforts, we participate in the Sustainable Forestry Initiative® (SFI), the Programme for the Endorsement of Forest Certification (PEFC), as well as the Forest Stewardship Council® (FSC®), and we are certified under their sourcing and chain of custody standards. These standards are aimed at ensuring the long-term health and conservation of forestry resources. We are committed to sourcing wood fiber through environmentally, socially, and economically sustainable practices and promoting resource and conservation stewardship ethics.

Energy supply. We obtain energy through self-generated or purchased fuels and electricity. Fuel sources include by-products of the manufacturing and pulping process (including black liquor and wood waste), natural gas, electricity, and purchased wood waste. The paper mill self-generates process steam requirements from by-products (black liquor and wood waste), as well as from the various purchased fuels. The process steam is used throughout the production process and to generate electricity.

In 2022, our paper mill consumed about 11 million MMBTUs of fuel to produce both steam and electricity. Of the 11 million MMBTUs consumed, about 75% was from mill-generated biogenic fuels that are by-products of the manufacturing and pulping process and 25% was from purchased natural gas.

Chemical supply. We consume various chemicals in the production of white papers, including starch, precipitated calcium carbonate, caustic soda, and sodium chlorate. Most of our chemicals are purchased under contracts, which are bid or negotiated periodically.

Sales, Marketing, and Distribution

Our papers are sold primarily through our sales and marketing organization. We ship to customers both directly from our mills and through distribution centers and a network of outside warehouses by rail or truck. This allows us to respond quickly to customer requirements.

Customers

We have about 40 customers in approximately 150 locations. These customers include office products distributors and retailers, paper merchants, and envelope and other converters. We have established long-term relationships with many of our customers. ODP Corporation ("ODP"), formerly Office Depot, Inc., along with its subsidiaries and affiliates, is our largest customer in the Paper segment. Effective January 1, 2023, we have a new agreement with ODP in which we will continue to supply commodity and non-commodity office papers through December 31, 2024. If the agreement is not renewed by the parties, ODP's obligation to purchase paper would phase down over a two-year period beginning January 1, 2025. In 2022, our sales revenue to ODP represented 48% of our Paper segment sales revenue and 4% of our consolidated sales revenue.

Competition

The markets in which our Paper segment competes are large and highly competitive. Commodity grades of UFS paper are globally traded, with numerous worldwide manufacturers, and as a result, these products compete primarily on the basis of price. Our paper manufacturing facility is located in the United States, and although we compete primarily in the domestic market, we do face competition from foreign producers. In 2016, as a result of a case brought by us and other domestic producers before United States international trade authorities, antidumping and countervailing duties at various levels were imposed on producers of uncoated freesheet papers produced in Australia, Brazil, China, Indonesia, and Portugal. These duties remain in effect after sunset review of duty orders by the U.S. International Trade Commission in January 2022. Other factors influencing competition from overseas producers include domestic and foreign demand and foreign currency exchange rates.

Our largest competitors include Domtar Corporation, a division of Paper Excellence, and Sylvamo Corporation. We also face competition from foreign producers and smaller North American producers. Although price is the primary basis for competition in most of our paper grades, quality and service are also important competitive determinants. Our papers compete with electronic data transmission, e-readers, electronic document storage alternatives, and paper grades we do not produce. Increasing shifts to these alternatives have had, and are likely to continue to have, an adverse effect on traditional print media and paper usage and lower demand for communication papers.

Corporate and Other

Our Corporate and Other segment includes corporate support staff services and related assets and liabilities. This segment also includes transportation assets such as rail cars and trucks, which we use to transport some of our products to and from our manufacturing sites, and assets related to a 50% owned variable interest entity, Louisiana Timber Procurement Company, L.L.C. (LTP).

Human Capital

PCA's success depends on a highly engaged, results-oriented workforce operating in an entrepreneurial culture. Our primary objective is to place the right people in the right roles and empower them to succeed.

Safety is a core value at PCA and we believe that all accidents are preventable and an injury-free environment is achievable. We have implemented a robust occupational health and safety management system to assure accountability throughout the organization for safe work practices. Key components to our system include commitment from management, extensive training of employees, hazard identification and communication and regular safety audits.

During 2022, we were committed to conducting safe operations through the COVID-19 pandemic in accordance with the guidelines of the Center for Disease Control and applicable health and safety regulations. PCA has experienced some labor shortage issues due to labor market conditions in general which, earlier in the year, were exacerbated by the pandemic. However, PCA has not experienced significant disruptions in its operations and has managed to maintain adequate availability of its workforce and supply of raw materials and services to continue to serve its customers.

We have extensive recruiting, training and development programs designed to attract and retain a highly talented workforce aligned with our objectives to relentlessly serve our customers and achieve operational excellence throughout our organization. As demand for qualified personnel is increasing, we are expanding our efforts in these critical areas along with efforts to continue to develop, promote and maintain a diverse workforce with a culture and an environment of respect and inclusion. We believe it is essential to hire and promote diverse candidates and employees in order to bring the best ideas to serve our customers. We have established a Diversity, Equity, and Inclusion Council consisting of leaders throughout our organization to hone our strategy and to create a roadmap for inclusive leadership. We publicly disclose in our annual responsibility report our employee demographics in the form of our annual EEO-1 report. Our responsibility report is available on our website and is not intended to be incorporated by reference herein.

To promote employee engagement and improve the work experience of our employees, PCA regularly conducts employee engagement surveys. In 2022, PCA worked with a new external partner who specializes in developing, administering, and interpreting employee surveys. With their help, we transitioned our survey to an online format which made it more accessible to our employees. We also adopted updated methodologies and industry comparisons to measure employee engagement. According to the survey, PCA's overall employee engagement level is in line with other U.S. manufacturing companies. Our survey continued to have a high level of participation, assuring us that the survey results are an accurate reflection of the feelings and opinions of our employees. In their survey responses, our employees reaffirmed our strong safety culture, and that they feel the company is socially and environmentally responsible. For the first time, our survey introduced a question related to Diversity and Inclusion and our employees' perceptions on this topic were favorable. In addition, most employees acknowledged that they know what is expected from them and how their work contributes to PCA's success. Our next survey is scheduled for early 2024.

As of December 31, 2022, we had approximately 15,100 employees, including 4,400 salaried and 10,700 hourly employees. Approximately 61% of our hourly employees worked pursuant to collective bargaining agreements. The majority of our unionized employees are represented by the United Steel Workers (USW), the International Brotherhood of Teamsters (IBT), the International Association of Machinists (IAM), and the Association of Western Pulp and Paper Workers (AWPPW). During 2022, PCA reached new six-year master labor agreements covering seven mills and 25 container plants. We are currently in negotiations to renew or extend union contracts that have recently expired or are expiring in the near future. During 2022, we experienced no work stoppages, and we believe we have satisfactory labor relations with our employees.

Regulatory and Environmental Matters

A discussion of the financial impact of our compliance with environmental laws is presented under the caption "Regulatory and Environmental Matters" in "Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" of this Form 10-K.

Executive Officers of the Registrant

Brief statements setting forth the age at February 23, 2023, the principal occupation, employment during the past five years, the year in which such person first became an officer of PCA, and other information concerning each of our executive officers appears below.

Mark W. Kowlzan, 67, Chairman and Chief Executive Officer - Mr. Kowlzan has served as PCA's Chairman since January 2016 and as Chief Executive Officer and a director since July 2010. From 1998 through June 2010, Mr. Kowlzan led the company's containerboard mill system, first as Vice President and General Manager and then as Senior Vice President - Containerboard. From 1996 through 1998, Mr. Kowlzan served in various senior mill-related operating positions with PCA and Tenneco Packaging, including as manager of the Counce linerboard mill. Prior to joining Tenneco Packaging, Mr. Kowlzan spent 15 years at International Paper, a global paper and packaging company, where he held a series of operational and managerial positions within its mill organization. Mr. Kowlzan is a member of the board of American Forest and Paper Association.

Charles J. Carter, 63, Executive Vice President - Mill Operations - Mr. Carter has led our mill operations since January 2011. From March 2010 to January 2011, Mr. Carter served as PCA's Director of Papermaking Technology. Prior to joining PCA in 2010, Mr. Carter spent 28 years with various pulp and paper companies in managerial and technical positions of increasing responsibility, most recently as Vice President and General Manager of the Calhoun, Tennessee mill of Abitibi Bowater from 2007 to 2010 and as manager of SP Newsprint's Dublin, Georgia mill from 1999 to 2007.

Thomas A. Hassfurther, 67, Executive Vice President - Corrugated Products - Mr. Hassfurther has served as Executive Vice President - Corrugated Products of PCA since September 2009. From February 2005 to September 2009, Mr. Hassfurther served as Senior Vice President - Sales and Marketing, Corrugated Products. Prior to this he held various senior-level management and sales positions at PCA and Tenneco Packaging. Mr. Hassfurther joined the company in 1977.

Robert P. Mundy, 61, Executive Vice President and Chief Financial Officer - Mr. Mundy has served as our Chief Financial Officer since 2015. He previously served as Senior Vice President and Chief Financial Officer of Verso Corporation, a leading North American supplier of coated papers to catalog and magazine publishers, from 2006 to June 2015. Verso Corporation filed for Chapter 11 bankruptcy in January 2016. Prior to that, he worked at International Paper from 1983 to 2006, where he was Director of Finance of the Coated and Supercalendered Papers division from 2002 to 2006, Director of Finance Projects from 2001 to 2002, Controller of Masonite Corporation from 1999 to 2001, and Controller of the Petroleum and Minerals business from 1996 to 1999. He served in various business positions at International Paper from 1983 to 1996.

Pamela A. Barnes, 58, Senior Vice President – Finance and Controller - Ms. Barnes has served as Senior Vice President – Finance and Controller since May 2019. Ms. Barnes previously served as a Vice President in PCA's finance organization from 2012 to 2019. After joining the company in 1992, she has held various positions of increasing responsibility, including serving as PCA's Treasurer since 1999. Before joining PCA, Ms. Barnes worked for Deloitte & Touche.

Jeff S. Kaser, 57, Senior Vice President – Corrugated Products - Mr. Kaser has served as Senior Vice President — Corrugated Products since May 2020. Prior to this, he served as a Vice President and Area General Manager in PCA's corrugated products business since 2012, leading PCA's Midwest Area, Mid-Atlantic Area and Pennsylvania Region. Mr. Kaser joined PCA in 1987 and has also held plant positions in sales, sales management and general management.

Darla J. Olivier, 53, Senior Vice President – Tax, ESG and Government Affairs - Ms. Olivier has led our tax department since 1994 and served as Vice President—Tax from October 2010 to January 2022. In January 2022, she was promoted to Senior Vice President—Tax, ESG and Government Affairs, and leads our sustainability reporting and government affairs functions. Before joining PCA, Ms. Olivier worked for Coopers & Lybrand LLP, Alberto-Culver Company and SPX Corporation.

Kent A. Pflederer, 52, Senior Vice President, General Counsel and Secretary - Mr. Pflederer has served as Senior Vice President, General Counsel and Corporate Secretary since January 2013 and has led our legal department since June 2007. Prior to joining PCA, Mr. Pflederer served as Senior Counsel, Corporate and Securities, at Hospira, Inc. from 2004 to 2007 and served in the corporate and securities practice at Mayer Brown, LLP from 1996 to 2004.

Bruce A. Ridley, 67, Senior Vice President – Environmental Health and Safety and Operational Services - Mr. Ridley has served as Senior Vice President – Environmental Health and Safety and Operational Services since May 2019. Mr. Ridley previously served as Vice President of Operations from 2012 to 2019 and at PCA's Tomahawk, Wisconsin containerboard mill as the Operations Manager and Mill Manager from 1999 to 2011. Before joining PCA, he held several positions of increasing responsibility at multiple locations during his 19 years with International Paper and two years with Champion International.

Robert A. Schneider, 57, Senior Vice President and Chief Information Officer - Mr. Schneider has served as our Chief Information Officer since 2000 and was promoted to Senior Vice President in 2019. Mr. Schneider joined the company in 1989 and has held various management and other positions of increasing responsibility in information systems for PCA.

D. Ray Shirley, 51, Senior Vice President – Corporate Engineering and Process Technology - Mr. Shirley has served as PCA's Senior Vice President – Corporate Engineering and Process Technology since May 2019. Mr. Shirley previously served as PCA's Vice President – Containerboard Mills Engineering and Process Technology from 2012 to 2019 and as Mill Manager at PCA's Counce, Tennessee containerboard mill from 2010 to 2012. He has served in various management roles within the company, including the Operations Manager at the Filer City, Michigan containerboard mill. Before joining PCA in 1996, Mr. Shirley worked for Georgia-Pacific Corporation.

Available Information

PCA's internet website address is www.packagingcorp.com. Our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 are available free of charge through our website as soon as reasonably practicable after they are electronically filed with, or furnished to, the Securities and Exchange Commission. In addition, our Code of Ethics may be accessed in the Investor Relations section of PCA's website. PCA's website and the information contained or incorporated therein are not intended to be incorporated into this report.

Item 1A. RISK FACTORS

Some of the statements in this report and, in particular, statements found in Management's Discussion and Analysis of Financial Condition and Results of Operations, that are not historical in nature are forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include statements about our expectations regarding our future liquidity; earnings; expenditures; environmental, social, and governance (ESG) goals; and financial condition. These statements are often identified by the words "will," "should," "anticipate," "believe," "expect," "intend," "estimate," "goals," "hope," or similar expressions. These statements reflect management's current views with respect to future events and are subject to risks and uncertainties. There are important factors that could cause actual results to differ materially from those in forward-looking statements, many of which are beyond our control. These factors, risks and uncertainties include, but are not limited to, the factors described below.

Our actual results, performance, or achievement could differ materially from those expressed in, or implied by, these forward-looking statements, and accordingly, we can give no assurances that any of the events anticipated by the forward-looking statements will transpire or occur, or if any of them do so, what impact they will have on our results of operations or financial condition. In view of these uncertainties, investors are cautioned not to place undue reliance on these forward-looking statements. We expressly disclaim any obligation to publicly revise or otherwise update any forward-looking statements that have been made to reflect the occurrence of events after the date hereof.

In addition to the risks and uncertainties we discuss elsewhere in this Form 10-K (particularly in "Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations") or in our other filings with the Securities and Exchange Commission (SEC), the following are important factors that could cause our actual results to differ materially from those we project in any forward-looking statement.

Risks Related to our Operations, Business and Industry

General Economic Conditions - A continued deterioration in general economic conditions may harm our business, results of operations, cash flows, and financial position. General global and domestic economic conditions directly affect the levels of demand and production of consumer goods, levels of employment, the availability and cost of credit, and ultimately, the demand for our products and the profitability of our business. The U.S. economy has experienced persistent inflation, and we have experienced, and continue to experience, cost inflation across our business. Inflation has resulted in, and may continue to result in, higher production and transportation costs, which we may not be able to recover through higher prices charged to our customers or otherwise. Interest rates have increased, which may result in lower consumer demand and higher borrowing costs, and may cause general economic conditions to deteriorate. Beginning in mid-2022, we have experienced a deterioration in operating conditions involving our Packaging business as a result of general economic conditions and our customers lowering their inventories. This has resulted in lower demand for our containerboard and corrugated products and lower production, which is continuing into 2023 and has negatively affected our profitability. If global economic conditions continue to deteriorate, economies could experience a recession, which may result in higher unemployment rates, lower disposable income, lower Company earnings and investment, and lower consumer spending. These factors may result in continued lower demand for our products and negatively affect our business, results of operations and cash flows.

In addition, changes in trade policy, including renegotiating or potentially terminating existing bilateral or multilateral agreements as well as the imposition of tariffs, could impact global markets and demand for our and our customers' products and the costs associated with certain of our capital investments. Further changes in tax laws or tax rates may have a material impact on our future cash taxes, effective tax rate or deferred tax assets and liabilities. These conditions are beyond our control and may have a material impact on our business, results of operations, liquidity, and financial position.

Industry Cyclicity - Changes in the prices of our products could materially affect our financial condition, results of operations, and liquidity. Macroeconomic conditions and fluctuations in industry capacity can create changes in prices, sales volumes, and margins for most of our products, particularly commodity grades of packaging and paper products. Prices for all of our products are driven by many factors, including demand for our products, industry capacity and decisions made by other producers with respect to capacity and production, and other competitive conditions in our industry. These factors are affected by general global and domestic economic conditions, customer purchasing decisions, and operating conditions involving our business and industry. We have little influence over the timing and extent of price changes of our products, which may be unpredictable and volatile. In addition, as many of our customer contracts include price adjustment provisions based upon published surveyed prices for containerboard or certain grades of UFS papers reported by trade publications, our selling prices are influenced by price levels determined and published by trade publications. Published containerboard prices have decreased beginning in the fourth quarter of 2022, which will result in lower prices for our containerboard and corrugated products and lower profitability. Changes in how these surveyed price levels are determined or maintained may affect our sales prices. If supply exceeds demand, operating conditions involving our business and industry continue to deteriorate, or other factors result in lower prices for our products, our earnings, and operating cash flows would be harmed.

Competition - The intensity of competition in the industries in which we operate could result in downward pressure on pricing and volume, which could lower earnings and operating cash flows. Our industries are highly competitive, with no single containerboard, corrugated packaging, or UFS paper producer having a dominant position. Certain containerboard grades and UFS paper products cannot generally be differentiated by producer, which tends to intensify price competition. The corrugated packaging industry is also sensitive to changes in economic conditions, as well as other factors including innovation, design, quality, and service. To the extent that one or more competitors are more successful than we are with respect to any key competitive factor, our business could be adversely affected. Our packaging products also compete, to some extent, with various other packaging materials, including products made of paper, plastics, wood, and various types of metal. If we are unable to successfully compete, we may lose market share or may be required to charge lower sales prices for our products, both of which would reduce our earnings and operating cash flows.

UFS paper products compete with electronic data transmission and document storage alternatives. Increasing shifts to electronic alternatives have had and will continue to have an adverse effect on usage of these products. As a result of such competition, the industry is experiencing decreasing demand for existing UFS paper products. As the use of these alternatives grows, demand for UFS paper products is likely to further decline. Declines in demand for our paper products may adversely affect our earnings and operating cash flows.

Some of our competitors are larger than we are and may have greater financial and other resources, greater manufacturing economies of scale, greater energy self-sufficiency, or lower operating costs, compared to our company. We may be unable to compete effectively with these companies particularly during economic downturns. Some of the factors that may adversely affect our ability to compete in the markets in which we participate include the entry of new competitors into the markets we serve, increased competition from overseas producers, our competitors' pricing strategies, changes in customer preferences, and the cost-efficiency of our facilities.

Cost of Fiber - An increase in the cost of fiber could increase our manufacturing costs and lower our earnings. The market price of wood fiber varies based upon availability, source, and the costs of fuels used in the harvesting and transportation of wood fiber. The cost and availability of wood fiber can also be impacted by weather, general logging conditions, geography, and regulatory activity.

The availability and cost of recycled fiber depends heavily on recycling rates and the domestic and global supply and demand for recycled products. We purchase recycled fiber for use at six of our containerboard mills and a small amount at our paper mill. In 2022, we purchased approximately 765,000 tons of recycled fiber at our containerboard mills, net of the recycled fiber generated by our corrugated box plants. The amount of recycled fiber purchased each year varies based upon production and the prices of both recycled fiber and wood fiber.

Periods of higher recycled fiber costs and unusual price volatility have occurred in the past, including during 2022. Prices for recycled fiber may continue to fluctuate significantly in the future, and a significant increase could result in higher costs and lower earnings. A \$10 per ton price increase in recycled fiber for our containerboard mills would result in approximately \$8 million of additional expense based on 2022 consumption.

Cost of Purchased Fuels and Chemicals - An increase in the cost of purchased fuels and chemicals could lead to higher manufacturing costs, resulting in reduced earnings. We are experiencing significant cost inflation and volatility for key inputs such as fuels and chemicals. We have the ability to use various types of purchased fuels in our manufacturing operations, including natural gas, bark, and other purchased fuels. Fuel prices, in particular prices for oil and natural gas, have fluctuated in the past. New and more stringent environmental regulations may discourage, reduce the availability of, or make more expensive, the use of certain fuels, such as natural gas, which represents the majority of our purchased fuels. In addition, costs for key chemicals used in our manufacturing operations also fluctuate. These fluctuations impact our manufacturing costs and result in earnings volatility. If fuel and chemical prices rise, our production costs and transportation costs will increase and cause higher manufacturing costs and reduced earnings if we are unable to recover such increases through higher prices of our products or other means. A \$0.10 per million MMBTU increase in natural gas prices would result in approximately \$3 million of additional expense, based on 2022 usage.

Customer Concentration - We rely on certain large customers. Our packaging and paper segments each have large customers, the loss of which could adversely affect the segment's sales and profitability. In particular, because our businesses operate in highly competitive industry segments, we regularly bid for new business or for renewal of existing business. The loss of business from our larger customers, or the renewal of business on less favorable terms, may adversely impact our financial results.

ODP Corporation ("ODP"), formerly Office Depot, Inc., along with its subsidiaries and affiliates, is our largest customer in the Paper segment. Effective January 1, 2023, we have a new agreement with ODP in which we will continue to supply commodity and non-commodity office papers through December 31, 2024. If the agreement is not renewed by the parties, ODP's obligation to purchase paper would phase down over a two-year period beginning January 1, 2025.

In 2022, sales to ODP represented 48% of our Paper segment sales and 4% of our consolidated sales. If these sales are reduced, including if we are unable to renew the agreement at historical volume levels, we would need to find new customers. We may not be able to fully replace any lost sales, and any new sales may be at lower prices or higher costs. Any significant deterioration in the financial condition of ODP affecting its ability to pay or any other change that makes ODP less willing to purchase our products will harm our Paper business and results of operations.

Transportation Costs - Reduced truck and rail availability could lead to higher costs or poorer service, resulting in lower earnings, and harm our ability to distribute our products. We ship our products primarily by truck and rail. We have at times experienced lower availability of third-party trucking services, including truck and driver shortages, and service issues, interruptions, and delays in rail services, which are exacerbated in periods of high demand for such services. These issues became more pronounced in 2021 and persisted at times during 2022. While we have generally been able to manage through these issues and have not experienced material disruptions in our ability to serve our customers, these issues have resulted in significantly higher costs for transportation services. If these factors persist, we could experience even higher transportation costs in the future and difficulties shipping our products in a timely manner. We may not be able to recover higher transportation costs through higher prices or otherwise, which would result in lower earnings.

Material Disruption of Operations - A material disruption at one of our manufacturing facilities could prevent us from meeting customer demand, reduce our sales, and/or negatively affect our results of operations and financial condition. Our business depends on continuous operation of our facilities, particularly at our mills. Any of our manufacturing facilities, or any of our machines within such facilities, could cease operations unexpectedly for a significant period of time due to a number of events, including:

- Unscheduled maintenance outages.
- Prolonged power failures.
- Equipment or information system breakdowns or failures.
- Explosion of a boiler or other major facilities.
- Disruption in the supply of raw materials, such as wood fiber, energy, or chemicals.
- A spill or release of pollutants or hazardous substances.
- Closure or curtailment related to environmental concerns.
- Labor difficulties.
- Disruptions in the transportation infrastructure, including roads, bridges, railroad tracks, and tunnels.
- Terrorism or threats of terrorism.

- The effect of a pandemic or other health event, such as the COVID-19 pandemic.
- Other operational problems.

These events could harm our ability to produce our products and serve our customers and may lead to higher costs and reduced earnings. Our business was affected by the COVID-19 pandemic and measures to control it during the last three years, which included travel bans and restrictions, quarantines, shelter in place orders, and standards affecting employers such as mask mandates, vaccine mandates, and testing protocols. PCA experienced some disruptions as a result of labor shortage issues due to the pandemic between 2020 and mid-2022. The pandemic also disrupted supply chains and transportation services.

Extreme Weather Events - Our facilities are susceptible to extreme weather events, which could disrupt our business. Extreme weather events like hurricanes, tornadoes, floods and winter storms have caused disruptions to our business both directly and indirectly in recent history. Climate change may increase the frequency and intensity of these extreme weather events. Certain weather events may cause damage to our facilities and require us to temporarily halt operations. These types of events may also disrupt our customers' and suppliers' operations. Disruptions to the supply chain may cause the cost of goods to temporarily increase. Damage to our facilities may cause insurance premiums to increase and also require us to incur additional costs to mitigate future risks.

ESG - We may not achieve or make satisfactory progress on our goals and targets to reduce emissions and satisfy other ESG metrics. Investors, governmental authorities, and other interested parties have recently focused on ESG matters, including with respect to climate change, greenhouse gas emissions, and sustainable business practices. This increased awareness with respect to ESG matters, including climate change, is expected to result in more prescriptive reporting requirements with respect to ESG metrics and expectations that companies establish goals and commitments regarding ESG metrics and take actions to achieve those goals and commitments.

We have voluntarily established targets and goals with respect to greenhouse gas emissions, which are discussed elsewhere in this report under the caption "Regulatory and Environmental Matters" in "Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" of this Form 10-K. Our ability to achieve those targets and goals will depend on certain factors beyond our control, including regulatory actions, emergence of and advances in technology, and availability of required products and services. Our efforts to achieve ESG targets and goals may result in higher costs and capital expenditures with a low return on investment and may distract management efforts from other operational matters. We may not achieve or make satisfactory progress on our ESG goals and targets. If we are unable to meet these goals and targets, our reputation with investors, customers and other stakeholders and businesses may be harmed.

Reliance on Personnel - We may fail to attract and retain qualified personnel, including key management personnel. Our ability to operate and grow our business depends on our ability to attract and retain employees with the skills necessary to operate and maintain our facilities, produce our products and serve our customers. The increasing demand for qualified personnel may make it more difficult for us to attract and retain qualified employees. Changing demographics and labor work force trends may make it difficult for us to replace retiring employees at our manufacturing and other facilities. U.S. labor market conditions remain tight and labor shortages were exacerbated by the COVID-19 pandemic. We have experienced higher than historical employee turnover in certain of our facilities. If we fail to attract and retain qualified personnel, or if we experience labor shortages, we may experience higher costs and other difficulties, and our business may be adversely impacted.

In addition, we rely on key executive and management personnel to manage our business efficiently and effectively. As our business has grown in size and geographic scope, we have relied on these individuals to manage increasingly complex operations. The loss of any of our key personnel could adversely affect our business.

Cybersecurity - Risks related to security breaches of company, customer, employee, and vendor information, as well as the technology that manages our operations and other business processes, could adversely affect our business. We rely on various information technology and process control systems to capture, process, store, and report data, operate our manufacturing and converting facilities, and interact with customers, vendors, and employees. Despite careful security and controls design, implementation, updating, and internal and independent third-party assessments, our information technology and process control systems, and those of our third-party providers, could become subject to cyber-attacks or security breaches. Network, system, and data breaches could result in misappropriation of sensitive data or operational disruptions including interruption to systems availability and denial of access to and misuse of applications required by our customers and vendors to conduct business with us. Misuse of internal applications; theft of intellectual property, trade secrets, or other corporate assets; and inappropriate disclosure of confidential information could stem from such incidents. Delayed shipments, slowed production, or other issues resulting from these disruptions could result in lost sales, business delays, and negative publicity and could have a material adverse effect on our operations, financial condition, or operating cash flows.

Environmental Matters - PCA may incur significant environmental liabilities with respect to both past and future operations. We are subject to, and must comply with, a variety of federal, state and local environmental laws, particularly those relating to air and water quality, waste disposal and the cleanup of contaminated soil and groundwater. Failure to comply with these regulations could result in fines, which may be significant, or other adverse regulatory action. Because environmental regulations are constantly evolving, we have incurred, and will continue to incur, costs to maintain compliance with those laws. See Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations - Environmental Matters” for estimates of expenditures we expect to make for environmental compliance in the next few years. New and more stringent environmental regulations may be adopted and may require us to incur additional operating expenses and/or significant additional capital expenditures to modify or replace certain of our boilers and other equipment. In addition, environmental regulations may increase the cost of our raw materials and purchased energy. Although we have established reserves to provide for known environmental liabilities, these reserves may change over time due to the enactment of new environmental laws or regulations or changes in existing laws or regulations, which might require additional significant environmental expenditures.

Labor Relations- If we experience strikes or other work stoppages, our business will be harmed. Our workforce is highly unionized and operates under various collective bargaining agreements. We must negotiate to renew or extend any union contracts that have recently expired or are expiring in the near future. While we believe that we have satisfactory labor relations, we may not be able to successfully negotiate new agreements without work stoppages or labor difficulties in the future or renegotiate them on favorable terms. If we are unable to successfully renegotiate the terms of any of these agreements, or if we experience any extended interruption of operations at any of our facilities as a result of strikes or other work stoppages, our business, results of operations and financial condition may be harmed.

Financial Risks

Inflation and Other General Cost Increases - We may not be able to offset higher costs. We are subject to both contractual, inflationary, and other general cost increases, including with regard to our labor costs and purchases of raw materials and transportation services. General economic conditions have resulted in higher inflation, which has led to higher costs across our business. If we are unable to offset these cost increases by price increases, growth, and/or cost reductions in our operations, these inflationary and other general cost increases could have a material adverse effect on our operating cash flows, profitability, and liquidity.

In 2022, our total company costs including cost of sales (COS) and selling, general, and administrative expenses (SG&A) was \$7.0 billion, and excluding non-cash costs (depreciation, depletion and amortization, pension and postretirement expense, and share-based compensation expense) was \$6.5 billion. A 1% increase in COS and SG&A costs would increase costs by \$70 million and cash costs by \$65 million.

Debt obligations - Our debt service obligations may reduce our operating flexibility. At December 31, 2022, we had \$2.5 billion of debt outstanding and a \$321 million undrawn revolving credit facility, after deducting letters of credit. All debt is comprised of fixed-rate senior notes. We and our subsidiaries are not restricted from incurring, and may incur, additional indebtedness in the future.

Our current borrowings, plus any future borrowings, may affect our ability to operate our business, including, without limitation:

- Result in significant cash requirements to make interest and maturity payments on our outstanding indebtedness;
- Increase our vulnerability to adverse changes in our business or industry conditions;
- Increase our vulnerability to increases in interest rates;
- Limit our ability to obtain additional financing for working capital, capital expenditures, general corporate, and other purposes;
- Limit our flexibility in planning for, or reacting to, changes in our business and our industry; and
- Limit our flexibility to make acquisitions.

Further, if we cannot service our indebtedness, we may have to take actions to secure additional cash by selling assets, seeking additional equity or reducing investments, which may not be achievable on acceptable terms or at all.

Pension Plans – Our pension plans may require additional funding. We record a liability associated with our pensions equal to the excess of the benefit obligations over the fair value of the assets funding the plans. The actual required amounts and timing of future cash contributions will be sensitive to changes in the applicable discount rates and returns on plan assets and could also be impacted by future changes in the laws and regulations applicable to plan funding. Fluctuations in the market performance of our plan assets will affect our pension plan costs in future periods. Changes in assumptions regarding expected long-term rate of return on plan assets, our discount rate, expected compensation levels, or mortality will also increase or decrease pension costs.

