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

FORM 10-Q

(Mark One)

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

For the Quarterly Period Ended June 30, 2023

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 1-37816

ALCOA CORPORATION

(Exact name of registrant as specified in its charter)

Delaware	**81-1789115**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
201 Isabella Street, Suite 500, Pittsburgh, Pennsylvania	**15212-5858**
(Address of principal executive offices)	**(Zip Code)**

412-315-2900
(Registrant's telephone number, including area code)
Not applicable
(Former name, former address and former fiscal year, if changed since last report)

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

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

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth 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 24, 2023, 178,449,605 shares of common stock, par value $0.01 per share, of the registrant were outstanding.

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Forward-Looking Statements

This report contains statements that relate to future events and expectations and as such constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include those containing such words as “aims,” “ambition,” “anticipates,” “believes,” “could,” “develop,” “endeavors,” “estimates,” “expects,” “forecasts,” “goal,” “intends,” “may,” “outlook,” “potential,” “plans,” “projects,” “reach,” “seeks,” “sees,” “should,” “strive,” “targets,” “will,” “working,” “would,” or other words of similar meaning. All statements by Alcoa that reflect expectations, assumptions or projections about the future, other than statements of historical fact, are forward-looking statements, including, without limitation, forecasts concerning global demand growth for bauxite, alumina, and aluminum, and supply/demand balances; statements, projections or forecasts of future or targeted financial results, or operating performance (including our ability to execute on strategies related to environmental, social and governance matters); statements about strategies, outlook, and business and financial prospects; and statements about capital allocation and return of capital. These statements reflect beliefs and assumptions that are based on Alcoa’s perception of historical trends, current conditions, and expected future developments, as well as other factors that management believes are appropriate in the circumstances. Forward-looking statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties, and changes in circumstances that are difficult to predict. Although Alcoa believes that the expectations reflected in any forward-looking statements are based on reasonable assumptions, it can give no assurance that these expectations will be attained and it is possible that actual results may differ materially from those indicated by these forward-looking statements due to a variety of risks and uncertainties. Such risks and uncertainties include, but are not limited to: (a) cyclicality of the aluminum industry and aluminum end use markets, including due to the influence of global economic conditions, and unfavorable changes in the markets served by Alcoa; (b) the effects of non-market forces, such as government policies and political instability, on global aluminum supply and demand; (c) volatility and declines in the aluminum industry, including global supply and demand conditions and fluctuations in London Metal Exchange-based prices and premiums, as applicable, for primary aluminum and other commodities, and fluctuations in indexed-based and spot prices for alumina; (d) legal, regulatory, economic, political, trade, public health and safety, and reputational risks and conditions, including changes in conditions beyond our control as a result of our participation in increasingly competitive and complex global markets; (e) our ability to obtain, maintain, or renew permits or approvals necessary for our mining operations; (f) unfavorable changes in cost, quality, or availability of key inputs, including energy and raw materials, or uncertainty of or disruption to the supply chain including logistics; (g) our ability to realize expected benefits or achieve intended results, including as planned and by targeted completion dates, from announced strategies, plans, programs, or initiatives relating to our portfolio, profitability, capital investments, and developing technologies, and from joint ventures or other strategic alliances or business transactions; (h) fluctuations in foreign currency exchange and tax rates on costs and results; (i) changes in tax laws or exposure to additional tax liabilities; (j) changes in global economic and financial market conditions generally, such as inflation, recessionary conditions, and interest rate increases, which may also affect Alcoa’s ability to obtain credit or financing upon acceptable terms or at all; (k) current and potential future impacts to the global economy and our industry, business and financial condition caused by various worldwide or macroeconomic events, such as the ongoing conflict between Russia and Ukraine; (l) global competition within and beyond the aluminum industry; (m) our ability to obtain or maintain adequate insurance coverage; (n) the outcomes of contingencies, including legal and tax proceedings, government or regulatory investigations, and environmental remediation, or changes in foreign and/or U.S. federal, state, or local laws, regulations, or policies; (o) the impacts of climate change, related legislation or regulations, and efforts to reduce greenhouse gas emissions and our ability to achieve strategies and expectations related to climate change and other environmental matters; (p) claims, costs and liabilities resulting from the impact of our operations, including impoundments, or from health, safety, and environmental laws, regulations, and requirements, in the areas where we operate; (q) the impact of cyberattacks and potential information technology or data security breaches, including disruptions to our operations, liability, and reputational harm; (r) our ability to fund capital expenditures; (s) risks associated with long-term debt obligations including restrictions on our current and future operations as a result of our indebtedness; (t) our ability to continue to return capital to stockholders through cash dividends and/or share repurchases; (u) the impact of labor disputes, work stoppages and strikes, or other employee relations issues, as well as labor market conditions; (v) declines in the discount rates used to measure pension and other postretirement benefit liabilities or lower-than-expected investment returns on pension assets, or unfavorable changes in laws or regulations that govern pension plan funding; and (w) the other risk factors discussed in Part I Item IA of Alcoa’s Annual Report on Form 10-K for the fiscal year ended December 31, 2022 and other reports filed by Alcoa with the SEC. Alcoa disclaims any obligation to update publicly any forward-looking statements, whether in response to new information, future events or otherwise, except as required by applicable law. Market projections are subject to the risks described above and other risks in the market.

PART I – FINANCIAL INFORMATION

Item 1. Financial Statements.

