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

FORM 10-Q

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

For the quarterly period ended June 30, 2021

or

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

For the transition period from_____to_____

Commission file number 1-15399

PACKAGING CORPORATION OF AMERICA

(Exact Name of Registrant as Specified in its Charter)

Delaware	**36-4277050**
(State or Other Jurisdiction of Incorporation or Organization)	*(I.R.S. Employer Identification No.)*
1 North Field Court, Lake Forest, Illinois	**60045**
(Address of Principal Executive Offices)	*(Zip Code)*

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

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, 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	☒	Accelerated filer	☐	Emerging growth company	☐
Non-accelerated filer	☐	Smaller reporting company	☐		

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 is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of July 30, 2021 the Registrant had outstanding 94,992,190 shares of common stock, par value $0.01 per share.

Securities registered pursuant to Section 12(b) of the Exchange 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

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All reports we file with the Securities and Exchange Commission (SEC) are available free of charge via the Electronic Data Gathering Analysis and Retrieval (EDGAR) System on the SEC website at www.sec.gov. We also provide copies of our SEC filings at no charge upon request and make electronic copies of our reports available through our website at *www.packagingcorp.com* as soon as reasonably practicable after filing such material with the SEC.

PART I
FINANCIAL INFORMATION

Item 1. ***FINANCIAL STATEMENTS***

Packaging Corporation of America

Consolidated Statements of Income and Comprehensive Income

(unaudited, dollars in millions, except per-share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2021	**2020**	**2021**	**2020**
Statements of Income:				
Net sales	$ 1,879.9	$ 1,541.6	$ 3,687.0	$ 3,250.3
Cost of sales	(1,431.1)	(1,215.8)	(2,834.5)	(2,559.6)
Gross profit	448.8	325.8	852.5	690.7
Selling, general and administrative expenses	(146.3)	(136.3)	(291.3)	(282.2)
Goodwill impairment	—	(55.2)	—	(55.2)
Other expense, net	(7.9)	(18.2)	(28.3)	(28.1)
Income from operations	294.6	116.1	532.9	325.2
Non-operating pension income	5.0	0.6	9.8	1.1
Interest expense, net	(24.9)	(25.1)	(48.4)	(44.6)
Income before taxes	274.7	91.6	494.3	281.7
Provision for income taxes	(67.4)	(34.9)	(120.5)	(83.4)
Net income	$ 207.3	$ 56.7	$ 373.8	$ 198.3
Net income per common share:				
Basic	$ 2.18	$ 0.60	$ 3.94	$ 2.09
Diluted	$ 2.17	$ 0.59	$ 3.92	$ 2.08
Dividends declared per common share	$ 1.00	$ 0.79	$ 2.00	$ 1.58
Statements of Comprehensive Income:				
Net income	$ 207.3	$ 56.7	$ 373.8	$ 198.3
Other comprehensive income, net of tax:				
Changes in unrealized gains (losses) on marketable debt securities, net of tax of $0.0 million, $0.3 million, $0.1 million, and $0.2 million	(0.1)	0.9	(0.2)	0.7
Amortization of pension and postretirement plans actuarial loss and prior service cost, net of tax of $0.8 million, $0.9 million, $1.7 million, and $1.8 million	2.5	2.7	5.0	5.4
Other comprehensive income	2.4	3.6	4.8	6.1
Comprehensive income	$ 209.7	$ 60.3	$ 378.6	$ 204.4

See accompanying condensed notes to unaudited quarterly consolidated financial statements.

Packaging Corporation of America

Consolidated Balance Sheets

(unaudited, dollars and shares in millions, except per-share data)

	June 30, 2021	December 31, 2020
ASSETS		
Current assets:		
Cash and cash equivalents	$ 972.2	$ 974.6
Short-term marketable debt securities	101.7	105.6
Accounts receivable, net of allowance for credit losses and customer deductions of $13.7 million as of June 30, 2021 and $10.6 million December 31, 2020, respectively	981.4	832.4
Inventories	827.2	787.9
Prepaid expenses and other current assets	78.6	44.7
Federal and state income taxes receivable	—	5.1
Total current assets	2,961.1	2,750.3
Property, plant, and equipment, net	3,240.5	3,193.4
Goodwill	863.5	863.5
Other intangible assets, net	277.0	295.9
Operating lease right-of-use assets	233.0	234.2
Long-term marketable debt securities	49.9	42.7
Other long-term assets	48.6	53.2
Total assets	$ 7,673.6	$ 7,433.2
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Operating lease obligations	$ 68.8	$ 68.9
Finance lease obligations	1.7	1.6
Accounts payable	405.3	387.0
Dividends payable	97.4	97.0
Accrued liabilities	231.4	216.2
Accrued interest	11.6	11.9
Federal and state income taxes payable	0.6	—
Total current liabilities	816.8	782.6
Long-term liabilities:		
Long-term debt	2,479.8	2,479.4
Operating lease obligations	172.3	173.6
Finance lease obligations	13.5	14.4
Deferred income taxes	395.7	379.4
Compensation and benefits	294.3	298.3
Other long-term liabilities	56.9	59.2
Total long-term liabilities	3,412.5	3,404.3
Commitments and contingent liabilities		
Stockholders' equity:		
Common stock, par value $0.01 per share, 300.0 million shares authorized, 95.0 million and 94.8 million shares issued as of June 30, 2021 and December 31, 2020, respectively	1.0	0.9
Additional paid in capital	574.5	554.4
Retained earnings	3,008.5	2,835.5
Accumulated other comprehensive loss	(139.7)	(144.5)
Total stockholders' equity	3,444.3	3,246.3
Total liabilities and stockholders' equity	$ 7,673.6	$ 7,433.2

See accompanying condensed notes to unaudited quarterly consolidated financial statements.

Packaging Corporation of America

Consolidated Statements of Cash Flows
(unaudited, dollars in millions)

	Six Months Ended June 30, 2021	Six Months Ended June 30, 2020
Cash Flows from Operating Activities:		
Net income	$ 373.8	$ 198.3
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation, depletion, and amortization of intangibles	205.5	208.5
Amortization of deferred financing costs	1.3	1.3
Share-based compensation expense	20.1	17.8
Deferred income tax provision	14.3	19.2
Loss on asset disposals	5.4	2.3
Goodwill impairment	—	55.2
Pension and post-retirement benefits expense, net of contributions	(0.3)	(1.1)
Other, net	4.2	14.1
Changes in operating assets and liabilities:		
(Increase) decrease in assets —		
Accounts receivable	(149.0)	28.3
Inventories	(39.4)	(40.4)
Prepaid expenses and other current assets	(34.7)	(14.9)
Increase (decrease) in liabilities —		
Accounts payable	(2.7)	(37.8)
Accrued liabilities	15.4	(7.7)
Federal and state income taxes payable / receivable	5.9	20.4
Net cash provided by operating activities	419.8	463.5
Cash Flows from Investing Activities:		
Additions to property, plant, and equipment	(216.5)	(151.2)
Additions to other long term assets	(1.6)	(5.1)
Proceeds from asset disposals	2.4	4.3
Purchases of marketable debt securities	(65.7)	(20.5)
Proceeds from sales of marketable debt securities	12.9	12.3
Proceeds from maturities of marketable debt securities	48.3	31.4
Net cash used for investing activities	(220.2)	(128.8)
Cash Flows from Financing Activities:		
Repayments of debt and finance lease obligations	(0.8)	(0.8)
Financing costs paid	(0.9)	—
Common stock dividends paid	(189.8)	(149.7)
Shares withheld to cover employee restricted stock taxes	(10.5)	(10.4)
Net cash used for financing activities	(202.0)	(160.9)
Net (decrease) increase in cash and cash equivalents	(2.4)	173.8
Cash and cash equivalents, beginning of period	974.6	679.5
Cash and cash equivalents, end of period	$ 972.2	$ 853.3

See accompanying condensed notes to unaudited quarterly consolidated financial statements.

Packaging Corporation of America

Consolidated Statements of Changes in Stockholders' Equity

(unaudited, dollars in millions and shares in thousands)

	Common Stock		Additional Paid in Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at April 1, 2021	94,994	$ 1.0	$ 566.0	$ 2,906.3	$ (142.1)	$ 3,331.2
Common stock withheld and retired to cover taxes on vested stock awards	(76)	(0.1)	(0.6)	(9.7)	—	(10.4)
Common stock dividends declared	—	—	—	(95.4)	—	(95.4)
Share-based compensation	61	0.1	9.1	—	—	9.2
Comprehensive income	—	—	—	207.3	2.4	209.7
Balance at June 30, 2021	94,979	$ 1.0	$ 574.5	$ 3,008.5	$ (139.7)	$ 3,444.3

	Common Stock		Additional Paid in Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at April 1, 2020	94,848	$ 0.9	$ 534.9	$ 2,771.1	$ (157.0)	$ 3,149.9
Common stock withheld and retired to cover taxes on vested stock awards	(106)	—	(0.8)	(9.6)	—	(10.4)
Common stock dividends declared	—	—	—	(75.3)	—	(75.3)
Share-based compensation	93	—	8.6	—	—	8.6
Comprehensive income	—	—	—	56.7	3.6	60.3
Balance at June 30, 2020	94,835	$ 0.9	$ 542.7	$ 2,742.9	$ (153.4)	$ 3,133.1

	Common Stock		Additional Paid in Capital	Retained Earnings	Accumulated Other Comprehensive Loss	Total Stockholders' Equity
	Shares	Amount				
Balance at January 1, 2021	94,830	$ 0.9	$ 554.4	$ 2,835.5	$ (144.5)	$ 3,246.3
Common stock withheld and retired to cover taxes on vested stock awards	(77)	(0.1)	(0.6)	(9.8)	—	(10.5)
Common stock dividends declared	—	—	—	(190.9)	—	(190.9)
Share-based compensation	226	0.2	20.7	(0.1)	—	20.8
Comprehensive income	—	—	—	373.8	4.8	378.6
Balance at June 30, 2021	94,979	$ 1.0	$ 574.5	$ 3,008.5	$ (139.7)	$ 3,444.3

	Common Stock		Additional Paid in Capital	Retained Earnings	Accumulated Other Comprehensive 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	(107)	—	(0.8)	(9.6)	—	(10.4)
Common stock dividends declared	—	—	—	(150.5)	—	(150.5)
Share-based compensation	287	—	18.7	—	—	18.7
Other	—	—	—	(0.1)	—	(0.1)
Comprehensive income	—	—	—	198.3	6.1	204.4
Balance at June 30, 2020	94,835	$ 0.9	$ 542.7	$ 2,742.9	$ (153.4)	$ 3,133.1

See accompanying condensed notes to unaudited quarterly consolidated financial statements.