Market Price of our Common Stock - The market price of our common stock may be volatile, which could cause the value of the stock to decline. Securities markets worldwide periodically experience significant price declines and volume fluctuations due to macroeconomic factors and other factors beyond our control. This market volatility, as well as general economic, market, or political conditions, could reduce the market price of our common stock with little regard to our operating performance. In addition, our operating results could be below the expectations of public market analysts and investors, and in response, the market price of our common stock could decrease significantly.

Item 1B. UNRESOLVED STAFF COMMENTS

None.

Item 2. PROPERTIES

We own and lease properties in our business. Primarily all of our leases are non-cancelable and are accounted for as operating leases. These leases are not subject to early termination except for standard nonperformance clauses.

Information regarding our principal operating facilities, the segments that use those facilities, and a map of geographical locations is presented in “Part I, Item 1. Business” of this Form 10-K. We assess the condition and capacity of our manufacturing, distribution, and other facilities needed to meet our operating requirements. Our properties have been generally well maintained and are in good operating condition. In general, our facilities have sufficient capacity and are adequate for our production and distribution requirements.

As of December 31, 2022, we own buildings and land for our eight mills. Additionally, we have 89 corrugated manufacturing operations, of which the buildings and land for 53 are owned, including 45 combining operations, or corrugated plants, one corrugated sheet-only manufacturer, and seven sheet plants. We lease the buildings for 13 corrugated plants and 23 sheet plants. We own warehouses and miscellaneous other properties, including sales offices and woodlands management offices. We lease space for regional design centers and numerous other distribution centers, warehouses, and facilities. The equipment in these leased facilities is, in virtually all cases, owned by us, except for forklifts and other rolling stock, which are generally leased.

We own our corporate headquarters building, which is located in Lake Forest, Illinois.

Item 3. LEGAL PROCEEDINGS

Information concerning legal proceedings can be found in Note 20, Commitments, Guarantees, Indemnifications, and Legal Proceedings, of the Notes to Consolidated Financial Statements in “Part II, Item 8. Financial Statements and Supplementary Data” of this Form 10-K.

Item 4. MINE SAFETY DISCLOSURE

Not applicable.

PART II

Item 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS, AND ISSUER PURCHASES OF EQUITY SECURITIES

Market Information

PCA's common stock is listed on the New York Stock Exchange (NYSE) under the symbol "PKG".

Stockholders

On February 17, 2023, there were 142 holders of record of our common stock.

Purchases of Equity Securities

Share Repurchase Program

On January 26, 2022, PCA announced that its Board of Directors authorized the repurchase of \$1 billion of the Company's outstanding common stock from time to time in open market or privately negotiated transactions in accordance with applicable securities laws. At the time of the announcement, there was no remaining authority under previously announced programs. Repurchases may be made from time to time in open market or privately negotiated transactions in accordance with applicable securities regulations. The timing and amount of repurchases will be determined by the Company in its discretion based on factors such as PCA's stock price and market and business conditions.

During the third and fourth quarters of 2022, we paid \$523 million, including fees, to repurchase 4.0 million shares of common stock. At December 31, 2022, \$477 million of the authorized amount remained available for repurchase of the Company's common stock. All shares repurchased have been retired. During the fourth quarter of 2021, we paid \$193 million, including fees, to repurchase 1.4 million shares of common stock, which was the entire remaining amount of repurchase authority we had under previously announced share repurchase programs. The Company did not repurchase any shares of its common stock during the year ended December 31, 2020.

Pursuant to its equity incentive plan, the Company withholds shares from vesting employee equity awards to cover employee tax liabilities. We withheld 110,827 shares in 2022 to cover \$15.4 million in employee tax liabilities, 95,437 shares in 2021 to cover \$12.9 million in employee tax liabilities, and 107,627 shares in 2020 to cover \$10.5 million in employee tax liabilities.

The following table presents information related to our repurchases of common stock made under repurchase plans authorized by PCA's Board of Directors, and shares withheld to cover taxes on vesting of equity awards, during the three months ended December 31, 2022:

Issuer Purchases of Equity Securities				
Period	Total Number of Shares Purchased (a)	Average Price Paid Per Share (b)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares That May Yet Be Purchased Under the Plans or Programs (in millions)
October 1-31, 2022	333,321	\$ 118.83	333,200	\$ 818.4
November 1-30, 2022	2,073,127	125.70	2,073,127	557.8
December 1-31, 2022	597,185	134.59	596,700	477.5
Total	3,003,633	\$ 126.70	3,003,027	\$ 477.5

(a) Includes 606 shares withheld from employees to cover income and payroll taxes on equity awards that vested during the period.

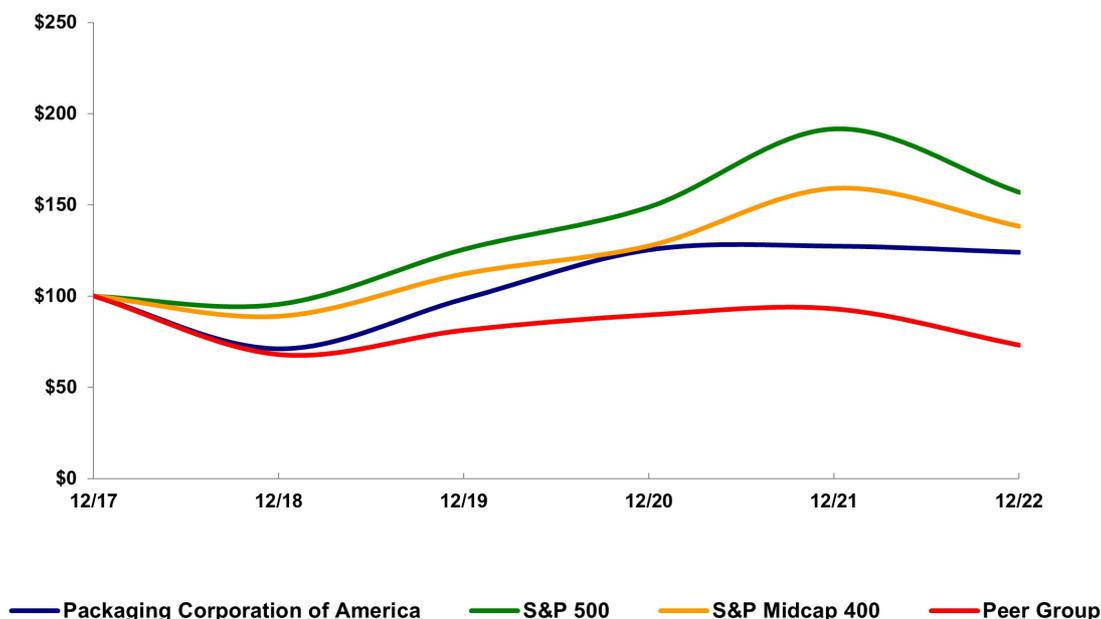
(b) Excludes commissions.

Performance Graph

The graph below compares PCA's cumulative 5-year total shareholder return on common stock with the cumulative total returns of the S&P 500 index; the S&P Midcap 400 index; and a customized peer group of two companies that includes: International Paper and WestRock Company. The graph tracks the performance of a \$100 investment (including the reinvestment of all dividends) in our common stock, in each index, and in each peer group's common stock from December 31, 2017 through December 31, 2022. The stock price performance included in this graph is not necessarily indicative of future stock price performance.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*

Among Packaging Corporation of America, the S&P 500 Index, the S&P Midcap 400 Index, and a Peer Group



*\$100 invested on 12/31/17 in stock or index, including reinvestment of dividends. Fiscal year ending December 31.

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	Cumulative Total Return					
	December 31,					
	2017	2018	2019	2020	2021	2022
Packaging Corporation of America	\$ 100.00	\$ 71.14	\$ 98.42	\$ 125.25	\$ 127.27	\$ 123.91
S&P 500	100.00	95.62	125.72	148.85	191.58	156.89
S&P Midcap 400	100.00	88.92	112.21	127.54	159.12	138.34
Peer Group	100.00	67.94	81.26	89.63	92.95	73.08

The information in the graph and table above is not deemed "filed" with the Securities and Exchange Commission and is not to be incorporated by reference in any of PCA's filings under the Securities Act of 1933 or the Securities Exchange Act of 1934, whether made before or after the date of this Annual Report on Form 10-K, except to the extent that PCA specifically incorporates such information by reference.

Item 6. [RESERVED]

Item 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of historical results of operations and financial condition should be read in conjunction with the audited financial statements and the notes thereto which appear elsewhere in this Form 10-K. This discussion includes forward-looking statements regarding our expectations with respect to our future performance, liquidity, ESG goals, and capital resources. Such statements, along with any other non-historical statements in the discussion, are forward-looking. See our discussion regarding forward-looking statements included under "Part I, Item 1A. Risk Factors" of this Form 10-K. For our discussion and analysis of our results of operations, financial condition and cash flows for the year ended December 31, 2020, the earliest of the years presented in the accompanying audited financial statements included in Item 8 herein, please refer to our Annual Report on Form 10-K for the year ended December 31, 2021, filed with the Securities and Exchange Commission on February 24, 2022. Such information is presented in Item 7 of such report under the subcaptions "Results of Operations —Year Ended December 31, 2021, Compared with Year Ended December 31, 2020" and "Liquidity and Capital Resources" and is incorporated by reference herein.

Overview

PCA is the third largest producer of containerboard products and a leading producer of uncoated freesheet paper in North America. We operate eight mills and 89 corrugated products manufacturing plants. Our containerboard mills produce linerboard and corrugating medium, which are papers primarily used in the production of corrugated products. Our corrugated products manufacturing plants produce a wide variety of corrugated packaging products, including conventional shipping containers used to protect and transport manufactured goods, multi-color boxes and displays with strong visual appeal that help to merchandise the packaged product in retail locations, and honeycomb protective packaging. In addition, we are a large producer of packaging for meat, fresh fruit and vegetables, processed food, beverages, and other industrial and consumer products. We also manufacture and sell UFS papers, including both commodity and specialty papers, which may have custom or specialized features such as colors, coatings, high brightness, and recycled content. We are headquartered in Lake Forest, Illinois and operate primarily in the United States.

Executive Summary

Net sales were \$8.5 billion for the year ended December 31, 2022 and \$7.7 billion for 2021. We reported \$1,030 million of net income, or \$11.03 per diluted share, in 2022, compared to \$841 million, or \$8.83 per diluted share, in 2021. Net income included \$10 million of expense for special items in 2022, compared to \$53 million of expense for special items in 2021. Special items in both periods are described later in this section. Excluding special items, we recorded \$1,040 million of net income, or \$11.14 per diluted share, in 2022, compared to \$894 million, or \$9.39 per diluted share, in 2021. The increase was driven primarily by higher prices and mix in our Packaging and Paper segments, partially offset by lower volumes in our Packaging and Paper segments, higher operating and converting costs, higher freight and logistic expenses, and higher annual outage expense. For additional detail on special items included in reported GAAP results, as well as segment income (loss) excluding special items, earnings before non-operating pension expense, interest, income taxes, and depreciation, amortization, and depletion (EBITDA), and EBITDA excluding special items, see "Item 7. Reconciliations of Non-GAAP Financial Measures to Reported Amounts." PCA ended the year with \$470 million of cash and marketable debt securities and, including borrowing availability under its revolving credit facility, \$791 million in liquidity.

Packaging segment income from operations was \$1,424 million in 2022, compared to \$1,306 million for 2021. Packaging segment EBITDA excluding special items was \$1,849 million in 2022, compared to \$1,688 million in 2021. The increase was driven primarily by higher containerboard and corrugated products prices and mix, partially offset by lower sales and production volumes, higher operating and converting costs, higher freight and logistic expenses, and higher annual outage expense. Packaging volumes remained strong at or above 2021 levels through the middle of the year. Volume then began to decline as general economic conditions deteriorated and our customers began to reduce their inventories and orders accordingly, which has resulted in lower demand for our products. Overall, our corrugated products shipments were down 3.4% for the year as those trends continued through the second half of the year. In order to achieve appropriate production levels for our demand and necessary inventory levels, we reduced our production of containerboard at our packaging mills during the second half of the year. For more information on our containerboard production and corrugated products shipments, refer to the table presented under the caption "Production and Shipments" in "Part I, Item 1. Business" of this Form 10-K. After increasing throughout 2021 and through the first three quarters of 2022, containerboard prices published by industry publications began to decline during the fourth quarter of 2022. We continued to experience cost inflation across our business, including in the areas of labor and benefits, chemicals, energy, repairs, materials, and supplies, as well as higher transportation costs. Over the past several years, we made extensive capital investments throughout the packaging segment to improve productivity and efficiencies at our containerboard mills and corrugated products facilities and believe that our success in execution of these capital investments has helped us to mitigate cost inflation and better serve our customers.

Paper segment income from operations was \$103 million in 2022, compared to \$39 million in 2021. Paper segment EBITDA excluding special items was \$132 million in 2022, compared to \$72 million in 2021. The increase was due primarily to higher paper prices and mix and lower operating costs, partially offset by lower sales and production volumes, higher annual outage expense, and higher freight and logistic expenses. The Jackson mill produced only containerboard, and no paper products, during 2022, which drove lower sales and production volumes.

We have undertaken activities to convert the Jackson mill from production of paper products, which the mill historically produced, to production of containerboard. For more information, see the Packaging caption in "Part I, Item 1. Business" and Note 1, Nature of Operations and Basis of Presentation, of the Notes to Consolidated Financial Statements in "Part II, Item 8. Financial Statements and Supplementary Data" of this Form 10-K.

Special Items and Earnings per Diluted Share, Excluding Special Items

Earnings per diluted share, excluding special items, in 2022 and 2021 were as follows:

	Year Ended December 31,	
	2022	2021
Earnings per diluted share	\$ 11.03	\$ 8.83
Special items:		
Jackson mill conversion-related activities (a)	0.11	0.11
Facilities closure and other costs (income) (b)	0.01	(0.03)
Acquisition and integration-related activities (c)	(0.01)	0.01
Debt refinancing (d)	—	0.47
Total special items expense	0.11	0.56
Earnings per diluted share, excluding special items	\$ 11.14	\$ 9.39

- (a) For 2022 and 2021, includes \$14.1 million and \$14.0 million, respectively, of charges related to the announced discontinuation of production of uncoated freesheet paper grades on the No. 3 machine at the Jackson, Alabama mill associated with the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities.
- (b) For 2022, includes \$0.7 million of charges consisting of closure costs related to corrugated products facilities. These costs were partially offset by insurance proceeds received for a natural disaster at one of the corrugated products facilities, a gain on sale of assets related to a corrugated products facility, and a favorable lease buyout for a closed corrugated products facility. For 2021, includes \$3.6 million of income primarily consisting of an adjustment of the required asset retirement obligation related to the 2020 closure of the San Lorenzo, California facility, a gain on sale of transportation assets and corrugated products facilities, and insurance proceeds received for a natural disaster at one of the corrugated products facilities, partially offset by closure costs related to corrugated products facilities.
- (c) For 2022, includes \$1.0 million of income from a favorable inventory adjustment related to the December 2021 Advance Packaging Corporation acquisition, partially offset by acquisition and integration related costs. For 2021, includes \$0.9 million of charges for acquisition and integration costs related to the acquisition.
- (d) Includes \$58.9 million of costs related to the Company's debt refinancing completed in October 2021, which included a redemption premium and the write-off of the remaining balance of unamortized debt issuance costs.

Management excludes special items, as it believes these items are not necessarily reflective of the ongoing results of operations of our business. We present these measures because they provide a means to evaluate the performance of our segments and our company on an ongoing basis using the same measures that are used by our management, because these measures assist in providing a meaningful comparison between periods presented and because these measures are frequently used by investors and other interested parties in the evaluation of companies and the performance of their segments. A reconciliation of diluted earnings per share to diluted earnings per share excluding special items is included above and the reconciliations of other non-GAAP measures used in this Management's Discussion and Analysis of Financial Condition and Results of Operations, to the most comparable measure reported in accordance with GAAP, are included later in Item 7 under "Reconciliations of Non-GAAP Financial Measures to Reported Amounts." Any analysis of non-GAAP financial measures should be done in conjunction with results presented in accordance with GAAP. The non-GAAP measures are not intended to be substitutes for GAAP financial measures and should not be used as such.

Industry and Business Conditions

Trade publications reported North American industry-wide corrugated products shipments were down 3.8% during 2022, compared to 2021. Reported industry containerboard production decreased 5.2% compared to 2021, and reported industry containerboard inventories at the end of 2022 were approximately 2.7 million tons, down 2.1% compared to 2021. Reported containerboard export shipments decreased 7.7% compared to 2021. Prices reported by trade publications increased by \$60 per ton for linerboard and \$70 per ton for corrugating medium in March 2022. Prices decreased \$20 per ton for linerboard and \$40 per ton for corrugating medium in November, followed by an additional decrease in December of \$20 per ton each. In January 2023, prices decreased \$10 per ton for linerboard and \$30 per ton for corrugating medium.

The market for communication papers competes heavily with electronic data transmission and document storage alternatives. Increasing shifts to these alternatives have reduced usage of traditional print media and communication papers. Trade publications reported North American uncoated freesheet paper shipments were flat in 2022, compared to 2021. Average prices reported by a trade publication for cut size office papers increased \$40 per ton in February and March 2022, \$90 per ton in May 2022, and \$65 per ton in September 2022. The average price was higher by \$259, or 22%, in 2022 compared to 2021.

Outlook

For the first quarter of 2023, in our Packaging segment we expect corrugated products demand on a per day basis to be similar to fourth quarter levels, although we expect higher total volume as there are four additional shipping days compared to the fourth quarter of 2022. Prices for containerboard and corrugated products are expected to decrease as a result of the recent decreases in the published domestic containerboard prices, and prices for containerboard in export markets are expected to be lower as well. We expect slightly higher paper prices on flat sales volume. Labor costs and certain indirect costs will increase as some containerboard mill operations were temporarily idled during the fourth quarter and resumed operations during the first quarter. In addition, we anticipate higher labor and benefits costs and other timing-related expenses that occur at the beginning of a new year as well as higher prices for many chemicals, particularly starch and caustic soda. However, we expect lower wood and recycled fiber prices, lower energy prices, and lower scheduled maintenance outage expenses during the first quarter when compared to the fourth quarter of 2022. Lastly, we expect higher interest and non-operating pension expenses and a higher tax rate, but we expect to benefit on an earnings per share basis from recent share repurchases. Considering these items, we expect first quarter earnings to be lower than the fourth quarter of 2022.

Results of Operations

Year Ended December 31, 2022, Compared with Year Ended December 31, 2021

The historical results of operations of PCA for the years ended December 31, 2022 and 2021 are set forth below (dollars in millions):

	Year Ended December 31,		Change
	2022	2021	
Packaging	\$ 7,780.7	\$ 7,052.6	\$ 728.1
Paper	622.1	599.7	22.4
Corporate and other and eliminations	75.2	78.0	(2.8)
Net sales	\$ 8,478.0	\$ 7,730.3	\$ 747.7
Packaging	\$ 1,423.7	\$ 1,306.0	\$ 117.7
Paper	103.0	39.1	63.9
Corporate and other	(106.0)	(103.7)	(2.3)
Income from operations	1,420.7	1,241.4	179.3
Non-operating pension income	14.5	19.7	(5.2)
Interest expense, net	(70.4)	(152.4)	82.0
Income before taxes	1,364.8	1,108.7	256.1
Income tax expense	(335.0)	(267.6)	(67.4)
Net income	\$ 1,029.8	\$ 841.1	\$ 188.7
Net income excluding special items (a)	\$ 1,040.2	\$ 893.8	\$ 146.4
EBITDA (a)	\$ 1,877.5	\$ 1,658.9	\$ 218.6
EBITDA excluding special items (a)	\$ 1,885.5	\$ 1,665.4	\$ 220.1

(a) See "Reconciliations of Non-GAAP Financial Measures to Reported Amounts" included in this Item 7 for a reconciliation of non-GAAP measures to the most comparable GAAP measure.

Net Sales

Net sales increased \$748 million, or 9.7%, to \$8,478 million in 2022, compared to \$7,730 million in 2021.

Packaging. Net sales increased \$728 million, or 10.3%, to \$7,781 million, compared to \$7,053 million in 2021, due to higher prices and mix (\$963 million), partially offset by lower volumes (\$235 million). In 2022, our domestic containerboard prices increased 12.0% and export prices increased 16.0% compared to 2021. Our containerboard outside shipments decreased 12.2%, and total corrugated products shipments were down 3.4% in total and per workday, compared to 2021.

Paper. Net sales increased \$22 million, or 3.7%, to \$622 million, compared to \$600 million in 2021. The increase was due to higher prices and mix (\$96 million), partially offset by lower volume (\$74 million).

Gross Profit

Gross profit increased \$218 million in 2022, compared to 2021. The increase was driven primarily by higher prices and mix in our Packaging and Paper segments, partially offset by lower volumes in our Packaging and Paper segments, higher operating and converting costs, higher freight and logistic expense, and higher annual outage expense. In 2022, gross profit included \$7 million of special items expense related to Jackson mill conversion-related activities, corrugated facility closure costs, and income related to acquisition and integration-related activities, compared to \$7 million of special items expense related to Jackson mill conversion-related activities, corrugated facility closure costs, and corrugated facility acquisition costs in 2021.

Selling, General, and Administrative Expenses

Selling, general, and administrative expenses (SG&A) increased \$32 million in 2022 compared to 2021. The increase was primarily due to higher information technology expenses, outside services, travel, and employee salaries and fringe benefits.

Other Expense, Net

Other expense, net for the years ended December 31, 2022 and 2021 are set forth below (dollars in millions):

	Year Ended December 31,	
	2022	2021
Asset disposals and write-offs	\$ (44.5)	\$ (38.9)
Jackson mill conversion-related activities	(6.9)	(8.9)
Facilities closure and other income (costs)	0.1	6.5
Acquisition and integration-related activities	—	(0.6)
Other	(10.0)	(12.9)
Total	<u>\$ (61.3)</u>	<u>\$ (54.8)</u>

We discuss these items in more detail in Note 7, Other Expense, Net of the Condensed Notes to the Consolidated Financial Statements in “Part II, Item 8. Financial Statements” of this Form 10-K.

Income from Operations

Income from operations increased \$179 million, or 14.4%, for the year ended December 31, 2022, compared to 2021. Income from operations in 2022 included \$14 million of expense for special items compared to \$11 million in 2021. Special items in 2022 consisted of \$14 million of expense for Jackson mill conversion-related activities, \$1 million of corrugated facility closure costs, and \$1 million of income related to acquisition and integration-related activities. 2021 special items included \$14 million of expense for Jackson mill conversion-related costs and other paper-to-containerboard conversion-related activities, \$1 million of expense related to the acquisition of Advance Packaging, and \$4 million of income related to corrugated products facility closures.

Packaging. Segment income from operations increased \$118 million to \$1,424 million, compared to \$1,306 million in 2021. The increase in 2022 related primarily to higher containerboard and corrugated products prices and mix (\$842 million), partially offset by lower containerboard and corrugated products sales and production volumes (\$166 million), higher operating and converting costs (\$394 million), higher freight expense (\$105 million), higher depreciation expense (\$40 million), higher annual outage expense (\$13 million), and other costs (\$5 million). Special items in 2022 included \$5 million of expense for Jackson mill conversion-related activities, corrugated facility closure costs, and income related to acquisition and integration-related activities. Special items in 2021 included \$4 million of expense for Jackson mill conversion-related activities, \$1 million of expense related to the acquisition of Advanced Packaging, and \$3 million of income related to corrugated products facility closures.

Paper. Segment income from operations increased \$64 million to \$103 million, compared to \$39 million in 2021. The increase, excluding special items, primarily related to higher paper prices and mix (\$98 million), lower operating costs (\$4 million), and lower depreciation expense (\$3 million), partially offset by lower sales and production volumes (\$27 million), higher annual outage expense (\$8 million), higher freight expense (\$4 million), and other costs (\$2 million). Special items in the Paper segment included \$9 million of expense for Jackson mill conversion-related activities in 2022 and 2021.

Non-Operating Pension Expense, Interest Expense, Net and Income Taxes

During 2022, non-operating pension income decreased \$5 million compared to 2021. The decrease in non-operating pension expense was primarily related to assumption changes, partially offset by favorable 2021 asset performance.

Interest expense, net, during 2022 decreased \$82 million compared to 2021. The decrease in interest expense, net in 2022 was primarily due to higher charges (\$59 million) in the prior year related to the Company's October 2021 debt refinancing, lower interest rates on the Company's fixed-rate debt (\$8 million) as a result of the Company's debt refinancing, higher interest income (\$8 million) due to higher rates on invested cash balances, and higher capitalized interest (\$4 million) related to the Company's increased levels of capital expenditures in 2022.

During 2022, we recorded \$335 million of income tax expense, compared to \$268 million of income tax expense during 2021. The effective tax rate for 2022 and 2021 was 24.5% and 24.1%, respectively. The higher effective tax rate for 2022 was primarily due to higher nondeductible employee remuneration paid to covered employees.

Liquidity and Capital Resources

Sources and Uses of Cash

Our primary sources of liquidity are net cash provided by operating activities and available borrowing capacity under our revolving credit facility. We ended the year with \$320 million of cash and cash equivalents, \$150 million of marketable debt securities, and \$321 million of unused borrowing capacity under the revolving credit facility, net of letters of credit. Currently, our primary uses of cash are for operations, capital expenditures, acquisitions, debt service, common stock dividends, and repurchases of common stock. We believe that net cash generated from operating activities, cash on hand, available borrowings under our revolving credit facility and available capital through access to capital markets will be adequate to meet our liquidity and capital requirements, including payments of any declared common stock dividends, for the foreseeable future. As our debt or credit facilities become due, we will need to repay, extend or replace such facilities. Our ability to do so will be subject to future economic conditions and financial, business, and other factors, many of which are beyond our control.

Below is a summary table of our cash flows, followed by a discussion of our sources and uses of cash through operating activities, investing activities, and financing activities (dollars in millions):

	Year Ended December 31,	
	2022	2021
Net cash provided by (used for):		
Operating activities	\$ 1,495.0	\$ 1,094.1
Investing activities	(833.7)	(794.4)
Financing activities	(960.0)	(655.6)
Net decrease in cash and cash equivalents	<u>\$ (298.7)</u>	<u>\$ (355.9)</u>

Operating Activities

Our operating cash flow is primarily driven by our earnings and changes in operating assets and liabilities, such as accounts receivable, inventories, accounts payable and other accrued liabilities, as well as other factors described below. Cash requirements for operating activities are subject to PCA's operating needs and the timing of collection of receivables and payments of payables and expenses.

During 2022, net cash provided by operating activities was \$1,495 million, compared to \$1,094 million for 2021, an increase of \$401 million. Cash from operations excluding changes in cash used for operating assets and liabilities increased \$199 million, primarily due to higher income from operations as discussed above. Cash increased by \$202 million due to changes in operating assets and liabilities, primarily due to the following:

- a) a favorable change in accounts receivable levels in 2022 compared to 2021 due to lower sales volumes in the Packaging segment during the latter portion of 2022, partially offset by higher pricing in the Packaging and Paper segments in 2022; and
- b) a net favorable change in inventories in 2022 due to a smaller increase in Packaging segment inventory levels in 2022 compared to 2021, primarily in raw materials and finished goods.

These favorable changes were partially offset by:

- a) an unfavorable change in accounts payable in 2022 compared to 2021 primarily due to lower Packaging production and sales volumes, which resulted in lower purchasing and manufacturing activities in 2022; and
- b) an unfavorable change in our income tax receivables due to higher tax payments in 2022.

Investing Activities

We used \$834 million for investing activities in 2022, compared to \$794 million in 2021. In 2022, we spent \$824 million for internal capital investments, compared to \$605 million in 2021. During 2021, we acquired Advance Packaging Corporation for \$193 million, including a purchase price adjustment based upon net working capital.

The details of capital expenditures for property and equipment, excluding acquisitions, by segment for the years ended December 31, 2022 and 2021 are included in the table below (dollars in millions).

	Year Ended December 31,	
	2022	2021
Packaging	\$ 753.5	\$ 562.5
Paper	14.1	30.1
Corporate and Other	56.6	12.5
	\$ 824.2	\$ 605.1

We expect capital investments in 2023 to be approximately \$475 million. These expenditures could increase or decrease as a result of a number of factors, including our financial results, strategic opportunities, future economic conditions, and our regulatory compliance requirements. We currently estimate capital expenditures to comply with environmental regulations will be about \$20 million in 2023. Our estimated environmental expenditures could vary significantly depending upon the enactment of new environmental laws and regulations. For additional information, see "Environmental Matters" in this Management's Discussion and Analysis of Financial Condition and Results of Operations.

Financing Activities

In 2022, net cash used for financing activities was \$960 million, compared to \$656 million of cash used for financing activities in 2021, an increase of \$304 million. We paid \$420 million in dividends on our common stock in 2022, compared to \$380 million paid in 2021. We repurchased and retired 4.0 million shares of the Company's common stock for \$523 million in 2022, compared to repurchases of 1.4 million shares for \$193 million in 2021. In 2021, we issued \$700 million of 3.05% Senior Notes due 2051 (the "New Notes"), the proceeds of which were used to redeem \$700 million of 4.50% Senior Notes due 2023 in October 2021. We also paid \$8 million of debt issuance costs associated with the 2021 debt refinancing and \$1 million of debt issuance costs related to the New Revolving Credit Agreement that was entered into on June 8, 2021.

See Note 11, Debt, of the Consolidated Financial Statements included in "Part II, Item 8. Financial Statements and Supplementary Data" of this Form 10-K for more information on the debt refinancing.

Commitments

Contractual Obligations

Our cash requirements greater than twelve months from contractual obligations and commitments include:

- *Debt obligations and interest payments.* See Note 11, Debt, of the Consolidated Financial Statements included in "Part II, Item 8. Financial Statements and Supplementary Data" of this Form 10-K for more information on our debt obligations and interest payments and the timing of expected future payments.
- *Operating and finance leases.* See Note 3, Leases, of the Consolidated Financial Statements included in "Part II, Item 8. Financial Statements and Supplementary Data" of this Form 10-K for more information on our lease obligations and the timing of expected future payments.
- *Asset retirement obligations.* See Note 14, Asset Retirement Obligations, of the Consolidated Financial Statements included in "Part II, Item 8. Financial Statements and Supplementary Data" of this Form 10-K for more information on our asset retirement obligation at the end of the period.
- *Capital additions.* See Note 20, Commitments, Guarantees, Indemnifications, and Legal Proceedings, of the Consolidated Financial Statements included in "Part II, Item 8. Financial Statements and Supplementary Data" of this Form 10-K for more information on our approved capital projects with future spending in connection with the expansion and replacement of existing facilities and equipment.
- *Purchase commitments.* Purchase commitments relate to various purchase agreements for items such as minimum amounts of energy and fiber purchases. See Note 20, Commitments, Guarantees, Indemnifications, and Legal Proceedings, of the Consolidated Financial Statements included in "Part II, Item 8. Financial Statements and Supplementary Data" of this Form 10-K for more information on our purchase commitments and the timing of expected future payments.
- *Employee benefit obligations.* See Note 13, Employee Benefits Plans and Other Postretirement Benefits, of the Consolidated Financial Statements included in "Part II, Item 8. Financial Statements and Supplementary Data" of this Form 10-K for more information on our employee benefit obligations and the timing of expected future benefit payments under our pension plans and postretirement plans.