Alcoa Corporation and Subsidiaries
Statement of Consolidated Operations (unaudited)
(in millions, except per-share amounts)

	Second quarter ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Sales (E)	$ 2,684	$ 3,644	$ 5,354	$ 6,937
Cost of goods sold (exclusive of expenses below)	2,515	2,767	4,919	4,948
Selling, general administrative, and other expenses	52	52	106	96
Research and development expenses	6	7	16	16
Provision for depreciation, depletion, and amortization	153	161	306	321
Restructuring and other charges, net (D)	24	(75)	173	50
Interest expense	27	30	53	55
Other expenses (income), net (R)	6	(206)	60	(220)
Total costs and expenses	2,783	2,736	5,633	5,266
(Loss) income before income taxes	(99)	908	(279)	1,671
Provision for income taxes	22	234	74	444
Net (loss) income	(121)	674	(353)	1,227
Less: Net (loss) income attributable to noncontrolling interest	(19)	125	(20)	209
NET (LOSS) INCOME ATTRIBUTABLE TO ALCOA CORPORATION	$ (102)	$ 549	$ (333)	$ 1,018
EARNINGS PER SHARE ATTRIBUTABLE TO ALCOA CORPORATION COMMON SHAREHOLDERS (F):				
Basic	$ (0.57)	$ 3.01	$ (1.87)	$ 5.55
Diluted	$ (0.57)	$ 2.95	$ (1.87)	$ 5.44

The accompanying notes are an integral part of the consolidated financial statements.

Alcoa Corporation and Subsidiaries
Statement of Consolidated Comprehensive Income (unaudited)
(in millions)

	Alcoa Corporation		Noncontrolling interest		Total	
	Second quarter ended June 30,		Second quarter ended June 30,		Second quarter ended June 30,	
	2023	2022	2023	2022	2023	2022
Net (loss) income	$ (102)	$ 549	$ (19)	$ 125	$ (121)	$ 674
Other comprehensive income (loss), net of tax (G):						
Change in unrecognized net actuarial loss and prior service cost/benefit related to pension and other postretirement benefits	10	52	(2)	—	8	52
Foreign currency translation adjustments	25	(370)	11	(132)	36	(502)
Net change in unrecognized gains/losses on cash flow hedges	226	1,137	—	1	226	1,138
Total Other comprehensive income (loss), net of tax	261	819	9	(131)	270	688
Comprehensive income (loss)	$ 159	$ 1,368	$ (10)	$ (6)	$ 149	$ 1,362

	Alcoa Corporation		Noncontrolling interest		Total	
	Six months ended June 30,		Six months ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022	2023	2022
Net (loss) income	$ (333)	$ 1,018	$ (20)	$ 209	$ (353)	$ 1,227
Other comprehensive income (loss), net of tax (G):						
Change in unrecognized net actuarial loss and prior service cost/benefit related to pension and other postretirement benefits	14	74	(2)	1	12	75
Foreign currency translation adjustments	27	(44)	26	(34)	53	(78)
Net change in unrecognized gains/losses on cash flow hedges	104	307	—	2	104	309
Total Other comprehensive income (loss), net of tax	145	337	24	(31)	169	306
Comprehensive (loss) income	$ (188)	$ 1,355	$ 4	$ 178	$ (184)	$ 1,533

The accompanying notes are an integral part of the consolidated financial statements.

Alcoa Corporation and Subsidiaries
Consolidated Balance Sheet (unaudited)
(in millions)

	June 30, 2023	December 31, 2022
ASSETS		
Current assets:		
Cash and cash equivalents (N)	$ 990	$ 1,363
Receivables from customers (I)	702	778
Other receivables	104	131
Inventories (J)	2,400	2,427
Fair value of derivative instruments (N)	93	134
Prepaid expenses and other current assets	381	417
Total current assets	4,670	5,250
Properties, plants, and equipment	19,814	19,605
Less: accumulated depreciation, depletion, and amortization	13,369	13,112
Properties, plants, and equipment, net	6,445	6,493
Investments (H)	1,034	1,122
Deferred income taxes	320	296
Fair value of derivative instruments (N)	5	2
Other noncurrent assets	1,654	1,593
Total assets	$ 14,128	$ 14,756
LIABILITIES		
Current liabilities:		
Accounts payable, trade	$ 1,491	$ 1,757
Accrued compensation and retirement costs	340	335
Taxes, including income taxes	67	230
Fair value of derivative instruments (N)	165	200
Other current liabilities	532	481
Long-term debt due within one year (L & N)	1	1
Total current liabilities	2,596	3,004
Long-term debt, less amount due within one year (L & N)	1,808	1,806
Accrued pension benefits (M)	242	213
Accrued other postretirement benefits (M)	445	480
Asset retirement obligations (P)	717	711
Environmental remediation (Q)	215	226
Fair value of derivative instruments (N)	912	1,026
Noncurrent income taxes	221	215
Other noncurrent liabilities and deferred credits	514	486
Total liabilities	7,670	8,167
CONTINGENCIES AND COMMITMENTS (Q)		
EQUITY		
Alcoa Corporation shareholders' equity:		
Common stock	2	2
Additional capital	9,173	9,183
Accumulated deficit	(939)	(570)
Accumulated other comprehensive loss (G)	(3,394)	(3,539)
Total Alcoa Corporation shareholders' equity	4,842	5,076
Noncontrolling interest	1,616	1,513
Total equity	6,458	6,589
Total liabilities and equity	$ 14,128	$ 14,756

The accompanying notes are an integral part of the consolidated financial statements.