Condensed Notes to Unaudited Quarterly 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. 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 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. 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 18, Segment Information.

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. Before October 2020, operating results for the Jackson mill were included in the Paper segment. Beginning in October 2020, operating results for the Jackson mill are included in both the Packaging and Paper segments.

In these consolidated financial statements, certain amounts in prior periods' consolidated financial statements have been reclassified to conform with the current period presentation.

The consolidated financial statements of PCA as of June 30, 2021 and for the three and six months ended June 30, 2021 and 2020 are unaudited but include all adjustments (consisting only of normal recurring adjustments) that management considers necessary for a fair presentation of such financial statements. The preparation of the consolidated financial statements involves the use of estimates and accruals. Actual results may vary from those estimates. These financial statements have been prepared in accordance with accounting principles generally accepted in the United States for interim financial information and with Article 10 of Regulation S-X of the Securities and Exchange Commission (SEC). Accordingly, they do not include all of the information and notes required by accounting principles generally accepted in the United States for complete audited financial statements. Operating results for the three and six months ended June 30, 2021 are not necessarily indicative of the results that may be expected for the year ending December 31, 2021. These consolidated financial statements should be read in conjunction with our Annual Report on Form 10-K for the year ended December 31, 2020.

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

2. New Accounting Standards

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. Companies can apply the ASU immediately, but the guidance will only be available until December 31, 2022. 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. 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):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2021	2020	2021	2020
Packaging	$ 1,718.5	$ 1,409.9	$ 3,342.1	$ 2,877.4
Paper	142.3	123.3	306.8	340.7
Corporate and Other	19.1	8.4	38.1	32.2
Total revenue	$ 1,879.9	$ 1,541.6	$ 3,687.0	$ 3,250.3

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 17, 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.

4. 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):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2021	2020	2021	2020
Numerator:				
Net income	$ 207.3	$ 56.7	$ 373.8	$ 198.3
Less: Distributed and undistributed earnings allocated to participating securities	(1.8)	(0.5)	(3.1)	(1.8)
Net income attributable to common shareholders	$ 205.5	$ 56.2	$ 370.7	$ 196.5
Denominator:				
Weighted average basic common shares outstanding	94.2	94.0	94.2	94.0
Effect of dilutive securities	0.4	0.4	0.4	0.4
Weighted average diluted common shares outstanding	94.6	94.4	94.6	94.4
Basic income per common share	$ 2.18	$ 0.60	$ 3.94	$ 2.09
Diluted income per common share	$ 2.17	$ 0.59	$ 3.92	$ 2.08

5. Other Expense, Net

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2021	2020	2021	2020
Asset disposals and write-offs	$ (9.0)	$ (5.0)	$ (19.9)	$ (11.0)
Facilities closure and other income (costs) (a)	5.5	(13.3)	3.4	(13.7)
Jackson mill conversion (b)	(2.4)	—	(2.9)	—
Other	(2.0)	0.1	(8.9)	(3.4)
Total	$ (7.9)	$ (18.2)	$ (28.3)	$ (28.1)

(a) 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 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 costs primarily related to the 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.

(b) 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.

6. Income Taxes

For the three months ended June 30, 2021 and 2020, we recorded $67.4 million and $34.9 million of income tax expense and had an effective tax rate of 24.5% and 38.2%, respectively. For the six months ended June 30, 2021 and 2020, we recorded $120.5 million and $83.4 million of income tax expense and had an effective tax rate of 24.4% and 29.6%, respectively. The decrease in our effective tax rate for both the three and six months ended June 30, 2021 compared to the same period in 2020 was primarily due to the nondeductible goodwill impairment charge associated with our Paper reporting unit recognized during the three and six months ended June 30, 2020 with no corresponding charge during the three and six months ended June 30, 2021.

Our current effective tax rate may differ from the federal statutory income tax rate of 21.0% due primarily to the effect of state and local income taxes. During the six months ended June 30, 2021 and 2020, cash paid for taxes, net of refunds received, was $100.4 million and $43.7 million, respectively. The increase in cash tax payments between the periods is primarily due to higher 2021 taxable income.

During the three and six months ended June 30, 2021, there were no significant changes to our uncertain tax positions. For more information, see Note 7, Income Taxes, of the Notes to Consolidated Financial Statements in “Part II, Item 8. Financial Statements and Supplementary Data” of our 2020 Annual Report on Form 10-K.

7. Inventories

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):

	June 30, 2021	December 31, 2020
Raw materials	$ 288.5	$ 263.5
Work in process	15.2	11.6
Finished goods	180.8	183.6
Supplies and materials	342.7	329.2
Inventories	$ 827.2	$ 787.9

8. Property, Plant, and Equipment

The components of property, plant, and equipment were as follows (dollars in millions):

	June 30, 2021	December 31, 2020
Land and land improvements	$ 186.6	$ 179.6
Buildings	896.8	858.5
Machinery and equipment	6,027.9	5,826.6
Construction in progress	269.5	360.0
Other	92.6	88.8
Property, plant and equipment, at cost	7,473.4	7,313.5
Less accumulated depreciation	(4,232.9)	(4,120.1)
Property, plant, and equipment, net	$ 3,240.5	$ 3,193.4

During the second quarter of 2020, with the exacerbated deterioration in uncoated freesheet market conditions arising from the COVID-19 pandemic and the estimated impact on our Paper segment and its projected future results of operations, we identified a triggering event indicating possible impairment of our long lived assets within our Paper segment, including property, plant, and equipment, and performed a recoverability test on the Paper reporting unit long lived assets as of May 31, 2020. The recoverability test was based on forecasts of undiscounted cash flows. The results of the recoverability test indicated that the long lived assets within our Paper segment, inclusive of property, plant, and equipment, were 100% recoverable.

Depreciation expense for the three months ended June 30, 2021 and 2020 was $94.5 million and $93.3 million, respectively. During the six months ended June 30, 2021 and 2020, depreciation expense was $184.5 million and $183.1 million, respectively. We recognized $2.1 million of incremental depreciation expense during the six months ended June 30, 2021 as a result of the corrugated products facilities closures and the Jackson, Alabama mill conversion. We recognized $2.6 million of incremental depreciation expense during the six months ended June 30, 2020 as a result of the closure of the San Lorenzo, California corrugated products facility.

At June 30, 2021 and December 31, 2020, purchases of property, plant, and equipment included in accounts payable were $41.4 million and $20.4 million, respectively.

9. Goodwill and Intangible Assets

During the second quarter of 2020, with the exacerbated deterioration in uncoated freesheet market conditions arising from the COVID-19 pandemic and the estimated impact on our Paper segment and its projected future results of operations, we identified a triggering event indicating possible impairment of goodwill and our long lived assets within our Paper reporting unit.

Goodwill

Due to the triggering event identified above an interim quantitative impairment analysis was performed as of May 31, 2020 for the Paper reporting unit, which is the same as our Paper reportable segment. We estimated the fair value of the Paper reporting unit using a combination of the income approach and the market approach, as further described below. Based on the evaluation performed, we determined that the carrying value of the Paper reporting unit exceeded its fair value, which resulted in a goodwill impairment charge totaling $55.2 million in the second quarter of 2020.

For purposes of our goodwill impairment analysis, we estimated the fair value of the Paper reporting unit using a combination of the income approach and the market approach applying an equal weighting. The income approach incorporated the estimated future cash flows and a terminal value discounted to their present value using an appropriate risk-adjusted discount rate. The estimated future cash flows and terminal value were based on internal forecasts and industry trends, including the long-term outlook for the paper industry. Our expected cash flows include assumptions about industry pricing, expected paper demand, and anticipated input and conversion costs. The discount rate utilized in the income approach was 9%, which was derived using a capital asset pricing model based on relevant industry data to estimate the cost of equity financing. The discount rate is commensurate with the risks and uncertainties inherent in the business and the cash flow forecasts, updated for recent events. The market approach estimated the fair value of the Paper reporting unit by using valuation metrics of publicly traded companies or historically completed transactions of comparable businesses.

The valuation of our Paper reporting unit requires significant judgment in evaluating recent indicators of market activity and estimated future cash flows, discount rates, and other factors. Our impairment analysis contains inherent uncertainties due to uncontrollable events that could positively or negatively impact anticipated future economic and operating conditions. In making these estimates, the weighted-average cost of capital is utilized to calculate the present value of future cash flows and terminal value. Many variables go into estimating future cash flows, including estimates of our future revenue growth and operating results. When estimating our projected revenue growth and future operating results, we considered industry trends, economic data, and our competitive situation.