Off-Balance Sheet Arrangements

The Company does not have any off-balance sheet arrangements as of December 31, 2022.

Inflation and Other General Cost Increases

We are subject to both contractual, inflation, and other general cost increases. If we are unable to offset these cost increases by price increases, growth, and/or cost reductions in our operations, these inflation and other general cost increases could have a material adverse effect on our operating cash flows, profitability, and liquidity.

In 2022, our total company costs including cost of sales (COS) and selling, general, and administrative expenses (SG&A) was \$7.0 billion, and excluding non-cash costs (depreciation, depletion and amortization, pension and postretirement expense, and share-based compensation expense) was \$6.5 billion. A 1% increase in COS and SG&A costs would increase costs by \$70 million and cash costs by \$65 million.

Certain items of product input costs have historically been subject to more cost volatility including fiber, purchased energy, and chemicals.

Energy

Our mills represent about 90% of our total purchased fuel costs. In 2022, our Packaging and Paper mills consumed about 91 million MMBTUs of fuel, including internally generated and externally purchased, to produce both steam and electricity. The following table for 2022 provides the total MMBTUs purchased externally by fuel type each quarter and the average cost per MMBTU by fuel type for the year. The cost per MMBTU includes the cost of the fuel plus our transportation and delivery costs.

Fuel Type	2022 Fuel Purchased (millions of MMBTUs)					2022 Avg. Cost / MMBTU
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year	
Natural gas	7.6	6.4	5.0	5.3	24.3	\$ 7.17
Purchased bark	1.6	1.7	2.0	2.1	7.4	2.36
Other purchased fuels	0.1	0.2	0.1	0.2	0.6	8.29
Total mills	9.3	8.3	7.1	7.6	32.3	\$ 6.09

In addition, the mills purchased 22.00 million CkWh (hundred kilowatt-hours) of electricity in 2022. The purchases by quarter and the average cost per CkWh were as follows:

Purchased electricity	2022 Purchased Electricity (millions of CkWh)					2022 Avg. Cost / CkWh
	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year	
Purchased electricity	5.7	5.8	5.5	5.0	22.0	\$ 6.86

Regulatory and Environmental Matters

Our operations are subject to our compliance with the laws and regulations in the jurisdictions in which we operate, primarily in the United States. Of particular importance are laws and regulations relating to the environment and health and safety matters.

Environmental compliance requirements are a significant factor affecting our business. We employ processes in the manufacture of containerboard, paper, and pulp, which result in various discharges, emissions and waste disposal. These processes are subject to numerous federal, state, local and foreign environmental laws and regulations. We operate and expect to continue to operate, under environmental permits and similar authorizations from various governmental authorities that regulate such discharges, emissions, and waste disposal. The most significant of these laws affecting the Company are:

- Resource Conservation and Recovery Act (RCRA);
- Clean Water Act (CWA);
- Clean Air Act (CAA);
- The Emergency Planning and Community Right-to-Know-Act (EPCRA);
- Toxic Substance Control Act (TSCA); and
- Safe Drinking Water Act (SDWA).

We believe that we are currently in material compliance with these and all applicable environmental rules and regulations. Because environmental regulations are constantly evolving, the Company has incurred, and will continue to incur, costs to maintain compliance with these and other environmental laws. The Company works diligently to anticipate and budget for the impact of applicable environmental regulations and does not currently expect that future environmental compliance obligations will materially affect its business or financial condition. For the year ended December 31, 2022, we spent \$50 million, and for the years ended December 31, 2021 and 2020, we spent \$44 million, to comply with the requirements of these and other environmental laws. Additionally, we had \$11 million of environmental capital expenditures in 2022, \$10 million in 2021, and \$9 million in 2020.

In January 2013, the U.S. Environmental Protection Agency (the "EPA") established a three-year deadline for compliance with the Boiler MACT regulations, establishing air emissions standards and certain other requirements for industrial boilers. PCA's compliance actions involved modifying or replacing certain boilers, and all PCA mills are in full compliance with Boiler MACT requirements. On July 29, 2016, the U.S. Court of Appeals for the District of Columbia Circuit issued a ruling on the consolidated cases challenging Boiler MACT. The court vacated key portions of the rule, including emission limits for certain subcategories of solid fuel boilers, and remanded issues to the EPA for further rulemaking. At this time, we cannot predict with certainty how this decision will impact our existing Boiler MACT compliance efforts or whether we will incur additional costs to comply with any revised standards.

As is the case with any industrial operation, PCA has, in the past, incurred costs associated with the remediation of soil or groundwater contamination, as required by the federal Comprehensive Environmental Response, Compensation and Liability Act, commonly known as the federal “Superfund” law, and analogous state laws. Cleanup requirements arise with respect to properties the Company currently owns or operates, former facilities and off-site facilities where the Company has disposed of hazardous substances. As part of the sale to PCA of the containerboard and corrugated products business of Pactiv Corporation in April 1999, Pactiv agreed to retain all liability for all former facilities and all sites associated with pre-closing off-site waste disposal. Pactiv also retained environmentally impaired real property in Filer City, Michigan unrelated to current mill operations. In addition, OfficeMax (now an indirect, wholly owned subsidiary of ODP) retains responsibility for certain environmental liabilities related to some of the businesses, facilities, and assets we acquired from Boise. Generally, this responsibility relates to hazardous substance releases and other environmental incidents that arose before 2004. Some of these liabilities could be significant; however, ODP may not have sufficient funds to satisfy its indemnification obligations, and in some cases, we may not be entitled to such indemnification.

Because liability for remediation costs under environmental laws is strict, meaning that liability is imposed without fault, joint and several, meaning that liability is imposed on each party without regard to contribution, and retroactive, PCA could receive notifications of cleanup liability in the future and this liability could be material. From 2006 through 2022, there were no significant environmental remediation costs at PCA's mills and corrugated plants. As of December 31, 2022, we maintained an environmental reserve of \$25.2 million relating to on-site landfills and surface impoundments as well as ongoing and anticipated remedial projects. The Company believes that it is not reasonably possible that future environmental expenses above the \$25.2 million accrued at December 31, 2022, will have a material impact on its financial condition, results of operations, and cash flows.

While legislation regarding the regulation of greenhouse gas emissions has been proposed at the federal level, it is uncertain whether such legislation will be passed and, if so, what the breadth and scope of such legislation will be. The result of the regulation of greenhouse gas emissions could be an increase in our future environmental compliance costs through carbon cap and trade systems, carbon or other related taxes, or additional capital expenditures to modify facilities to reduce carbon emissions, which may be material. However, climate change legislation and the resulting future energy policy could also provide us with opportunities if the use of renewable energy is encouraged. We currently self-generate the majority of our power requirements at our mills using renewable biogenic fuel such as bark, black liquor and biomass, which are derived from renewable resources. While we believe we are well-positioned to take advantage of any renewable energy incentives, it is uncertain what the ultimate costs and opportunities of any climate change legislation will be and how our business and industry will be affected.

We are seeking to further improve our environmental impact by setting goals to reduce our absolute Scope 1 and 2 (market-based) greenhouse gas emissions by 35% by 2030 from a 2021 baseline year and to reach net-zero carbon emissions within our own operations and our value chain by 2050. In addition, we and our industry support the American Forest & Paper Association's goal of a 50% reduction in Scope 1 and Scope 2 greenhouse gas emissions intensity by 2030 from a 2005 baseline. We have a carbon neutrality team, consisting of a cross-functional group of key operational, engineering, environmental, and sustainability personnel to lead our efforts. Our strategy to achieve greenhouse gas emissions reductions is premised upon the carbon neutrality of the biogenic fuels used in our operations and we believe that meaningful reductions in greenhouse gas emissions can be achieved through investment in more efficient operations utilizing carbon-neutral fuels and in emerging and advancing technologies. We regularly work to identify and implement projects that will improve our efficiency. To what extent and when we embark upon major capital projects to reduce emissions will depend in part upon technology advancements, emerging regulatory and tax policies involving greenhouse gas emissions and incentives to invest in projects that reduce emissions. We also regularly assess the use of alternative, non-emitting energy sources at our own facilities (such as solar) and opportunities to support additive carbon-free grid power via renewable energy certificates (RECs) and power purchase agreements (PPAs), where feasible to do so, and partnering with utilities to procure carbon-free power where opportunities exist. We annually report key data to our stakeholders regarding our greenhouse gas emissions, among other things, in our responsibility report. Our responsibility report is available on our website and is not intended to be incorporated by reference herein.

We are also subject to extensive federal, state and local laws related to workplace health and safety, and our safety management system includes measures to assure compliance with these laws and regulations. We do not believe that future compliance with health and safety laws and regulations will have a material adverse effect on our financial condition, results of operations or cash flows.

Critical Accounting Policies and Estimates

Management's discussion and analysis of financial condition and results of operations are based upon the Company's consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosures of contingent assets and liabilities. On an ongoing basis, PCA evaluates its estimates, including those related to business combinations, goodwill and intangible assets, pensions and other postretirement benefits, environmental liabilities, income taxes, and long-lived asset impairment, among others. PCA bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

Critical accounting estimates are those that are most important to the portrayal of our financial condition and results. These estimates require management's most difficult, subjective, or complex judgments. We review the development, selection, and disclosure of our critical accounting estimates with the Audit Committee of our Board of Directors. The Company believes that of its significant accounting policies, the following involve a higher degree of judgment and/or complexity:

Pensions

The Company accounts for defined benefit pension plans in accordance with Accounting Standards Codification ("ASC") 715, *Compensation - Retirement Benefits*. The calculation of pension expense and pension liabilities requires decisions about a number of key assumptions that can significantly affect expense and liability amounts, including discount rates, expected return on plan assets, expected rate of compensation increases, longevity and service lives of participants, expected contributions, and other factors. The pension assumptions used to measure pension expense and liabilities are discussed in Note 13, Employee Benefit Plans and Other Postretirement Benefits, of the Notes to Consolidated Financial Statements in "Part II, Item 8. Financial Statements and Supplementary Data" of this Form 10-K.

We recognize the funded status of our pension plans on our Consolidated Balance Sheet and recognize the actuarial and experienced gains and losses and the prior service costs and credits as a component of "Accumulated Other Comprehensive Loss" in our Consolidated Statement of Changes in Stockholders' Equity. Actual results that differ from assumptions are accumulated and amortized over future periods and, therefore, generally affect recognized expense in future periods. At December 31, 2022, we had approximately \$100.3 million of actuarial losses and prior service costs, net of tax, recorded in "Accumulated other comprehensive loss" on our Consolidated Balance Sheet. Accumulated losses in excess of 10% of the greater of the projected benefit obligation or the market-related value of assets will be recognized on a straight-line basis over the average remaining service period of active employees in PCA plans (which is between six and nine years) and over the average remaining lifetime of inactive participants of Boise plans (which is between 22 and 25 years), to the extent that losses are not offset by gains in subsequent years. While we believe that the assumptions used to measure our pension obligations are reasonable, differences in actual experience or changes in assumptions may materially affect our pension obligations and future expense.

We believe that the accounting estimate related to pensions is a critical accounting estimate because it is highly susceptible to change from period to period. As discussed above, the future effects of pension plans on our financial position and results of operations will depend on economic conditions, employee demographics, mortality rates, retirement rates, investment performance, and funding decisions, among other factors. The following table presents selected assumptions used and expected to be used in the measurement of pension expense in the following periods (dollars in millions):

	Year Ending December 31, 2023	Year Ended December 31,	
		2022	2021
Pension expense	\$ 22.7	\$ 5.3	\$ 2.1
Assumptions			
Discount rate	5.06%	2.89%	2.57%
Expected rate of return on plan assets	5.52%	4.08%	4.91%

A change of 0.25% in either direction to the discount rate or the expected rate of return on plan assets would have had the following effect on 2022 and 2023 pension expense (dollars in millions):

	Base Expense	Increase (Decrease) in Pension Expense(a)	
		0.25% Increase	0.25% Decrease
2022			
Discount rate	\$ 5.3	\$ (1.8)	\$ 1.6
Expected rate of return on plan assets	5.3	(3.4)	3.4
2023			
Discount rate	\$ 22.7	\$ (2.0)	\$ 2.2
Expected rate of return on plan assets	22.7	(2.6)	2.6

(a) The sensitivities shown above are specific to 2022 and 2023. The sensitivities may not be additive, so the impact of changing multiple factors simultaneously cannot be calculated by combining the individual sensitivities shown.

For more information related to our pension benefit plans, see Note 13, Employee Benefit Plans and Other Postretirement Benefits, of the Notes to Consolidated Financial Statements in “Part II, Item 8. Financial Statements and Supplementary Data” of this Form 10-K.

New and Recently Adopted Accounting Standards

For a listing of our new and recently adopted accounting standards, see Note 2, Summary of Significant Accounting Policies, of the Notes to Consolidated Financial Statements in “Part II, Item 8. Financial Statements and Supplementary Data” of this Form 10-K.

Reconciliations of Non-GAAP Financial Measures to Reported Amounts

Net income excluding special items, EBITDA, and EBITDA excluding special items are non-GAAP financial measures. Management excludes special items, as it believes that these items are not necessarily reflective of the ongoing operations of our business. These measures are presented because they provide a means to evaluate the performance of our segments and our Company on an ongoing basis using the same measures that are used by our management, because these measures assist in providing a meaningful comparison between periods and because these measures are frequently used by investors and other interested parties in the evaluation of companies and the performance of their segments. Any analysis of non-GAAP financial measures should be done in conjunction with results presented in accordance with GAAP. The non-GAAP measures are not intended to be substitutes for GAAP financial measures and should not be used as such. Reconciliations of the non-GAAP measures to the most comparable measure reported in accordance with GAAP for the years ended December 31, 2022 and 2021 follow (dollars in millions):

	Year Ended December 31,					
	2022			2021		
	Income before Taxes	Income Taxes	Net Income	Income before Taxes	Income Taxes	Net Income
As reported in accordance with GAAP	\$ 1,364.8	\$ (335.0)	\$ 1,029.8	\$ 1,108.7	\$ (267.6)	\$ 841.1
Special items:						
Jackson mill conversion-related activities (a)	14.1	(3.5)	10.6	14.0	(3.5)	10.5
Facilities closure and other costs (income) (b)	0.7	(0.2)	0.5	(3.6)	0.9	(2.7)
Acquisition and integration-related activities (c)	(1.0)	0.3	(0.7)	0.9	(0.2)	0.7
Debt refinancing (d)	—	—	—	58.9	(14.7)	44.2
Total special items	13.8	(3.4)	10.4	70.2	(17.5)	52.7
Excluding special items	\$ 1,378.6	\$ (338.4)	\$ 1,040.2	\$ 1,178.9	\$ (285.1)	\$ 893.8

(a) For 2022 and 2021, includes charges related to the announced discontinuation of production of uncoated freesheet paper grades on the No. 3 machine at the Jackson, Alabama mill associated with the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities.

- (b) For 2022, includes charges consisting of closure costs related to corrugated products facilities. These costs were partially offset by insurance proceeds received for a natural disaster at one of the corrugated products facilities, a gain on sale of assets related to a corrugated products facility, and a favorable lease buyout for a closed corrugated products facility. For 2021, includes income primarily consisting of an adjustment of the required asset retirement obligation related to the 2020 closure of the San Lorenzo, California facility, a gain on sale of transportation assets and corrugated products facilities, and insurance proceeds received for a natural disaster at one of the corrugated products facilities, partially offset by closure costs related to corrugated products facilities.
- (c) For 2022, includes income from a favorable inventory adjustment related to the December 2021 Advance Packaging Corporation acquisition, partially offset by acquisition and integration related costs. For 2021, includes charges for acquisition and integration costs related to the acquisition.
- (d) Includes costs related to the Company's debt refinancing completed in October 2021, which included a redemption premium and the write-off of the remaining balance of unamortized debt issuance costs.

The following table reconciles net income to EBITDA and EBITDA excluding special items for the periods indicated (dollars in millions):

	Year Ended December 31,	
	2022	2021
Net income	\$ 1,029.8	\$ 841.1
Non-operating pension income	(14.5)	(19.7)
Interest expense, net	70.4	152.4
Provision for income taxes	335.0	267.6
Depreciation, amortization, and depletion	456.8	417.5
EBITDA	<u>\$ 1,877.5</u>	<u>\$ 1,658.9</u>
Special items:		
Jackson mill conversion-related activities	\$ 8.6	\$ 9.9
Facilities closure and other costs (income)	0.4	(4.3)
Acquisition and integration-related activities	(1.0)	0.9
EBITDA excluding special items	<u>\$ 1,885.5</u>	<u>\$ 1,665.4</u>

The following table reconciles segment income (loss) to EBITDA and EBITDA excluding special items (dollars in millions):

	Year Ended December 31,	
	2022	2021
Packaging		
Segment income	\$ 1,423.7	\$ 1,306.0
Depreciation, amortization, and depletion	420.2	381.0
EBITDA	1,843.9	1,687.0
Jackson mill conversion-related activities	5.3	4.3
Facilities closure and other costs (income)	0.4	(3.5)
Acquisition and integration-related activities	(1.0)	0.4
EBITDA excluding special items	<u>\$ 1,848.6</u>	<u>\$ 1,688.2</u>
Paper		
Segment income	\$ 103.0	\$ 39.1
Depreciation, amortization, and depletion	26.1	27.4
EBITDA	129.1	66.5
Jackson mill conversion-related activities	3.3	5.2
EBITDA excluding special items	<u>\$ 132.4</u>	<u>\$ 71.7</u>
Corporate and Other		
Segment loss	\$ (106.0)	\$ (103.7)
Depreciation, amortization, and depletion	10.5	9.1
EBITDA	(95.5)	(94.6)
Acquisition and integration-related activities	—	0.5
Jackson mill conversion-related activities	—	0.4
Facilities closure and other income	—	(0.8)
EBITDA excluding special items	<u>\$ (95.5)</u>	<u>\$ (94.5)</u>
EBITDA	<u>\$ 1,877.5</u>	<u>\$ 1,658.9</u>
EBITDA excluding special items	<u>\$ 1,885.5</u>	<u>\$ 1,665.4</u>

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

PCA is exposed to the impact of commodity price changes, interest rate changes, and changes in the market value of its financial instruments. To manage these risks, we may from time to time enter into transactions, including certain physical commodity transactions, that are determined to be derivatives. As of December 31, 2022, we are party to certain physical commodity transactions related to natural gas supply contracts. For a discussion of derivatives and hedging activities, see Note 2, Summary of Significant Accounting Policies, of the Notes to Consolidated Financial Statements in “Part II, Item 8. Financial Statements and Supplementary Data” of this Form 10-K.

At December 31, 2022, the interest rates on 100% of PCA’s outstanding debt are fixed.

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Packaging Corporation of America Consolidated Financial Statements

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors
Packaging Corporation of America:

Opinions on the Consolidated Financial Statements and Internal Control Over Financial Reporting

We have audited the accompanying consolidated balance sheets of Packaging Corporation of America and subsidiaries (the Company) as of December 31, 2022 and 2021, the related consolidated statements of income and comprehensive income, changes in stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2022, and the related notes (collectively, the consolidated financial statements). We also have audited the Company'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.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the Company 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 the Committee of Sponsoring Organizations of the Treadway Commission.

Basis for Opinions

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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.

Critical Audit Matter

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

Evaluation of the value of the pension benefit obligation

As discussed in Note 13 to the consolidated financial statements, the Company's estimated pension benefit obligation totaled \$1,167 million as of December 31, 2022. The pension benefit obligation is measured at the actuarial present value as of a date of all benefits attributed by the pension benefit formula to employee service rendered before that date. The determination of the Company's pension benefit obligation is dependent, in part, on the selection of certain actuarial assumptions, including the discount rate.

We identified the evaluation of the value of the pension benefit obligation as a critical audit matter because of the specialized skills required to evaluate the measurement of the pension benefit obligation. In particular, the measurement of the pension benefit obligation is sensitive to minor changes in the discount rate assumption.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Company's pension benefit obligation valuation process, including a control related to the development of the discount rate. We involved an actuarial professional with specialized skills and knowledge, who assisted in understanding and assessing the actuarial methods and assumptions used to measure the pension benefit obligation. In addition, the actuarial professional assisted with our evaluation of the discount rate by assessing:

- changes in the discount rate from the prior year against changes in published indices;
- the pattern of cash flows, including consideration of the plan type and plan provisions; and
- the selected yield curve and its consistency with the prior year and spot rates.

/s/ KPMG LLP

We have served as the Company's auditor since 2014.

Chicago, Illinois
February 23, 2023

Packaging Corporation of America

Consolidated Statements of Income and Comprehensive Income
(dollars in millions, except per-share data)

	Year Ended December 31,		
	2022	2021	2020
Statements of Income			
Net sales	\$ 8,478.0	\$ 7,730.3	\$ 6,658.2
Cost of sales	(6,387.4)	(5,857.3)	(5,288.8)
Gross profit	2,090.6	1,873.0	1,369.4
Selling and administrative expenses	(608.6)	(576.8)	(539.6)
Goodwill impairment	—	—	(55.2)
Other expense, net	(61.3)	(54.8)	(50.7)
Income from operations	1,420.7	1,241.4	723.9
Non-operating pension income	14.5	19.7	2.3
Interest expense, net	(70.4)	(152.4)	(93.5)
Income before taxes	1,364.8	1,108.7	632.7
Provision for income taxes	(335.0)	(267.6)	(171.7)
Net income	\$ 1,029.8	\$ 841.1	\$ 461.0
Net income per common share:			
Basic	\$ 11.08	\$ 8.87	\$ 4.86
Diluted	\$ 11.03	\$ 8.83	\$ 4.84
Dividends declared per common share	\$ 4.75	\$ 4.00	\$ 3.37
Statements of Comprehensive Income:			
Net income	\$ 1,029.8	\$ 841.1	\$ 461.0
Other comprehensive (loss) income, net of tax:			
Foreign currency translation adjustment	\$ —	\$ 0.4	\$ —
Changes in unrealized (losses) gains on marketable debt securities, net of tax of \$0.5 million, \$0.2 million, and (\$0.1) million for 2022, 2021, and 2020, respectively	(1.7)	(0.5)	0.3
Amortization of pension and postretirement plans actuarial loss and prior service cost, net of tax of (\$1.5) million, (\$3.3) million, and (\$3.6) million for 2022, 2021, and 2020, respectively	4.7	10.0	10.7
Changes in unfunded employee benefit obligations, net of tax of \$10.1 million, (\$19.9) million, and (\$1.3) million for 2022, 2021, and 2020, respectively	(30.2)	59.4	4.0
Other comprehensive (loss) income	(27.2)	69.3	15.0
Comprehensive income	\$ 1,002.6	\$ 910.4	\$ 476.0

See notes to consolidated financial statements.

Packaging Corporation of America

Consolidated Balance Sheets
(dollars and shares in millions, except per-share data)

	December 31,	
	2022	2021
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 320.0	\$ 618.7
Short-term marketable debt securities	85.2	86.1
Accounts receivable, net of allowance for credit losses and customer deductions of \$19.6 million and \$14.3 million as of December 31, 2022 and 2021, respectively	1,031.8	1,071.0
Inventories	977.3	902.5
Prepaid expenses and other current assets	58.3	47.0
Federal and state income taxes receivable	35.7	7.4
Total current assets	2,508.3	2,732.7
Property, plant and equipment, net	3,900.0	3,529.0
Goodwill	922.4	923.5
Other intangible assets, net	267.9	308.4
Operating lease right-of-use assets	298.3	238.3
Long-term marketable debt securities	64.9	60.0
Other long-term assets	42.0	44.9
Total assets	\$ 8,003.8	\$ 7,836.8
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Operating lease obligations	\$ 72.2	\$ 67.1
Finance lease obligations	1.9	1.7
Accounts payable	410.4	452.4
Dividends payable	115.5	96.3
Accrued liabilities	263.7	255.0
Accrued interest	11.8	12.3
Total current liabilities	875.5	884.8
Long-term liabilities:		
Long-term debt	2,473.6	2,471.5
Operating lease obligations	234.6	179.3
Finance lease obligations	10.8	12.7
Deferred income taxes	543.0	465.9
Compensation and benefits	141.8	157.4
Other long-term liabilities	57.4	58.0
Total long-term liabilities	3,461.2	3,344.8
Commitments and contingent liabilities (Note 20)		
Stockholders' equity:		
Common stock, par value \$0.01 per share, 300.0 million shares authorized, 89.7 million and 93.5 million shares issued as of December 31, 2022 and 2021, respectively	0.9	0.9
Additional paid in capital	581.8	579.4
Retained earnings	3,186.8	3,102.1
Accumulated other comprehensive loss	(102.4)	(75.2)
Total stockholders' equity	3,667.1	3,607.2
Total liabilities and stockholders' equity	\$ 8,003.8	\$ 7,836.8

See notes to consolidated financial statements.

Packaging Corporation of America
Consolidated Statements of Cash Flows
(dollars in millions)

	Year Ended December 31,		
	2022	2021	2020
Cash Flows from Operating Activities:			
Net income	\$ 1,029.8	\$ 841.1	\$ 461.0
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation, depletion, and amortization of intangibles	456.8	417.5	409.9
Amortization of deferred financing costs	2.1	4.4	2.6
Loss on early extinguishment of debt	—	56.1	—
Share-based compensation expense	35.6	35.5	30.0
Deferred income tax provision	86.0	59.4	34.7
Goodwill impairment	—	—	55.2
Net loss on asset disposals	15.2	6.1	6.8
Pension and post-retirement benefits expense, net of contributions	(47.4)	(50.5)	(63.4)
Other, net	2.0	11.9	18.2
Changes in operating assets and liabilities, net of acquisitions:			
(Increase) decrease in assets —			
Accounts receivable	39.3	(227.2)	13.2
Inventories	(75.2)	(105.5)	6.3
Prepaid expenses and other current assets	(11.0)	(2.7)	0.4
Increase (decrease) in liabilities —			
Accounts payable	(18.1)	12.2	39.7
Accrued liabilities	8.3	37.9	(3.2)
Federal and state income tax payable / receivable	(28.4)	(2.1)	21.4
Net cash provided by operating activities	<u>1,495.0</u>	<u>1,094.1</u>	<u>1,032.8</u>
Cash Flows from Investing Activities:			
Additions to property, plant, and equipment	(824.2)	(605.1)	(421.2)
Acquisition of business, net of cash acquired	—	(194.9)	—
Additions to other long-term assets	(6.2)	(1.8)	(6.4)
Proceeds from asset disposals	2.2	7.9	4.6
Purchases of marketable debt securities	(126.1)	(127.4)	(110.1)
Proceeds from sales of marketable debt securities	31.1	26.7	24.2
Proceeds from maturities of marketable debt securities	87.6	100.2	82.8
Other, net	1.9	—	—
Net cash used for investing activities	<u>(833.7)</u>	<u>(794.4)</u>	<u>(426.1)</u>
Cash Flows from Financing Activities:			
Repayments of debt and finance lease obligations	(1.7)	(757.7)	(1.5)
Net proceeds received from issuance of debt	—	690.2	—
Financing costs paid	—	(2.4)	—
Common stock dividends paid	(420.3)	(379.8)	(299.6)
Repurchases of common stock	(522.6)	(193.0)	—
Shares withheld to cover employee restricted stock taxes	(15.4)	(12.9)	(10.5)
Net cash used for financing activities	<u>(960.0)</u>	<u>(655.6)</u>	<u>(311.6)</u>
Net (decrease) increase in cash and cash equivalents	<u>(298.7)</u>	<u>(355.9)</u>	<u>295.1</u>
Cash and cash equivalents, beginning of year	<u>618.7</u>	<u>974.6</u>	<u>679.5</u>
Cash and cash equivalents, end of year	<u>\$ 320.0</u>	<u>\$ 618.7</u>	<u>\$ 974.6</u>

See notes to consolidated financial statements.

Packaging Corporation of America

Consolidated Statements of Changes in Stockholders' Equity
(dollars in millions and shares in thousands)

	Common Stock		Additional Paid in Capital	Retained Earnings	Accumulated Other Comprehensiv e Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at January 1, 2020	94,655	\$ 0.9	\$ 524.8	\$ 2,704.8	\$ (159.5)	\$ 3,071.0
Common stock withheld and retired to cover taxes on vested stock awards	(108)	—	(0.8)	(9.7)	—	(10.5)
Common stock dividends declared	—	—	—	(320.9)	—	(320.9)
Share-based compensation	283	—	30.8	—	—	30.8
Other	—	—	(0.4)	0.3	—	(0.1)
Comprehensive income	—	—	—	461.0	15.0	476.0
Balance at December 31, 2020	94,830	0.9	554.4	2,835.5	(144.5)	3,246.3
Common stock repurchases and retirements	(1,443)	—	(11.5)	(181.5)	—	(193.0)
Common stock withheld and retired to cover taxes on vested stock awards	(95)	—	(0.8)	(12.1)	—	(12.9)
Common stock dividends declared	—	—	—	(379.9)	—	(379.9)
Share-based compensation	247	—	36.3	—	—	36.3
Other	—	—	1.0	(1.0)	—	—
Comprehensive income	—	—	—	841.1	69.3	910.4
Balance at December 31, 2021	93,539	0.9	579.4	3,102.1	(75.2)	3,607.2
Common stock repurchases and retirements	(4,035)	—	(33.5)	(489.1)	—	(522.6)
Common stock withheld and retired to cover taxes on vested stock awards	(111)	—	(0.9)	(14.5)	—	(15.4)
Common stock dividends declared	—	—	—	(441.2)	—	(441.2)
Share-based compensation	302	—	37.2	—	—	37.2
Other	—	—	(0.4)	(0.3)	—	(0.7)
Comprehensive income	—	—	—	1,029.8	(27.2)	1,002.6
Balance at December 31, 2022	89,695	\$ 0.9	\$ 581.8	\$ 3,186.8	\$ (102.4)	\$ 3,667.1

See notes to consolidated financial statements.