Alcoa Corporation and Subsidiaries
Statement of Consolidated Cash Flows (unaudited)
(in millions)

	Six months ended June 30,	
	2023	**2022**
CASH FROM OPERATIONS		
Net (loss) income	$ (353)	$ 1,227
Adjustments to reconcile net (loss) income to cash from operations:		
Depreciation, depletion, and amortization	306	321
Deferred income taxes	(36)	93
Equity loss (income), net of dividends	123	(61)
Restructuring and other charges, net (D)	173	50
Net loss from investing activities – asset sales (R)	19	5
Net periodic pension benefit cost (M)	2	28
Stock-based compensation	21	20
Loss (gain) on mark-to-market derivative financial contracts	4	(123)
Other	59	28
Changes in assets and liabilities, excluding effects of divestitures and foreign currency translation adjustments:		
Decrease (increase) in receivables	71	(153)
Decrease (increase) in inventories	22	(657)
Decrease in prepaid expenses and other current assets	63	15
(Decrease) increase in accounts payable, trade	(277)	98
Decrease in accrued expenses	(48)	(103)
Decrease in taxes, including income taxes	(146)	(79)
Pension contributions (M)	(9)	(9)
Increase in noncurrent assets	(66)	(71)
Decrease in noncurrent liabilities	(104)	(59)
CASH (USED FOR) PROVIDED FROM OPERATIONS	(176)	570
FINANCING ACTIVITIES		
Additions to debt	25	—
Payments on debt	(16)	—
Proceeds from the exercise of employee stock options	1	22
Repurchase of common stock	—	(350)
Dividends paid on Alcoa common stock	(36)	(37)
Payments related to tax withholding on stock-based compensation awards	(34)	(19)
Financial contributions for the divestiture of businesses (C)	(25)	(9)
Contributions from noncontrolling interest	122	83
Distributions to noncontrolling interest	(22)	(245)
Other	1	(3)
CASH PROVIDED FROM (USED FOR) FINANCING ACTIVITIES	16	(558)
INVESTING ACTIVITIES		
Capital expenditures	(198)	(181)
Proceeds from the sale of assets	2	4
Additions to investments	(36)	(21)
Sale of investments	—	10
Other	10	2
CASH USED FOR INVESTING ACTIVITIES	(222)	(186)
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS AND RESTRICTED CASH	5	(2)
Net change in cash and cash equivalents and restricted cash	(377)	(176)
Cash and cash equivalents and restricted cash at beginning of year	1,474	1,924
CASH AND CASH EQUIVALENTS AND RESTRICTED CASH AT END OF PERIOD	$ 1,097	$ 1,748

The accompanying notes are an integral part of the consolidated financial statements.

Alcoa Corporation and Subsidiaries
Statement of Changes in Consolidated Equity (unaudited)
(in millions)

	Alcoa Corporation shareholders					
	Common stock	Additional capital	Accumulated deficit	Accumulated other comprehensive loss	Non-controlling interest	Total equity
Balance at January 1, 2022	$ 2	$ 9,577	$ (315)	$ (4,592)	$ 1,612	$ 6,284
Net income	—	—	469	—	84	553
Other comprehensive (loss) income (G)	—	—	—	(482)	100	(382)
Stock-based compensation	—	9	—	—	—	9
Net effect of tax withholding for compensation plans and exercise of stock options	—	2	—	—	—	2
Repurchase of common stock		(54)	(21)			(75)
Dividends paid on Alcoa common stock ($0.10 per share)	—	—	(19)	—	—	(19)
Contributions	—	—	—	—	46	46
Distributions	—	—	—	—	(162)	(162)
Other	—	3	—	—	(2)	1
Balance at March 31, 2022	$ 2	$ 9,537	$ 114	$ (5,074)	$ 1,678	$ 6,257
Net income	—	—	549	—	125	674
Other comprehensive income (loss) (G)	—	—	—	819	(131)	688
Stock-based compensation	—	11	—	—	—	11
Net effect of tax withholding for compensation plans and exercise of stock options	—	1	—	—	—	1
Repurchase of common stock		(236)	(39)			(275)
Dividends paid on Alcoa common stock ($0.10 per share)	—	—	(18)	—	—	(18)
Contributions	—	—	—	—	37	37
Distributions	—	—	—	—	(83)	(83)
Balance at June 30, 2022	$ 2	$ 9,313	$ 606	$ (4,255)	$ 1,626	$ 7,292
Balance at January 1, 2023	$ 2	$ 9,183	$ (570)	$ (3,539)	$ 1,513	$ 6,589
Net loss	—	—	(231)	—	(1)	(232)
Other comprehensive (loss) income (G)	—	—	—	(116)	15	(101)
Stock-based compensation	—	10	—	—	—	10
Net effect of tax withholding for compensation plans and exercise of stock options	—	(33)	—	—	—	(33)
Dividends paid on Alcoa common stock ($0.10 per share)	—	—	(18)	—	—	(18)
Contributions	—	—	—	—	86	86
Distributions	—	—	—	—	(6)	(6)
Other	—	2	—	—	(1)	1
Balance at March 31, 2023	$ 2	$ 9,162	$ (819)	$ (3,655)	$ 1,606	$ 6,296
Net loss	—	—	(102)	—	(19)	(121)
Other comprehensive income (G)	—	—	—	261	9	270
Stock-based compensation	—	11	—	—	—	11
Dividends paid on Alcoa common stock ($0.10 per share)	—	—	(18)	—	—	(18)
Contributions	—	—	—	—	36	36
Distributions	—	—	—	—	(16)	(16)
Balance at June 30, 2023	$ 2	$ 9,173	$ (939)	$ (3,394)	$ 1,616	$ 6,458

The accompanying notes are an integral part of the consolidated financial statements.

A. Basis of Presentation – The interim Consolidated Financial Statements of Alcoa Corporation and its subsidiaries (Alcoa Corporation, Alcoa, or the Company) are unaudited. These Consolidated Financial Statements include all adjustments, consisting only of normal recurring adjustments, considered necessary by management to fairly state the Company's results of operations, financial position, and cash flows. The results reported in these Consolidated Financial Statements are not necessarily indicative of the results that may be expected for the entire year. The 2022 year-end balance sheet data was derived from audited financial statements but does not include all disclosures required by accounting principles generally accepted in the United States of America (GAAP). This Quarterly Report on Form 10-Q should be read in conjunction with the Company's Annual Report on Form 10-K for the year ended December 31, 2022, which includes disclosures required by GAAP.