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 both June 30, 2021 and December 31, 2020, we had $863.5 million of goodwill recorded in our Packaging segment, which represents the entire goodwill balance reported on our Consolidated Balance Sheets.

Intangible Assets

Intangible assets are primarily comprised of customer relationships and trademarks and trade names. As a result of the triggering event described above, we also performed a recoverability test on our long-lived assets within the Paper segment, including long lived intangible assets, as of May 31, 2020. The recoverability test was based on forecasts of undiscounted cash flows. The results of the recoverability test indicated that the long lived assets within our Paper segment, inclusive of the long lived intangible assets, were 100% recoverable.

The weighted average remaining useful life, gross carrying amount, and accumulated amortization of our intangible assets were as follows (dollars in millions):

	June 30, 2021			December 31, 2020		
	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	8.7	$ 503.8	$ 237.6	9.1	$ 503.8	$ 220.2
Trademarks and trade names	9.3	34.8	24.2	9.3	34.8	23.0
Other	0.9	4.3	4.1	1.2	4.3	3.8
Total intangible assets (excluding goodwill)	8.7	$ 542.9	$ 265.9	9.1	$ 542.9	$ 247.0

During the six months ended June 30, 2021 and 2020, amortization expense was $18.9 million and $23.9 million, respectively. For the six months ended June 30, 2020, amortization expense includes a $4.5 million adjustment to decrease the remaining book value of the customer relationship intangible asset as a result of the closure of the San Lorenzo, California corrugated products facility.

10. Accrued Liabilities

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

	June 30, 2021	December 31, 2020
Compensation and benefits	$ 131.8	$ 126.5
Customer rebates and other credits	30.2	27.1
Medical insurance and workers' compensation	25.7	25.5
Property, franchise, sales and use taxes	24.1	16.5
Environmental liabilities and asset retirement obligations	4.9	4.6
Severance, retention, and relocation	2.4	4.1
Other	12.3	11.9
Total	$ 231.4	$ 216.2

11. Debt

At June 30, 2021 and December 31, 2020, our long-term debt and interest rates on that debt were as follows (dollars in millions):

	June 30, 2021		December 31, 2020	
	Amount	Interest Rate	Amount	Interest Rate
Revolving Credit Facility, due August 2021, terminated June 2021	$ —	— %	$ —	— %
Revolving Credit Facility, due June 2026	—	— %	—	— %
4.50% Senior Notes, net of discount of $0.5 million and $0.6 million as of June 30, 2021 and December 31, 2020, respectively, due November 2023	699.5	4.50 %	699.4	4.50 %
3.65% Senior Notes, net of discount of $0.4 million and $0.5 million as of June 30, 2021 and December 31, 2020, respectively, due September 2024	399.6	3.65 %	399.5	3.65 %
3.40% Senior Notes, net of discount of $1.1 million and $1.2 million as of June 30, 2021 and December 31, 2020, respectively, due December 2027	498.9	3.40 %	498.8	3.40 %
3.00% Senior Notes, net of discount of $0.6 million as of both June 30, 2021 and December 31, 2020, due December 2029	499.4	3.00 %	499.4	3.00 %
4.05% Senior Notes, net of discount of $3.4 million as of both June 30, 2021 and December 31, 2020, due December 2049	396.6	4.05 %	396.6	4.05 %
Total	2,494.0	3.77 %	2,493.7	3.77 %
Less unamortized debt issuance costs	14.2		14.3	
Total long-term debt	$ 2,479.8	3.77 %	$ 2,479.4	3.77 %

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.

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. Except for approximately $23.5 million of letters of credit, no borrowings were outstanding under the Old Credit Agreement at the time of its replacement and no borrowings are outstanding under the New Revolving Credit Agreement. Borrowings under the New Revolving Credit Agreement are guaranteed by PCA's material subsidiaries.

Loans under the New Revolving Credit Agreement bear interest at LIBOR plus an applicable margin. The applicable margin is determined based upon the public ratings of PCA's senior long-term unsecured debt or PCA's gross leverage ratio. The New Revolving Credit Agreement contains customary LIBOR successor rate provisions.

The New Revolving Credit Agreement contains customary affirmative and negative covenants, including limitations on our ability to incur indebtedness at the subsidiary level and liens on our assets, and restrictions on our ability to engage in certain transactions involving mergers, consolidations, and sales of all or substantially all of our assets or the assets of a subsidiary guarantor. The New Revolving Credit Agreement has two financial covenants, a maximum leverage ratio and a minimum interest coverage ratio, each calculated on a consolidated basis. At June 30, 2021, we were in compliance with these covenants.

PCA may prepay loans under the New Revolving Credit Agreement at any time without premium or penalty.

For the six months ended June 30, 2021 and 2020, cash payments for interest were $47.8 million and $49.4 million, respectively.

Included in interest expense, net is the amortization of financing costs. For both the three months ended June 30, 2021 and 2020, amortization of financing costs was $0.5 million, and during both the six months ended June 30, 2021 and 2020, amortization of financing costs was $1.0 million.

At June 30, 2021, we had $2,494.0 million of fixed-rate senior notes outstanding. The fair value of our fixed-rate debt was estimated to be $2,741.6 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) within the fair value hierarchy, which is further defined in 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 our 2020 Annual Report on Form 10-K.

For more information on our long-term debt and interest rates on that debt, see Note 10, Debt, of the Notes to Consolidated Financial Statements in "Part II, Item 8. Financial Statements and Supplementary Data" of our 2020 Annual Report on Form 10-K.

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 June 30, 2021 and December 31, 2020 (in millions):

	June 30, 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	$ 969.2	$ —	$ —	$ 969.2	$ 969.2	$ —	$ —
Level 1 [(a)]:							
Money market funds	2.0	—	—	2.0	2.0	—	—
U.S. Treasury securities	28.6	0.1	—	28.7	—	19.7	9.0
Subtotal	30.6	0.1	—	30.7	2.0	19.7	9.0
Level 2 [(b)]:							
Certificates of deposit	9.0	—	—	9.0	0.5	8.5	—
U.S. government agency securities	7.9	—	—	7.9	—	4.2	3.7
Corporate debt securities	106.9	0.1	—	107.0	0.5	69.3	37.2
Subtotal	123.8	0.1	—	123.9	1.0	82.0	40.9
Total	$ 1,123.6	$ 0.2	$ —	$ 1,123.8	$ 972.2	$ 101.7	$ 49.9

	December 31, 2020						
	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	$ 970.5	$ —	$ —	$ 970.5	$ 970.5	$ —	$ —
Level 1 [(a)]:							
Money market funds	0.6	—	—	0.6	0.6	—	—
U.S. Treasury securities	28.1	0.2	—	28.3	—	18.9	9.4
Subtotal	28.7	0.2	—	28.9	0.6	18.9	9.4
Level 2 [(b)]:							
Certificates of deposit	5.9	—	—	5.9	1.1	4.8	—
Commercial paper	3.2	—	—	3.2	1.0	2.2	—
U.S. government agency securities	6.6	—	—	6.6	—	2.6	4.0
Corporate debt securities	107.5	0.3	—	107.8	1.4	77.1	29.3
Subtotal	123.2	0.3	—	123.5	3.5	86.7	33.3
Total	$ 1,122.4	$ 0.5	$ —	$ 1,122.9	$ 974.6	$ 105.6	$ 42.7

(a) Valuations based on quoted prices for identical assets or 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 three and six months ended June 30, 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 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 be more likely than not be required to sell, the marketable debt security before recovery of its amortized cost basis.

As of June 30, 2021 and December 31, 2020, 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 June 30, 2021 and December 31, 2020 (in millions, except number of marketable debt securities in a loss position):

	June 30, 2021			December 31, 2020		
	Fair Value of Marketable Debt Securities	Number of Marketable Debt Securities in a Loss Position	Unrealized Losses (c)	Fair Value of Marketable Debt Securities	Number of Marketable Debt Securities in a Loss Position	Unrealized Losses (c)
Corporate debt securities	$ 35.0	47	$ —	$ 42.9	56	$ —
U.S. Treasury securities	9.8	12	—	1.7	3	—
U.S. government agency securities	1.3	3	—	—	—	—
Certificates of deposit	0.3	1	—	1.3	2	—
Commercial paper	—	—	—	2.2	1	—
	$ 46.4	63	$ —	$ 48.1	62	$ —

(c) Unrealized losses were insignificant for the periods ended June 30, 2021 and December 31, 2020.

13. Employee Benefit Plans and Other Postretirement Benefits

The components of net periodic benefit cost for our pension plans were as follows (dollars in millions):

	Pension Plans			
	Three Months Ended June 30,		Six Months Ended June 30,	
	2021	2020	2021	2020
Service cost	$ 5.4	$ 5.9	$ 10.7	$ 11.9
Interest cost	7.4	10.0	14.9	19.9
Expected return on plan assets	(15.8)	(14.2)	(31.6)	(28.4)
Net amortization of unrecognized amounts				
Prior service cost	1.0	1.1	1.9	2.2
Actuarial loss	2.5	2.7	5.0	5.3
Net periodic benefit cost	$ 0.5	$ 5.5	$ 0.9	$ 10.9

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 additional discretionary contributions based on the funded status of the plans, tax deductibility, income from operations, and other factors. During the three and six months ended June 30, 2021 and 2020, payments to our nonqualified pension plans were insignificant. During the three and six months ended June 30, 2021, we did not make any contributions to our qualified pension plans, and for the three and six months ended June 30, 2020, we made contributions of $7.2 million and $11.1 million, respectively, to our qualified pension plans. We do not have a required minimum contribution amount established for 2021, but we expect to make discretionary contributions to our plans.