Notes to Consolidated Financial Statements

1. Nature of Operations and Basis of Presentation

Packaging Corporation of America (“we,” “us,” “our,” “PCA,” or the “Company”) was incorporated on January 25, 1999. In April 1999, PCA acquired the containerboard and corrugated packaging products business of Pactiv Corporation (Pactiv), formerly known as Tenneco Packaging, Inc., a wholly owned subsidiary of Tenneco Inc. We are a large, diverse manufacturer of both packaging and paper products. We are headquartered in Lake Forest, Illinois and we operate primarily in the United States. We have approximately 15,100 employees.

We report our business in three reportable segments: Packaging, Paper, and Corporate and Other. Our Packaging segment produces a wide variety of containerboard and corrugated packaging products. The Paper segment manufactures and sells a range of communication-based papers.

Before October 2020, our Jackson, Alabama mill had historically operated as a UFS paper mill, with its results of operations reported in our Paper segment. Beginning in October 2020, operating results for the Jackson mill are included in both the Packaging and Paper segments. During the fourth quarter of 2020, in order to meet strong packaging demand and maintain appropriate inventory levels, we temporarily began producing linerboard on the No. 3 machine at our Jackson, Alabama mill. In the first quarter of 2021, we announced the discontinuation of production of UFS paper grades on the machine and the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities. In the third quarter of 2021, we began producing corrugating medium on the No. 1 machine at the Jackson mill (which had produced UFS paper in the past) to help satisfy our demand for containerboard, build necessary inventories, and evaluate the capability of the machine to produce containerboard on a cost-effective basis.

Corporate and other includes support staff services and related assets and liabilities, transportation assets, and activity related to other ancillary support operations. For more information about our segments, see Note 19, Segment Information.

The consolidated financial statements include the accounts of PCA and its majority-owned subsidiaries after elimination of intercompany balances and transactions.

2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions about future events. These estimates and the underlying assumptions affect the amounts of assets and liabilities reported, disclosures about contingent assets and liabilities, and reported amounts of revenues and expenses. These estimates and assumptions are based on management's best estimates and judgment. Management evaluates its estimates and assumptions on an ongoing basis using historical experience and other factors, including the current economic environment. We adjust such estimates and assumptions when facts and circumstances dictate. As future events and their effects cannot be determined with precision, actual results could differ significantly from these estimates. Changes in these estimates will be reflected in the consolidated financial statements in future periods.

Revenue Recognition

In accordance with ASU 2014-09 (Topic 606): *Revenue from Contracts with Customers*, we recognize revenue when control of the promised goods or services is transferred to customers in an amount that reflects the consideration expected to be received in exchange for those goods or services. The timing of revenue recognition for most goods and services occurs when performance obligations under the terms of a contract with a customer are satisfied. This occurs with the transfer of control of our products at a specific point in time. For most packaging and paper products, revenue is recognized when the product is shipped from the mill or from our manufacturing facility to our customer. Shipping and handling fees billed to a customer are recorded on a gross basis in “Net sales”, with the corresponding shipping and handling costs included in “Cost of sales” in the concurrent period as the revenue is recorded. We present taxes collected from customers and remitted to governmental authorities on a net basis in our Consolidated Statements of Income. See Note 4, Revenue, for more information.

Planned Major Maintenance Costs

The Company accounts for its planned major maintenance activities in accordance with ASC 360, *Property, Plant, and Equipment*, using the deferral method. All maintenance costs incurred during the year are expensed in the year in which the maintenance activity occurs.

Share-Based Compensation

We recognize compensation expense for awards granted under the PCA long-term equity incentive plans based on the fair value on the grant date. We recognize the cost of the equity awards expected to vest over the period the awards vest. See Note 15, Share-Based Compensation, for more information.

Cash and Cash Equivalents

Cash and cash equivalents include all cash balances and highly liquid investments with original maturities of three months or less at the date of purchase. Cash equivalents are stated at cost, which approximates market. Cash and cash equivalents totaled \$320.0 million and \$618.7 million at December 31, 2022 and 2021, respectively, which included cash equivalents of \$228.4 million and \$532.9 million, respectively. At December 31, 2022 and 2021, we had \$1.5 million and \$1.2 million, respectively, of cash at our operations outside the United States.

Marketable Debt Securities

The Company's marketable debt securities have been classified and accounted for as available-for-sale (AFS) marketable debt securities in accordance with ASU 2016-13, *Financial Instruments – Credit Losses* (Topic 326). The Company reports its marketable debt securities at fair value, and they are classified as short-term or long-term based on each security's underlying contractual maturity date.

The Company's marketable debt securities are analyzed at the individual debt security level. Changes in the fair value of the debt security have the potential to impact accumulated other comprehensive income (loss) (AOCI), the Company's earnings, or both.

The Company regularly reviews its investment portfolio to determine if any debt security is impaired. A decline in the fair value of the debt security below its amortized cost results in an impairment of the debt security. If there is an intent to sell the debt security, or if it is more likely than not that the debt security will be sold prior to recovering the amortized cost basis, the Company recognizes the impairment as a realized loss in earnings by writing down the debt security's amortized cost basis.

Additional analysis is required if there is not an intent to sell the debt security, or if a recovery of the amortized cost basis is expected to be made prior to the sale of the security. If any portion of the impairment is the result of a credit loss, the Company recognizes this portion in earnings through an allowance for credit losses, with the remainder recognized as unrealized loss in AOCI. Subsequent improvements in credit losses are recognized as a reduction in the allowance. Any impairment not attributed to credit loss is recognized as an unrealized loss in AOCI in its entirety.

The Company considers several factors when determining if a portion of an impairment is the result of a credit loss including, but not limited to, adverse conditions related to the financial health and future outlook of the issuer; the credit quality of the issuer, as reported by credit rating agencies; trends present in the issuer's industry in which it operates; and general market conditions.

For the years ended December 31, 2022 and 2021, we do not consider any of the impairments related to our marketable debt securities to be the result of credit losses. See Note 12, Cash, Cash Equivalents, and Marketable Debt Securities, for more information.

Trade Accounts Receivable, Allowances, and Customer Deductions

Trade accounts receivable are recorded at amortized cost and represent a contractual right to receive payment from a customer. The Company's trade accounts receivable are short-term receivables, with most requiring payment within 30 to 60 days, and represent the primary class of financing receivables utilized by the Company.

The Company has entered into a number of customer-based supply chain financing programs to accelerate the receipt of payments for outstanding accounts receivable from certain customers. Receivables transferred under these programs meet the requirements to be accounted for as sales in accordance with guidance under Financial Accounting Standards Board ("FASB") ASC 860, *Transfers and Servicing*. The receivables are sold without recourse and are reflected as a reduction of accounts receivable on the Consolidated Balance Sheets at the time of sale. The corresponding proceeds are reflected in cash flows from operating activities within the Consolidated Statements of Cash Flows. Receivables involved with these programs constituted about 5% of both our 2022 and 2021 net sales.

In accordance with ASU 2016-13, *Financial Instruments – Credit Losses* (Topic 326), the Company established an allowance for credit losses, which is a valuation account that estimates the expected credit loss over the lifetime of the asset and is deducted from, or added to, the amortized cost basis of the trade accounts receivable. The allowance for credit losses is based upon a combination of factors such as historical collection experience, aged receivables, current economic conditions, and reasonable and supportable forecasts on future economic conditions. Expected recoveries of amounts previously written off, not to exceed the aggregate of the amount previously written off, are also considered when determining the necessary allowance at the balance sheet date. When determining the allowance for credit losses, management also considers specific customer accounts that may be considered higher risk or uncollectible due to customer industry trends, bankruptcy filings, or substantial downgrades of credit scores.

Current period estimates for the allowance for credit losses are compared against the allowance previously recorded, and all required adjustments are reported as credit loss expense (for expected losses or write offs) or a reversal of credit loss expense (for expected recoveries) in net income. Outstanding trade accounts receivable balances are written off when deemed uncollectible after undergoing reasonable collection efforts. At December 31, 2022 and 2021, the allowance for credit losses was \$10.0 million and \$4.9 million, respectively.

The customer deductions reserve represents the estimated amount required for customer returns, allowances, and earned discounts. Based on the Company's experience, customer returns, allowances, and earned discounts have averaged approximately 1% of gross selling price. Accordingly, PCA reserves 1% of its open customer accounts receivable balance for these items. The reserves for customer deductions of \$9.6 million and \$9.4 million at December 31, 2022 and 2021, respectively, are also included as a reduction of the accounts receivable balance.

Derivative Instruments and Hedging Activities

PCA is exposed to the impact of commodity price changes, interest rate changes, and changes in the market value of its financial instruments. To manage these risks, we may, from time to time, enter into transactions, including certain physical commodity transactions, that are determined to be derivatives. We do not enter into derivative arrangements for trading or speculative purposes.

The Company records its derivatives, if any, in accordance with ASC 815, *Derivatives and Hedging*. The guidance requires the Company to recognize derivative instruments as either assets or liabilities on the balance sheet at fair value. The accounting for changes in the fair value of a derivative depends on the intended use and designation of the derivative instrument. For a derivative designated as a fair value hedge, the gain or loss on the derivative is recognized in earnings in the period of change at fair value together with the offsetting gain or loss on the hedged item. For a derivative instrument designated as a cash flow hedge, the effective portion of the derivative's gain or loss is initially reported as a component of AOCI and is subsequently recognized in earnings when the hedged exposure affects earnings. The ineffective portion of the gain or loss is recognized in earnings.

As of December 31, 2022, PCA has entered into master supply contracts, or physical commodity contracts, with suppliers and distributors of natural gas for several of its manufacturing locations. These physical commodity contracts meet the criteria of derivatives under ASC 815 but qualify for the normal purchase normal sales ("NPNS") scope exception, which we have elected. As such, PCA is not required to apply derivative accounting treatment as required in ASC 815 to these physical commodity transactions.

Fair Value Measurements

PCA measures the fair value of its financial instruments and marketable debt securities in accordance with ASC 820, *Fair Value Measurements and Disclosures*. The guidance defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants. It is determined based on assumptions that market participants would use in pricing an asset or liability. As a basis for considering such assumptions, ASC 820 establishes the following hierarchy that prioritizes the inputs to valuation methodologies used to measure fair value:

Level 1 — Valuations based on quoted prices for identical assets and liabilities in active markets.

Level 2 — Valuations based on observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data.

Level 3 — Valuations based on unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

Assets that are measured at fair value using the net asset value (NAV) per share as a practical expedient are not categorized within the fair value hierarchy.

Financial instruments and marketable debt securities measured at fair value on a recurring basis include the fair values of our marketable debt securities and our pension and postretirement benefit assets and liabilities. The valuation techniques used to measure the fair value of the Company's marketable debt securities and pension and postretirement benefit assets and liabilities, which generally have counterparties with high credit ratings, are based on quoted market prices or model-driven valuations using significant inputs derived from or corroborated by observable market data. See Note 12, Cash, Cash Equivalents, and Marketable Debt Securities, and Note 13, Employee Benefit Plans and Other Postretirement Benefits, for more information.

Other assets and liabilities measured and recognized at fair value on a nonrecurring basis include assets acquired and liabilities assumed in acquisitions and our asset retirement obligations. Given the nature of these assets and liabilities, evaluating their fair value from the perspective of a market participant is inherently complex. Assumptions and estimates about future values can be affected by a variety of internal and external factors. Changes in these factors may require us to revise our estimates and could require us to retroactively adjust provisional amounts that we recorded for the fair values of assets acquired and liabilities assumed in connection with business combinations. These adjustments could have a material effect on our financial condition and results of operations. See Note 5, Acquisitions, and Note 14, Asset Retirement Obligations, for more information.

Inventory Valuation

We value our raw materials, work in process, and finished goods inventories using lower of cost, as determined by the average cost method, or net realizable value. Supplies and materials are valued at the first-in, first-out (FIFO) or average cost methods.

The components of inventories were as follows (dollars in millions):

	December 31,	
	2022	2021
Raw materials	\$ 341.2	\$ 324.2
Work in process	16.0	16.2
Finished goods	198.4	201.0
Supplies and materials	421.7	361.1
Inventories	<u>\$ 977.3</u>	<u>\$ 902.5</u>

Property, Plant, and Equipment

Property, plant, and equipment are recorded at cost. Cost includes expenditures for major improvements and replacements and the amount of interest cost associated with significant capital additions. Repairs and maintenance costs are expensed as incurred. When property and equipment are retired, sold, or otherwise disposed of, the asset's carrying amount and related accumulated depreciation are removed from the accounts and any gain or loss is included in "Other expense, net" in our Consolidated Statements of Income.

Property, plant, and equipment consisted of the following (dollars in millions):

	December 31,	
	2022	2021
Land and land improvements	\$ 192.4	\$ 189.8
Buildings	1,023.6	938.7
Machinery and equipment	6,709.3	6,159.1
Construction in progress	440.2	481.0
Other	146.9	102.9
Property, plant and equipment, at cost	8,512.4	7,871.5
Less accumulated depreciation	(4,612.4)	(4,342.5)
Property, plant and equipment, net	<u>\$ 3,900.0</u>	<u>\$ 3,529.0</u>

The amount of interest capitalized from construction in progress was \$7.3 million, \$3.8 million, and \$3.7 million for the years ended December 31, 2022, 2021, and 2020, respectively.

Depreciation is computed on the straight-line basis over the estimated useful lives of the related assets. Assets under finance leases are depreciated on the straight-line method over the term of the lease or the useful life, if shorter. The following lives are used for the various categories of assets:

Buildings and land improvements	5 to 40 years
Machinery and equipment	3 to 25 years
Trucks and automobiles	3 to 10 years
Furniture and fixtures	3 to 20 years
Computers and hardware	3 to 10 years
Leasehold improvements	Period of the lease or useful life, if shorter

The amount of depreciation expense was \$413.7 million, \$376.0 million, and \$362.5 million for the years ended December 31, 2022, 2021, and 2020, respectively. In 2022, 2021, and 2020, we recognized incremental depreciation expense of \$5.7 million, \$4.7 million, and \$4.5 million, respectively. The incremental depreciation expense for 2022 and 2021 related to Jackson mill conversion-related activities and closures of corrugated products facilities. For 2020, the incremental depreciation expense related to closures of corrugated products facilities.

Pursuant to the terms of an industrial revenue bond, title to certain property, plant, and equipment was transferred to a municipal development authority in 2009 in order to receive a property tax abatement. The title of these assets will revert back to PCA upon retirement or cancellation of the bond. The assets are included in the consolidated balance sheets under the caption "Property, plant, and equipment, net", as all risks and rewards remain with the Company.

Leases

We determine if an arrangement is, or contains, a lease at the inception date based on the presence of identified assets and our right to obtain substantially all of the economic benefit from or to direct the use of such assets. When we determine a lease exists, we record a right-of-use asset and corresponding lease liability on our consolidated balance sheets. Right-of-use assets represent our right to use an underlying asset for the lease term. Lease liabilities represent our obligation to make lease payments arising from the lease. Right-of-use assets are recognized at commencement date at the value of the lease liability and are adjusted for any prepayments, lease incentives received, and initial direct costs incurred. Lease liabilities are recognized at lease commencement date based on the present value of remaining lease payments over the lease term. As the discount rate implicit in the lease is not readily determinable in most of our leases, we use our incremental borrowing rate based on the information available at commencement date in determining the present value of lease payments. Our lease terms include options to extend or terminate the lease when it is reasonably certain that we will exercise that option.

Operating lease balances are included in Operating lease right-of-use assets with the related liabilities included in Current operating lease obligations and Long-term operating lease obligations. Assets under finance leases are included in Property, plant and equipment, net, with the related liabilities included in Current finance lease obligations and Long-term finance lease obligations.

We do not record lease contracts with a term of 12 months or less on our consolidated balance sheets.

We recognize fixed lease expense for operating leases on a straight-line basis over the lease term. For finance leases, we recognize amortization expense on the right-of-use asset and interest expense on the lease liability over the lease term.

We have lease agreements with non-lease components that relate to lease components (e.g., common area maintenance such as cleaning or landscaping, insurance, etc.). We account for each lease and any non-lease components associated with that lease as a single lease component for all underlying asset classes. Accordingly, all costs associated with a lease contract are accounted for as lease costs.

Long-Lived Asset Impairment

Long-lived assets other than goodwill and other intangibles are reviewed for impairment in accordance with provisions of ASC 360, *Property, Plant and Equipment*. In the event that facts and circumstances indicate that the carrying amount of any long-lived assets may be impaired, an evaluation of recoverability is performed. If an evaluation is required, the estimated future undiscounted cash flows associated with the asset (or group of assets) is compared to the assets (or group of assets) carrying amount to determine if a write-down to fair value is required.

Goodwill and Intangible Assets

The Company has capitalized certain intangible assets, primarily goodwill, customer relationships, and trademarks and trade names, based on their estimated fair value at the date of acquisition. Amortization is provided for customer relationships on a straight-line basis over periods ranging from ten to 40 years, and trademarks and trade names over periods ranging from five to 20 years.

Goodwill, which amounted to \$922.4 million and \$923.5 million at December 31, 2022 and 2021, respectively, is not amortized but is subject to an annual impairment test in accordance with ASC 350, *Intangibles – Goodwill and Other*. We test goodwill for impairment annually in the fourth quarter or sooner if events or changes in circumstances indicate that the carrying value of the asset may exceed fair value. Additionally, we evaluate the remaining useful lives of our finite-lived purchased intangible assets to determine whether any adjustments to the useful lives are necessary.

In the second quarter of 2020, we recorded an impairment to write off the remaining goodwill balance associated with our Paper segment. The Company concluded that none of the goodwill or intangible assets were impaired during the 2022, 2021, and 2020 annual impairment tests. See Note 9, Goodwill and Intangible Assets, for additional information.

Pension and Postretirement Benefits

Several estimates and assumptions are required to record pension costs and liabilities, including discount rate, return on assets, and longevity and service lives of employees. We review and update these assumptions annually unless a plan curtailment or other event occurs, requiring that we update the estimates on an interim basis. While we believe the assumptions used to measure our pension and postretirement benefit obligations are reasonable, differences in actual experience or changes in assumptions may materially affect our pension and postretirement benefit obligations and future expense. See Note 13, Employee Benefit Plans and Other Postretirement Benefits, for additional information.

For postretirement health care plan accounting, the Company reviews external data and its own historical trends for health care costs to determine the health care cost trend rate assumption.

Environmental Matters

Environmental expenditures that extend the life of the related property or mitigate or prevent future environmental contamination are capitalized. Liabilities are recorded for environmental contingencies when such costs are probable and reasonably estimable. These liabilities are adjusted as further information develops or circumstances change. Environmental expenditures related to existing conditions resulting from past or current operations from which no current or future benefit is discernible are expensed as incurred.

Asset Retirement Obligations

The Company accounts for its retirement obligations related predominantly to landfill closure, wastewater treatment pond dredging, closed-site monitoring costs, and certain leasehold improvements under ASC 410, *Asset Retirement and Environmental Obligations*, which requires recognition of legal obligations associated with the retirement of long-lived assets whether these assets are owned or leased. These legal obligations are recognized at fair value at the time that the obligations are incurred. When we record the liability, we capitalize the cost by increasing the carrying amount of the related long-lived asset, which is amortized to expense over the useful life of the asset. See Note 14, Asset Retirement Obligations, for additional information.

Deferred Debt Issuance Costs

PCA has capitalized certain costs related to obtaining its financing. These costs are amortized to interest expense using the effective interest rate method over the terms of the related financing, which range from 10 to 30 years. At December 31, 2022 and 2021, deferred debt issuance costs were \$17.9 million and \$19.5 million, respectively, and were recorded in “Long-Term Debt” on our Consolidated Balance Sheets.

Cutting Rights and Fiber Farms

We lease the cutting rights to approximately 58,000 acres of timberland. For our cutting rights, we capitalize the annual lease payments and reforestation costs associated with these leases. Costs are recorded as depletion when the timber or fiber is harvested and used in operations or sold to customers. Capitalized long-term lease costs for our cutting rights, primarily recorded in “Other long-term assets” on our Consolidated Balance Sheets, were \$22.4 million and \$21.0 million as of December 31, 2022 and 2021, respectively. The amount of depletion expense was \$2.4 million, \$2.0 million, and \$3.1 million for the years ended December 31, 2022, 2021, and 2020, respectively.

Deferred Software Costs

PCA capitalizes costs related to the purchase and development of software, which is used in its business operations. The costs attributable to these software systems are amortized over their estimated useful lives based on various factors such as the effects of obsolescence, technology, and other economic factors. Net capitalized software costs recorded in “Other long-term assets” on our Consolidated Balance Sheets were \$3.0 million and \$3.3 million for the years ended December 31, 2022 and 2021, respectively. Software amortization expense was \$1.6 million for both the years ended December 31, 2022 and 2021 and \$1.1 million for the year ended December 31, 2020.

The Company accounts for costs incurred to implement a cloud computing arrangement that is a service contract under ASU 2018-15, *Intangibles – Goodwill and Other – Internal Use Software* (Subtopic 350-40): *Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*. This ASU includes guidance on capitalizing costs associated with developing or obtaining internal-use software. As of December 31, 2022 and 2021, capitalized costs associated with cloud computing arrangements were \$1.6 million and \$2.8 million, respectively.

Income Taxes

PCA utilizes the liability method of accounting for income taxes whereby it recognizes deferred tax assets and liabilities for the future tax consequences of temporary differences between the tax basis of assets and liabilities and the reported amounts in the financial statements. Deferred tax assets will be reduced by a valuation allowance if, based upon management’s estimates, it is more likely than not that a portion of the deferred tax assets will not be realized in a future period. The estimates utilized in the recognition of deferred tax assets are subject to revision in future periods based on new facts or circumstances. PCA’s practice is to recognize interest and penalties related to unrecognized tax benefits in income tax expense.

Trade Agreements

PCA regularly trades containerboard with other manufacturers primarily to reduce shipping costs. These agreements are entered into with other producers on an annual basis, pursuant to which both parties agree to ship an identical number of tons of containerboard to each other within the agreement period. These agreements lower transportation costs by allowing each party’s containerboard mills to ship containerboard to the other party’s closer corrugated products plant. PCA tracks each shipment to ensure that the other party’s shipments to PCA match PCA’s shipments to the other party during the agreement period. Such transfers are possible because certain grades of containerboard are commodity products with no distinguishing product characteristics. These transactions are accounted for at carrying value, and revenue is not recorded as the transactions do not represent the culmination of an earnings process. The transactions are recorded into inventory accounts, and no sale or income is recorded until such inventory is converted to a finished product and sold to an end-use customer.

Business Combinations

The Company accounts for acquisitions under ASC 805, *Business Combinations* and ASU 2017-01 (Topic 805): *Clarifying the Definition of a Business*. ASC 805 requires separate recognition of assets acquired and liabilities assumed from goodwill at the acquisition date fair values. ASU 2017-01 (Topic 805) provides additional guidance to assist entities with evaluating whether transfers of assets and activities should be accounted for as acquisitions of assets or businesses. Goodwill as of the acquisition date is measured as the excess of consideration transferred over the net of the acquisition date fair values of the assets acquired and liabilities assumed. During the measurement period, which may be up to one year from the acquisition date, the Company records adjustments to the assets acquired and liabilities assumed with the corresponding offset to goodwill. Upon the conclusion of the measurement period or final determination of the values of assets acquired or liabilities assumed, whichever comes first, any subsequent adjustments are recorded to the consolidated financial statements.

Recently Adopted Accounting Standards

The Company did not adopt any new accounting standards during 2022.

New Accounting Standards Not Yet Adopted

In October 2021, the FASB issued ASU 2021-08, *Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers*. ASU 2021-08 requires contract assets and contract liabilities acquired in a business combination to be recognized and measured by the acquirer on the acquisition date in accordance with ASC 606, *Revenue from Contracts with Customers*. Under current business combination guidance in ASC 805, *Business Combinations*, such assets and liabilities are recognized by the acquirer at fair value on the acquisition date, whereas the new guidance requires the acquirer to recognize such assets and liabilities as if it had originated the contracts. The ASU is effective for annual periods beginning after December 15, 2022, and interim periods within those annual periods, with early adoption permitted. The Company will apply the amended guidance on a prospective basis to any business combinations that occur after the adoption date.

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*. ASU 2020-04 provides optional guidance for a limited period of time to ease the potential burden in accounting for, or recognizing the effects of, reference rate reform on financial reporting. The amendments in this Update are elective and apply to all entities, subject to meeting certain criteria, that have contracts, hedging relationships, and other transactions that reference LIBOR or another reference rate expected to be discontinued because of reference rate reform. In January 2021, the FASB issued ASU 2021-01, which extends some of the optional expedients under Topic 848 to include derivative contracts impacted by discounting transition. In December 2022, the FASB issued ASU 2022-06, *Reference Rate Reform (Topic 848): Deferral of the Sunset Date of Topic 848*, which further extends the relief offered in this series of ASUs through December 31, 2024. Companies can apply these ASUs immediately. The ASUs can be adopted on a full retrospective basis as of any date from the beginning of an interim period that includes or is subsequent to March 12, 2020, or on a prospective basis to any new modification from any date within an interim period that includes or is subsequent to the date of the issuance of a final Update, up to the date that financial statements are available to be issued. While the Company's fixed-rate outstanding debt will not be impacted by the reference rate reform, the Company is still evaluating the impact of this guidance on its revolving credit facility, as the interest rate associated with any future borrowings against the revolving credit facility is based on LIBOR. Overall, the Company does not expect the guidance to have a significant impact on its financial position or related disclosures.

There were no other accounting standards recently issued that had or are expected to have a material impact on our financial position or results of operations.

3. Leases

We group our leases into two primary lease types, real estate and equipment, and into various asset classes within each type. Real estate leases primarily include manufacturing locations, office space, warehouses, and design centers, while equipment leases primarily include manufacturing equipment.

Leases with an initial term of 12 months or less and certain month-to-month leases are not recorded on the balance sheet. The lease expense for these types of leases is recognized on a straight-line basis over the lease term.

To determine the lease term, we include the non-cancellable period of the lease together with the following: all periods covered by an option to extend the lease if we are reasonably certain to exercise that option; any periods covered by an option to terminate the lease if we are reasonably certain not to exercise that option; and any periods covered by an option to extend or not to terminate the lease that are controlled by the lessor. The exercising of lease renewal options is based on whether future economic benefit is expected to be derived from the renewal. Most of our real estate leases contain at least one renewal option. Renewal options generally range from 1 to 5 years. Although equipment leases may also contain renewal options, we typically do not expect to extend and/or exercise these renewal options unless a compelling business reason is provided to management.

Our leases may contain fixed and variable costs. Fixed costs determine the right-of-use asset. Variable costs are those costs which will vary month to month and are excluded from the calculation of the right-of-use asset. Variable lease costs are recorded to lease expense in the period in which they are incurred.

Our leases do not provide an implicit borrowing rate of return. Therefore, we use our incremental borrowing rate to calculate the present value of lease payments at inception of the lease or when a lease is modified.

Supplemental balance sheet information related to our operating leases was as follows (dollars in millions):

	Year Ended December 31,	
	2022	2021
Operating lease right-of-use assets	\$ 298.3	\$ 238.3
Current portion of operating lease obligations	\$ 72.2	\$ 67.1
Long-term portion of operating lease obligations	234.6	179.3
Total operating lease obligations	\$ 306.8	\$ 246.4

Supplemental balance sheet information related to our finance leases was as follows (dollars in millions):

	Year Ended December 31,	
	2022	2021
Buildings	\$ 0.3	\$ 0.3
Machinery and equipment	28.5	28.5
Total	28.8	28.8
Less accumulated amortization	(22.6)	(21.1)
Total	\$ 6.2	\$ 7.7
Current portion of finance lease obligations	\$ 1.9	\$ 1.7
Long-term portion of finance lease obligations	10.8	12.7
Total finance lease obligations	\$ 12.7	\$ 14.4

The Company was obligated under finance leases covering buildings and machinery and equipment in the amount of \$12.7 million and \$14.4 million at December 31, 2022 and 2021, respectively. Amortization of assets under finance lease obligations is included in depreciation expense.

For both operating and finance leases, the weighted average remaining lease term in years and weighted average discount rates were as follows:

	Year Ended December 31,	
	2022	2021
Weighted-average remaining lease term (years):		
Operating leases	5.4	5.4
Finance leases	5.8	6.8
Weighted-average discount rate:		
Operating leases	3.29%	3.08%
Finance leases	6.66%	6.66%

The components of lease expense were as follows (dollars in millions):

	Year Ended December 31,		
	2022	2021	2020
Finance lease cost:			
Amortization of finance lease assets	\$ 1.5	\$ 1.5	\$ 1.5
Interest on lease liabilities	0.9	1.0	1.1
Total finance lease cost	2.4	2.5	2.6
Operating lease cost	81.4	77.0	74.4
Short-term lease cost	27.0	22.7	18.0
Variable lease cost	17.2	19.4	12.9
Total lease cost	<u>\$ 128.0</u>	<u>\$ 121.6</u>	<u>\$ 107.9</u>

We had an insignificant amount of sublease rental income for the years ended December 31, 2022, 2021, and 2020.

Supplemental cash flow information related to leases was as follows (dollars in millions):

	Year Ended December 31,		
	2022	2021	2020
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows for operating leases	\$ (73.6)	\$ (71.7)	\$ (68.2)
Operating cash flows for finance leases	(1.5)	(1.5)	(1.5)
Financing cash flows for finance leases	(0.9)	(1.0)	(1.1)
Right-of-use assets obtained in exchange for new lease obligations:			
Operating leases	\$ (83.5)	\$ (44.4)	\$ (35.7)
Finance leases	—	—	—
Supplemental non-cash information on changes in lease liabilities	\$ 51.6	\$ 31.3	\$ 34.8
Supplemental non-cash information on changes in right-of-use assets	\$ 23.5	\$ 40.3	\$ 35.8

The future minimum payments under operating and finance lease liabilities at December 31, 2022 were as follows (dollars in millions):

	Operating Leases	Finance Leases
2023	\$ 81.2	\$ 2.7
2024	72.8	2.7
2025	59.9	2.7
2026	42.8	2.7
2027	27.9	2.7
Thereafter	52.3	1.8
Total lease payments	<u>336.9</u>	<u>15.3</u>
Less imputed interest (a)	(30.1)	(2.6)
Present value of lease liabilities	<u>\$ 306.8</u>	<u>\$ 12.7</u>

(a) Calculated using the incremental borrowing rate for each lease applied to the future payments.

4. Revenue

Revenue Recognition

Revenue is recognized when control of the promised goods or services is transferred to customers in an amount that reflects the consideration expected to be received in exchange for those goods or services. Sales, value added, and other taxes collected concurrently with revenue-producing activities are excluded from revenue.