In accordance with GAAP, certain situations require management to make estimates based on judgments and assumptions, which may affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements. They also may affect the reported amounts of revenues and expenses during the reporting periods. Management uses historical experience and all available information to make these estimates. Management regularly evaluates the judgments and assumptions used in its estimates, and results could differ from those estimates upon future events and their effects or new information.

Principles of Consolidation. The Consolidated Financial Statements of Alcoa Corporation include the accounts of Alcoa Corporation and companies in which Alcoa Corporation has a controlling interest, including those that comprise the Alcoa World Alumina & Chemicals (AWAC) joint venture (see below). Intercompany transactions have been eliminated. The equity method of accounting is used for investments in affiliates and other joint ventures over which Alcoa Corporation has significant influence but does not have effective control. Investments in affiliates in which Alcoa Corporation cannot exercise significant influence are accounted for at cost less any impairment, a measurement alternative in accordance with GAAP.

AWAC is an unincorporated global joint venture between Alcoa Corporation and Alumina Limited and consists of several affiliated operating entities, which own, have an interest in, or operate the bauxite mines and alumina refineries within Alcoa Corporation's Alumina segment (except for the Poços de Caldas mine and refinery, portions of the São Luís refinery, and investment in Mineração Rio do Norte S.A. (MRN) until its sale in April 2022, all in Brazil) and a portion (55%) of the Portland smelter (Australia) within Alcoa Corporation's Aluminum segment. Alcoa Corporation owns 60% and Alumina Limited owns 40% of these individual entities, which are consolidated by the Company for financial reporting purposes and include Alcoa of Australia Limited (AofA), Alcoa World Alumina LLC (AWA), Alcoa World Alumina Brasil Ltda. (AWAB), and Alúmina Española, S.A. (Española). Alumina Limited's interest in the equity of such entities is reflected as Noncontrolling interest on the accompanying Consolidated Balance Sheet.

B. Recently Adopted and Recently Issued Accounting Guidance

On January 1, 2023, the Company adopted Accounting Standard Update No. 2022-04 which requires a buyer in a supplier finance program to disclose qualitative and quantitative information about its supplier finance programs, including the key terms of the program, the amount of obligations outstanding at the end of the reporting period, a description of where those obligations are presented in the balance sheet, and effective January 1, 2024, a roll-forward of such amounts during the annual period. The adoption of this guidance resulted in enhanced disclosures regarding these programs (see Note S) and did not have a material impact on the Company's Consolidated Financial Statements.

C. Divestitures

In conjunction with the sale of its rolling mill located at Warrick Operations (Warrick Rolling Mill) in March 2021, the Company recorded estimated liabilities for site separation commitments. The Company recorded a charge of $17 in the six-month period of 2023 and $5 in the second quarter and six-month period of 2022 in Other expenses (income), net on the Statement of Consolidated Operations related to these commitments. In the second quarter and the six-month period of 2023, the Company spent $11 and $25 against the reserve, respectively. In the second quarter and six-month period of 2022, the Company spent $7 and $9 against the reserve, respectively. The remaining balance of $38 at June 30, 2023 is expected to be spent over the next 12 months.

D. Restructuring and Other Charges, Net – In the second quarter and the six-month period of 2023, Alcoa Corporation recorded Restructuring and other charges, net, of $24 and $173, respectively, which were comprised of:

- A charge of $101 (six-month period only) for asset impairments and to establish reserves for environmental, demolition and employee severance costs related to the permanent closure of the Intalco (Washington) aluminum smelter;
- A charge of $47 (six-month period only) for increased reserves for certain employee obligations related to the updated viability agreement for the San Ciprián (Spain) aluminum smelter;
- A charge of $21 (both periods) related to the settlement of certain pension benefits (see Note M);
- A charge of $2 (both periods) for employee termination and severance costs for overhead reductions; and,
- Charges of $1 (six-month period only) and $1 (both periods) for several other insignificant items.

In March 2023, Alcoa Corporation announced the closure of the previously curtailed Intalco aluminum smelter. The facility had been fully curtailed since 2020. Charges related to the closure totaled $117 in the six-month period of 2023 and included a charge of $16 for the write down of remaining inventories to net realizable value recorded in Cost of goods sold on the Statement of Consolidated Operations and a charge of $101 recorded in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of asset impairments of $50, environmental and demolition obligation reserves of $50, and severance and employee termination costs from the separation of approximately 12 employees of $1. Cash outlays related to the permanent closure of the site are expected to be approximately $85 over the next three years, with approximately $25 to be spent in 2023.

On February 3, 2023, the Company reached an updated viability agreement with the workers' representatives to commence the restart process of the San Ciprián aluminum smelter in phases beginning in January 2024. Under the terms of the updated viability agreement, the Company is responsible for certain employee obligations during 2024 and 2025. As a result, the Company recorded charges of $47 in the six-month period of 2023 in Restructuring and other charges, net on the Statement of Consolidated Operations. Cash outlays related to these obligations are expected in 2024 and 2025.

Alcoa Corporation recorded a net benefit of $75 in the second quarter of 2022 and a net charge of $50 in the six-month period of 2022 in Restructuring and other charges, net, which were comprised of:

- A reversal of $83 (both periods) for the reversal of a valuation allowance on Brazil value added taxes (VAT) (see Note R);
- A net charge of $3 and net reversal of $6, respectively, for changes in estimated take-or-pay contract costs at the closed Wenatchee (Washington) and Intalco smelters;
- A net charge of $3 and $2, respectively, for site remediation at previously closed sites;
- A charge of $2 and $79, respectively, for the offer made to the workers of the divested Avilés and La Coruña (Spain) facilities to settle various legal disputes related to the 2019 divestiture (see Note Q); and,
- A charge of $58 (six-month period only) for an asset impairment related to the sale of the Company's interest in MRN (see Note H).