For the three and six months ended June 30, 2021 and 2020, the net periodic benefit cost for our postretirement plans was insignificant.

14. 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 June 30, 2021, assuming performance units are paid out at the target level of performance, 1.2 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.

The following table presents restricted stock and performance unit award activity for the six months ended June 30, 2021:

	Restricted Stock		Performance Units	
	Shares	Weighted Average Grant-Date Fair Value	Shares	Weighted Average Grant-Date Fair Value
Outstanding at January 1, 2021	669,102	$ 102.55	357,417	$ 103.63
Granted	173,970	134.10	95,236	140.47
Vested (a)	(161,741)	108.80	(53,070)	135.33
Forfeitures	(5,496)	109.07	—	—
Outstanding at June 30, 2021	675,835	$ 109.12	399,583	$ 108.20

(a) Upon vesting of the performance unit awards, PCA issued 58,083 shares, which includes 5,013 shares for dividends accrued during the vesting period.

Compensation Expense

Our share-based compensation expense is recorded in "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):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2021	2020	2021	2020
Restricted stock	$ 5.9	$ 5.6	$ 14.5	$ 13.6
Performance units	2.5	2.1	5.6	4.2
Total share-based compensation expense	8.4	7.7	20.1	17.8
Income tax benefit	(2.1)	(1.9)	(5.1)	(4.5)
Share-based compensation expense, net of tax benefit	$ 6.3	$ 5.8	$ 15.0	$ 13.3

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.

Performance unit awards granted to certain key employees 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. For performance unit awards made in 2021 and 2020, in terms of grant date value, 50% used TSR as the performance measure and 50% 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 at June 30, 2021 was as follows (dollars in millions):

	June 30, 2021	
	Unrecognized Compensation Expense	Remaining Weighted Average Recognition Period (in years)
Restricted stock	$ 34.5	2.8
Performance units	24.5	2.5
Total unrecognized share-based compensation expense	$ 59.0	2.7

15. Stockholders' Equity

Dividends

During the six months ended June 30, 2021, we paid $189.8 million of dividends to shareholders. On May 4, 2021, PCA’s Board of Directors declared a regular quarterly cash dividend of $1.00 per share of common stock, which was paid on July 15, 2021 to shareholders of record as of June 15, 2021. The dividend payment was $95.0 million.

Repurchases of Common Stock

On February 25, 2016, PCA announced that its Board of Directors authorized the repurchase of $200.0 million of the Company’s outstanding common stock. 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.

The Company did not repurchase any shares of its common stock under this authority during the three and six months ended June 30, 2021. At June 30, 2021, $193.0 million of the authorized amount remained available for repurchase of the Company's common stock.

Accumulated Other Comprehensive Income (Loss)

Changes in accumulated other comprehensive income (loss) (AOCI) by component were as follows (dollars in millions). Amounts in parentheses indicate losses:

	Foreign Currency Translation Adjustments	Unrealized Loss on Foreign Exchange Contracts	Unrealized Loss 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, net of tax	—	—	(0.2)	—	(0.2)
Amounts reclassified from AOCI, net of tax	—	—	—	5.0	5.0
Balance at June 30, 2021	$ (0.4)	$ (0.2)	$ 0.1	$ (139.2)	$ (139.7)

Reclassifications out of AOCI were as follows (dollars in millions). Amounts in parentheses indicate expenses in the Consolidated Statements of Income:

	Amounts Reclassified from AOCI				
	Three Months Ended June 30,		Six Months Ended June 30,		
Details about AOCI Components	**2021**	**2020**	**2021**	**2020**	
Unfunded employee benefit obligations (a)					
Amortization of prior service costs	$ (0.8)	$ (1.0)	$ (1.7)	$ (2.0)	See (a) below
Amortization of actuarial losses	(2.5)	(2.6)	(5.0)	(5.2)	See (a) below
	(3.3)	(3.6)	(6.7)	(7.2)	Total before tax
	0.8	0.9	1.7	1.8	Tax benefit
	$ (2.5)	$ (2.7)	$ (5.0)	$ (5.4)	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.

16. Concentrations of Risk

Our Paper segment has a long-standing commercial and contractual relationship with Office Depot, our largest customer in the paper business. This relationship exposes us to a significant concentration of business and financial risk. Our sales to Office Depot represent approximately 4% and 5% of our total Company sales revenue for the six month periods ended June 30, 2021 and 2020, respectively, and approximately 47% and 44% of our Paper segment sales revenue for both of those periods, respectively. For full year 2020, sales to Office Depot represented 45% of our Paper segment sales. At June 30, 2021 and December 31, 2020, we had $37.9 million and $39.6 million of accounts receivable due from Office Depot, respectively, which represents approximately 4% and 5% of our total Company accounts receivable, respectively.

17. 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 $3.8 million at June 30, 2021 and $2.5 million at December 31, 2020. During the three months ended June 30, 2021 and 2020, we recorded $20.7 million and $13.8 million, respectively, and during the six months ended June 30, 2021 and 2020, we recorded $41.0 million and $36.4 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".

During the three months ended June 30, 2021 and 2020, fiber purchases from related parties were $3.4 million and $2.5 million, respectively. Fiber purchases from related parties were $6.7 million for both the six months ended June 30, 2021 and 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.

18. 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.

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. Before October 2020, operating results for the Jackson mill were included in the Paper segment. Beginning in October 2020, operating results for the Jackson mill are included in both the Packaging and Paper segments.

Each segment's profits and losses are measured on operating profits before interest expense, net, non-operating pension income, and income taxes. For certain allocated expenses, the related assets and liabilities remain in the Corporate and Other segment.

Selected financial information by reportable segment was as follows (dollars in millions):

	Sales, net				
Three Months Ended June 30, 2021	**Trade**	**Intersegment**	**Total**	**Operating Income (Loss)**	
Packaging	$ 1,714.5	$ 4.0	$ 1,718.5	$ 317.2	(a)
Paper	142.3	—	142.3	2.6	(a)
Corporate and Other	23.1	32.0	55.1	(25.2)	(a)
Intersegment eliminations	—	(36.0)	(36.0)	—	
	$ 1,879.9	$ —	$ 1,879.9	294.6	
Non-operating pension income				5.0	
Interest expense, net				(24.9)	
Income before taxes				$ 274.7	

	Sales, net				
Three Months Ended June 30, 2020	**Trade**	**Intersegment**	**Total**	**Operating Income (Loss)**	
Packaging	$ 1,401.8	$ 8.1	$ 1,409.9	$ 197.6	(b)
Paper	123.3	—	123.3	(61.4)	(b)(c)
Corporate and Other	16.5	34.0	50.5	(20.1)	
Intersegment eliminations	—	(42.1)	(42.1)	—	
	$ 1,541.6	$ —	$ 1,541.6	116.1	
Non-operating pension income				0.6	
Interest expense, net				(25.1)	
Income before taxes				$ 91.6	

	Sales, net				
Six Months Ended June 30, 2021	**Trade**	**Intersegment**	**Total**	**Operating Income (Loss)**	
Packaging	$ 3,334.3	$ 7.8	$ 3,342.1	$ 575.1	(a)
Paper	306.7	0.1	306.8	11.3	(a)
Corporate and Other	46.0	64.5	110.5	(53.5)	(a)
Intersegment eliminations	—	(72.4)	(72.4)	—	
	$ 3,687.0	$ —	$ 3,687.0	532.9	
Non-operating pension income				9.8	
Interest expense, net				(48.4)	
Income before taxes				$ 494.3	

	Sales, net				
Six Months Ended June 30, 2020	**Trade**	**Intersegment**	**Total**	**Operating Income (Loss)**	
Packaging	$ 2,867.2	$ 10.2	$ 2,877.4	$ 397.5	(b)
Paper	340.7	—	340.7	(29.0)	(b)(c)
Corporate and Other	42.4	68.3	110.7	(43.3)	
Intersegment eliminations	—	(78.5)	(78.5)	—	
	$ 3,250.3	$ —	$ 3,250.3	325.2	
Non-operating pension income				1.1	
Interest expense, net				(44.6)	
Income before taxes				$ 281.7	

(a) The three and six months ended June 30, 2021 include the following:

1. $4.7 million and $2.6 million, respectively, 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 insurance proceeds received for a natural disaster at one of the corrugated products facilities, partially offset by closure costs related to corrugated products facilities.
2. $3.8 million and $4.9 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 in the first quarter of 2021 associated with the permanent conversion of the machine to produce linerboard.

(b) The three and six months ended June 30, 2020 include the following:

1. $20.4 million and $20.8 million of charges, respectively, consisting of closure costs related to corrugated products facilities, substantially all of which relates to the 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.
2. $6.1 million and $6.9 million, respectively, 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.

(c) 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. See Note 9, Goodwill and Intangible Assets, for additional information.

19. 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, capital commitments, lease obligations, and purchase commitments for goods and services, and legal proceedings, all of which are discussed in Note 10, Debt, and 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 our 2020 Annual Report on Form 10-K.

Guarantees and Indemnifications

We provide guarantees, indemnifications, and other assurances to third parties in the normal course of our business. These include tort indemnifications, product guarantees, environmental assurances, and representations and warranties in commercial agreements. At June 30, 2021, 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 has been appealed by the plaintiff to the United States Court of Appeals for the Fifth Circuit. 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.