The following table presents our revenues disaggregated by product line (dollars in millions):

	Year Ended December 31,		
	2022	2021	2020
Packaging	\$ 7,780.7	\$ 7,052.6	\$ 5,919.5
Paper	622.1	599.7	674.8
Corporate and Other	75.2	78.0	63.9
Total revenue	<u>\$ 8,478.0</u>	<u>\$ 7,730.3</u>	<u>\$ 6,658.2</u>

Packaging Revenue

Our containerboard mills produce linerboard and corrugating medium which are papers primarily used in the production of corrugated products. The majority of our containerboard production is used internally by our corrugated products manufacturing facilities. The remaining containerboard is sold to outside domestic and export customers. Our corrugated products manufacturing plants produce a wide variety of corrugated packaging products and retail merchandise displays. We sell corrugated products to national, regional and local accounts, which are broadly diversified across industries and geographic locations.

The Company recognizes revenue for its packaging products when performance obligations under the terms of a contract with a customer are satisfied. This occurs with the transfer of control of our products at a specific point in time. Based on our express terms and conditions of the sale of products to our customers, as well as terms included in contractual arrangements with our customers, we do not have an enforceable right of payment that includes a reasonable profit throughout the duration of the contract for products that do not have an alternative use. Revenue is recognized when the product is shipped from the mill or from our manufacturing facility to our customer. Certain customers may receive volume-based incentives, which are accounted for as variable consideration. We estimate these amounts based on the expected amount to be provided to customers and reduce revenue recognized.

Certain customers receive a portion of their packaging products as consigned inventory with billing triggered once the customer uses or consumes the designated product. Prior to invoicing, these amounts are handled as unbilled receivables. Total unbilled receivables, which are immaterial in amount, are included in the accounts receivable financial statement caption.

Paper Revenue

We manufacture and sell a range of communication-based papers. Communication papers consist of cut-size office papers, and printing and converting papers.

The Company recognizes revenue for its paper products when performance obligations under the terms of a contract with a customer are satisfied. This occurs with the transfer of control of our products at a specific point in time. Revenue is recognized when the product is shipped from the mill or from our manufacturing facility or distribution center to our customer. Certain customers may receive volume-based incentives, which are accounted for as variable consideration. We estimate these amounts based on the expected amount to be provided to customers and reduce revenue recognized.

Corporate and Other Revenue

Revenue in this segment primarily relates to Louisiana Timber Procurement Company, L.L.C. (LTP), a variable-interest entity that is 50% owned by PCA and 50% owned by Boise Cascade Company (Boise Cascade). PCA is the primary beneficiary of LTP and has the power to direct the activities that most significantly affect the economic performance of LTP. Therefore, we consolidate 100% of LTP in our financial statements. See Note 18, Transactions With Related Parties, for more information related to LTP.

The Company recognizes revenue within this segment when performance obligations under the terms of a contract with a customer are satisfied. This occurs with the transfer of control of our products at a specific point in time.

Practical Expedients and Exemption

Shipping and handling fees billed to a customer are recorded on a gross basis in "Net sales" with the corresponding shipping and handling costs included in "Cost of sales" in the concurrent period as the revenue is recorded. We expense sales commissions when incurred because the amortization period is one year or less. Sales commissions are recorded in "Selling, general, and administrative expenses".

We do not disclose the value of unsatisfied performance obligations for contracts with an original expected duration of one year or less.

5. Acquisitions

Advance Packaging Acquisition

On December 11, 2021, PCA acquired the assets of Advance Packaging Corporation ("Advance Packaging"), an independent corrugated products producer, for \$194.9 million, including working capital adjustments. Assets acquired include full-line corrugated products operations in Grand Rapids, Michigan. Advance Packaging is a full-service producer of corrugated packaging products, including graphics, retail displays, sustainable shipping containers, and protective packaging. Advance Packaging's financial results are included in the Packaging segment from the date of acquisition.

During the second quarter of 2022, we received \$1.9 million from the seller related to a final working capital adjustment. We recorded the adjustment as a decrease to goodwill, which decreased the purchase price to \$193.0 million.

The Company accounted for the Advance Packaging acquisition using the acquisition method of accounting in accordance with ASC 805, *Business Combinations*. The total purchase price has been allocated to tangible and intangible assets acquired and liabilities assumed based on respective fair values, as follows (dollars in millions):

	12/31/2021 Allocation	Adjustments	Revised Allocation
Goodwill	\$ 60.0	\$ (1.0)	\$ 59.0
Other intangible assets	50.2	(1.4)	48.8
Property, plant and equipment	66.7	0.5	67.2
Other net assets	18.0	—	18.0
Net assets acquired	<u>\$ 194.9</u>	<u>\$ (1.9)</u>	<u>\$ 193.0</u>

Goodwill is calculated as the excess of the purchase price over the fair value of the net assets acquired. Among the factors that contributed to the recognition of goodwill were Advance Packaging's commitment to continuous improvement and synergies, as well as the expected increases in PCA's containerboard integration levels. Goodwill is deductible for tax purposes.

Other intangible assets, primarily customer relationships, were assigned an estimated weighted average useful life of 12.8 years.

Property, plant, and equipment were assigned estimated useful lives ranging from one to 20 years.

6. Earnings Per Share

The following table sets forth the computation of basic and diluted income per common share for the periods presented (dollars and shares in millions, except per share data).

	Year Ended December 31,		
	2022	2021	2020
Numerator:			
Net income	\$ 1,029.8	\$ 841.1	\$ 461.0
Less: distributed and undistributed earnings allocated to participating securities	(7.9)	(6.4)	(3.6)
Net income attributable to common stockholders	<u>\$ 1,021.9</u>	<u>\$ 834.7</u>	<u>\$ 457.4</u>
Denominator:			
Weighted average common shares outstanding	92.3	94.1	94.1
Effect of dilutive securities	0.4	0.4	0.3
Diluted common shares outstanding	<u>92.7</u>	<u>94.5</u>	<u>94.4</u>
Basic income per common share	\$ 11.08	\$ 8.87	\$ 4.86
Diluted income per common share	\$ 11.03	\$ 8.83	\$ 4.84

7. Other Expense, Net

The components of other expense, net, were as follows (dollars in millions):

	Year Ended December 31,		
	2022	2021	2020
Asset disposals and write-offs	\$ (44.5)	\$ (38.9)	\$ (26.5)
Jackson mill conversion-related activities (a)	(6.9)	(8.9)	—
Facilities closure and other income (costs) (b)	0.1	6.5	(19.1)
Acquisition and integration-related activities (c)	—	(0.6)	—
Other	(10.0)	(12.9)	(5.1)
Total	<u>\$ (61.3)</u>	<u>\$ (54.8)</u>	<u>\$ (50.7)</u>

- (a) Includes charges related to the announced discontinuation of production of uncoated freesheet paper grades on the No. 3 machine at the Jackson, Alabama mill in the first quarter of 2021 associated with the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities.
- (b) For 2022, includes income primarily related to insurance proceeds received for a natural disaster at one of the corrugated products facilities and a gain on sale of assets related to a corrugated products facility, partially offset by closure costs related to corrugated products facilities. For 2021, includes income primarily consisting of an adjustment of the required asset retirement obligation related to the 2020 closure of the San Lorenzo, California facility, a gain on sale of transportation assets and corrugated products facilities, and insurance proceeds received for a natural disaster at one of the corrugated products facilities, partially offset by closure costs related to corrugated products facilities. For 2020, includes charges consisting of restructuring costs for paper administrative functions and closure costs related to corrugated products facilities, substantially all of which relates to the previously announced closure of the San Lorenzo, California facility during the second quarter of 2020, partially offset by income related to the sale of a closed corrugated products facility during the second quarter of 2020.
- (c) Includes charges related to the December 2021 Advance Packaging Corporation acquisition.

8. Income Taxes

The following is an analysis of the components of the consolidated income tax provision (dollars in millions):

	Year Ended December 31,		
	2022	2021	2020
Current income tax provision -			
U.S. federal	\$ 187.3	\$ 158.0	\$ 109.4
State and local	61.7	50.1	27.5
Foreign	—	0.1	0.1
Total current provision for taxes	<u>249.0</u>	<u>208.2</u>	<u>137.0</u>
Deferred income tax provision (benefit) -			
U.S. federal	86.9	62.1	26.8
State and local	(0.7)	(2.6)	8.0
Foreign	(0.2)	(0.1)	(0.1)
Total deferred provision for taxes	<u>86.0</u>	<u>59.4</u>	<u>34.7</u>
Total provision for taxes	<u>\$ 335.0</u>	<u>\$ 267.6</u>	<u>\$ 171.7</u>

The effective tax rate varies from the U.S. federal statutory tax rate principally due to the following (dollars in millions):

	2022	2021	2020
Provision computed at U.S. federal statutory rate of 21%	\$ 286.6	\$ 232.8	\$ 132.9
State and local taxes, net of federal benefit	51.6	42.6	28.4
Goodwill impairment	—	—	11.6
Other	(3.2)	(7.8)	(1.2)
Total	<u>\$ 335.0</u>	<u>\$ 267.6</u>	<u>\$ 171.7</u>

The following details the scheduled expiration dates of our tax effected net operating loss (NOL) and other tax carryforwards at December 31, 2022 (dollars in millions):

	2023 Through 2032	2033 Through 2042	Indefinite	Total
U.S. federal NOLs	\$ 18.9	\$ —	\$ —	\$ 18.9
State taxing jurisdiction NOLs	0.8	0.1	—	0.9
U.S. federal and non-U.S. capital loss carryforwards	0.4	—	—	0.4
U.S. federal tax credit carryforwards	0.1	—	—	0.1
Total	\$ 20.2	\$ 0.1	\$ —	\$ 20.3

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts for income tax purposes. Deferred income tax assets and liabilities at December 31 are summarized as follows (dollars in millions):

	December 31,	
	2022	2021
Deferred tax assets:		
Lease obligations	\$ 77.0	\$ 61.4
Employee benefits and compensation	44.0	44.7
Pension and postretirement benefits	30.4	33.8
Accrued liabilities	28.9	6.3
Net operating loss carryforwards	19.8	23.4
Restricted stock and performance units	8.7	8.5
Inventories	7.9	6.8
Capital loss and general business credit carryforwards	0.5	0.7
Derivatives	0.1	0.1
Gross deferred tax assets	217.3	185.7
Valuation allowance (a)	(0.4)	(0.6)
Net deferred tax assets	\$ 216.9	\$ 185.1
Deferred tax liabilities:		
Property, plant and equipment	\$ (609.0)	\$ (518.0)
Goodwill and intangible assets	(75.9)	(73.3)
Right-of-use assets	(75.0)	(59.7)
Total deferred tax liabilities	\$ (759.9)	\$ (651.0)
Net deferred tax liabilities	\$ (543.0)	\$ (465.9)

- (a) Deferred tax assets are reduced by a valuation allowance when it is more likely than not that some portion of the deferred tax assets will not be realized. Both the 2022 and 2021 valuation allowances relate to capital losses. We do not expect to generate capital gains before the capital losses expire. If or when recognized, the tax benefits relating to the reversal of any or all of the valuation allowance would be recognized as a benefit to income tax expense.

Cash payments for federal, state, and foreign income taxes were \$277.4 million, \$210.5 million, and \$115.6 million for the years ended December 31, 2022, 2021, and 2020, respectively.

The following table summarizes the changes related to PCA's gross unrecognized tax benefits excluding interest and penalties (dollars in millions):

	2022	2021	2020
Balance as of January 1	\$ (1.9)	\$ (5.2)	\$ (4.8)
Increases related to prior years' tax positions	(0.2)	—	—
Increases related to current year tax positions	(0.4)	(0.3)	(0.4)
Decreases related to prior years' tax positions	—	0.2	—
Settlements with taxing authorities	—	3.0	—
Expiration of the statute of limitations	0.8	0.4	—
Balance at December 31	\$ (1.7)	\$ (1.9)	\$ (5.2)

At December 31, 2022, PCA had recorded a \$1.7 million gross reserve for unrecognized tax benefits, excluding interest and penalties. Of the total, \$1.7 million (net of the federal benefit for state taxes) would impact the effective tax rate if recognized.

PCA recognizes interest accrued related to unrecognized tax benefits and penalties as income tax expense. For the years ended December 31, 2022 and 2021, we had \$0.1 million and \$0.2 million, respectively, of interest and penalties recorded for unrecognized tax benefits. PCA does not expect the unrecognized tax benefits to change significantly over the next 12 months.

PCA is subject to income taxation in the United States, various state and local jurisdictions, and Hong Kong. A federal examination of the 2016 tax year concluded in March 2021. The tax years 2019-2022 remain open to federal examination. The tax years 2018 - 2022 remain open to state examinations. Some foreign tax jurisdictions are open to examination for the 2009 tax year forward. Through the Boise acquisition, PCA recorded net operating losses and credit carryforwards from 2008 through 2011 and 2013 that are subject to examinations and adjustments for at least three years following the year in which utilized.

9. Goodwill and Intangible Assets

Goodwill

Goodwill represents the excess of the cost of an acquired business over the fair value of the identifiable tangible and intangible assets acquired and liabilities assumed in a business combination. At December 31, 2022 and 2021, we had \$922.4 million and \$923.5 million of goodwill recorded in our Packaging segment, which represents the entire goodwill balance reported on our Consolidated Balance Sheets.

Changes in the carrying amount of our goodwill were as follows (dollars in millions):

	Goodwill	
Balance at January 1, 2021	\$	863.5
Acquisition (a)		60.0
Balance at December 31, 2021		923.5
Acquisition adjustment (b)		(1.0)
Adjustment related to sale of corrugated assets (c)		(0.1)
Balance at December 31, 2022	\$	922.4

- (a) In connection with the December 2021 acquisition of Advance Packaging, the Company recorded \$60.0 million of goodwill in the Packaging segment.
- (b) During 2022, the Company recorded a \$1.0 million adjustment to decrease the goodwill balance for the Company's December 2021 acquisition of Advance Packaging.
- (c) During 2022, a corrugated products facility sold part of its operations, which primarily included existing inventory. As a result, the Company recorded a \$0.1 million adjustment to decrease the goodwill balance.

See Note 5, Acquisitions, for more information on the December 2021 acquisition of Advance Packaging.

Intangible Assets

Intangible assets are comprised of customer relationships and trademarks and trade names. The weighted average useful life, gross carrying amount, and accumulated amortization of our intangible assets were as follows (dollars in millions):

	As of December 31, 2022			As of December 31, 2021		
	Weighted Average Remaining Useful Life (in Years)	Gross Carrying Amount	Accumulated Amortization	Weighted Average Remaining Useful Life (in Years)	Gross Carrying Amount	Accumulated Amortization
Customer relationships (d)	8.2	\$ 546.0	\$ 290.9	8.5	\$ 551.1	\$ 254.9
Trademarks and trade names (d)	7.2	41.3	28.6	8.4	37.6	25.5
Other (d)	3.4	4.4	4.3	2.2	4.4	4.3
Total intangible assets (excluding goodwill)	8.1	\$ 591.7	\$ 323.8	8.5	\$ 593.1	\$ 284.7

(d) In connection with the December 2021 acquisition of Advance Packaging, the Company recorded intangible assets of \$47.3 million for customer relationships, \$2.8 million for trade names, and \$0.1 million for other intangibles. During 2022, the Company made a \$1.4 million net adjustment based on the final valuation received for the intangible assets. This adjustment resulted in a revision to the original allocations for customer relationships and trade names. As of December 31, 2022, the revised allocations for customer relationships and trade names were \$42.2 million and \$6.5 million, respectively.

Amortization expense was \$39.1 million, \$37.7 million, and \$42.9 million (including the \$4.5 million adjustment to the customer relationships intangible asset related to the San Lorenzo, California facility closure, which was written off to amortization expense) for the years ended December 31, 2022, 2021, and 2020, respectively. Estimated amortization expense of intangible assets over the next five years is expected to approximate \$38.2 million (2023), \$37.7 million (2024), \$37.6 million (2025), \$37.5 million (2026) and \$34.7 million (2027).

Impairment Testing

We test goodwill for impairment annually in the fourth quarter or sooner if events or changes in circumstances indicate that the carrying value of the asset may exceed fair value. Additionally, when we experience changes to our business or operating environment, we evaluate the remaining useful lives and recoverability of our finite-lived purchased intangible assets to determine whether any adjustments to the useful lives or impairment are necessary. We completed our annual qualitative assessment in the fourth quarter, and there was no indication of goodwill or intangible asset impairment.

10. Accrued Liabilities

The components of accrued liabilities were as follows (dollars in millions):

	December 31,	
	2022	2021
Compensation and benefits	\$ 159.7	\$ 157.1
Customer rebates and other credits	43.8	36.9
Medical insurance and workers' compensation	26.1	26.9
Franchise, property, sales and use taxes	17.4	17.6
Environmental liabilities and asset retirement obligations	4.1	4.0
Severance, retention, and relocation	1.8	2.7
Other	10.8	9.8
Total	\$ 263.7	\$ 255.0

11. Debt

At December 31, 2022 and 2021, our long-term debt and interest rates on that debt were as follows (dollars in millions):

	<u>December 31, 2022</u>	<u>December 31, 2021</u>
	<u>Amount</u>	<u>Amount</u>
Revolving Credit Facility	\$ —	\$ —
3.65% Senior Notes, net of discount of \$0.2 million and \$0.4 million as of December 31, 2022 and 2021, respectively, due September 2024	399.8	399.6
3.40% Senior Notes, net of discount of \$0.9 million and \$1.0 million as of December 31, 2022 and 2021, respectively, due December 2027	499.1	499.0
3.00% Senior Notes, net of discount of \$0.5 million as of both December 31, 2022 and 2021, due December 2029	499.5	499.5
4.05% Senior Notes, net of discount of \$3.3 million and \$3.4 million as of December 31, 2022 and 2021, respectively, due December 2049	396.7	396.6
3.05% Senior Notes, net of discount of \$3.6 million and \$3.7 million as of December 31, 2022 and 2021, respectively, due October 2051	696.4	696.3
Total	<u>2,491.5</u>	<u>2,491.0</u>
Less unamortized debt issuance costs	17.9	19.5
Total long-term debt	<u>\$ 2,473.6</u>	<u>\$ 2,471.5</u>

On September 21, 2021, the Company issued \$700.0 million of 3.05% senior notes due 2051 through a registered public offering, for the purpose of refinancing its \$700.0 million of 4.50% notes due November 1, 2023. On October 8, 2021, the Company completed the redemption of the old 4.50% notes for \$769.8 million, which included a redemption premium of \$56.1 million and \$13.7 million of accrued and unpaid interest. The redemption of the old 4.50% notes also included a \$1.4 million write-off of the remaining balance of unamortized debt issuance costs and a \$0.5 million write-off of the remaining balance of unamortized debt discount. PCA used the proceeds of the offering of the new 3.05% notes and cash on hand to fund the redemption and the \$7.7 million of debt issuance costs associated with the new notes. The debt issuance costs are amortized to interest expense using the effective interest method over the term of the notes.

As of December 31, 2022, the details of our borrowings were as follows:

- *Senior Unsecured Credit Agreement.* On June 8, 2021, we entered into a revolving credit agreement with various financial institutions (the "New Revolving Credit Agreement"), which replaced the old Credit Agreement, dated August 29, 2016 (the "Old Credit Agreement"). The Old Credit Agreement was scheduled to terminate on August 29, 2021. Loans under the New Revolving Credit Agreement bear interest at LIBOR plus an applicable margin based upon the public ratings of PCA's senior long-term unsecured debt or PCA's gross leverage ratio. The New Revolving Credit Agreement includes customary LIBOR replacement provisions. The New Revolving Credit Agreement is a \$350 million unsecured revolving credit facility, which has a five-year term and is available for borrowings on a revolving basis for general corporate purposes. At December 31, 2022, unused borrowing capacity was \$321.3 million, which includes various outstanding letters of credit. The outstanding letters of credit were primarily for workers compensation. We are required to pay commitment fees on the unused portions of the credit facility.
- *3.65% Senior Notes.* On September 5, 2014, we issued \$400.0 million of 3.65% senior notes due September 15, 2024, through a registered public offering.
- *3.40% Senior Notes.* On December 13, 2017, we issued \$500.0 million of 3.40% senior notes due December 15, 2027, through a registered public offering.
- *3.00% Senior Notes.* On November 21, 2019, we issued \$500.0 million of 3.00% senior notes due December 15, 2029, through a registered public offering.
- *4.05% Senior Notes.* On November 21, 2019, we issued \$400.0 million of 4.05% senior notes due December 15, 2049, through a registered public offering.
- *3.05% Senior Notes.* On September 21, 2021, we issued \$700.0 million of 3.05% senior notes due October 1, 2051, through a registered public offering.

The instruments governing our indebtedness contain financial and other covenants that limit the ability of PCA and its subsidiaries to enter into sale and leaseback transactions, incur liens, incur indebtedness at the subsidiary level, enter into certain transactions with affiliates, merge or consolidate with any other person or sell or otherwise dispose of all or substantially all of our assets. Our credit facility also requires us to comply with certain financial covenants, including maintaining a minimum interest coverage ratio and a maximum leverage ratio. A failure to comply with these restrictions could lead to an event of default, which could result in an acceleration of any outstanding indebtedness and/or prohibit us from drawing on the revolving credit facility. An acceleration under the revolving credit facility may also constitute an event of default under the senior notes indenture. At December 31, 2022, we were in compliance with these covenants.

At December 31, 2022, we have \$2,491.5 million of fixed-rate senior notes outstanding. At December 31, 2022, the fair value of our fixed-rate debt was estimated to be \$2,041.2 million. The difference between the book value and fair value is due to the difference between the period-end market interest rate and the stated rate of our fixed-rate debt. We estimated the fair value of our fixed-rate debt using quoted market prices (Level 2 inputs), discussed further in Note 2, Summary of Significant Accounting Policies.

Repayments, Interest, and Other

In 2022, we did not repay any outstanding debt, as we did not have any maturities of our Senior Notes during 2022.

In October 2021, we used the net proceeds from the September 2021 offering of the new 3.05% notes and cash on hand to redeem the 4.50% notes, as described above. We completed the redemption of the old 4.50% notes for \$769.8 million, which included a redemption premium and accrued and unpaid interest.

In 2020, we did not repay any outstanding debt, as we did not have any maturities of our Senior Notes during 2020.

As of December 31, 2022, annual principal maturities for debt, excluding unamortized debt discount, are: none for 2023; \$400.0 million for 2024; none for 2025; none for 2026; and \$2.1 billion for 2027 and thereafter.

Interest payments paid in connection with the Company's debt obligations for the years ended December 31, 2022, 2021, and 2020 were \$85.6 million, \$149.6 million (including redemption premiums of \$56.1 million), and \$97.0 million, respectively. As of December 31, 2022, the estimated future interest payments for the Company's debt obligations are: \$84.2 million for 2023 and 2024; \$69.6 million for 2025 and 2026; and \$968.4 million, in aggregate, for 2027 and thereafter.

Included in interest expense, net, are amortization of financing costs. Amortization of financing costs in 2022, 2021, and 2020 was \$1.6 million, \$3.4 million (including a \$1.4 million write-off of deferred debt issuance costs related to the October 2021 debt refinancing), and \$2.0 million, respectively.

12. Cash, Cash Equivalents, and Marketable Debt Securities

The following table shows the Company's cash and available-for-sale (AFS) debt securities by major asset category at December 31, 2022 and 2021 (in millions):

	December 31, 2022						
	Adjusted Cost Basis	Unrealized Gain	Unrealized Loss	Fair Value	Cash and Cash Equivalents	Short-Term Marketable Debt Securities	Long-Term Marketable Debt Securities
Cash and cash equivalents	\$ 318.3	\$ —	\$ —	\$ 318.3	\$ 318.3	\$ —	\$ —
Level 1 ^(a) :							
U.S. Treasury securities	24.3	—	(0.4)	23.9	—	16.7	7.2
Money market funds	0.1	—	—	0.1	0.1	—	—
Subtotal	<u>24.4</u>	<u>—</u>	<u>(0.4)</u>	<u>24.0</u>	<u>0.1</u>	<u>16.7</u>	<u>7.2</u>
Level 2 ^(b) :							
Corporate debt securities	123.9	—	(2.1)	121.8	1.6	65.7	54.5
U.S. government agency securities	4.5	—	(0.1)	4.4	—	1.2	3.2
Certificates of deposit	1.6	—	—	1.6	—	1.6	—
Subtotal	<u>130.0</u>	<u>—</u>	<u>(2.2)</u>	<u>127.8</u>	<u>1.6</u>	<u>68.5</u>	<u>57.7</u>
Total	<u>\$ 472.7</u>	<u>\$ —</u>	<u>\$ (2.6)</u>	<u>\$ 470.1</u>	<u>\$ 320.0</u>	<u>\$ 85.2</u>	<u>\$ 64.9</u>

December 31, 2021

	Adjusted Cost Basis	Unrealized Gain	Unrealized Loss	Fair Value	Cash and Cash Equivalents	Short-Term Marketable Debt Securities	Long-Term Marketable Debt Securities
Cash and cash equivalents	\$ 612.3	—	—	\$ 612.3	\$ 612.3	\$ —	\$ —
Level 1 ^(a) :							
U.S. Treasury securities	26.4	—	(0.1)	26.3	2.0	14.7	9.6
Money market funds	0.9	—	—	0.9	0.9	—	—
Subtotal	27.3	—	(0.1)	27.2	2.9	14.7	9.6
Level 2 ^(b) :							
Corporate debt securities	118.9	—	(0.3)	118.6	3.5	66.0	49.1
U.S. government agency securities	4.8	—	—	4.8	—	3.5	1.3
Certificates of deposit	1.9	—	—	1.9	—	1.9	—
Subtotal	125.6	—	(0.3)	125.3	3.5	71.4	50.4
Total	\$ 765.2	\$ —	\$ (0.4)	\$ 764.8	\$ 618.7	\$ 86.1	\$ 60.0

- (a) Valuations based on quoted prices for identical assets and liabilities in active markets.
- (b) Valuations based on observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in markets that are not active, or other inputs that are observable or can be corroborated by observable market data.

For the years ended December 31, 2022, 2021 and 2020, net realized gains and losses on the sales and maturities of certain marketable debt securities were insignificant.

The Company invests in highly rated securities, with the primary objective of minimizing the potential risk of principal loss. The Company's investment policy requires securities to be investment grade and limits the amount of credit exposure to any one issuer. The maturities of the Company's long-term marketable debt securities generally range from one to two years.

Fair values were determined for each individual marketable debt security in the investment portfolio. When evaluating a marketable debt security for other-than-temporary impairment, PCA reviews factors such as the duration and extent to which the fair value of the marketable debt security is less than its cost, the financial condition of the issuer and any changes thereto, the general market condition in which the issuer operates, and PCA's intent to sell or whether it will more likely than not be required to sell, the marketable debt security before recovery of its amortized cost basis.

As of December 31, 2022 and 2021, we do not consider any of the impairments related to our marketable debt securities to be the result of credit losses. Therefore, we have not recorded an allowance for credit losses related to our marketable debt securities. All unrealized gains and losses were recorded in other comprehensive income (OCI).

The following table provides information about the Company's marketable debt securities that have been in a continuous loss position as of December 31, 2022 and 2021 (in millions, except number of marketable debt securities in a loss position):

	December 31, 2022					
	Fair Value of Marketable Debt Securities in a Loss Position < 12 Months	Number of Marketable Debt Securities in a Loss Position < 12 Months	Unrealized Losses < 12 Months	Fair Value of Marketable Debt Securities in a Loss Position ≥ 12 Months	Number of Marketable Debt Securities in a Loss Position ≥ 12 Months	Unrealized Losses ≥ 12 Months
Corporate debt securities	\$ 77.0	113	\$ 1.0	\$ 37.9	50	\$ 1.1
U.S. Treasury securities	14.5	14	0.2	9.3	13	0.3
U.S. government agency securities	3.2	5	—	1.3	3	—
	\$ 94.7	132	\$ 1.2	\$ 48.5	66	\$ 1.4

	December 31, 2021		
	Fair Value of Marketable Debt Securities	Number of Marketable Debt Securities in a Loss Position	Unrealized Losses (c)
Corporate debt securities	\$ 106.9	153	\$ 0.3
U.S. Treasury securities	22.4	27	0.1
U.S. government agency securities	4.8	6	—
Certificates of deposit	0.5	1	—
	<u>\$ 134.6</u>	<u>187</u>	<u>\$ 0.4</u>

(c) For the period ended December 31, 2021, there were no marketable debt securities in a continuous loss position greater than or equal to 12 months.

13. Employee Benefit Plans and Other Postretirement Benefits

PCA has defined pension benefit plans for both salaried and hourly employees. The plans covering salaried employees are closed to new entrants with only certain current active participants still accruing benefits. The plans covering certain hourly employees are closed to new participants. We also have a Supplemental Executive Retirement Plan (SERP) and other nonqualified defined benefit pension plans that provide unfunded supplemental retirement benefits to certain of our current and former management employees. The SERP provides for incremental pension benefits in excess of those offered in our principal pension plans.

Other Postretirement Benefits

PCA provides postretirement medical benefits for certain retired salaried employees and postretirement medical and life insurance benefits for certain hourly employees. The plan covering salaried employees is closed to new participants.

Obligations and Funded Status of Defined Benefit Pension and Other Postretirement Benefits Plans

The funded status of PCA's plans change from year to year based on the plan asset investment return, contributions, benefit payments, the discount rate used to measure the liability, and expected participant longevity. The following table, which includes only company-sponsored defined benefit and other postretirement benefit plans, reconciles the beginning and ending balances of the projected benefit obligation and the fair value of plan assets. We recognize the unfunded status of these plans on the Consolidated Balance Sheets, and we recognize changes in funded status in the year changes occur through the Consolidated Statements of Comprehensive Income (dollars in millions):

	Pension Plans		Postretirement Plans	
	Year Ended December 31		Year Ended December 31	
	2022	2021	2022	2021
Change in Benefit Obligation:				
Benefit obligation at beginning of period	\$ 1,503.8	\$ 1,565.6	\$ 13.6	\$ 13.1
Service cost	19.3	21.4	0.2	0.2
Interest cost	34.7	29.6	0.3	0.3
Plan amendments	15.1	2.1	—	(0.1)
Actuarial (gain) loss (a)	(348.0)	(61.1)	(3.4)	1.3
Participant contributions	—	—	0.5	0.6
Benefits paid	(57.8)	(53.8)	(1.7)	(1.8)
Benefit obligation at plan year end	<u>\$ 1,167.1</u>	<u>\$ 1,503.8</u>	<u>\$ 9.5</u>	<u>\$ 13.6</u>
Accumulated benefit obligation portion of above	<u>\$ 1,131.0</u>	<u>\$ 1,464.8</u>		
Change in Fair Value of Plan Assets:				
Plan assets at fair value at beginning of period	\$ 1,382.7	\$ 1,300.7	\$ —	\$ —
Actual return on plan assets	(320.9)	84.7	—	—
Company contributions	51.3	51.1	1.2	1.2
Participant contributions	—	—	0.5	0.6
Benefits paid	(57.8)	(53.8)	(1.7)	(1.8)
Fair value of plan assets at plan year end	<u>\$ 1,055.3</u>	<u>\$ 1,382.7</u>	<u>\$ —</u>	<u>\$ —</u>
Underfunded status	<u>\$ (111.8)</u>	<u>\$ (121.1)</u>	<u>\$ (9.5)</u>	<u>\$ (13.6)</u>
Amounts Recognized on Consolidated Balance Sheets:				
Current liabilities	\$ (1.9)	\$ (1.9)	\$ (0.5)	\$ (0.6)
Noncurrent liabilities	(109.9)	(119.2)	(9.0)	(13.0)
Accrued obligation recognized at December 31	<u>\$ (111.8)</u>	<u>\$ (121.1)</u>	<u>\$ (9.5)</u>	<u>\$ (13.6)</u>
Amounts Recognized in Accumulated Other Comprehensive Loss (Income) (Pre-Tax):				
Prior service cost (credit)	\$ 31.5	\$ 20.0	\$ (4.2)	\$ (4.7)
Actuarial loss (gain)	155.6	130.4	(6.7)	(3.6)
Total	<u>\$ 187.1</u>	<u>\$ 150.4</u>	<u>\$ (10.9)</u>	<u>\$ (8.3)</u>

- (a) For the year ended December 31, 2022, the most significant driver of the decrease in aggregate benefit obligations for the pension and OPEB plans was the actuarial gains due to an increase in the discount rate assumption. For the year ended December 31, 2021, the most significant driver of the decrease in benefit obligations for the pension plans was the actuarial gains due to an increase in the discount rate assumption. The OPEB plans experienced an actuarial loss primarily due to adverse medical claims experience that was partially offset by the effect of the change in the discount rate assumption.