Alcoa Corporation does not include Restructuring and other charges, net in the results of its reportable segments. The impact of allocating such charges to segment results would have been as follows:

	Second quarter ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Alumina [1]	$ 1	$ (83)	$ 2	$ (25)
Aluminum	19	5	165	73
Segment total	20	(78)	167	48
Corporate	4	3	6	2
Total Restructuring and other charges, net	$ 24	$ (75)	$ 173	$ 50

[1] Beginning in January 2023, the Company changed its operating segments, by combining the Bauxite and Alumina segments, and reported its financial results in the following two segments: (i) Alumina and (ii) Aluminum (see Note E).

Activity and reserve balances for restructuring charges were as follows:

	Severance and employee termination costs	Other costs	Total
Balance at December 31, 2021	$ 3	$ 90	$ 93
Restructuring and other charges, net	1	73	74
Cash payments	(2)	(37)	(39)
Reversals and other	(1)	(10)	(11)
Balance at December 31, 2022	1	116	117
Restructuring and other charges, net	3	49	52
Cash payments	(1)	(22)	(23)
Reversals and other	—	4	4
Balance at June 30, 2023	$ 3	$ 147	$ 150

The activity and reserve balances include only Restructuring and other charges, net that impact the reserves for Severance and employee termination costs and Other costs. Restructuring and other charges, net that affected other liability accounts such as Investments (see Note H), Accrued pension benefits (see Note M), Asset retirement obligations (see Note P), and Environmental remediation (see Note Q) are excluded from the above activity and balances. Reversals and other includes reversals of previously recorded liabilities and foreign currency translation impacts.

The noncurrent portion of the reserve was $30 and $3 at June 30, 2023 and December 31, 2022, respectively.

E. Segment Information – Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. Beginning in January 2023, the financial information provided to the chief operating decision maker (CODM) for the activities of the bauxite mines and the alumina refineries was combined, and accordingly the Company changed its operating segments. Beginning with the first quarter of 2023, the Company reported its financial results in the following two segments: (i) Alumina and (ii) Aluminum. Segment information for all prior periods presented has been updated to reflect the new segment structure. Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) for each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation's Segment Adjusted EBITDA may not be comparable to similarly titled measures of other companies. The CODM function regularly reviews the financial information, including Sales and Adjusted EBITDA, of these two operating segments to assess performance and allocate resources.

The operating results of Alcoa Corporation's reportable segments were as follows (differences between segment totals and consolidated amounts are in Corporate):

	Alumina	Aluminum	Total
Second quarter ended June 30, 2023			
Sales:			
Third-party sales	$ 894	$ 1,788	$ 2,682
Intersegment sales	397	4	401
Total sales	$ 1,291	$ 1,792	$ 3,083
Segment Adjusted EBITDA	$ 33	$ 110	$ 143
Supplemental information:			
Depreciation, depletion, and amortization	$ 80	$ 68	$ 148
Equity loss	$ (11)	$ (16)	$ (27)
Second quarter ended June 30, 2022			
Sales:			
Third-party sales	$ 1,111	$ 2,539	$ 3,650
Intersegment sales	483	8	491
Total sales	$ 1,594	$ 2,547	$ 4,141
Segment Adjusted EBITDA	$ 358	$ 596	$ 954
Supplemental information:			
Depreciation, depletion, and amortization	$ 84	$ 71	$ 155
Equity (loss) income	$ (5)	$ 40	$ 35

	Alumina	Aluminum	Total
Six months ended June 30, 2023			
Sales:			
Third-party sales	$ 1,751	$ 3,598	$ 5,349
Intersegment sales	818	7	825
Total sales	$ 2,569	$ 3,605	$ 6,174
Segment Adjusted EBITDA	$ 136	$ 294	$ 430
Supplemental information:			
Depreciation, depletion, and amortization	$ 157	$ 138	$ 295
Equity loss	$ (28)	$ (73)	$ (101)
Six months ended June 30, 2022			
Sales:			
Third-party sales	$ 2,009	$ 4,927	$ 6,936
Intersegment sales	896	15	911
Total sales	$ 2,905	$ 4,942	$ 7,847
Segment Adjusted EBITDA	$ 660	$ 1,309	$ 1,969
Supplemental information:			
Depreciation, depletion, and amortization	$ 169	$ 140	$ 309
Equity (loss) income	$ (4)	$ 79	$ 75

The following table reconciles total Segment Adjusted EBITDA to Consolidated net (loss) income attributable to Alcoa Corporation:

	Second quarter ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Total Segment Adjusted EBITDA	$ 143	$ 954	$ 430	$ 1,969
Unallocated amounts:				
Transformation[1]	(17)	(11)	(25)	(25)
Intersegment eliminations	31	10	23	110
Corporate expenses[2]	(24)	(35)	(54)	(64)
Provision for depreciation, depletion, and amortization	(153)	(161)	(306)	(321)
Restructuring and other charges, net (D)	(24)	75	(173)	(50)
Interest expense	(27)	(30)	(53)	(55)
Other (expenses) income, net (R)	(6)	206	(60)	220
Other[3]	(22)	(100)	(61)	(113)
Consolidated (loss) income before income taxes	(99)	908	(279)	1,671
Provision for income taxes	(22)	(234)	(74)	(444)
Net loss (income) attributable to noncontrolling interest	19	(125)	20	(209)
Consolidated net (loss) income attributable to Alcoa Corporation	$ (102)	$ 549	$ (333)	$ 1,018

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.

(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.

(3) Other includes certain items that are not included in the Adjusted EBITDA of the reportable segments.