The EPA investigation is ongoing. 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. In January 2021, the EPA and U.S. Department of Justice (DOJ) initiated civil judicial enforcement discussions with PCA. These discussions are ongoing. As of the date of filing of this report, no complaint has been filed. PCA continues to cooperate with the agencies. 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.

Environmental Matters

On August 8, 2019, the EPA issued a notice of violation (NOV) alleging violations of the Clean Air Act, resulting from an inspection of our Wallula, Washington mill in September 2018. PCA denies the violations set forth in the NOV and has requested that the EPA’s Office of Air Quality Planning and Standards provide an applicability determination to clarify that the relevant operations of PCA have not violated the regulations at issue in the NOV. The EPA denied our request in 2020. We intend to vigorously defend any enforcement action and, on July 27, 2020, filed a petition with the EPA to reconsider its denial of our applicability determination and filed petitions in U.S. federal court to review the agency’s denial of our applicability determination as well as the rule at issue. While we cannot predict with certainty the ultimate resolution of this matter, we believe that we have a meritorious position that our operations have not violated the Clean Air Act, that we have taken appropriate action to address the matters raised by the EPA in the NOV, and that this matter will not result in a material adverse effect on our financial condition, results of operations, or cash flows.

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 2. *MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS*

This management's discussion and analysis includes statements regarding our expectations with respect to our future performance, expected business conditions, liquidity, and capital resources. Such statements, along with any other statements that are not historical in nature, are forward-looking. These forward-looking statements are subject to numerous risks and uncertainties, including, but not limited to, the risks and uncertainties described in our 2020 Annual Report on Form 10-K, as well as those factors listed in other documents we file with the Securities and Exchange Commission (SEC). We do not assume any obligation to update any forward-looking statement. Our actual results may differ materially from those contained in or implied by any of the forward-looking statements in this Form 10-Q. Please see "Forward Looking Statements" elsewhere in this Item 2.

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 uncoated freesheet 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.

This Item 2 is intended to supplement, and should be read in conjunction with, "Management's Discussion and Analysis of Financial Condition and Results of Operations" included in our 2020 Annual Report on Form 10-K.

Executive Summary

Second quarter net sales were $1.88 billion in 2021 and $1.54 billion in 2020. We reported $207 million of net income, or $2.17 per diluted share, during the second quarter of 2021, compared to $57 million, or $0.59 per diluted share, during the same period in 2020. Net income included less than $1 million of income for special items in the second quarter of 2021, compared to $75 million of expense for special items in 2020 (discussed below). Excluding special items, net income was $207 million, or $2.17 per diluted share, during the second quarter of 2021, compared to $132 million, or $1.38 per diluted share, in the second quarter of 2020. The increase in net income was driven primarily by higher prices and mix and volume in our Packaging segment, higher volume in our Paper segment, and lower non-operating pension expense. These items were partially offset by higher operating costs, higher annual outage expenses, higher freight and logistics expenses, higher converting costs, and lower prices and mix in our Paper segment. 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 income (expense), interest, income taxes, and depreciation, amortization, and depletion (EBITDA), and EBITDA excluding special items, see "Item 2. Reconciliations of Non-GAAP Financial Measures to Reported Amounts."

Packaging segment income from operations was $317 million in the second quarter of 2021, compared to $198 million in the second quarter of 2020. Packaging segment EBITDA excluding special items was $409 million in the second quarter of 2021 compared to $313 million in the second quarter of 2020. The increase in EBITDA excluding special items was due primarily to higher prices and mix and higher sales and production volumes, partially offset by higher operating and converting costs, higher annual outage expense, as we successfully executed planned maintenance outages at four of our mills, and higher freight and logistic expenses. We experienced strong demand throughout the quarter, driving record volumes in terms of box shipments, but we also experienced cost inflation across our business. Our sales prices were higher as we implemented price increases on containerboard and corrugated products that we previously communicated to our customers. We are managing through challenges brought on by limited availability of transportation resources, which has contributed to an increase in our freight and logistics costs. We continue to deploy capital to improve productivity and efficiencies at our facilities and believe that our success in doing so is helping us to manage cost inflation and better serve our customers.

Paper segment income from operations was $3 million in the second quarter of 2021, compared to a loss of $61 million in the second quarter of 2020. Paper segment EBITDA excluding special items was $12 million in the second quarter of 2021, compared to $5 million in the second quarter of 2020. The increase in EBITDA excluding special items was due to higher sales and production volumes, lower operating costs and lower annual outage costs, partially offset by lower prices and mix, and higher freight and logistic expenses.

Sales and production volumes in the Paper segment significantly declined after the first quarter of 2020 as the COVID-19 pandemic caused lower demand for our paper products. During the second and third quarters of 2020, in response to such lower demand, we temporary idled both machines at our Jackson Alabama mill. During the fourth quarter of 2020, in order to meet strong packaging demand and maintain appropriate inventory levels in the packaging segment, we temporarily began producing linerboard on the number 3 machine at the mill and we have produced linerboard on the machine since that time. In the first quarter of 2021, we announced the discontinuation of production of uncoated freesheet paper grades on the machine and our plans to permanently convert the machine to produce linerboard in a phased approach over the next three years. Demand for paper products has improved since the beginning of the pandemic, but our sales and production in the paper segment will remain below pre-pandemic levels as we will no longer be producing paper products on the machine. Before October 2020, operating results for the Jackson mill were included in the Paper segment. Beginning in October 2020, operating results for the Jackson mill are included in both the Packaging and Paper segments

Packaging segment income from operations was $575 million in the first six months of 2021, compared to $398 million in the same period in 2020. Packaging segment EBITDA excluding special items was $761 million in the first six months of 2021 compared to $602 million in the first six months of 2020. The increase in EBITDA excluding special items was due primarily to higher prices and mix and higher sales and production volumes, partially offset by higher operating and converting costs, higher freight and logistic expenses, and higher annual outage expense.

Paper segment income from operations was $11 million in the first six months of 2021, compared to a loss of $29 million in the first six months of 2020. Paper segment EBITDA excluding special items was $27 million in the first six months of 2021, compared to $47 million in the same period in 2020. The decrease in EBITDA excluding special items was due to lower sales and production volumes, lower prices and mix, and higher freight and logistic expenses, partially offset by lower operating costs and lower annual outage expense.

Special Items and Earnings per Diluted Share, Excluding Special Items

A reconciliation of reported earnings per diluted share to earnings per diluted share, excluding special items, for the three and six months ended June 30, 2021 and 2020 are as follows:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2021	2020	2021	2020
Earnings per diluted share, as reported	$ 2.17	$ 0.59	$ 3.92	$ 2.08
Special items:				
Facilities closure and other costs (income) (a)	(0.03)	0.16	(0.02)	0.17
Jackson mill conversion (b)	0.03	—	0.04	—
Goodwill impairment (c)	—	0.58	—	0.58
Incremental costs for COVID-19 (d)	—	0.05	—	0.05
Total special items	—	0.79	0.02	0.80
Earnings per diluted share, excluding special items	$ 2.17	$ 1.38	$ 3.94	$ 2.88

(a) For the three and six months ended June 30, 2021, includes $4.7 million and $2.6 million, respectively, 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 corporate assets, 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 the three and six months ended June 30, 2020, includes $20.4 million and $20.8 million, respectively, of charges consisting of closure costs related to corrugated products facilities, substantially all of which relates to the 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.

(b) For the three and six months ended June 30, 2021, includes $3.8 million and $4.9 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 in the first quarter of 2021 associated with the permanent conversion of the machine to produce linerboard.

(c) 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 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.

(d) For the three and six months ended June 30, 2020, includes $6.1 million and $6.9 million, respectively, 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.

Included in this Item 2 are various non-GAAP financial measures, including diluted EPS excluding special items, segment income excluding special items and EBITDA excluding special items. 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 EPS to diluted EPS 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 in Item 2 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 per work day were up 8.2% during the second quarter of 2021 compared to the same quarter of 2020. Reported industry containerboard production increased 8.3% compared to the second quarter of 2020. Reported industry containerboard inventories at the end of the second quarter of 2021 were approximately 2.5 million tons, down 2.3% compared to the same period in 2020. Reported containerboard export shipments were down 24.7% compared to the second quarter of 2020. Prices reported by trade publications increased by $20 per ton for linerboard and $30 per ton for corrugating medium in March 2021 and a further $40 per ton for linerboard and corrugating medium in April 2021.

Trade publications reported North American uncoated freesheet paper shipments were up 19.1% in the second quarter of 2021, compared to the same quarter of 2020. Average prices reported by a trade publication for cut size office papers were higher by $63 per ton, or 5.9%, in the second quarter of 2021, compared to the first quarter of 2021, and higher by $52 per ton, or 4.8%, compared to the second quarter of 2020. Average prices reported by a trade publication for cut size office papers increased $20 per ton in March, $40 per ton in April, and $30 per ton in June 2021.

Outlook

Looking ahead to the third quarter, in our Packaging segment we expect continued strong demand for containerboard and corrugated products with one additional day for box shipments. Paper segment volume should be relatively flat, primarily due to the scheduled maintenance outage at the Jackson Mill. We will also continue to implement our previously announced price increases in both our Packaging and Paper segments. Our annual outage costs will be lower with one outage in the third quarter versus four mill outages in the second quarter. Inflation associated with most of our operating costs as well as freight and logistics expenses is expected to continue. Energy costs will also be impacted due to higher seasonal usage, and wood costs in our southern mills will be higher due to wet weather, low inventory and high demand for fiber. Considering these items, we expect third quarter earnings to be higher than second quarter earnings.