Components of Net Periodic Benefit Cost and Other Comprehensive (Income) Loss

The components of net periodic benefit cost and other comprehensive (income) loss (pretax) were as follows (dollars in millions):

	Pension Plans			Postretirement Plans		
	Year Ended December 31,			Year Ended December 31,		
	2022	2021	2020	2022	2021	2020
Service cost	\$ 19.3	\$ 21.4	\$ 23.0	\$ 0.2	\$ 0.2	\$ 0.3
Interest cost	34.7	29.6	39.8	0.3	0.3	0.4
Expected return on plan assets	(55.7)	(63.1)	(56.8)	—	—	—
Net amortization of unrecognized amounts:						
Prior service cost (credit)	3.6	3.8	4.3	(0.4)	(0.4)	(0.4)
Actuarial loss (gain)	3.4	10.4	10.8	(0.4)	(0.5)	(0.4)
Net periodic benefit cost	<u>\$ 5.3</u>	<u>\$ 2.1</u>	<u>\$ 21.1</u>	<u>\$ (0.3)</u>	<u>\$ (0.4)</u>	<u>\$ (0.1)</u>
Changes in plan assets and benefit obligations recognized in other comprehensive (income) loss:						
Actuarial net loss (gain)	\$ 28.6	\$ (82.7)	\$ (5.0)	\$ (3.4)	\$ 1.3	\$ (1.5)
Prior service cost (credit)	15.1	2.1	1.3	—	(0.1)	—
Amortization of prior service cost (credit)	(3.6)	(3.8)	(4.3)	0.4	0.4	0.4
Amortization of actuarial loss (gain)	(3.4)	(10.4)	(10.8)	0.4	0.5	0.4
Total recognized in other comprehensive loss (income) (b)	<u>\$ 36.7</u>	<u>\$ (94.8)</u>	<u>\$ (18.8)</u>	<u>\$ (2.6)</u>	<u>\$ 2.1</u>	<u>\$ (0.7)</u>
Total recognized in net periodic benefit cost and other comprehensive loss (income) (pre-tax)	<u>\$ 42.0</u>	<u>\$ (92.7)</u>	<u>\$ 2.3</u>	<u>\$ (2.9)</u>	<u>\$ 1.7</u>	<u>\$ (0.8)</u>

- (b) Accumulated losses in excess of 10% of the greater of the projected benefit obligation or the market-related value of assets will be recognized on a straight-line basis over the average remaining service period of active employees in PCA plans (which is between six and nine years) and over the average remaining lifetime of inactive participants of Boise plans (which is between 22 and 25 years), to the extent that losses are not offset by gains in subsequent years.

At December 31, 2022, the Company performed a merger of four of the Boise qualified pension plans into one qualified pension plan. As a result of this plan merger, we did not have any plans in an overfunded position for the year ended December 31, 2022.

For the years ended December 31, 2022 and 2021, the accumulated benefit obligations for the plans with obligations in excess of plan assets is \$1.1 billion and \$1.4 billion, respectively, and the pension benefit obligations for the plans with obligations in excess of plan assets is \$1.2 billion and \$1.4 billion for those same periods, respectively. Additionally, the fair value of the plan assets for the plans with obligations in excess of plan assets is \$1.1 billion and \$1.3 billion as of December 31, 2022 and 2021, respectively.

Assumptions

The following table presents the assumptions used in the measurement of our benefits obligations:

	Pension Plans			Postretirement Plans		
	December 31,			December 31,		
	2022	2021	2020	2022	2021	2020
Weighted-Average Assumptions Used to Determine Benefit Obligations at December 31:						
Discount rate	5.06 %	2.89 %	2.57 %	5.07 %	2.91 %	2.60 %
Rate of compensation increase	4.00 %	4.00 %	4.00 %	N/A	N/A	N/A
Weighted-Average Assumptions Used to Determine Net Periodic Benefit Cost for the Years Ended December 31:						
Discount rate	2.89 %	2.57 %	3.25 %	2.92 %	2.60 %	3.18 %
Expected return on plan assets	4.08 %	4.91 %	5.29 %	N/A	N/A	N/A
Rate of compensation increase	4.00 %	4.00 %	4.00 %	N/A	N/A	N/A

Discount Rate Assumption. The discount rate reflects the current rate at which the pension obligations could be settled on the measurement date: December 31. The discount rate assumption used to calculate the present value of pension and postretirement benefit obligations reflects the rates available on high-quality, fixed-income debt instruments at December 31. In all periods, the bonds included in the models reflect anticipated investments that would be made to match the expected monthly benefit payments over time. The plans' projected cash flows were duration-matched to these models to develop an appropriate discount rate.

Asset Return Assumption. The expected return on plan assets reflects the expected long-term rates of return for the categories of investments currently held in the plans as well as anticipated returns for additional contributions made in the future. The expected long-term rate of return is adjusted when there are fundamental changes in expected returns on the plan investments. The weighted-average expected return on plan assets we will use in our calculation of 2023 net periodic pension benefit cost is 5.52%.

Rate of Compensation Increase. The rate of compensation increase is determined by PCA based upon annual reviews. The compensation increase assumption is not applicable for all plans as many of our pension plans are frozen and not accruing benefits.

Health Care Cost Trend Rate Assumptions. PCA assumed health care cost trend rates for its postretirement benefits plans were as follows:

	2022	2021	2020
Health care cost trend rate assumed for next year	7.24 %	6.55 %	6.82 %
Rate to which the cost trend rate is assumed to decline (the ultimate trend rate)	4.42 %	4.50 %	4.50 %
Year that the rate reaches the ultimate trend rate	2033	2030	2029

Postretirement Health Care Plan Assumptions. For postretirement health care plan accounting, PCA reviews external data and its own historical trends for health care costs to determine the health care cost trend rate assumption.

Investment Policies and Strategies

PCA has retained the services of professional advisors to oversee pension investments and provide recommendations regarding investment strategy. PCA's overall strategy and related apportionments between equity and debt securities may change from time to time based on market conditions, external economic factors, and the funded status of the plans. The general investment objective for all of our plan assets is to optimize growth of the pension plan trust assets, while minimizing the risk of significant losses to enable the plans to satisfy their benefit payment obligations over time. The objectives take into account the long-term nature of the benefit obligations, the liquidity needs of the plans, and the expected risk/return trade-offs of the asset classes in which the plans may choose to invest. Assets of our pension plans were invested in the following classes of securities at December 31, 2022 and 2021:

	Percentage of Fair Value at December 31,	
	2022	2021
Fixed income securities	77 %	67 %
International equity securities	13 %	18 %
Domestic equity securities	9 %	13 %
Other	1 %	2 %

At December 31, 2022, the targeted investment allocations differed between the plans based on funded status. For our pension plans, the weighted average target allocation of plan assets was 79% in fixed income, 20% in equities, and 1% in other. Our retirement committee reviews the investment allocations for reasonableness at a minimum, semi-annually.

Investment securities, in general, are exposed to various risks, such as interest rate, credit, and overall market volatility risk, all of which are subject to change. Due to the level of risk associated with some investment securities, it is reasonably possible that changes in the values of investment securities will occur in the near term, and such changes could materially affect the reported amounts.

Fair Value Measurements of Plan Assets

The following tables set forth, by level within the fair value hierarchy, discussed in Note 2, Summary of Significant Accounting Policies, the pension plan assets, by major asset category, at fair value at December 31, 2022 and 2021 (dollars in millions):

Asset Category	Fair Value Measurements at December 31, 2022					Total
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Net Asset Value (NAV) (a)		
Short-term investments	\$ —	\$ 9.9	\$ —	\$ —	\$ 9.9	
<i>Common/collective trust funds:</i>						
International equities	73.3	42.4	—	16.9	132.6	
Domestic equities	—	98.2	—	—	98.2	
<i>Corporate and government bonds:</i>						
Corporate bonds	—	338.5	—	—	338.5	
Fixed income	—	282.6	—	—	282.6	
Government bonds and agencies	—	167.1	—	—	167.1	
Municipal bonds	—	21.4	—	—	21.4	
Private equity securities	—	—	—	1.0	1.0	
Total securities at fair value	\$ 73.3	\$ 960.1	\$ —	\$ 17.9	\$ 1,051.3	
Accrued income						4.0
Total fair value of plan assets						\$ 1,055.3

Asset Category	Fair Value Measurements at December 31, 2021					Total
	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Net Asset Value (NAV) (a)		
Short-term investments	\$ —	\$ 19.3	\$ —	\$ —	\$ 19.3	
<i>Common/collective trust funds:</i>						
International equities	134.4	20.1	—	90.1	244.6	
Domestic equities	—	185.7	—	—	185.7	
<i>Corporate and government bonds:</i>						
Corporate bonds	—	436.2	—	—	436.2	
Government bonds and agencies	—	320.2	—	—	320.2	
Fixed income	—	147.7	—	—	147.7	
Municipal bonds	—	24.0	—	—	24.0	
Private equity securities	—	—	1.5	—	1.5	
Total securities at fair value	\$ 134.4	\$ 1,153.2	\$ 1.5	\$ 90.1	\$ 1,379.2	
Accrued income						3.5
Total fair value of plan assets						\$ 1,382.7

- (a) In accordance with ASC 820, *Fair Value Measurement*, certain investments that do not have readily determinable fair values are measured at fair value using the net asset value (NAV) per share practical expedient and are not classified within the fair value hierarchy.

Funding and Cash Flows

PCA makes pension plan contributions that are sufficient to fund its actuarially determined costs, generally equal to the minimum amounts required by the Employee Retirement Income Security Act (ERISA). From time to time, PCA may make discretionary contributions based on the funded status of the plans, tax deductibility, income from operations, and other factors. In both 2022 and 2021, we made contributions of \$50.0 million to our qualified pension plans, and for 2020, we made contributions of \$82.5 million. We do not have a required minimum contribution amount established for 2023, but we expect to make discretionary contributions to our plans.

The following are estimated benefit payments to be paid to current plan participants by year (dollars in millions). Qualified pension benefit payments are paid from plan assets, while nonqualified pension benefit payments are paid by the Company.

	Pension Plans	Postretirement Plans
2023	\$ 63.3	\$ 0.5
2024	66.7	0.5
2025	70.0	0.5
2026	73.1	0.6
2027 - 2032	482.5	3.5

Defined Contribution Plans

Some of our employees participate in defined contribution savings plans, available to most of our salaried and hourly employees. The defined contribution plans permit participants to make contributions by salary reduction pursuant to Section 401(k) of the Code. PCA made employer-matching contributions of \$44.3 million, \$38.2 million, and \$40.8 million in 2022, 2021, and 2020, respectively. All company-matching contributions to all employees were made in cash. We expense employer matching contributions and charge dividends on shares held by the ESOP to retained earnings. Shares of company stock held by the ESOP are included in basic shares for earnings-per-share computations. At both December 31, 2022 and 2021, the ESOP held 1.2 million shares of Company stock.

Certain salaried and hourly employees that are not participating in a PCA sponsored defined benefit pension plan receive a service-related company retirement contribution to their defined contribution plan account in addition to any employer matching contribution. This contribution increases with years of service and ranges from 3% to 5% of base pay. We contributed \$43.7 million, \$46.4 million, and \$39.4 million for this retirement contribution during the years ended December 31, 2022, 2021, and 2020, respectively.

Deferred Compensation Plans

Key managers can elect to participate in a deferred compensation plan. The deferred compensation plan is unfunded; therefore, benefits are paid from our general assets. At December 31, 2022 and 2021, we had \$22.8 million and \$25.2 million, respectively, of liabilities attributable to participation in our deferred compensation plan on our Consolidated Balance Sheets.

14. Asset Retirement Obligations

Our asset retirement obligations relate predominantly to landfill closure, wastewater treatment pond dredging, closed-site monitoring costs, and certain leasehold improvements. In accordance with ASC 410, *Asset Retirement and Environmental Obligations*, we recognize the fair value of these liabilities as an asset retirement obligation and capitalize that cost as part of the cost basis of the related asset in the period in which the costs are incurred if sufficient information is available to reasonably estimate the fair value of the obligation. Fair value estimates are determined using Level 3 inputs in the fair value hierarchy. The fair value of our asset retirement obligations is measured using expected future cash outflows discounted using the Company's credit-adjusted risk-free interest rate. Over time, the liability is accreted to its settlement value, and the capitalized cost is depreciated over the useful life of the related asset. These liabilities are based on the best estimate of costs and are updated periodically to reflect current technology, laws and regulations, inflation, and other economic factors. Occasionally, we become aware of events or circumstances that require us to revise our future estimated cash flows. When revisions become necessary, we recalculate our obligation and adjust our asset and liability accounts utilizing appropriate discount rates. No assets are legally restricted for purposes of settling asset retirement obligations. Upon settlement of the liability, we will recognize a gain or loss for any difference between the settlement amount and the liability recorded.

The following table describes changes to the asset retirement obligation liability (dollars in millions):

	Year Ended December 31,	
	2022	2021
Asset retirement obligation at beginning of period	\$ 29.4	\$ 31.8
Accretion expense	1.3	1.2
Liabilities incurred	—	1.0
Payments	(0.3)	(0.1)
Revisions in estimated cash flows (a)	(0.2)	(4.5)
Asset retirement obligation at end of period	<u>\$ 30.2</u>	<u>\$ 29.4</u>

(a) For 2021, primarily consists of an asset retirement adjustment of \$4.2 million related to the San Lorenzo, California facility closure.

We have additional asset retirement obligations with indeterminate settlement dates. The fair value of these asset retirement obligations cannot be estimated due to the lack of sufficient information to estimate the settlement dates of the obligations. These asset retirement obligations include, for example, (i) removal and disposal of potentially hazardous materials related to equipment and/or an operating facility if the equipment and/or facilities were to undergo major maintenance, renovation, or demolition and (ii) storage sites or owned facilities for which removal and/or disposal of chemicals and other related materials are required if the operating facility is closed. We will recognize a liability in the period in which sufficient information becomes available to reasonably estimate the fair value of these obligations.

15. Share-Based Compensation

The Company has a long-term equity incentive plan, which allows for grants of restricted stock, performance awards, stock appreciation rights, and stock options to directors, officers, and employees, as well as others who engage in services for PCA. On February 25, 2020, our board of directors approved, and, on May 5, 2020, our stockholders approved, the amendment and restatement of the plan. The amendment extended the plan's term to May 5, 2030 and increased the number of shares of common stock available for issuance under the plan by 1.4 million shares. The total number of shares authorized for past and future awards is 12.0 million shares.

As of December 31, 2022, assuming performance units are paid out at the target level of performance, 1.0 million shares were available for future grants under the current plan. Forfeitures are added back to the pool of shares of common stock available to be granted at a future date.

Restricted Stock

Restricted stock awards granted to officers and employees generally vest at the end of a four-year period, and restricted stock awards granted to directors vest immediately. A summary of the Company's restricted stock activity follows:

	2022		2021		2020	
	Shares	Weighted Average Grant- Date Fair Value	Shares	Weighted Average Grant- Date Fair Value	Shares	Weighted Average Grant- Date Fair Value
Restricted stock at January 1	651,448	\$ 109.16	669,102	\$ 102.55	716,952	\$ 94.50
Granted	175,047	145.63	173,970	134.10	204,960	94.25
Vested (a)	(153,171)	115.33	(182,779)	108.59	(244,823)	72.11
Forfeitures	(17,410)	120.68	(8,845)	111.73	(7,987)	99.94
Restricted stock at December 31	<u>655,914</u>	<u>\$ 117.14</u>	<u>651,448</u>	<u>\$ 109.16</u>	<u>669,102</u>	<u>\$ 102.55</u>

(a) The total fair value of awards upon vesting for the years ended December 31, 2022, 2021, and 2020 was \$21.8 million, \$24.8 million, and \$23.6 million, respectively.

Performance Units

Performance unit awards granted to certain officers are earned based on the achievement of defined performance rankings of Return on Invested Capital (ROIC) or Total Shareholder Return (TSR) compared to ROIC and TSR for peer companies. ROIC performance unit awards vest four years after the grant date, while TSR performance unit awards vest approximately three years after the grant date. Both ROIC and TSR performance units are paid out entirely in shares of the Company's common stock. A summary of the Company's performance unit activity follows:

	2022		2021		2020	
	Units	Weighted Average Grant-Date Fair Value	Units	Weighted Average Grant-Date Fair Value	Units	Weighted Average Grant-Date Fair Value
Performance units at January 1	358,092	\$ 105.38	357,417	\$ 103.63	323,147	\$ 96.56
Granted	133,017	148.71	95,236	140.47	111,287	99.20
Vested (b)	(132,404)	136.62	(74,894)	134.53	(77,017)	67.57
Forfeitures	(256)	145.26	(19,667)	132.58	—	—
Performance units at December 31	358,449	\$ 109.89	358,092	\$ 105.38	357,417	\$ 103.63

- (b) The total fair value of awards upon vesting, including dividends, for the years ended December 31, 2022, 2021, and 2020 was \$19.7 million, \$11.0 million, and \$8.5 million, respectively. Upon vesting of the awards in 2022, 2021, and 2020, PCA issued 144,193 shares, 81,577 shares, and 86,015 shares, respectively. For 2022, 2021, and 2020, these amounts included 11,789 shares, 6,683 shares, and 8,998 shares, respectively, for dividends accrued during the vesting period.

Compensation Expense

Our share-based compensation expense is recorded in "Cost of sales" and "Selling, general, and administrative expenses" Compensation expense for share-based awards recognized in the Consolidated Statements of Income, net of forfeitures was as follows (dollars in millions):

	Year Ended December 31,		
	2022	2021	2020
Restricted stock	\$ 22.5	\$ 23.0	\$ 20.1
Performance units	13.1	12.5	9.9
Impact on income before income taxes	35.6	35.5	30.0
Income tax benefit	(8.9)	(8.9)	(7.6)
Impact on net income	\$ 26.7	\$ 26.6	\$ 22.4

The fair value of restricted stock is determined based on the closing price of the Company's stock on the grant date. Compensation expense, net of estimated forfeitures, is recorded over the requisite service period. As PCA's Board of Directors has the ability to accelerate the vesting of these awards upon an employee's retirement, the Company accelerates the recognition of compensation expense for certain employees approaching normal retirement age.

For performance unit awards made in 2022, 2021, and 2020, in terms of grant date value, 50% used total shareholder return (TSR) as the performance measure and 50% used return on invested capital (ROIC) as the performance measure. All units awarded before 2018 used ROIC as the performance measure. The ROIC component of performance unit awards is valued based on the closing price of the stock on the grant date. As the ROIC component contains a performance condition, compensation expense, net of estimated forfeitures, is recorded over the requisite service period based on the most probable number of awards expected to vest. The TSR component of performance unit awards is valued using a Monte Carlo simulation as the TSR component contains a market condition. The Monte Carlo simulation estimates the fair value of the TSR component based on the expected term of the award, a risk-free interest rate, expected dividends, and expected volatility of the Company's common stock and the common stock of the peer companies. Compensation expense is recorded ratably over the expected term of the award.

The unrecognized compensation expense for all share-based awards was as follows (dollars in millions):

	December 31, 2022	
	Unrecognized Compensation Expense	Remaining Weighted Average Recognition Period (in years)
Restricted stock	\$ 27.3	2.4
Performance units	19.7	2.2
Total unrecognized share-based compensation expense	\$ 47.0	2.3

We evaluate share-based compensation expense on a quarterly basis based on our estimate of expected forfeitures, review of recent forfeiture activity, and expected future turnover. We recognize the effect of adjusting the forfeiture rate for all expense amortization in the period that we change the forfeiture estimate. The effect of forfeiture adjustments was insignificant in all periods presented.

16. Stockholders' Equity

Dividends

During the year ended December 31, 2022, we paid \$420.3 million of dividends to shareholders. On December 8, 2022, PCA's Board of Directors declared a regular quarterly cash dividend of \$1.25 per share of common stock, which was paid on January 13, 2023 to shareholders of record as of December 19, 2022. The dividend payment was \$112.1 million.

On May 18, 2022, PCA announced an increase of its quarterly cash dividend on its common stock from an annual rate of \$4.00 per share to \$5.00 per share. The first quarterly dividend of \$1.25 per share was paid on July 15, 2022 to shareholders of record as of June 15, 2022. The dividend payment was \$117.1 million.

Share Repurchase Program

On January 26, 2022, PCA announced that its Board of Directors authorized the repurchase of an additional \$1 billion of the Company's outstanding common stock. At the time of the announcement, there was no remaining authority under previously announced programs. Repurchases may be made from time to time in open market or privately negotiated transactions in accordance with applicable securities regulations. The timing and amount of repurchases will be determined by the Company in its discretion based on factors such as PCA's stock price and market and business conditions.

During the third and fourth quarters of 2022, we paid \$522.6 million, including fees, to repurchase 4.0 million shares of common stock. All shares repurchased have been retired. At December 31, 2022, \$477.5 million of the authorized amount remained available for repurchase of the Company's common stock.

During 2021, we paid \$193.0 million, including fees, to repurchase 1.4 million shares of common stock. The Company did not repurchase any shares of its common stock during the year ended December 31, 2020.

Accumulated Other Comprehensive Income (Loss)

Changes in AOCI, net of taxes, by component follows (dollars in millions). Amounts in parentheses indicate losses.

	Foreign Currency Translation Adjustments	Unrealized Loss on Foreign Exchange Contracts	Unrealized (Loss) Gain on Marketable Debt Securities	Unfunded Employee Benefit Obligations	Total
Balance at January 1, 2021	\$ (0.4)	\$ (0.2)	\$ 0.3	\$ (144.2)	\$ (144.5)
Other comprehensive income before reclassifications	—	—	(0.5)	59.4	58.9
Amounts reclassified from AOCI	0.4	—	—	10.0	10.4
Net current-period other comprehensive income (loss)	0.4	—	(0.5)	69.4	69.3
Balance at December 31, 2021	\$ —	\$ (0.2)	\$ (0.2)	\$ (74.8)	\$ (75.2)
Other comprehensive income before reclassifications	—	—	(1.7)	(30.2)	(31.9)
Amounts reclassified from AOCI	—	—	—	4.7	4.7
Net current-period other comprehensive income (loss)	—	—	(1.7)	(25.5)	(27.2)
Balance at December 31, 2022	\$ —	\$ (0.2)	\$ (1.9)	\$ (100.3)	\$ (102.4)

The following table presents information about reclassifications out of AOCI (dollars in millions). Amounts in parentheses indicate expenses in the Consolidated Statements of Income.

Details about AOCI Components	Amounts Reclassified from AOCI Year Ended December 31,		
	2022	2021	
Unfunded employee benefit obligations (a)			
Amortization of prior service costs	\$ (3.2)	\$ (3.4)	
Amortization of actuarial gains / (losses)	(3.0)	(9.9)	
	(6.2)	(13.3)	Total before tax
	1.5	3.3	Tax benefit
	\$ (4.7)	\$ (10.0)	Net of tax

(a) These AOCI components are included in the computation of net pension and postretirement benefit costs. See Note 13, Employee Benefit Plans and Other Postretirement Benefits, for additional information.

17. Concentrations of Risk

ODP Corporation ("ODP"), formerly Office Depot Inc., along with its subsidiaries and affiliates, is our largest customer in the Paper segment. Our Paper segment has had a long-standing commercial and contractual relationship with ODP. This relationship exposes us to a significant concentration of business and financial risk. Our sales to ODP represented approximately 4% of our total Company sales for both 2022 and 2021 and about 48% and 51% of our Paper segment sales revenue for those periods, respectively. At December 31, 2022 and 2021, we had \$52.4 million and \$49.8 million of accounts receivable due from ODP, respectively, which represents approximately 5% and 4% of our total Company receivables, respectively.

In 2022, sales to ODP represented about 48% of our Paper segment sales. If these sales are reduced, we would need to find new customers. We may not be able to fully replace any lost sales, and any new sales may be at lower prices or higher costs. Any significant deterioration in the financial condition of ODP affecting its ability to pay or any other change that affects its willingness to purchase our products will harm our business and results of operations.

Labor

At December 31, 2022, we had approximately 15,100 employees and approximately 43% of these employees worked pursuant to collective bargaining agreements. Approximately 61% of our hourly employees worked pursuant to collective bargaining agreements. The majority of our unionized employees are represented by the United Steel Workers (USW), the International Brotherhood of Teamsters (IBT), the International Association of Machinists (IAM), and the Association of Western Pulp and Paper Workers (AWPPW). Of the employees who work pursuant to collective bargaining agreements, approximately 29% work pursuant to collective bargaining agreements that will expire within the next twelve months.

18. Transactions With Related Parties

Louisiana Timber Procurement Company, L.L.C. (LTP) is a variable-interest entity that is 50% owned by PCA and 50% owned by Boise Cascade Company (Boise Cascade). LTP procures sawtimber, pulpwood, residual chips, and other residual wood fiber to meet the wood and fiber requirements of PCA and Boise Cascade in Louisiana. PCA is the primary beneficiary of LTP and has the power to direct the activities that most significantly affect the economic performance of LTP. Therefore, we consolidate 100% of LTP in our financial statements in our Corporate and Other segment. The carrying amounts of LTP's assets and liabilities (which relate primarily to non-inventory working capital items) on our Consolidated Balance Sheets were \$2.2 million at December 31, 2022 and \$3.5 million at December 31, 2021. For 2022, 2021, and 2020, we recorded \$85.5 million, \$84.4 million, and \$70.6 million, respectively, of LTP sales to Boise Cascade in "Net Sales" in the Consolidated Statements of Income and approximately the same amount of expenses in "Cost of Sales".

Fiber purchases from related parties were \$13.5 million for both 2022 and 2021 and \$12.6 million for 2020. Most of these purchases related to chip and log purchases by LTP from Boise Cascade's wood products business. These purchases are recorded in "Cost of Sales" in the Consolidated Statements of Income.

19. Segment Information

We report our business in three reportable segments: Packaging, Paper, and Corporate and Other. These segments represent distinct businesses that are managed separately because of differing products and services. Each of these businesses requires distinct operating and marketing strategies.

Before October 2020, our Jackson, Alabama mill had historically operated as a UFS mill, with its results of operations reported in our Paper segment. Beginning in October 2020, operating results for the Jackson mill are included in both the Packaging and Paper segments. During the fourth quarter of 2020, in order to meet strong packaging demand and maintain appropriate inventory levels, we temporarily began producing linerboard on the No. 3 machine at our Jackson, Alabama mill. In the first quarter of 2021, we announced the discontinuation of production of uncoated freesheet paper grades on the machine and the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities.

Packaging. We manufacture and sell a wide variety of containerboard and corrugated packaging products, including conventional shipping containers used to protect and transport manufactured goods, multi-color boxes and displays with strong visual appeal that help to merchandise the packaged product in retail locations. In addition, we are a large producer of packaging for meat, fresh fruit and vegetables, processed food, beverages, and other industrial and consumer products.

Paper. We manufacture and sell a range of communication-based papers. Our papers can be manufactured as either commodity papers or specialty papers with specialized or custom features, such as colors, coatings, high brightness, or recycled content.

Corporate and Other. Our Corporate and Other segment includes corporate support staff services and related assets and liabilities, and foreign exchange gains and losses. This segment also includes transportation assets, such as rail cars and trucks, which we use to transport our products from some of our manufacturing sites and assets related to LTP. See Note 18, Transactions with Related Parties, for more information related to LTP. Sales in this segment relate primarily to LTP and our rail and truck business. We provide transportation services not only to our own facilities but also, on a limited basis, to third parties when geographic proximity and logistics are favorable. Rail cars and trucks are generally leased.

Each segment's profits and losses are measured on operating profits before interest expense, net and other and income taxes. For many of these allocated expenses, the related assets and liabilities remain in the Corporate and Other segment.

Segment sales to external customers by product line were as follows (dollars in millions):

	Year Ended December 31,		
	2022	2021	2020
Packaging	\$ 7,780.7	\$ 7,052.6	\$ 5,919.5
Paper	622.1	599.7	674.8
Corporate and Other	75.2	78.0	63.9
	<u>\$ 8,478.0</u>	<u>\$ 7,730.3</u>	<u>\$ 6,658.2</u>

Sales to foreign unaffiliated customers during the years ended December 31, 2022, 2021, and 2020 were \$512.9 million, \$497.8 million, and \$318.7 million, respectively. At December 31, 2022 and 2021, we did not have any significant long-lived assets held by foreign operations.