The following table details Alcoa Corporation's Sales by product division:

	Second quarter ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Aluminum	$ 1,824	$ 2,624	$ 3,670	$ 5,071
Alumina	774	1,064	1,488	1,914
Energy	26	40	54	81
Bauxite	109	27	236	55
Other[1]	(49)	(111)	(94)	(184)
	$ 2,684	$ 3,644	$ 5,354	$ 6,937

(1) Other includes realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum.

F. Earnings Per Share – Basic earnings per share (EPS) amounts are computed by dividing earnings by the average number of common shares outstanding. Diluted EPS amounts assume the issuance of common stock for all potentially dilutive share equivalents outstanding.

The share information used to compute basic and diluted EPS attributable to Alcoa Corporation common shareholders was as follows (shares in millions):

	Second quarter ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Net (loss) income attributable to Alcoa Corporation	$ (102)	$ 549	$ (333)	$ 1,018
Average shares outstanding – basic	178	182	178	183
Effect of dilutive securities:				
Stock options	—	—	—	—
Stock units	—	4	—	4
Average shares outstanding – diluted	178	186	178	187

In the second quarter and six-month period of 2023, basic average shares outstanding and diluted average shares outstanding were the same because the effect of potential shares of common stock was anti-dilutive. Had Alcoa generated net income in the second quarter or six-month period of 2023, two million and three million common share equivalents, respectively, related to three million outstanding stock units and stock options combined would have been included in diluted average shares outstanding for the periods.

For the second quarter and six-month period of 2022, all options to purchase shares of common stock were included in the computation of diluted EPS.

G. Accumulated Other Comprehensive Loss

The following table details the activity of the three components that comprise Accumulated other comprehensive loss for both Alcoa Corporation's shareholders and Noncontrolling interest:

	Alcoa Corporation		Noncontrolling interest	
	Second quarter ended June 30,		Second quarter ended June 30,	
	2023	2022	2023	2022
Pension and other postretirement benefits (M)				
Balance at beginning of period	$ 66	$ (860)	$ (5)	$ (12)
Other comprehensive income (loss):				
Unrecognized net actuarial loss and prior service cost/benefit	(18)	30	(2)	1
Tax benefit (expense)[2]	8	(6)	—	—
Total Other comprehensive (loss) income before reclassifications, net of tax	(10)	24	(2)	1
Amortization of net actuarial loss and prior service cost/benefit[1]	26	29	—	(1)
Tax expense[2]	(6)	(1)	—	—
Total amount reclassified from Accumulated other comprehensive loss, net of tax[7]	20	28	—	(1)
Total Other comprehensive income (loss)	10	52	(2)	—
Balance at end of period	$ 76	$ (808)	$ (7)	$ (12)
Foreign currency translation				
Balance at beginning of period	$ (2,683)	$ (2,288)	$ (1,025)	$ (839)
Other comprehensive income (loss)	25	(370)	11	(132)
Balance at end of period	$ (2,658)	$ (2,658)	$ (1,014)	$ (971)
Cash flow hedges (N)				
Balance at beginning of period	$ (1,038)	$ (1,926)	$ 1	$ —
Other comprehensive income:				
Net change from periodic revaluations	241	1,184	—	1
Tax expense[2]	(38)	(164)	—	—
Total Other comprehensive income before reclassifications, net of tax	203	1,020	—	1
Net amount reclassified to earnings:				
Aluminum contracts[3]	33	132	—	—
Interest rate contracts[5]	(3)	—	—	—
Foreign exchange contracts[6]	(3)	(3)	—	—
Sub-total	27	129	—	—
Tax expense[2]	(4)	(12)	—	—
Total amount reclassified from Accumulated other comprehensive loss, net of tax[7]	23	117	—	—
Total Other comprehensive income	226	1,137	—	1
Balance at end of period	$ (812)	$ (789)	$ 1	$ 1
Total Accumulated other comprehensive loss	$ (3,394)	$ (4,255)	$ (1,020)	$ (982)

	Alcoa Corporation		Noncontrolling interest	
	Six months ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Pension and other postretirement benefits (M)				
Balance at beginning of period	$ 62	$ (882)	$ (5)	$ (13)
Other comprehensive income (loss):				
Unrecognized net actuarial loss and prior service cost/benefit	(18)	23	(2)	1
Tax benefit (expense)[2]	8	(5)	—	—
Total Other comprehensive (loss) income before reclassifications, net of tax	(10)	18	(2)	1
Amortization of net actuarial loss and prior service cost/benefit[1]	30	57	—	—
Tax expense[2]	(6)	(1)	—	—
Total amount reclassified from Accumulated other comprehensive loss, net of tax[7]	24	56	—	—
Total Other comprehensive income (loss)	14	74	(2)	1
Balance at end of period	$ 76	$ (808)	$ (7)	$ (12)
Foreign currency translation				
Balance at beginning of period	$ (2,685)	$ (2,614)	$ (1,040)	$ (937)
Other comprehensive income (loss)	27	(44)	26	(34)
Balance at end of period	$ (2,658)	$ (2,658)	$ (1,014)	$ (971)
Cash flow hedges (N)				
Balance at beginning of period	$ (916)	$ (1,096)	$ 1	$ (1)
Other comprehensive income (loss):				
Net change from periodic revaluations	54	121	—	2
Tax expense[2]	—	(11)	—	—
Total Other comprehensive income before reclassifications, net of tax	54	110	—	2
Net amount reclassified to earnings:				
Aluminum contracts[3]	94	242	—	—
Financial contracts[4]	(20)	—	—	—
Interest rate contracts[5]	(2)	4	—	—
Foreign exchange contracts[6]	(8)	(3)	—	—
Sub-total	64	243	—	—
Tax expense[2]	(14)	(46)	—	—
Total amount reclassified from Accumulated other comprehensive loss, net of tax[7]	50	197	—	—
Total Other comprehensive income	104	307	—	2
Balance at end of period	$ (812)	$ (789)	$ 1	$ 1
Total Accumulated other comprehensive loss	$ (3,394)	$ (4,255)	$ (1,020)	$ (982)