Results of Operations

Three Months Ended June 30, 2021, compared to Three Months Ended June 30, 2020

The historical results of operations of PCA for the three months ended June 30, 2021 and 2020 are set forth below (dollars in millions):

	Three Months Ended June 30,		
	2021	2020	Change
Packaging	$ 1,718.5	$ 1,409.9	$ 308.6
Paper	142.3	123.3	19.0
Corporate and Other	55.1	50.5	4.6
Intersegment eliminations	(36.0)	(42.1)	6.1
Net sales	$ 1,879.9	$ 1,541.6	$ 338.3
Packaging	$ 317.2	$ 197.6	$ 119.6
Paper	2.6	(61.4)	64.0
Corporate and Other	(25.2)	(20.1)	(5.1)
Income from operations	$ 294.6	$ 116.1	$ 178.5
Non-operating pension income	5.0	0.6	4.4
Interest expense, net	(24.9)	(25.1)	0.2
Income before taxes	274.7	91.6	183.1
Income tax provision	(67.4)	(34.9)	(32.5)
Net income	$ 207.3	$ 56.7	$ 150.6
Non-GAAP Measures (a)			
Net income excluding special items	$ 206.6	$ 131.8	$ 74.8
Consolidated EBITDA	399.3	224.4	174.9
Consolidated EBITDA excluding special items	396.8	299.0	97.8
Packaging EBITDA	412.1	293.6	118.5
Packaging EBITDA excluding special items	408.8	312.5	96.3
Paper EBITDA	10.1	(51.0)	61.1
Paper EBITDA excluding special items	11.6	4.7	6.9

(a) See “Reconciliations of Non-GAAP Financial Measures to Reported Amounts” included in this Item 2 for a reconciliation of non-GAAP measures to the most comparable GAAP measure.

Net Sales

Net sales increased $338 million, or 21.9%, to $1,880 million during the three months ended June 30, 2021, compared to $1,542 million during the same period in 2020.

Packaging. Net sales increased $309 million, or 21.9%, to $1,719 million, compared to $1,410 million in the second quarter of 2020 due to higher containerboard and corrugated products volume ($158 million) and higher prices and mix ($151 million). In the second quarter of 2021, our domestic containerboard prices were 14.6% higher, while export prices were 29.1% higher, than the same period in 2020. In the second quarter of 2021, export and domestic containerboard outside shipments increased 32.0% compared to the second quarter of 2020. Our total and per day corrugated products shipments were up 9.6% compared to the same period in 2020, driven by strong demand.

Paper. Net sales increased $19 million, or 15.4%, to $142 million, compared to $123 million in the second quarter of 2020, due to increased volume ($21 million), partially offset by lower prices and mix ($2 million). In the fourth quarter of 2020, the Jackson mill No. 3 machine began producing linerboard. The Jackson mill was idled for two months during the second quarter of 2020.

Gross Profit

Gross profit increased $123 million during the three months ended June 30, 2021, compared to the same period in 2020. The increase was driven primarily by higher prices and mix and volume in our Packaging segment, and higher volume in our Paper segment. These items were partially offset by higher operating costs, higher annual outage expenses, higher freight and logistics expenses, higher converting costs, and lower prices and mix in our Paper segment. In the three months ended June 30, 2021, gross profit included $2 million of special items for charges related to the Jackson mill conversion and facility closure costs. In the three months ended June 30, 2020, gross profit included $6 million of special items for incremental, out-of-pocket costs related to the COVID-19 pandemic and $3 million of accelerated depreciation associated with the closure of our San Lorenzo, California facility.

Selling, General, and Administrative Expenses

Selling, general, and administrative expenses (“SG&A”) increased $10 million during the three months ended June 30, 2021, compared to the same period in 2020. The increase was primarily due to higher employee salaries and fringes and incentives.

Goodwill Impairment

During the three months ended June 30, 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 million in the second quarter of 2020.

Other Expense, Net

Other income (expense), net, for the three months ended June 30, 2021 and 2020 are set forth below (dollars in millions):

	Three Months Ended June 30,	
	2021	2020
Asset disposals and write-offs	$ (9.0)	$ (5.0)
Facilities closure and other income (costs)	5.5	(13.3)
Jackson mill conversion	(2.4)	—
Other	(2.0)	0.1
Total	$ (7.9)	$ (18.2)

We discuss these items in more detail in Note 5, Other Expense, Net, of the Condensed Notes to Unaudited Quarterly Consolidated Financial Statements in “Part I, Item 1. Financial Statements” of this Form 10-Q.

Income from Operations

Income from operations increased $179 million, or 153.7%, during the three months ended June 30, 2021, compared to the same period in 2020. The second quarter of 2021 included $1 million of special items income primarily related to corrugated facility closures, net of costs from the Jackson mill conversion from uncoated freesheet paper to linerboard, compared to $82 million of special items expense for the Paper reporting unit goodwill impairment, facility closures (primarily relating to the closure of the San Lorenzo, California corrugated products facility), and incremental, out-of-pocket costs related to COVID-19 in the second quarter of 2020.

Packaging. Packaging segment income from operations increased $120 million to $317 million, compared to $198 million during the three months ended June 30, 2020. The increase related primarily to higher containerboard and corrugated products prices and mix ($128 million), higher sales and production volumes ($97 million), partially offset by higher operating and converting costs ($86 million), higher annual outage expenses ($26 million), higher freight expenses ($17 million), higher depreciation expense ($6 million), and other costs. Special items during the second quarter of 2021 included $3 million of income primarily related to corrugated facility closures, compared to $20 million of special items expense for facility closure costs and $6 million of incremental, out-of-pocket costs related to COVID-19 in the second quarter of 2020.

Paper. Paper segment income from operations increased $64 million to $3 million, compared to a loss of $61 million during the three months ended June 30, 2020. The increase primarily related to higher sales and production volumes ($4 million), lower operating costs ($10 million), lower depreciation expense ($4 million), and lower annual outage expenses ($2 million), partially offset by lower prices and mix ($2 million) and higher freight expenses ($7 million). Special items during the second quarter of 2021 included $3 million of expense related to the Jackson mill conversion from uncoated freesheet paper to linerboard, compared to $55 million of expense related to the goodwill impairment and $1 million of incremental, out-of-pocket costs related to COVID-19 in the second quarter of 2020.

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

Non-operating pension income increased $4 million during the three months ended June 30, 2021, compared to the same period in 2020. The increase in non-operating pension income was primarily related to the favorable 2020 asset performance.

Interest expense, net for the three months ended June 30, 2021 was relatively flat when compared to the same period in 2020. The slight increase in interest expense, net was primarily related to lower interest income due to lower rates on invested cash balances in the second quarter of 2021, almost completely offset by lower earnings on deferred compensation balances in the second quarter of 2021.

During the three months ended June 30, 2021, we recorded $67 million of income tax expense, compared to $35 million of expense during the three months ended June 30, 2020. The effective tax rate for the three months ended June 30, 2021 and 2020 was 24.5% and 38.2%, respectively. The decrease in our effective tax rate was primarily due to the nondeductible goodwill impairment charge associated with our Paper reporting unit recognized during the three months ended June 30, 2020 with no corresponding charge during the three months ended June 30, 2021.

Six Months Ended June 30, 2021, compared to Six Months Ended June 30, 2020

The historical results of operations of PCA for the six months ended June 30, 2021 and 2020 are set forth below (dollars in millions):

	Six Months Ended June 30,		
	2021	2020	Change
Packaging	$ 3,342.1	$ 2,877.4	$ 464.7
Paper	306.8	340.7	(33.9)
Corporate and Other	110.5	110.7	(0.2)
Intersegment eliminations	(72.4)	(78.5)	6.1
Net sales	$ 3,687.0	$ 3,250.3	$ 436.7
Packaging	$ 575.1	$ 397.5	$ 177.6
Paper	11.3	(29.0)	40.3
Corporate and Other	(53.5)	(43.3)	(10.2)
Income from operations	$ 532.9	$ 325.2	$ 207.7
Non-operating pension income (expense)	9.8	1.1	8.7
Interest expense, net	(48.4)	(44.6)	(3.8)
Income before taxes	494.3	281.7	212.6
Income tax provision	(120.5)	(83.4)	(37.1)
Net income	$ 373.8	$ 198.3	$ 175.5
Non-GAAP Measures (a)			
Net income excluding special items	$ 375.5	$ 274.3	$ 101.2
Consolidated EBITDA	738.4	533.7	204.7
Consolidated EBITDA excluding special items	738.6	609.5	129.1
Packaging EBITDA	762.1	582.3	179.8
Packaging EBITDA excluding special items	760.9	602.3	158.6
Paper EBITDA	25.3	(9.1)	34.4
Paper EBITDA excluding special items	27.4	46.7	(19.3)

(a) See “Reconciliations of Non-GAAP Financial Measures to Reported Amounts” included in this Item 2 for a reconciliation of non-GAAP measures to the most comparable GAAP measure.

Net Sales

Net sales increased $437 million, or 13.4%, to $3,687 million during the six months ended June 30, 2021, compared to $3,250 million during the same period in 2020.

Packaging. Net sales increased $465 million, or 16.1%, to $3,342 million, compared to $2,877 million in the six months ended June 30, 2020, due to higher containerboard and corrugated products volume ($264 million) and higher containerboard and corrugated products prices and mix ($201 million). In the first six months of 2021, our domestic containerboard prices were 8.9% higher, while export prices were 22.5% higher, than the same period in 2020. In the first six months of 2021, export and domestic containerboard outside shipments increased 21.7% compared to the first six months of 2020. Total corrugated products shipments were up 8.1% with one less workday, and up 9.0% per day compared to the same period in 2020.