An analysis of operations by reportable segment is as follows (dollars in millions):

Year Ended December 31, 2022	Sales, net			Operating Income (Loss)	Depreciation, Amortization, and Depletion	Capital Expenditures (j)	Assets
	Trade	Inter- segment	Total				
Packaging	\$ 7,760.7	\$ 20.0	\$ 7,780.7	\$ 1,423.7	(a) \$ 420.2	\$ 753.5	\$ 6,986.5
Paper	622.1	—	622.1	103.0	(b) 26.1	14.1	403.1
Corporate and Other	95.2	148.2	243.4	(106.0)	10.5	56.6	614.2
Intersegment eliminations	—	(168.2)	(168.2)	—	—	—	—
	<u>\$ 8,478.0</u>	<u>\$ —</u>	<u>\$ 8,478.0</u>	1,420.7	<u>\$ 456.8</u>	<u>\$ 824.2</u>	<u>\$ 8,003.8</u>
Non-operating pension income				14.5			
Interest expense, net				(70.4)			
Income before taxes				<u>\$ 1,364.8</u>			

Year Ended December 31, 2021	Sales, net			Operating Income (Loss)	Depreciation, Amortization, and Depletion	Capital Expenditures (j)	Assets
	Trade	Inter- segment	Total				
Packaging	\$ 7,036.2	\$ 16.4	\$ 7,052.6	\$ 1,306.0 (c)	\$ 381.0	\$ 562.5	\$ 6,603.3
Paper	599.6	0.1	599.7	39.1 (d)	27.4	30.1	398.9
Corporate and Other	94.5	135.9	230.4	(103.7) (e)	9.1	12.5	834.6
Intersegment eliminations	—	(152.4)	(152.4)	—	—	—	—
	<u>\$ 7,730.3</u>	<u>\$ —</u>	<u>\$ 7,730.3</u>	1,241.4	<u>\$ 417.5</u>	<u>\$ 605.1</u>	<u>\$ 7,836.8</u>
Non-operating pension income				19.7			
Interest expense, net				(152.4) (f)			
Income before taxes				<u>\$ 1,108.7</u>			

Year Ended December 31, 2020	Sales, net			Operating Income (Loss)	Depreciation, Amortization, and Depletion	Capital Expenditures (j)	Assets
	Trade	Inter- segment	Total				
Packaging	\$ 5,901.7	\$ 17.8	\$ 5,919.5	\$ 829.5 (g)	\$ 365.2	\$ 394.8	\$ 5,744.0
Paper	674.7	0.1	674.8	(20.0) (h)(i)	36.5	20.1	497.2
Corporate and Other	81.8	131.3	213.1	(85.6)	8.3	6.3	1,192.0
Intersegment eliminations	—	(149.2)	(149.2)	—	—	—	—
	<u>\$ 6,658.2</u>	<u>\$ —</u>	<u>\$ 6,658.2</u>	723.9	<u>\$ 410.0</u>	<u>\$ 421.2</u>	<u>\$ 7,433.2</u>
Non-operating pension income				2.3			
Interest expense, net				(93.5)			
Income before taxes				<u>\$ 632.7</u>			

(a) Includes the following:

- \$5.3 million of charges related to the announced discontinuation of production of UFS paper grades on the No. 3 machine at the Jackson, Alabama mill associated with the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities.
- \$0.7 million of charges consisting of closure costs partially offset by insurance proceeds received for a natural disaster at one of the corrugated products facilities, a gain on sale of assets related to a corrugated products facility, and a favorable lease buyout for a closed corrugated products facility.
- \$1.0 million of income from a favorable inventory adjustment related to the December 2021 Advance Packaging Corporation acquisition, partially offset by acquisition and integration related costs.

(b) Includes \$8.8 million of charges related to the announced discontinuation of production of UFS paper grades on the No. 3 machine at the Jackson, Alabama mill associated with the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities.

(c) Includes the following:

- \$4.3 million of charges related to the announced discontinuation of UFS paper grades on the No. 3 machine at the Jackson, Alabama mill in the first quarter of 2021 associated with the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities.
- \$2.8 million of income primarily consisting of an adjustment of the required asset retirement obligation related to the 2020 closure of the San Lorenzo, California facility, a gain on sale of corrugated products facilities, and insurance proceeds received for a natural disaster at one of the corrugated products facilities, partially offset by closure costs related to corrugated products facilities.
- \$0.4 million of charges for acquisition and integration costs related to the December 2021 Advance Packaging Corporation acquisition.

(d) Includes \$9.3 million of charges related to the announced discontinuation of UFS paper grades on the No. 3 machine at the Jackson, Alabama mill in the first quarter of 2021 associated with the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities.

(e) Includes the following:

- \$0.8 million of income related to a gain on sale of transportation assets.
- \$0.5 million of charges for acquisition and integration costs related to the December 2021 Advance Packaging Corporation acquisition.
- \$0.4 million of charges related to the announced discontinuation of UFS paper grades on the No. 3 machine at the Jackson, Alabama mill in the first quarter of 2021 associated with the permanent conversion of the machine to produce linerboard and other paper-to-containerboard conversion related activities.

- (f) Includes \$58.9 million of costs related to the Company's debt refinancing completed in October 2021, which included a redemption premium and the write-off of the remaining balance of unamortized debt issuance costs.
- (g) Includes the following:
- \$27.3 million of closure costs related to corrugated products facilities, substantially all of which relates to the previously announced closure of the San Lorenzo, California facility during the second quarter of 2020, partially offset by income related to the sale of a corrugated products facility during the second quarter of 2020.
 - \$10.0 million of charges related to the impact of Hurricane Laura at our DeRidder, Louisiana mill, including unabsorbed costs related to lost production, excess purchased containerboard and freight costs, repair expenses, rental and supplies costs, and other recovery expenses.
 - \$6.3 million of incremental, out-of-pocket costs related to COVID-19, including supplies, cleaning and sick pay. Beginning in July 2020, all corresponding COVID-19 related expenses were included in normalized costs.
- (h) Includes the following:
- \$0.8 million of restructuring costs for paper administrative functions.
 - \$0.6 million incremental, out-of-pocket costs related to COVID-19, including supplies, cleaning and sick pay. Beginning in July 2020, all corresponding COVID-19 related expenses were included in normalized costs.
- (i) During the second quarter of 2020, with the exacerbated deterioration in uncoated freesheet market conditions and the estimated impact on our Paper reporting unit arising from the COVID-19 pandemic, as well as projected future results of operations, we identified a triggering event indicating possible impairment of goodwill within our Paper reporting unit. The Company performed an interim quantitative impairment analysis as of May 31, 2020, and, based on the evaluation performed, we determined that goodwill was fully impaired for the Paper reporting unit and recognized a non-cash impairment charge of \$55.2 million.
- (j) Includes "Additions to property, plant, and equipment" and excludes cash used for "Acquisition of business, net of cash acquired" as reported on our Consolidated Statements of Cash Flows.

20. Commitments, Guarantees, Indemnifications, and Legal Proceedings

We have financial commitments and obligations that arise in the ordinary course of our business. These include long-term debt (discussed in Note 11, Debt), lease obligations (discussed in Note 3, Leases), capital additions, purchase commitments for goods and services, and legal proceedings (discussed below).

Capital Additions

The Company had approved capital projects with future spending of \$758.4 million and \$784.9 million as of December 31, 2022 and 2021, respectively, in connection with the expansion and replacement of existing facilities and equipment.

Purchase Commitments

In the table below, we set forth our enforceable and legally binding purchase obligations as of December 31, 2022. These obligations relate to various purchase agreements for items such as minimum amounts of energy, fiber, and chemical purchases over periods ranging from one year to 28 years. Some of the amounts are based on management's estimates and assumptions about these obligations, including their duration, the possibility of renewal, anticipated actions by third parties, and other factors. Because these estimates and assumptions are necessarily subjective, our actual payments may vary from those reflected in the table. Total purchase commitments were as follows (dollars in millions):

2023	\$	59.6
2024		50.8
2025		37.3
2026		27.8
2027		28.4
Thereafter		71.6
Total	\$	275.5

The Company purchased a total of \$520.5 million, \$360.8 million, and \$317.6 million during the years ended December 31, 2022, 2021, and 2020, respectively, under these purchase agreements.

Environmental Matters

The potential costs for various environmental matters are uncertain due to such factors as the unknown magnitude of possible cleanup costs, the complexity and evolving nature of governmental laws and regulations and their interpretations, and the timing, varying costs and effectiveness of alternative cleanup technologies. From 2006 through 2022, there were no significant environmental remediation costs at PCA's mills and corrugated plants. At December 31, 2022, the Company had \$25.2 million of environmental-related reserves recorded on its Consolidated Balance Sheet. Of the \$25.2 million, approximately \$17.8 million related to environmental-related asset retirement obligations discussed in Note 14, Asset Retirement Obligations, and \$7.4 million related to our estimate of other environmental contingencies. The Company recorded \$4.1 million in "Accrued liabilities" and \$21.1 million in "Other long-term liabilities" on the Consolidated Balance Sheet. Liabilities recorded for environmental contingencies are estimates of the probable costs based upon available information and assumptions. Because of these uncertainties, PCA's estimates may change. The Company believes that it is not reasonably possible that future environmental expenditures for remediation costs and asset retirement obligations above the \$25.2 million accrued as of December 31, 2022 will have a material impact on its financial condition, results of operations, or cash flows.

Guarantees and Indemnifications

We provide guarantees, indemnifications, and other assurances to third parties in the normal course of our business. These include tort indemnifications, environmental assurances, and representations and warranties in commercial agreements. At December 31, 2022, we are not aware of any material liabilities arising from any guarantee, indemnification, or financial assurance we have provided. If we determined such a liability was probable and subject to reasonable determination, we would accrue for it at that time.

DeRidder Mill Incident

On February 8, 2017, a tank located in the pulp mill at the Company's DeRidder, Louisiana facility exploded, resulting in three contractor fatalities and other injuries. The Company has been served with multiple lawsuits involving the decedents and other allegedly injured parties, alleging negligence on the part of the Company and claiming compensatory and punitive damages. The Company is vigorously defending these lawsuits. The Company believes that these suits are covered by its liability insurance policies, subject to an aggregate \$1.0 million deductible, which has been satisfied in full as a result of settlement of various lawsuits and fees and expenses incurred by the Company. Cases involving nine plaintiffs are pending in the U.S. District Court for the Middle District of Louisiana and one case remains pending in state court in Alabama. One case previously dismissed by the federal district court for the Western District of Louisiana was appealed by the plaintiff to the United States Court of Appeals for the Fifth Circuit, which affirmed such dismissal. The remaining lawsuits pending in federal district court and state court are in the early stages. Accordingly, the Company is unable to estimate a range of reasonable possible losses at this time.

The Company has cooperated with investigations from the U.S. Occupational Health and Safety Administration ("OSHA"), the U.S. Chemical Safety Board ("CSB") and the U.S. Environmental Protection Agency ("EPA"). The U.S. Chemical Safety Board completed its investigation and issued its report during the second quarter of 2018. The Company settled with OSHA during the second quarter of 2018 and paid approximately \$40,000 in penalties for citations.

In May 2017, the EPA conducted an on-site inspection of the facility to assess compliance with the Clean Air Act, Risk Management Program ("RMP"). The Company provided additional information to the EPA promptly after the inspection to address certain areas of concern ("AOCs") observed during the inspection. Since the inspection in 2017, PCA performed several voluntary activities to address the AOCs presented in the EPA's inspection report and has removed the RMP covered process from the facility. In January 2021, the EPA and U.S. Department of Justice ("DOJ") initiated civil judicial enforcement discussions with PCA. During the third quarter of 2022, we reached a settlement with the agencies, resulting in an agreed civil penalty of \$2.5 million. The Company did not admit liability for violation of the Clean Air Act in connection with the settlement. The settlement was approved by the federal district court for the Western District of Louisiana in December 2022, and the agreed civil penalty was paid out in January 2023.

Legal Proceedings

We are also a party to various legal actions arising in the ordinary course of our business. These legal actions include commercial liability claims, premises liability claims, and employment-related claims, among others. As of the date of this filing, we believe it is not reasonably possible that any of the legal actions against us will, either individually or in the aggregate, have a material adverse effect on our financial condition, results of operations, or cash flows.

Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

Item 9A. CONTROLS AND PROCEDURES

Controls and Procedures

PCA maintains disclosure controls and procedures (as defined in Rule 13a-15(e) of the Securities Exchange Act of 1934) that are designed to provide reasonable assurance that information required to be disclosed in PCA's filings under the Securities Exchange Act is recorded, processed, summarized and reported within the periods specified in the rules and forms of the SEC and that such information is accumulated and communicated to PCA's management, including its Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Prior to filing this report, PCA completed an evaluation under the supervision and with the participation of PCA's management, including PCA's Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of PCA's disclosure controls and procedures as of December 31, 2022. The evaluation of PCA's disclosure controls and procedures included a review of the controls' objectives and design, PCA's implementation of the controls and the effect of the controls on the information generated for use in this report. Based on this evaluation, PCA's Chief Executive Officer and Chief Financial Officer concluded that PCA's disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2022.

During the quarter ended December 31, 2022, there were no changes to internal controls over financial reporting that have materially affected, or are reasonably likely to materially affect, PCA's internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

PCA's management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). 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. 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 Company's assets; (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 are being made only with proper authorizations; 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, PCA's internal control over financial reporting may not prevent or detect misstatements. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that objectives of the control system are met. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls become inadequate because of changes in conditions, or that the degree of compliance with the policies and procedures may deteriorate.

PCA's management, under the supervision of and with the participation of the Chief Executive Officer and Chief Financial Officer, assessed the Company'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 (COSO). Based on this assessment, PCA's management concluded that its internal control over financial reporting was effective as of December 31, 2022 based on the specified criteria.

KPMG LLP, the independent registered public accounting firm that audited PCA's financial statements included in this Form 10-K, has also audited the effectiveness of the Company's internal control over financial reporting. Their attestation report precedes PCA's audited financial statements included elsewhere in this report.

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

Information regarding PCA's executive officers required by this Item 10 is set forth in Item 1 of Part I of this report under the caption "Executive Officers of the Registrant."

The following information required by this Item 10 will be included in PCA's Proxy Statement for the 2023 Annual Meeting of Stockholders and is incorporated by reference herein:

- Information regarding PCA's directors included under the caption "Election of Directors"
- Information regarding PCA's Audit Committee and financial experts included under the caption "Election of Directors - Audit Committee"
- Information regarding PCA's codes of ethics included under the caption "Election of Directors - Code of Ethics"
- Information regarding PCA's stockholder nominating procedures included under the captions "Election of Directors - Nominating and Governance Committee," "Other Information - Recommendations for Board - Nominated Director Nominees," and "Other Information - Procedures for Nominating Directors or Bringing Business Before the 2023 Annual Meeting"
- Information regarding compliance with Section 16(a) of the Securities Exchange Act of 1934 included under the caption "Delinquent Section 16(a) Reports"

Item 11. EXECUTIVE COMPENSATION

Information with respect to executive compensation required by this Item 11 will be included in PCA's Proxy Statement under the captions "Compensation Discussion and Analysis," "Compensation Committee Report," "Executive Officer Compensation" (including all subcaptions and tables thereunder), "Director Compensation," and "Board Committees - Compensation Committee" and is incorporated herein by reference.

Item 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information with respect to security ownership of certain beneficial owners and management required by this Item 12 will be included in PCA's Proxy Statement under the caption "Ownership of Our Stock" and is incorporated herein by reference.

Authorization of Securities under Equity Compensation Plans — Securities authorized for issuance under our equity compensation plans at December 31, 2022 are as follows:

	Column		
	A	B	C
Plan Category	Number of Securities to Be Issued Upon Exercise of Outstanding Options, Warrants, and Rights (a)	Weighted Average Exercise Price of Outstanding Options, Warrants, and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column A)
Equity compensation plans approved by securityholders	—	\$ —	1,010,073
Equity compensation plans not approved by securityholders	N/A	N/A	N/A
Total	—	\$ —	1,010,073

- (a) Assumes that outstanding performance units pay out at the target level. Does not include 1,014,363 shares of unvested restricted stock and performance units granted pursuant to our Amended and Restated 1999 Long-Term Equity Incentive Plan.

Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information with respect to certain relationships and related transactions and director independence required by this Item 13 will be included in PCA's Proxy Statement under the captions "Transactions with Related Persons" and "Election of Directors - Determination of Director Independence," respectively, and is incorporated herein by reference.

Item 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information with respect to fees and services of the principal accountant required by this Item 14 will be included in PCA's Proxy Statement under the caption "Ratification of Appointment of the Independent Registered Public Accounting Firm" under the subcaptions "- Fees to the Independent Registered Public Accounting Firm" and "- Audit Committee Preapproval Policy for Audit and Non-Audit Fees" and are incorporated herein by reference.

PART IV

Item 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

- (a) The following documents are filed as a part of this report:
- (1) The financial statements listed in the “Index to Financial Statements.”
 - (2) Financial Statement Schedule.

All schedules for which provision is made in the applicable accounting regulations of the Securities and Exchange Commission are not required under the related instructions, are inapplicable or not material, or the information called for thereby is otherwise included in the financial statements or the accompanying notes to the financial statements and therefore, have been omitted.

- (3) Exhibits

Exhibit Number	Description
2.1	<u>Contribution Agreement, dated as of January 25, 1999, among Pactiv Corporation (formerly known as Tenneco Packaging Inc.) (“Pactiv”), PCA Holdings LLC (“PCA Holdings”) and Packaging Corporation of America (“PCA”). (Incorporated herein by reference to Exhibit 2.1 to PCA’s registration Statement on Form S-4, Registration No. 333-79511).</u>
2.2	<u>Letter Agreement Amending the Contribution Agreement, dated as of April 12, 1999, among Pactiv, PCA Holdings and PCA. (Incorporated herein by reference to Exhibit 2.2 to PCA’s Registration Statement on Form S-4, Registration No. 333-79511).</u>
2.3	<u>Agreement and Plan of Merger, dated September 16, 2013, between PCA, Bee Acquisition Corp. and Boise Inc. (Incorporated herein by reference to Exhibit 2.1 to PCA’s Current Report on Form 8-K filed September 17, 2013, File No. 1-15399). PCA will furnish supplementally a copy of any omitted schedule or exhibit to the SEC upon request; provided, however, that PCA may request confidential treatment pursuant to Rule 24b-2 of the Securities Exchange Act of 1934, as amended, for any schedule or exhibit so furnished.</u>
3.1	<u>Restated Certificate of Incorporation of PCA. (Incorporated herein by reference to Exhibit 3.1 to PCA’s Registration Statement on Form S-4, Registration No. 333-79511).</u>
3.2	<u>Certificate of Amendment to Restated Certificate of Incorporation of PCA. (Incorporated herein by reference to Exhibit 3.2 to PCA’s Registration Statement on Form S-4, Registration No. 333-109437).</u>
3.3	<u>Amended and Restated By-laws of PCA. (Incorporated herein by reference to Exhibit 3.1 to PCA’s Current Report on Form 8-K filed December 13, 2020, File No. 1-15399.)</u>
4.1	<u>Form of certificate representing shares of common stock. (Incorporated herein by reference to Exhibit 4.9 to PCA’s Registration Statement on Form S-1, Registration No. 333-86963).</u>
4.2	<u>Indenture, dated as of July 21, 2003, between PCA and U.S. Bank National Association. (Incorporated herein by reference to Exhibit 4.2 to PCA’s Quarterly Report on Form 10-Q for the period ended June 30, 2003, File No. 1-15399.)</u>
4.3	<u>First Supplemental Indenture, dated as of July 21, 2003, between PCA and U.S. Bank National Association. (Incorporated herein by reference to Exhibit 4.3 to PCA’s Quarterly Report on Form 10-Q for the period ended June 30, 2003, File No. 1-15399.)</u>

- 4.4 [Officers' Certificate, dated as of November 21, 2019, pursuant to Section 301 of the Indenture establishing 3.000% Senior Notes due 2029 and 4.050% Senior Notes due 2049. \(Incorporated herein by reference to Exhibit 4.1 to PCA's Current Report on Form 8-K filed November 21, 2019, File No. 1-15399.\)](#)
- 4.5 [3.000% Senior Notes due 2029. \(Incorporated herein by reference to Exhibit 4.2 to PCA's Current Report on Form 8-K filed November 21, 2019, File No. 1-15399.\)](#)
- 4.6 [4.050% Senior Notes due 2049. \(Incorporated herein by reference to Exhibit 4.3 to PCA's Current Report on Form 8-K filed November 21, 2019, File No. 1-15399.\)](#)
- 4.7 [Officers' Certificate, dated September 5, 2014, pursuant to Section 301 of the Indenture establishing 3.650% Senior Notes due 2024. \(Incorporated herein by reference to Exhibit 4.1 to PCA's Current Report on Form 8-K filed September 5, 2014, File No. 1-15399.\)](#)
- 4.8 [3.650% Senior Notes due 2024 \(Incorporated herein by reference to Exhibit 4.2 to PCA's Current Report on Form 8-K filed September 5, 2014, File No. 1-15399.\)](#)
- 4.9 [Officer's Certificate, dated December 13, 2017, pursuant to Section 301 of the Indenture establishing 2.450% Senior Notes due 2020 \(redeemed and no longer outstanding\) and 3.400% Senior Notes due 2027. \(Incorporated herein by reference to Exhibit 4.1 to PCA's Current Report on Form 8-K filed December 13, 2017, File No. 1-15399.\)](#)
- 4.10 [3.400% Senior Notes due 2027 \(Incorporated herein by reference to Exhibit 4.3 to PCA's Current Report on Form 8-K filed December 13, 2017, File No. 1-15399.\)](#)
- 4.11 [Officer's Certificate, dated September 21, 2021, pursuant to Section 301 of the Indenture establishing 3.050% Senior Notes due 2051. \(Incorporated herein by reference to Exhibit 4.1 to PCA's Current Report on Form 8-K filed September 21, 2021, File No. 1-15399.\)](#)
- 4.12 [3.050% Senior Notes due 2051 \(Incorporated herein by reference to Exhibit 4.2 to PCA's Current Report on Form 8-K filed September 21, 2021, File No. 1-15399.\)](#)
- 4.13 [Description of Common Stock. \(Incorporated herein by reference to Exhibit 4.13 to PCA's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-15399.\)](#)
- 10.1 [Credit Agreement, dated June 8, 2021 between Packaging Corporation of America and the lenders and agents named therein. \(Incorporated herein by reference to Exhibit 10.1 to PCA's Current Report on Form 8-K filed June 11, 2021, File No. 1-15399.\)](#)
- 10.2 [Packaging Corporation of America Thrift Plan for Hourly Employees and First Amendment of Packaging Corporation of America Thrift Plan for Hourly Employees, effective February 1, 2000. \(Incorporated herein by reference to Exhibit 4.5 to PCA's Registration Statement on Form S-8, Registration No. 333-33176.\)](#)
- 10.3 [Packaging Corporation of America Retirement Savings Plan, effective February 1, 2000. \(Incorporated herein by reference to Exhibit 4.6 to PCA's Registration Statement on Form S-8, Registration No. 333-33176.\)*](#)
- 10.4 [Packaging Corporation of America Supplemental Executive Retirement Plan, as Amended and Restated Effective as of January 1, 2023.*†](#)
- 10.5 [Packaging Corporation of America Deferred Compensation Plan, as Amended and Restated Effective as of February 27, 2019. \(Incorporated herein by reference to Exhibit 10.5 to PCA's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-15399\).*](#)
- 10.6 [Amended and Restated 1999 Long-Term Equity Incentive Plan, effective as of May 5, 2020, conformed to incorporate all amendments. \(Incorporated herein by reference to Appendix A to PCA's Proxy Statement for the 2020 Annual Meeting of Stockholders\)*](#)
- 10.7 [Amended and Restated Executive Incentive Compensation Plan, effective as of December 29, 2017. \(Incorporated herein by reference to Exhibit 10.10 to PCA's Annual Report on Form 10-K for the year ended December 31, 2017, File No. 1-15399\).*](#)
- 10.8 [Trade Vendor Purchasing Agreement, dated December 6, 2019, between Boise White Paper, L.L.C. and Office Depot, Inc. \(Incorporated by reference to Exhibit 10.11 to PCA's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-15399\)**](#)

10.9	<u>Form of Return on Invested Capital Performance Unit Agreement for executive officer awards. (Incorporated by reference to Exhibit 10.2 to PCA's Quarterly Report on Form 10-Q for the period ended June 30, 2018, File No. 1-15399).</u>*
10.10	<u>Form of Total Shareholder Return Performance Unit Agreement for executive officer awards. (Incorporated by reference to Exhibit 10.3 to PCA's Quarterly Report on Form 10-Q for the period ended June 30, 2018, File No. 1-15399).</u>*
10.11	<u>Form of Restricted Stock Agreement for executive officer awards. (Incorporated by reference to Exhibit 10.1 to PCA's Quarterly Report on Form 10-Q for the period ended June 30, 2018, File No. 1-15399).</u>*
21.1	<u>Subsidiaries of the Registrant.</u>†
23.1	<u>Consent of KPMG LLP.</u>†
24.1	<u>Powers of Attorney.</u>†
31.1	<u>Certification of Chief Executive Officer, As Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</u>†
31.2	<u>Certification of Chief Financial Officer, As Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.</u>†
32	<u>Certification of Chief Executive Officer and Chief Financial Officer Pursuant to 18 U.S.C. §1350, As Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.</u>†
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because XBRL tags are embedded within the Inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

* Management contract or compensatory plan or arrangement.

** Confidential information in this exhibit has been omitted.

† Filed herewith.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrants have duly caused this report to be signed on their behalf by the undersigned, thereunto duly authorized on February 23, 2023.

Packaging Corporation of America

/s/ MARK W. KOWLZAN

Mark W. Kowlzan
Chairman of the Board and Chief Executive Officer
Principal Executive Officer

/s/ ROBERT P. MUNDY

Robert P. Mundy
Executive Vice President and Chief Financial Officer
Principal Financial Officer

/s/ PAMELA A. BARNES

Pamela A. Barnes
Senior Vice President, Finance and Controller
Principal Accounting Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below on February 23, 2023, by the following persons on behalf of the registrants and in the capacities indicated.

Signature	Capacity
<hr/> <i>/s/</i> MARK W. KOWLZAN <hr/> Mark W. Kowlzan	Chairman of the Board and Chief Executive Officer (Principal Executive Officer)
<hr/> <i>/s/</i> ROBERT P. MUNDY <hr/> Robert P. Mundy	Executive Vice President and Chief Financial Officer (Principal Financial Officer)
<hr/> <i>/s/</i> PAMELA A. BARNES <hr/> Pamela A. Barnes	Senior Vice President, Finance and Controller (Principal Accounting Officer)
<hr/> *	
<hr/> Cheryl K. Beebe	Director
<hr/> *	
<hr/> Duane Farrington	Director
<hr/> *	
<hr/> Donna A. Harman	Director
<hr/> *	
<hr/> Robert C. Lyons	Director
<hr/> *	
<hr/> Thomas P. Maurer	Director
<hr/> *	
<hr/> Samuel M. Mencoff	Director
<hr/> *	
<hr/> Roger B. Porter	Director
<hr/> *	
<hr/> Thomas S. Souleles	Director
<hr/> *	
<hr/> Paul T. Stecko	Director
<hr/> <i>/s/</i> ROBERT P. MUNDY <hr/> Robert P. Mundy <i>(Attorney-In-Fact)</i>	

PACKAGING CORPORATION OF AMERICA
SUPPLEMENTAL EXECUTIVE RETIREMENT PLAN
(As Amended and Restated Effective as of February 27, 2019)

**PACKAGING CORPORATION OF AMERICA
SUPPLEMENTAL EXECUTIVE RETIREMENT PLAN**

(As Amended and Restated Effective as of February 27, 2019)

INTRODUCTION

The Packaging Corporation of America Supplemental Executive Retirement Plan was originally established November 1, 2000 by Packaging Corporation of America and it was amended and restated effective as of January 1, 2005. The Company hereby again amends and restates the Plan as set forth herein effective as of February 27, 2019. The terms of the Plan, as set forth herein, shall not apply to any Participant of the Plan who terminated employment from the Company prior to January 1, 2005.

The Plan is an unfunded plan for the purpose of providing retirement benefits with respect to certain employees whose qualified plan benefits are limited by certain provisions in the Code. The portion of the Plan that provides for benefits limited by Section 415 of the Code is maintained as an “excess benefit plan” as described in Section 3(36) of ERISA. The other benefits provided for under the Plan are only available to a “select group of management or highly compensated employees” as determined by the Company, and the portion of the Plan providing such benefits is intended to satisfy the ERISA exemption requirements for a plan limited to such a group.

The Plan is intended to satisfy the requirements of Section 409A of the Code. Except as provided to the contrary in an Appendix to the Plan, the Company has determined that it does not wish to distinguish the treatment of benefits accrued and vested by December 31, 2004 from that of benefits accrued or vested after that date.

1. Definitions. In the case of any real or claimed ambiguity, the Plan Administrator shall determine the meaning and application of each term used herein in its sole discretion. Feminine or neuter pronouns shall be substituted for those of the masculine form, and the plural shall be substituted for the singular, in any place or places herein where the context may require such substitution or substitutions. _

Subject to the preceding paragraph, for purposes of the Plan, the following terms shall have the following meanings:

1.1 “**Affiliate**” means any parent, subsidiary or other entity that is directly or indirectly controlled by, or controls, the Company, and any entity that is directly or indirectly controlled by the Company’s parent.

1.2 “**Board**” means the Company’s Board of Directors.

1.3 “**Code**” means the Internal Revenue Code of 1986, as amended. Any reference to any Code Section shall also mean any successor provision thereto.

1.4 “**Company**” means Packaging Corporation of America, a Delaware corporation, any successor thereto as provided in Section 6.14 and where applicable, any of its

Affiliates that adopt the Plan or have employees or former employees who are Participants under the Plan.

1.5 “**Compensation**” shall have the same meaning as “Covered Compensation” under the PCA Pension Plan; provided, however, Compensation shall be determined without regard to any limits under Sections 401 or 415 or any other applicable Section of the Code and shall include annual bonuses in the year paid (or the year in which such bonus would have been paid but for a deferral election) pursuant to the Packaging Corporation of America Executive Incentive Compensation Plan, or its successor, for such year. The Plan Administrator may for purposes of the Plan reduce a bonus pro-rata, as necessary, to reflect the actual number of months worked during the calendar year in which the Employment Termination Date occurs.

1.6 “**Employment Termination Date**” means, with respect to any Participant, the date on which such Participant experiences a Separation from Service.

1.7 “**ERISA**” means the Employee Retirement Income Security Act of 1974, as amended.

1.8 “**Monthly Career Average Compensation**” shall have the same meaning as “Average Monthly Covered Compensation” under the PCA Pension Plan paid by the Company to the Participant since January 1, 2000; provided, however, that the definition of Compensation used to calculate Average Monthly Covered Compensation shall be modified as set forth in Section 1.5 of the Plan.

1.9 “**Normal Retirement Date**” means, with respect to a Participant, the first of the month following the month in which the Participant attains 65.

1.10 “**Pactiv Pension Plan Benefit**” means the single life annuity at age 65 of the Participant’s benefit, if any, accrued under the Pactiv Retirement Plan as of April 30, 2004.

1.11 “**Pactiv SERP Benefit**” means the single life annuity at age 65 of the Participant’s benefit, if any, accrued under the Pactiv Corporation Supplemental Executive Retirement Plan as of April 30, 2004.

1.12 “**Participant**” means an employee of the Company or an Affiliate who has been designated to participate in the Plan by the Board or by the Chief Executive Officer of the Company. A Participant shall retain such status for purposes of the Plan until his or her Retirement Benefit has been distributed in full.

1.13 “**Participation Service**” shall have the same meaning as “Years of Participation” determined under the PCA Pension Plan.

1.14 “**PCA Pension Plan**” means the Packaging Corporation of America Pension Plan for Eligible Grandfathered Salaried Employees, as may be amended from time to time.