(1) These amounts were included in the computation of net periodic benefit cost for pension and other postretirement benefits (see Note M).
(2) These amounts were reported in Provision for income taxes on the accompanying Statement of Consolidated Operations.
(3) These amounts were reported in Sales on the accompanying Statement of Consolidated Operations.
(4) These amounts were reported in Cost of goods sold on the accompanying Statement of Consolidated Operations.
(5) These amounts were reported in Other expenses (income), net on the accompanying Statement of Consolidated Operations.
(6) For the second quarter and six-month period of 2023, $4 was reported in Cost of goods sold (both periods) and $(7) and $(12) were reported in Sales, respectively, on the accompanying Statement of Consolidated Operations. For the second quarter and six-month period of 2022, $(3) was reported in Sales (both periods) on the accompanying Statement of Consolidated Operations.
(7) A positive amount indicates a corresponding charge to earnings and a negative amount indicates a corresponding benefit to earnings.

H. Investments – A summary of unaudited financial information for Alcoa Corporation's equity investments is as follows (amounts represent 100% of investee financial information):

Second quarter ended June 30, 2023	Saudi Arabia Joint Venture	Mining	Energy	Other
Sales	$ 700	$ 172	$ 59	$ 116
Cost of goods sold	620	101	32	106
Net (loss) income	(99)	14	22	(33)
Equity in net (loss) income of affiliated companies, before reconciling adjustments	(25)	6	9	(15)
Other	(3)	1	1	7
Alcoa Corporation's equity in net (loss) income of affiliated companies	(28)	7	10	(8)

Second quarter ended June 30, 2022				
Sales	$ 1,016	$ 191	$ 65	$ 125
Cost of goods sold	712	123	23	115
Net income (loss)	156	32	29	(30)
Equity in net income (loss) of affiliated companies, before reconciling adjustments	39	12	12	(15)
Other	(4)	(2)	(2)	19
Alcoa Corporation's equity in net income of affiliated companies	35	10	10	4

Six months ended June 30, 2023				
Sales	$ 1,300	$ 359	$ 117	$ 237
Cost of goods sold	1,302	204	59	219
Net (loss) income	(351)	38	46	(49)
Equity in net (loss) income of affiliated companies, before reconciling adjustments	(88)	17	18	(23)
Other	(15)	1	1	—
Alcoa Corporation's equity in net (loss) income of affiliated companies	(103)	18	19	(23)

Six months ended June 30, 2022				
Sales	$ 1,913	$ 422	$ 127	$ 242
Cost of goods sold	1,328	269	53	222
Net income (loss)	311	81	52	(58)
Equity in net income (loss) of affiliated companies, before reconciling adjustments	78	26	21	(28)
Other	(4)	(2)	(1)	15
Alcoa Corporation's equity in net income (loss) of affiliated companies	74	24	20	(13)

The results for the Saudi Arabia joint venture for the six-month period of 2023 include an adjustment to the estimate for the settlement of a dispute with an industrial utility for periods in 2021 and 2022. Alcoa's share of this adjustment is $41 which is included in Other expenses (income), net on the Statement of Consolidated Operations for the six-month period of 2023. Alcoa's total share of this dispute of $62 includes $21 that was recorded in the fourth quarter of 2022.

The Company's basis in the ELYSIS™ Limited Partnership (ELYSIS) as of June 30, 2023 and 2022, included in Other in the table above, has been reduced to zero for its share of losses incurred to date. As a result, the Company has $63 in unrecognized losses as of June 30, 2023 that will be recognized upon additional contributions into the partnership.

In February 2022, the Company signed an agreement to sell its share of its investment in MRN in Brazil for $10 to South32 Minerals S.A. Related to this transaction, the Company recorded an asset impairment of $58 in the first quarter of 2022 in Restructuring and other charges, net on the Statement of Consolidated Operations. In April 2022, Alcoa completed the sale of its investment in MRN. An additional $30 in cash could be paid to the Company in the future if certain post-closing conditions related to future MRN mine development are satisfied.

I. Receivables

On January 31, 2023, a wholly-owned special purpose entity (SPE) of the Company entered into a one-year agreement with a financial institution to sell up to $150 of certain customer receivables without recourse on a revolving basis. Company subsidiaries sell customer receivables to the SPE, which then transfers the receivables to the financial institution. The Company does not maintain effective control over the transferred receivables, and therefore accounts for the transfers as sales of receivables.

Alcoa Corporation guarantees the performance obligations of the Company subsidiaries and unsold customer receivables are pledged as collateral to the financial institution to secure the sold receivables. At June 30, 2023, the SPE held unsold customer receivables of $184 pledged as collateral against the sold receivables.

The Company continues to service the customer receivables that were transferred to the financial institution. As Alcoa collects customer payments, the SPE transfers additional receivables to the financial institution rather than remitting cash. In the second quarter of 2023, the Company sold gross customer receivables of $98, reinvested collections of $104 from previously sold receivables, resulting in a net cash remittance to the financial institution of $6. In the six-month period of 2023, the Company sold gross customer receivables of $174, and reinvested collections of $127 from previously sold receivables, resulting in net cash proceeds from the financial institution of $47. Cash collections from previously sold receivables yet to be reinvested of $29 were included in Accounts payable, trade on the accompanying Consolidated Balance Sheet as of June 30, 2023. Cash received from sold receivables under the agreement are presented within operating activities in the Statement of Consolidated Cash Flows.