Paper. Net sales during the six months ended June 30, 2021 decreased $34 million, or 10.0%, to $307 million, compared to $341 million in the six months ended June 30, 2020, due to decreased volume ($27 million) and lower prices and mix ($7 million), primarily related to the COVID-19 pandemic.

Gross Profit

Gross profit increased $162 million during the six months ended June 30, 2021, compared to the same period in 2020. The increase was driven primarily by higher prices and mix and higher volumes in our Packaging segment, partially offset by lower volume and lower prices and mix in our Paper segment, higher operating and converting costs, higher freight and logistic expenses, and higher annual outage expense. In the six months ended June 30, 2021, gross profit included $3 million of special items expense for the Jackson mill conversion and facility closure costs. In the six months ended June 30, 2020, gross profit included $7 million of special items expense for incremental out-of-pocket costs related to the COVID-19 pandemic, including supplies, cleaning and sick pay, and $3 million of accelerated depreciation associated with the closure of our San Lorenzo, California facility.

Selling, General, and Administrative Expenses

Selling, general, and administrative expenses (“SG&A”) increased $9 million during the six months ended June 30, 2021, compared to the same period in 2020. The increase was primarily due to higher employee compensation and fringes.

Goodwill Impairment

During the six months ended June 30, 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 million in the second quarter of 2020.

Other Expense, Net

Other income (expense), net, for the six months ended June 30, 2021 and 2020 are set forth below (dollars in millions):

	Six Months Ended June 30,	
	2021	**2020**
Asset disposals and write-offs	$ (19.9)	$ (11.0)
Facilities closure and other income (costs)	3.4	(13.7)
Jackson mill conversion	(2.9)	—
Other	(8.9)	(3.4)
Total	$ (28.3)	$ (28.1)

We discuss these items in more detail in Note 5, Other Expense, Net, of the Condensed Notes to Unaudited Quarterly Consolidated Financial Statements in “Part I, Item 1. Financial Statements” of this Form 10-Q.

Income from Operations

Income from operations increased $208 million, or 63.9%, during the six months ended June 30, 2021, compared to the same period in 2020. The first six months of 2021 included $5 million of special items expense related to Jackson mill conversion costs, partially offset by $3 million of income related to facility closures, compared to $83 million of special items expense for Paper reporting unit goodwill impairment; incremental, out-of-pocket costs related to COVID-19; and facility closure costs in the same period in 2020.

Packaging. Packaging segment income from operations increased $178 million to $575 million during the first six months of 2021, compared to the same period last year. The increase related primarily to higher containerboard and corrugated products prices and mix ($170 million), higher sales and production volumes ($154 million), partially offset by higher operating and converting costs ($122 million), higher freight expenses ($26 million), higher annual outage expenses ($16 million), and higher depreciation expense ($9 million). Special items during the first six months of 2021 included $2 million of income related to facility closures and $1 million of costs related to the Jackson mill conversion, compared to $21 million of expense related to facility closure costs and $6 million of incremental, out-of-pocket costs related to COVID-19 in the first six months of 2020.

Paper. Paper segment income from operations increased $40 million to $11 million, compared to the six months ended June 30, 2020. The increase primarily related to lower operating costs ($29 million), lower annual outage expenses ($7 million), and lower depreciation expense ($8 million), partially offset by lower sales and production volumes ($32 million), lower prices and mix ($6 million), and higher freight and other expenses ($17 million). Special items during the first six months of 2021 included $4 million of expense related to Jackson mill conversion costs, compared to $55 million of goodwill impairment and $1 million of incremental, out-of-pocket costs related to COVID-19 in the first six months of 2020.

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

Non-operating pension income increased $9 million during the six months ended June 30, 2021, compared to the same period in 2020. The increase in non-operating pension income was primarily related to the favorable 2020 asset performance.

Interest expense, net increased $4 million during the six months ended June 30, 2021, compared to the same period in 2020. The increase in interest expense, net was primarily related to lower interest income due to lower rates on invested cash balances in 2021, partially offset by higher cash balances in 2021, and higher earnings on deferred compensation balances in 2021.

During the six months ended June 30, 2021, we recorded $121 million of income tax expense, compared to $83 million of expense during the six months ended June 30, 2020. The effective tax rate for the six months ended June 30, 2021 and 2020 was 24.4% and 29.6%, respectively. The decrease in our effective tax rate was primarily due to the nondeductible goodwill impairment charge associated with our Paper reporting unit recognized during the six months ended June 30, 2020 with no corresponding charge during the six months ended June 30, 2021.

Liquidity and Capital Resources

Sources and Uses of Cash

Our primary sources of liquidity are net cash provided by operating activities, cash on hand, and available borrowing capacity under our revolving credit facility. At June 30, 2021, we had $972 million of cash and cash equivalents, $152 million of marketable debt securities, and $326 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, common stock dividends, debt service, acquisitions, 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, refinance, extend, or replace such debt or credit 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):

	Six Months Ended June 30, 2021	Six Months Ended June 30, 2020	Change
Net cash provided by (used for):			
Operating activities	$ 419.8	$ 463.5	$ (43.7)
Investing activities	(220.2)	(128.8)	(91.4)
Financing activities	(202.0)	(160.9)	(41.1)
Net (decrease) increase in cash and cash equivalents	$ (2.4)	$ 173.8	$ (176.2)

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 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 the six months ended June 30, 2021, net cash provided by operating activities was $420 million, compared to $464 million in the same period in 2020, a decrease of $44 million. Cash from operations excluding changes in cash used for operating assets and liabilities increased $109 million primarily due to higher income from operations in 2021 as discussed above. Cash decreased by $152 million due to changes in operating assets and liabilities, primarily due to the following:

a) an increase in accounts receivable due to higher sales volumes and pricing in the second quarter in the Packaging segment, an increase in sales volumes in the Paper segment for the second quarter compared to last year primarily due to the impact of the pandemic in 2020, as well as the timing of collection of receivables in both the Packaging and Paper segments;

b) an increase in prepaid expenses primarily due to the timing of annual mill maintenance outages; and

c) a decrease in the change in income taxes payable primarily due to higher tax payments in 2021.

These items were partially offset by an increase in accounts payable for the Paper segment primarily due to the impact of the curtailment of the Jackson mill in the second quarter of 2020.

Investing Activities

We used $220 million for investing activities during the six months ended June 30, 2021 compared to $129 million during the same period in 2020. We spent $217 million for internal capital investments during the six months ended June 30, 2021, compared to $151 million during the same period in 2020. In the six months ended June 30, 2021, we used $5 million of cash-on-hand to purchase available-for-sale (AFS) marketable debt securities, net of redemptions, compared to $23 million in redemptions of marketable debt securities, net of purchases, in the same period in 2020.

We expect capital investments in 2021 to be between $650 million and $675 million, including capital spending related to the conversion of the No. 3 paper machine to containerboard at our Jackson mill. 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 2021. Our estimated environmental expenditures could vary significantly depending upon the enactment of new environmental laws and regulations, including those related to greenhouse gas emissions and industrial boilers. For additional information, see “Environmental Matters” in “Part II, Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” of our 2020 Annual Report on Form 10-K.

Financing Activities

During the six months ended June 30, 2021, net cash used for financing activities was $202 million, compared to $161 million during the same period in 2020. In the first six months of 2021, we paid $190 million of dividends compared to $150 million of dividends paid during the first six months of 2020. In addition, we paid $1 million of debt issuance costs related to the New Revolving Credit Agreement that was entered into on June 8, 2021.

In addition to the items discussed in Note 11, Debt, of the Condensed Notes to Unaudited Quarterly Consolidated Financial Statements in "Part I, Item 1. Financial Statements" of this Form 10-Q, for more information about our debt, see Note 10, Debt, of the Notes to Consolidated Financial Statements in “Part II, Item 8. Financial Statements and Supplementary Data” of our 2020 Annual Report on Form 10-K.

Contractual Obligations

There have been no material changes to the contractual obligations table disclosed in Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations” of our 2020 Annual Report on Form 10-K.

Reconciliations of Non-GAAP Financial Measures to Reported Amounts

Income from operations excluding special items, 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 three and six months ended June 30, 2021 and 2020 follow (dollars in millions):

	Three Months Ended June 30,					
	2021			2020		
	Income before Taxes	Income Taxes	Net Income	Income before Taxes	Income Taxes	Net Income
As reported in accordance with GAAP	$ 274.7	$ (67.4)	$ 207.3	$ 91.6	$ (34.9)	$ 56.7
Special items:						
Facilities closure and other costs (income) (a)	(4.7)	1.2	(3.5)	20.4	(5.1)	15.3
Jackson mill conversion (b)	3.8	(1.0)	2.8	—	—	—
Goodwill impairment (c)	—	—	—	55.2	—	55.2
Incremental costs for COVID-19 (d)	—	—	—	6.1	(1.5)	4.6
Total special items	(0.9)	0.2	(0.7)	81.7	(6.6)	75.1
Excluding special items	$ 273.8	$ (67.2)	$ 206.6	$ 173.3	$ (41.5)	$ 131.8

	Six Months Ended June 30,					
	2021			2020		
	Income before Taxes	Income Taxes	Net Income	Income before Taxes	Income Taxes	Net Income
As reported in accordance with GAAP	$ 494.3	$ (120.5)	$ 373.8	$ 281.7	$ (83.4)	$ 198.3
Special items:						
Facilities closure and other costs (income) (a)	(2.6)	0.6	(2.0)	20.8	(5.2)	15.6
Jackson mill conversion (b)	4.9	(1.2)	3.7	—	—	—
Goodwill impairment (c)	—	—	—	55.2	—	55.2
Incremental costs for COVID-19 (d)	—	—	—	6.9	(1.7)	5.2
Total special items	2.3	(0.6)	1.7	82.9	(6.9)	76.0
Excluding special items	$ 496.6	$ (121.1)	$ 375.5	$ 364.6	$ (90.3)	$ 274.3

(a) 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 corporate assets, 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 closure costs related to corrugated products facilities, substantially all of which relate to the 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.