1.15 “**PCA Pension Plan Benefit**” means the single life annuity at age 65, if any, accrued under the PCA Pension Plan.

1.16 “**Plan**” shall mean the Packaging Corporation of America Supplemental Executive Retirement Plan as amended and restated effective as of February 27, 2019, as set forth herein and as may be amended from time to time.

1.17 “**Plan Administrator**” means the Benefits Administration Committee, as appointed by the Board.

1.18 “**Retirement Benefit**” shall mean the monthly benefit payable under Section 2.1 and any Appendix to the Plan.

1.19 “**Section 409A**” shall mean Section 409A of the Code and any applicable regulations, authority, or other guidance issued thereunder from time to time.

1.20 “**Service Ratio**” shall mean the quotient of the Participant’s Participation Service divided by 35.

1.21 “**Separation from Service**” means the Participant’s ceasing to be employed by the Company or one of its Affiliates for any reason whatsoever, whether voluntarily or involuntarily, including without limitation by reason of early retirement, normal retirement, or death, provided that transfer from the Company to one of its Affiliates or vice versa shall not be deemed a Separation from Service for purposes of this Plan. A Separation from Service shall also occur if (a) the Participant is on a leave of absence that exceeds six (6) months and the Participant does not have a statutory or contractual right of reemployment, in which case, Separation from Service shall be deemed to have occurred on the first day following the six-month period, (b) the Participant is on a leave of absence that exceeds six (6) months and the Participant’s statutory or contractual right of reemployment ends, in which case Separation from Service shall be deemed to have occurred on the first day following the end of the right of reemployment, or (c) the Company and the Participant reasonably anticipate that the level of services the Participant will perform for the Company (whether as an employee or an independent contractor) will permanently decrease to 20% or less of the average level of services performed for the Company over the preceding 36 months. Determination of whether a Separation from Service has occurred will be made subject to the facts and circumstances of each situation and will comply with Section 409A.

1.22 “**Specified Employee**” means a “specified employee” as defined in Treasury Regulation §1.409A-1(i) (or any successor regulation). For purposes of identifying Specified Employees, the specified employee identification date is December 31 of each year and the specified employee effective date is the following January 1.

1.23 “**Surviving Spouse**” shall mean an individual who is legally married to a Participant at the time of the Participant’s death and who survives the Participant for at least 30 days following the Participant’s death.

2. **Benefits.**

2.1 **Amount of Retirement Benefit.** Unless provided otherwise in an Appendix to the Plan, the Participant's Retirement Benefit under this Plan that would be payable if distribution were to commence on the Participant's Normal Retirement Date shall be equal to (i) minus (ii), where: (i) equals the product of the Participant's Monthly Career Average Compensation, multiplied by the Participant's Service Ratio, multiplied by 0.55; and (ii) equals the sum of the Participant's Pactiv Pension Plan Benefit plus the Participant's Pactiv SERP Benefit, plus the Participant's PCA Pension Plan Benefit. If the net Retirement Benefit payable under this Section 2.1 equals or is below zero, no benefit shall be payable under the Plan.

2.2 **Vesting of Retirement Benefit.** The Participant's Retirement Benefit shall be immediately vested.

2.3 **Commencement of Retirement Benefit Distribution.** Except as otherwise provided in Section 2.4, distribution of a Participant's Retirement Benefit shall commence upon the Participant's Employment Termination Date. If the Participant's distribution commences prior to age 62, the amount of the Retirement Benefit distributions shall be reduced consistent with the provisions set forth in the PCA Pension Plan.

2.4 **Distribution Restrictions.** No distribution may be made pursuant to the Plan if the Plan Administrator reasonably determines that such distribution would violate Federal securities laws or other applicable law, or violate a loan covenant or similar contractual requirement of the Company causing material harm to the Company. In any such case, distribution shall be made at the earliest date at which the Plan Administrator determines such distribution would not cause such a violation. In addition, a distribution may not be made to a Specified Employee until at least six (6) months following his or her Employment Termination Date or such other date permissible under Section 409A. Any monthly distributions that cannot be made during such time shall be accumulated and distributed at the earliest date permissible under Section 409A.

2.5 **Form of Distribution.** Distributions shall be made in the form of an annuity, as elected by the Participant from among the actuarially equivalent annuity options set forth in the PCA Pension Plan. In the absence of a valid election, distribution shall be made in the form of a single life annuity or, for married Participants, a 50% joint and survivor annuity. Notwithstanding any provision to the contrary, if the Participant's monthly Retirement Benefit is One Thousand Dollars (\$1,000) or less at the time distribution is to commence, such benefit shall be paid in the form of a lump sum. The Plan Administrator may, in its discretion, impose rules or limitations with respect to elections made under this Section 2.5, as permitted under Section 409A.

2.6 **Death Benefit.** Unless provided otherwise in an Appendix to the Plan,

(a) if a Participant dies before the full amount of his Retirement Benefit is paid, the actuarial equivalent of any remaining Retirement Benefit payable to his Surviving Spouse shall be paid to the Surviving Spouse in a lump sum as soon as practicable after the Participant's death. If the Participant has no Surviving Spouse, no further benefits will be paid from the Plan.

(b) if a Participant dies before the Participant's Employment Termination Date, the amount of the Retirement Benefit payable to the Participant's Surviving Spouse shall be calculated as if: (i) the Participant's Employment Termination Date was the date of the Participant's death, (ii) the Participant had elected a joint and 50% survivor annuity with his or her Surviving Spouse as beneficiary to commence on the Participant's Employment Termination Date and then (iii) the Participant had died on the day following the Participant's Employment Termination Date.

(c) If a Participant dies on or after the Participant's Employment Termination Date but distribution of the Participant's Retirement Benefit has not begun in accordance with Section 2.4 of the Plan, the amount of the Retirement Benefit payable to his or her Surviving Spouse shall be equal to the sum of (i) the unpaid monthly distributions for the period from the Participant's Employment Termination Date until the date of the Participant's Death and (b) the payments that were due following the Participant's death, if any, based on the form of distribution in effect upon the Participant's death.

2.7 Actuarial Equivalencies. The Plan Administrator shall determine actuarial equivalence under the Plan in the following manner:

(a) If the distribution of the Participant's Retirement Benefit commences before the Normal Retirement Date but on or after the first of the month following the month in which the Participant attains age 55, the Retirement Benefit that would otherwise be payable if distribution were to commence on the Normal Retirement Date shall be reduced by applying the early retirement factors set forth in Exhibit II of the PCA Pension Plan (the "**Early Retirement Factors**"); and

(b) If the distribution of the Participant's Retirement Benefit commences before the first of the month following the month in which the Participant attains age 55, the Retirement Benefit that would otherwise be payable if distribution were to commence on the Normal Retirement Date shall be reduced:

- (i) first, by applying the Early Retirement Factors to reduce the amount of the Retirement Benefit otherwise payable if distribution were to commence on the Normal Retirement Date to the amount that would otherwise be payable commencing on the first of the month following the month in which the Participant attains age 55 (i.e., multiply such Retirement Benefit by 64%); and
- (ii) next, by further reducing the Retirement Benefit determined in paragraph (i) above by applying the UP 1984 Unisex Mortality Table with a one year set back and an interest rate of 7.5% to reflect the commencement of distribution on the actual commencement date rather than the first of the month following the month in which the Participant attains age 55.

Notwithstanding the foregoing, for purposes of determining the amount of any lump sum payment that may be payable under the Plan, the interest rate used in determining actuarial equivalence from the date payable shall be the annual rate of interest on 30-year Treasury securities as specified by the Internal Revenue Service (“IRS”) for the second calendar month preceding the first day of the calendar year during which the annuity starting date would otherwise occur, and the applicable mortality table described in Rev. Rul. 2007-67, 2007-2 C.B. (page 1047), or in such other formal guidance as may be issued from time to time by the IRS.

2.8 Withholding. The Plan Administrator will have the power and the right to deduct or withhold, or require a Participant to remit to the Company, an amount sufficient to satisfy federal, state, and local taxes, domestic or foreign, required by law or regulation to be withheld with respect to any taxable event arising under this Plan.

3. Plan Administration and Expenses. The Plan Administrator shall administer the Plan in accordance with its terms and purposes and shall have the authority, which may be exercised in its discretion, to interpret the Plan, to make any necessary rules and regulations, and to determine benefits under the Plan; provided that, as permitted by law, the Plan Administrator may delegate some or all of its authority under the Plan. The Plan Administrator shall also be responsible for complying with statutory reporting and disclosure requirements. Any determination made by the Plan Administrator in good faith shall be binding upon the Participant, his or her Surviving Spouse and the Company.

The Plan Administrator shall not be subject to liability with respect to the administration of the Plan. The Company shall indemnify and hold harmless the Plan Administrator and each member of the Benefits Administration Committee, or any employee of the Company, or any individual acting as an employee or agent of either of them (to the extent not indemnified or saved harmless under any liability insurance or any other indemnification arrangement) from any and all claims, losses, liabilities, costs and expenses (including attorneys’ fees) arising out of any actual or alleged act or failure to act made in good faith pursuant to the provisions of the Plan, including expenses reasonably incurred in the defense of any claim relating thereto with respect to the administration of the Plan, except that no indemnification or defense shall be provided to any person with respect to any conduct that has been judicially determined, or agreed by the parties, to have constituted willful misconduct on the part of such person, or to have resulted in his or her receipt of personal profit or advantage to which he or she is not entitled. The rights of indemnification provided hereunder shall be in addition to any right to which any person concerned may otherwise be entitled by contract or as a matter of law, and shall inure to the benefit of the heirs, executors, and administrators of any such person.

The Company shall pay all expenses of the Plan.

4. Claims Procedures and Decisions of Plan Administrator. In general, distributions under this Plan are automatic and no claim for benefits need be filed. However, a Participant (or the Participant’s Surviving Spouse) may submit a claim for benefits under this Plan in writing to the Plan Administrator. The following procedure shall apply in such case:

(a) If such claim for benefits is wholly or partially denied, the Plan Administrator shall notify the claimant of the denial of the claim within a reasonable period of time, but no later than 90 days after receipt of the written claim, unless special circumstances require an extension of time for processing the claim. In such event, written notice of the extension shall be furnished to the claimant prior to the end of the 90-day period and shall indicate the special circumstances requiring the extension and the date by which a final decision is expected. In no event shall the extension period exceed 90 days from the end of the initial 90 day period. The notice of denial: (i) shall be in writing; (ii) shall be written in a manner calculated to be understood by the claimant; and (iii) shall contain (A) the specific reason or reasons for denial of the claim; (B) a specific reference to the pertinent Plan provisions upon which the denial is based; (C) a description of any additional material or information necessary for the claimant to perfect the claim; and (D) an explanation of the Plan's claims review procedure.

(b) Within 60 days of the receipt by the claimant of the written notice of denial of the claim, or if the claim has not been granted within the applicable time period, the claimant may file a written request with the Plan Administrator that it conduct a full and fair review of the denial of the claimant's claim for benefits. In connection with the claimant's appeal of the denial of his or her benefit, the claimant may review pertinent documents and may submit issues and comments in writing.

(c) The Plan Administrator shall deliver to the claimant a written decision on the claim promptly, but not later than 60 days after the receipt of the claimant's request for review, except that if there are special circumstances which require an extension of time for processing, the 60-day period shall be extended to a maximum of 120 days, in which case written notice of the extension shall be furnished to the claimant prior to the end of the 60-day period. The Plan Administrator's decision shall: (i) be written in a manner calculated to be understood by the claimant; (ii) include specific reasons for the decision; and (iii) contain specific references to the pertinent Plan provisions upon which the decision is based. If a written decision on review is not furnished to the claimant within the applicable time period, the claim shall be deemed denied on review.

5. Amendment, Suspension and Termination. Although the Company intends to maintain the Plan indefinitely, the Company reserves the right to amend or terminate the Plan, in whole or in part. Notwithstanding the foregoing, no modification of the Plan will, without the prior written consent of the Participant, alter or impair any rights or obligations under the Plan, except to the extent the Plan Administrator determines such amendment is necessary for the Plan to remain compliant with Section 409A. In addition, the Company may in its discretion terminate the Plan subject to the following:

(a) the Plan may be terminated within the 30 days preceding, or 12 months following, a change in control (as defined in Section 409A) provided that the full actuarial present value of the Retirement Benefit shall be distributed in full within 12 months after termination;

(b) the Plan may be terminated in the Company's discretion at any time provided that (1) all deferred compensation arrangements of similar type maintained by the Company are terminated, (2) the actuarial present value of the Retirement Benefit shall be

distributed in full at least 12 months and no more than 24 months after the termination, and (3) the Company does not adopt a new deferred compensation arrangement of similar type for a period of five (5) years following the termination of the Plan; and

(c) the Plan may be terminated within 12 months of a corporate dissolution taxed under Section 331 of the Code or with the approval of a bankruptcy court pursuant to 11 U.S.C. 503(b)(1)(A) provided that, subject to the Company's ability to pay benefits, the actuarial present value of the Retirement Benefit is distributed in full by the latest of the (1) the end of the calendar year of the termination, (2) the calendar year in which such Retirement Benefit is fully vested, or (3) the first calendar year in which such payment is administratively practicable.

6. General Provisions.

6.1 Nonassignability of Benefits. The benefits payable hereunder or the right to receive future benefits under the Plan may not be anticipated, alienated, pledged, encumbered, or subjected to any charge or legal process, and if any attempt is made to do so, or a person eligible for any benefit becomes bankrupt, the interest under the Plan of the person affected may be terminated by the Plan Administrator which, in its sole discretion, may cause the same to be held or applied for the benefit of one or more of the dependents of such person or make any other disposition of such benefits that it deems appropriate, in its sole discretion.

6.2 Status of Plan. The Plan shall at all times be entirely unfunded for tax purposes in that a Participant's right to receive payment of benefits hereunder from the Company shall be subject to the claims of the creditors of the Company. No Participant or any other person shall have any interest in any particular assets of the Company by reason of the right to receive a benefit under the Plan, and any such Participant or other person shall have only the rights of a general unsecured creditor of the Company with respect to any rights under the Plan.

6.3 No Guaranty of Benefits. Nothing contained in the Plan shall constitute a guaranty by the Company or any other entity or person that the assets of the Company will be sufficient to pay any benefit hereunder.

6.4 No Right to Employment or Other Benefits. Nothing contained herein shall be construed as conferring upon any Participant the right to continue in the employ of the Company. Any compensation deferred and any payments made under this Plan shall not be included in creditable compensation in computing benefits under any employee benefit plan of the Company except to the extent expressly provided for therein.

6.5 Governing Law. The provisions of this Plan shall be construed according to the laws of the State of Illinois to the extent such laws are not preempted by ERISA. In any question of interpretation or other matter of doubt, the Company and the Plan Administrator may rely upon the opinion of legal counsel.

6.6 Reliance on Documents and Instruments. The Plan Administrator may rely on any certificate, statement or other representation made on behalf of the Company, a Participant or a Surviving Spouse, which it in good faith believes to be genuine, and on any certificate,

statement, report or other representation made to it by any agent or any attorney, accountant or other expert retained by it or the Company in connection with the operation and administration of the Plan.

6.7 Information Requests. Each Participant and Surviving Spouse and the Company shall furnish to the Plan Administrator such documents, evidence, data, and other information, as the Plan Administrator considers necessary or desirable for administering the Plan. Benefits under the Plan are conditioned on a Participant's promptly furnishing full, true and complete documents, evidence, data, and other information requested by the Plan Administrator or the Company in connection with the Plan's administration.

6.8 Mistake of Fact. Any mistake of fact or misstatement of fact shall be corrected when it becomes known and proper adjustment made by reason thereof. Without limiting the prior sentence, the Plan Administrator is expressly authorized to take reasonable steps to recover mistaken overpayments from the Plan.

6.9 Severability. If any provision of the Plan is held invalid or unenforceable, its invalidity or unenforceability will not affect any other provisions of the Plan and will be construed and enforced as if such provision had not been included herein.

6.10 Plan Bifurcation. If, at any time, it is determined by a court of law or government agency that the Plan is not a plan that is maintained primarily for the purpose of providing deferred compensation for a select group of management or highly compensated employees within the meaning of Sections 201(2), 301(a)(3) and 401(a)(1) of Title I of ERISA due to the participation of one or more Participants, the Plan shall be bifurcated into two separate and distinct plans: one maintained for the benefit of Participants who are a select group of management or highly compensated employees; the other maintained for the benefit of the remaining Participants.

6.11 Inurement. The Plan shall be binding upon and inure to the benefit of the Company and its successors and assigns, and the Participant, his or her successors, heirs, executors, administrators and beneficiaries.

6.12 Notices. Any notice required or permitted to be given pursuant to the Plan shall be in writing, and shall be signed by the person giving the notice. If such notice is mailed, it shall be sent by United States first class mail, postage prepaid, addressed to such person's last known address as shown on the records of the Company. The date of such mailing shall be deemed to be the date of notice, but the notice shall not be effective until actually received. The Company or the Participant may change the address to which notice is sent by giving notice of such change in the manner above.

6.13 Unclaimed Benefit. Each Participant shall keep the Plan Administrator informed of his or her current address and the current address of his or her Surviving Spouse. The Plan Administrator shall not be obligated to search for the whereabouts of any person. The Plan Administrator is authorized to adopt procedures regarding unclaimed benefits that provide for the irrevocable forfeiture of a benefit if the Plan Administrator is unable to locate the Participant, or if

the Participant is deceased, his or her Surviving Spouse. Such procedures shall be consistent with guidance issued by the IRS.

6.14 Successors. All obligations of the Company under the Plan will be binding on any successor to the Company, whether the existence of the successor results from a direct or indirect purchase of all or substantially all of the business of the Company, or a merger, consolidation, or otherwise.

6.15 Gender and Number. Words in the masculine generally shall include the feminine gender and the singular shall include the plural, and vice versa, unless qualified by the context. Any headings used herein are included for reference only, and are not to be construed so as to alter the terms hereof.

6.16 Interpretation under Section 409A. The Plan at all times shall be operated in accordance with the requirements of Section 409A and, in the event of any inconsistency between any provision of the Plan and Section 409A, the provisions of Section 409A shall control and the provision of the Plan shall be void and without effect. In addition, any provision that is required to appear in the Plan that is not expressly set forth herein shall be deemed set forth herein, and the Plan shall be administered in all respects as if such provision were expressly set forth herein.

6.17 No Guarantee of Tax Consequences. Neither the Plan Administrator nor the Company makes any commitment or guarantee that any amounts deferred or credited hereunder will be excludable from the Participant's gross income for federal or state income tax purposes, or that any other federal or state income tax treatment will or will not apply to or be available to any Participant.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, a duly authorized officer of the Company has executed the Plan on this ____ day of _____, 2019.

PACKAGING CORPORATION OF AMERICA

By: _____

Its: _

Appendix A

Special Benefit for Paul T. Stecko

This Special Appendix sets forth certain special provisions of the Plan with respect to the benefits of Paul T. Stecko (“Stecko”).

1. Defined Terms. Unless otherwise noted, capitalized terms used in this Appendix A shall have the same meanings ascribed to them in the Plan.

2. Retirement Benefit. Notwithstanding any provision of the Plan to the contrary, Stecko’s Retirement Benefit under Section 2.1 shall be equal to the product of Stecko’s final average compensation, multiplied by his years of service, multiplied by (.0167). For purposes of this Appendix A: (i) “final average compensation” shall mean Stecko’s average base salary plus average bonus in the three of his final five years of service during which his base salary and bonus, determined independently, were highest; and (ii) “years of service” shall equal five (5) plus the elapsed time from April 12, 1999 until Stecko’s termination of service. Stecko’s Retirement Benefit shall not be reduced by his PCA Pension Plan Benefit, Pactiv Pension Plan Benefit or Pactiv SERP Benefit, and shall be nonforfeitable without regard to his reason for terminating Service. If distribution of Stecko’s Retirement Benefit commences prior to age 62, a 4% per year reduction will apply.

3. Death Benefit. Notwithstanding any provision of the Plan to the contrary, upon Stecko’s death, the actuarial equivalent of his remaining Retirement Benefit, if any shall be payable in a lump sum to (a) his Surviving Spouse, (b) if there is no Surviving Spouse, then to his living children in equal portions, or (c) if none of Stecko’s children survives him, then to his estate.

4. Form of Distribution and Permissive Election. The actuarial equivalent of Stecko’s Retirement Benefit shall be payable in the form of a lump sum upon the earliest of (i) the six-month anniversary of Stecko’s Employment Termination Date, (ii) Stecko’s death or (iii) a designated date in 2009 Stecko may designate no later than December 31, 2008 pursuant to such rules as the Company may establish. If Stecko designates a distribution date in 2009, he may accrue no additional Retirement Benefit after such distribution date.

Appendix B

Special Provisions Applicable to Thomas A. Hassfurther

This Appendix B sets forth certain special provisions of the Plan with respect to the benefits of Thomas A. Hassfurther (“**Hassfurther**”).

1. Defined Terms. Unless otherwise noted, capitalized terms used in this Appendix B shall have the same meanings ascribed to them in the Plan.

2. Participation Service. For purposes of determining Hassfurther’s Participation Service under the Plan, the maximum limit of 35 Years of Participation in the PCA Pension Plan shall be increased to a maximum limit of 45 Years of Participation. Nothing herein shall modify the definition of Service Ratio with respect to Hassfurther; thus, if Hassfurther’s Participation Service exceeds 35 Years of Participation, his Service Ratio under the Plan would exceed 1.0.

Appendix C

Special Provisions Applicable to Thomas W.H. Walton

This Appendix C sets forth certain special provisions of the Plan with respect to the benefits of Thomas W.H. Walton (“Walton”).

1. Defined Terms. Unless otherwise noted, capitalized terms used in this Appendix C shall have the same meanings ascribed to them in the Plan.

2. Participation Service. For purposes of determining Walton’s Participation Service under the Plan, the maximum limit of 35 Years of Participation in the PCA Pension Plan shall be increased to a maximum limit of 45 Years of Participation. Nothing herein shall modify the definition of Service Ratio with respect to Walton; thus, if Walton’s Participation Service exceeds 35 Years of Participation, his Service Ratio under the Plan would exceed 1.0.

Appendix D

Special Provisions Applicable to David Carmon

This Appendix D sets forth certain special provisions of the Plan with respect to the benefits of David Carmon (“**Carmon**”).

1. Defined Terms. Unless otherwise noted, capitalized terms used in this Appendix D shall have the same meanings ascribed to them in the Plan.

2. Compensation. For purposes of determining Carmon’s Compensation under the Plan, the bonus of \$85,000 paid to him in January of 2013, and the bonus of \$100,000 paid to him in January of 2014 shall be treated as bonuses paid pursuant to the Packaging Corporation of America Executive Incentive Compensation Plan. Therefore, they will be included in the calculation of his benefit from this Plan.

**FIRST AMENDMENT TO THE
PACKAGING CORPORATION OF AMERICA
SUPPLEMENTAL EXECUTIVE RETIREMENT PLAN**

(As Amended and Restated Effective as of February 27, 2019)

Pursuant to the authority set forth in Section 5 thereof, the Packaging Corporation of Supplemental Executive Retirement Plan (the “Plan”), is amended as follows:

WITNESSETH:

WHEREAS, Packaging Corporation of America, Inc. (the “Company”) maintains the Plan for the benefit of its employees who are eligible to participate therein and employees of such of its affiliated companies as are eligible to participate therein and the beneficiaries of each such employee; and

WHEREAS, the Compensation Committee of the Company authorized and approved an amendment to Appendix B of the Plan to extend the maximum level of Participation Service that may be credited towards determining the Retirement Benefit for Thomas A. Hassfurther; and

WHEREAS, the Company considers it necessary and desirable to amend the Plan to reflect such change to the Plan.

NOW THEREFORE, pursuant to the authority set forth in Section 5 of the Plan, it is hereby resolved that the Plan be, and hereby is, amended by replacing the section titled “Special Provisions Applicable to Thomas A. Hassfurther” in Appendix B of the Plan in its entirety with the following, effective as of December 1, 2022:

Appendix B

Special Provisions Applicable to Thomas A. Hassfurther

This Appendix B sets forth certain special provisions of the Plan with respect to the benefits of Thomas A. Hassfurther (“**Hassfurther**”).

1. Defined Terms. Unless otherwise noted, capitalized terms used in this Appendix B shall have the same meanings ascribed to them in the Plan.

2. Participation Service. For purposes of determining Hassfurther’s Participation Service under the Plan, the maximum limit of 35 Years of Participation in the PCA Pension Plan shall be increased to a maximum limit of 50 Years of Participation. Nothing herein shall modify the definition of Service Ratio with respect to Hassfurther; thus, if Hassfurther’s Participation Service exceeds 35 Years of Participation, his Service Ratio under the Plan would exceed 1.0.

In all other respects the Plan shall remain in full force and effect.

[Signature page to follow]

IN WITNESS WHEREOF, and as conclusive evidence of the adoption of the foregoing, Packaging Corporation of America causes these presents to be duly executed by its proper officer thereunto duly authorized this ___ day of November, 2022.

PACKAGING CORPORATION OF AMERICA

By: _____

Michelle Wojdyla

Its: Vice President, Benefits

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029329.0001:29460673.5

Subsidiaries of the Registrant *

	State or Other Jurisdiction of Incorporation or Organization
Packaging Corporation of America (100%)	Delaware
Polywoven Distributors PA, LLC (51%)	Pennsylvania
PCA International Inc. (100%)	Delaware
PCA International Services, LLC (100%)	Delaware
PCA Hydro Inc. (100%)	Delaware
Packaging Corporation of Asia, Limited (100%)	Hong Kong
PCA Texas Acquisition, LLC (100%)	Delaware
PCA Central California Corrugated, LLC (100%)	Delaware
PCA Michigan Acquisition, LLC (100%)	Delaware
Packaging Asset Holdings, LLC (100%)	Delaware
Hexacomb Corporation (100%)	Illinois
Louisiana Timber Procurement Company, LLC (50%)	Delaware
Boise White Paper, LLC (100%)	Delaware
International Falls Power Company (100%)	Delaware
Minnesota, Dakota & Western Railway Company (100%)	Minnesota
B C T, Incorporated (100%)	Delaware

* The names of some of our foreign subsidiaries have been omitted. These unnamed subsidiaries, considered in the aggregate as a single subsidiary, would not constitute a significant subsidiary, as defined in Regular S-X, Rule 1-02 (w).

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Packaging Corporation of America:

We consent to the incorporation by reference in the registration statements (No. 333-259350) on Form S-3 and (Nos. 333-202723, 333-238155, and 333-238156) on Form S-8 of our report dated February 23, 2023, with respect to the consolidated financial statements of Packaging Corporation America and the effectiveness of internal control over financial reporting.

/s/ KPMG LLP

Chicago, Illinois
February 23, 2023

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ CHERYL K. BEEBE

Cheryl K. Beebe

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ DUANE FARRINGTON

Duane Farrington

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ DONNA A. HARMAN

Donna A. Harman

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ MARK W. KOWLZAN

Mark W. Kowlzan

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ ROBERT C. LYONS

Robert C. Lyons

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ THOMAS P. MAURER

Thomas P. Maurer

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ SAMUEL M. MENCOFF

Samuel M. Mencoff

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ ROGER B. PORTER

Roger B. Porter

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ THOMAS S. SOULELES

Thomas S. Soules

SPECIAL POWER OF ATTORNEY

The undersigned constitutes and appoints Mark W. Kowlzan, Robert P. Mundy and Kent A. Pflederer, and each of them, his true and lawful attorney-in-fact and agent with full power of substitution and resubstitution, for him and in his name, place, and stead, in any and all capacities, to sign the Annual Report on Form 10-K for the fiscal year ended December 31, 2022, for filing with the Securities and Exchange Commission by Packaging Corporation of America, a Delaware corporation, together with any and all amendments to such Form 10-K, and to file the same with all exhibits thereto, and all documents in connection therewith, with the Securities and Exchange Commission, granting to such attorneys-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully and to all intents and purposes as he might or could do in person, hereby ratifying and confirming all that such attorneys-in-fact and agents, or each of them, may lawfully do or cause to be done by virtue hereof.

DATED: February 22, 2023

/s/ PAUL T. STECKO

Paul T. Stecko

**CEO CERTIFICATION PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002**

I, Mark W. Kowlzan, certify that:

- (1) I have reviewed this annual report on Form 10-K of Packaging Corporation of America (PCA);
- (2) Based on my knowledge, this annual report does not contain any untrue statement of a 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 annual report;
- (3) Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of PCA as of, and for, the periods presented in this annual report;
- (4) PCA's other certifying officer 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 PCA 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 PCA, 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 PCA'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 PCA's internal control over financial reporting that occurred during PCA's most recent fiscal quarter (PCA's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, PCA's internal control over financial reporting; and
- (5) PCA's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to PCA's auditors and the Audit Committee of PCA'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 PCA'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 PCA's internal control over financial reporting.

/s/ MARK W. KOWLZAN

Mark W. Kowlzan

Chairman of the Board and Chief Executive Officer

Date: February 23, 2023

**CFO CERTIFICATION PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002**

I, Robert P. Mundy, certify that:

- (1) I have reviewed this annual report on Form 10-K of Packaging Corporation of America (PCA);
- (2) Based on my knowledge, this annual report does not contain any untrue statement of a 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 annual report;
- (3) Based on my knowledge, the financial statements, and other financial information included in this annual report, fairly present in all material respects the financial condition, results of operations and cash flows of PCA as of, and for, the periods presented in this annual report;
- (4) PCA's other certifying officer 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 PCA 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 PCA, 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 PCA'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 PCA's internal control over financial reporting that occurred during PCA's most recent fiscal quarter (PCA's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, PCA's internal control over financial reporting; and
- (5) PCA's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to PCA's auditors and the Audit Committee of PCA'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 PCA'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 PCA's internal control over financial reporting.

/s/ ROBERT P. MUNDY

Robert P. Mundy

Executive Vice President and Chief Financial Officer

Date: February 23, 2023

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

We are providing this Certificate pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, 18 U.S.C., Section 1350. It accompanies the Annual Report on Form 10-K of Packaging Corporation of America for the year ended December 31, 2022.

I, Mark W. Kowlzan, Chief Executive Officer of Packaging Corporation of America (the “Company”), certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Annual Report of the Company on Form 10-K for the period ended December 31, 2022 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 such Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ MARK W. KOWLZAN

Mark W. Kowlzan

Chairman of the Board and Chief Executive Officer

Date: February 23, 2023

I, Robert P. Mundy, Chief Financial Officer of Packaging Corporation of America (the “Company”), certify, pursuant to 18 U.S.C. § 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) The Annual Report of the Company on Form 10-K for the period ended December 31, 2022 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 such Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

/s/ ROBERT P. MUNDY

Robert P. Mundy

Executive Vice President and Chief Financial Officer

Date: February 23, 2023