(b) 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.

(c) 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 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.

(d) Includes 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.

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

	Three Months Ended June 30,		Six Months Ended June 30,	
	2021	2020	2021	2020
Net income	$ 207.3	$ 56.7	$ 373.8	$ 198.3
Non-operating pension income	(5.0)	(0.6)	(9.8)	(1.1)
Interest expense, net	24.9	25.1	48.4	44.6
Income tax provision	67.4	34.9	120.5	83.4
Depreciation, amortization, and depletion	104.7	108.3	205.5	208.5
EBITDA	$ 399.3	$ 224.4	$ 738.4	$ 533.7
Special items:				
Facilities closure and other costs (income)	(5.0)	13.3	(2.9)	13.7
Jackson mill conversion	2.5	—	3.1	—
Goodwill impairment	—	55.2	—	55.2
Incremental costs for COVID-19	—	6.1	—	6.9
Total special items	(2.5)	74.6	0.2	75.8
EBITDA excluding special items	$ 396.8	$ 299.0	$ 738.6	$ 609.5

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

	Three Months Ended June 30, 2021	Three Months Ended June 30, 2020	Six Months Ended June 30, 2021	Six Months Ended June 30, 2020
Packaging				
Segment income	$ 317.2	$ 197.6	$ 575.1	$ 397.5
Depreciation, amortization, and depletion	94.9	96.0	187.0	184.8
EBITDA	412.1	293.6	762.1	582.3
Facilities closure and other costs (income)	(4.2)	13.3	(2.1)	13.7
Jackson mill conversion	0.9	—	0.9	—
Incremental costs for COVID-19	—	5.6	—	6.3
EBITDA excluding special items	**$ 408.8**	**$ 312.5**	**$ 760.9**	**$ 602.3**
Paper				
Segment income (loss)	$ 2.6	$ (61.4)	$ 11.3	$ (29.0)
Depreciation, amortization, and depletion	7.5	10.4	14.0	19.9
EBITDA	10.1	(51.0)	25.3	(9.1)
Jackson mill conversion	1.5	—	2.1	—
Goodwill impairment	—	55.2	—	55.2
Incremental costs for COVID-19	—	0.5	—	0.6
EBITDA excluding special items	**$ 11.6**	**$ 4.7**	**$ 27.4**	**$ 46.7**
Corporate and Other				
Segment loss	$ (25.2)	$ (20.1)	$ (53.5)	$ (43.3)
Depreciation, amortization, and depletion	2.3	1.9	4.5	3.8
EBITDA	(22.9)	(18.2)	(49.0)	(39.5)
Facilities closure and other income	(0.8)	—	(0.8)	—
Jackson mill conversion	0.1	—	0.1	—
EBITDA excluding special items	**$ (23.6)**	**$ (18.2)**	**$ (49.7)**	**$ (39.5)**
EBITDA	**$ 399.3**	**$ 224.4**	**$ 738.4**	**$ 533.7**
EBITDA excluding special items	**$ 396.8**	**$ 299.0**	**$ 738.6**	**$ 609.5**

Market Risk and Risk Management Policies

PCA is exposed to the impact of interest rate changes and changes in the market value of its financial instruments. We periodically enter into derivatives to minimize these risks, but not for trading purposes. We were not a party to any derivatives-based arrangements at June 30, 2021. For a discussion of derivatives and hedging activities, see Note 15, Derivative Instruments and Hedging Activities, of the Notes to Consolidated Financial Statements in “Part II, Item 8. Financial Statements and Supplementary Data” of our 2020 Annual Report on Form 10-K.

At June 30, 2021, interest rates on 100% of PCA’s outstanding debt are fixed.

Off-Balance-Sheet Activities

The Company does not have any off-balance sheet arrangements as of June 30, 2021.

Environmental Matters

There have been no material changes to the disclosure set forth in Item 7. “Management’s Discussion and Analysis of Financial Condition and Results of Operations - Environmental Matters” filed with our 2020 Annual Report on Form 10-K.

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, pensions and other postretirement benefits, goodwill and intangible assets, long-lived asset impairment, environmental liabilities, and income taxes, 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.

PCA has included in its 2020 Annual Report on Form 10-K a discussion of its critical accounting policies and estimates which require management's most difficult, subjective, or complex judgments used in the preparation of its consolidated financial statements. PCA has not had any changes to these critical accounting estimates during the first six months of 2021.

New and Recently Adopted Accounting Standards

For a listing of our new and recently adopted accounting standards, see Note 2, New and Recently Adopted Accounting Standards, of the Condensed Notes to Unaudited Quarterly Consolidated Financial Statements in "Part I, Item 1. Financial Statements" of this Form 10-Q.

Forward-Looking Statements

Some of the statements in this Quarterly Report on Form 10-Q, and in particular, statements found in this 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, and financial condition. These statements are often identified by the words "will," "should," "anticipate," "believe," "expect," "intend," "estimate," "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 the following:

- the impact of general economic conditions;
- the impact of the COVID-19 pandemic on the health of our employees, on our vendors and customers and on economic conditions affecting our business;
- the impact of acquired businesses and risks and uncertainties regarding operation, expected benefits and integration of such businesses;
- containerboard, corrugated products, and white paper general industry conditions, including competition, product demand, product pricing, and input costs;
- fluctuations in wood fiber and recycled fiber costs;
- fluctuations in purchased energy costs;
- the possibility of unplanned outages or interruptions at our principal facilities;
- legislative or regulatory actions or requirements, particularly concerning environmental or tax matters.

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 occur, what impact they will have on our results of operations or financial condition. Given these uncertainties, investors are cautioned not to place undue reliance on these forward-looking statements. We expressly disclaim any obligation to publicly revise any forward-looking statements that have been made to reflect the occurrence of events after the date hereof. For a discussion of other factors, risks and uncertainties that may affect our business, see Item 1A. Risk Factors included in our Annual Report on Form 10-K for the year ended December 31, 2020.

Item 3. *QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK*

For a discussion of market risks related to PCA, see Part I, Item 2, "Management's Discussion and Analysis of Financial Condition and Results of Operations - Market Risk and Risk Management Policies" in this Quarterly Report on Form 10-Q.

Item 4. *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 June 30, 2021. 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 June 30, 2021.

Changes in Internal Control over Financial Reporting

There have been no changes in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) that occurred during the most recent fiscal quarter ended June 30, 2021 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II
OTHER INFORMATION

Item 1. *LEGAL PROCEEDINGS*

The disclosure set forth under the caption "Legal Proceedings" in Note 19, Commitments, Guarantees, Indemnifications and Legal Proceedings, of the Condensed Notes to Unaudited Quarterly Consolidated Financial Statements in "Part I, Item 1. Financial Statements" of this Form 10-Q is incorporated herein by reference.

Item 1A. *RISK FACTORS*

There have been no material changes to the risk factors disclosed in “Part I, Item IA. Risk Factors” in our Annual Report on Form 10-K for the year ended December 31, 2020.

Item 2. *UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS*

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 June 30, 2021:

Issuer Purchases of Equity Securities

Period	Total Number of Shares Purchased (a)	Average Price Paid Per Share	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)
April 1-30, 2021	126	$ 137.84	—	$ 193.0
May 1-31, 2021	1,108	149.51	—	193.0
June 1-30, 2021	74,852	135.33	—	193.0
Total	76,086	$ 135.54	—	$ 193.0

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

Item 3. *DEFAULTS UPON SENIOR SECURITIES*

None.

Item 4. *MINE SAFETY DISCLOSURES*

Not applicable.

Item 5. *OTHER INFORMATION*

None.

Item 6. ***EXHIBITS***

Exhibit Number	Description
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).
31.1	Certification of Chief Executive Officer, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. †
31.2	Certification of Chief Financial Officer, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002. †
32	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. †
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its 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 (formatted as inline XBRL and contained in Exhibit 101). †

† Filed herewith.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Packaging Corporation of America

/s/ PAMELA A. BARNES

Pamela A. Barnes
Senior Vice President, Finance and Controller

Date: August 5, 2021

Exhibit 31.1

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

I, Mark W. Kowlzan, certify that:

(1) I have reviewed this quarterly report on Form 10-Q of Packaging Corporation of America (PCA);

(2) Based on my knowledge, this 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 report;

(3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of PCA as of, and for, the periods presented in this 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 and Chief Executive Officer

Date: August 5, 2021

Exhibit 31.2

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

I, Robert P. Mundy, certify that:

(1) I have reviewed this quarterly report on Form 10-Q of Packaging Corporation of America (PCA);

(2) Based on my knowledge, this 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 report;

(3) Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of PCA as of, and for, the periods presented in this 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: August 5, 2021

Exhibit 32

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

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 Quarterly Report of the Company on Form 10-Q for the period ended June 30, 2021 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 and Chief Executive Officer

Date: August 5, 2021

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 Quarterly Report of the Company on Form 10-Q for the period ended June 30, 2021 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: August 5, 2021