J. Inventories

	June 30, 2023	December 31, 2022
Finished goods	$ 435	$ 385
Work-in-process	334	350
Bauxite and alumina	630	584
Purchased raw materials	803	923
Operating supplies	198	185
	$ 2,400	$ 2,427

K. Goodwill

As a result of the January 2023 segment change, the Company reviewed the recoverability of the carrying value of goodwill of its Alumina reporting unit in the first quarter of 2023. The estimated fair value of the Alumina reporting unit substantially exceeded the reporting unit's carrying value, resulting in no impairment.

Goodwill, which is included in Other noncurrent assets on the accompanying Consolidated Balance Sheet, was as follows:

	June 30, 2023	December 31, 2022
Alumina	$ 4	$ 4
Aluminum	—	—
Corporate[(1)]	142	141
	$ 146	$ 145

(1) The carrying value of Corporate's goodwill is net of accumulated impairment losses of $742 as of both June 30, 2023 and December 31, 2022. As of June 30, 2023, the $142 of goodwill reflected in Corporate is allocated to Alcoa Corporation's Alumina reportable segment for purposes of impairment testing. This goodwill is reflected in Corporate for segment reporting purposes because it is not included in management's assessment of performance by the reportable segment. Changes in the carrying amount of goodwill were attributable to foreign currency translation as of June 30, 2023 and December 31, 2022.

L. Debt

Short-term borrowings

Inventory Repurchase Agreement

In March 2023, the Company entered into an inventory repurchase agreement whereby the Company sold aluminum to a third party and agreed to subsequently repurchase substantially similar inventory. The Company did not record a sale upon shipment of the inventory and the cash received of $25 was recorded in Short-term borrowings within Other current liabilities on the Consolidated Balance Sheet as of March 31, 2023. The inventory sold of $25 was pledged as collateral and was reflected in Prepaid expenses and other current assets on the Consolidated Balance Sheet.

During the second quarter and six-month period of 2023, the Company repurchased $15 of inventory related to this agreement, resulting in an increase to Inventories and decrease to Prepaid expenses and other current assets on the Consolidated Balance Sheet.

The cash received and subsequently paid under the inventory repurchase agreement is included in Cash provided from (used for) financing activities on the Statement of Consolidated Cash Flows for the six-month period of 2023.

Credit Facilities

Revolving Credit Facility

The Company has an unsecured $1,250 revolving credit and letter of credit facility in place for working capital and/or other general corporate purposes (the Revolving Credit Facility). The Revolving Credit Facility established on September 16, 2016 and amended and restated in 2022, is scheduled to mature in June 2027. Subject to the terms and conditions under the Revolving Credit Facility, the Company or Alcoa Nederland Holding B.V. (ANHBV), a wholly-owned subsidiary of Alcoa Corporation, may borrow funds or issue letters of credit. See Part II Item 8 of Alcoa Corporation's Annual Report on Form 10-K in Note M to the Consolidated Financial Statements for the year ended December 31, 2022 for more information on the Revolving Credit Facility.

As of June 30, 2023, the Company was in compliance with all covenants. The Company may access the entire amount of commitments under the Revolving Credit Facility. There were no borrowings outstanding at June 30, 2023 and December 31, 2022, and no amounts were borrowed during the second quarter and six-month period of 2023 and 2022 under the Revolving Credit Facility.

Japanese Yen Revolving Credit Facility

In April 2023, the Company entered into a one-year unsecured revolving credit facility for $250 (available to be drawn in Japanese yen). Subject to the terms and conditions under the facility, the Company or ANHBV may borrow funds. The facility includes covenants that are substantially the same as those included in the Revolving Credit Facility. If Alcoa Corporation or ANHBV, as applicable, fails to have a rating of at least Ba1 from Moody's Investor Service (Moody's) and BB+ from Standard and Poor's Global Ratings (S&P), then no lending party to this facility would have any commitment or obligation to lend.

As of June 30, 2023, the Company was in compliance with all covenants. The Company may access the entire amount of commitments under the facility. There were no borrowings outstanding at June 30, 2023 and no amounts were borrowed during the second quarter and six-month period of 2023.

M. Pension and Other Postretirement Benefits

The components of net periodic benefit cost were as follows:

	Second quarter ended June 30,		Six months ended June 30,	
Pension benefits	**2023**	**2022**	**2023**	**2022**
Service cost	$ 3	$ 4	$ 5	$ 7
Interest cost[1]	29	27	60	54
Expected return on plan assets[1]	(37)	(44)	(76)	(88)
Recognized net actuarial loss[1]	7	27	14	55
Settlements[2]	21	—	21	—
Net periodic benefit cost	$ 23	$ 14	$ 24	$ 28

Other postretirement benefits	Second quarter ended June 30, 2023	Second quarter ended June 30, 2022	Six months ended June 30, 2023	Six months ended June 30, 2022
Service cost	$ 1	$ 1	$ 2	$ 2
Interest cost[1]	7	4	13	8
Recognized net actuarial loss[1]	1	5	2	9
Amortization of prior service benefit[1]	(4)	(4)	(7)	(7)
Net periodic benefit cost	$ 5	$ 6	$ 10	$ 12

(1) These amounts were reported in Other expenses (income), net on the accompanying Statement of Consolidated Operations (see Note R).
(2) These amounts were reported in Restructuring and other charges, net on the accompanying Statements of Consolidated Operations (see Note D) and Cash Flows.

Plan Actions. In 2023, management initiated the following actions to certain pension and other postretirement plans:

Action #1 – In the second quarter of 2023, plan amendment accounting and related plan remeasurements were triggered within the Surinamese pension and other postretirement plans as a result of participants electing to prospectively convert their Surinamese dollar pension and Company-provided retiree medical to a United States dollar pension with no Company-provided retiree medical. As a result, Alcoa recorded a $15 increase to Accrued pension benefits and a $9 decrease to Accrued other postretirement benefits in the second quarter.

Action #2 – In the second quarter of 2023, settlement accounting and related plan remeasurements were triggered within certain Canadian pension plans as a result of the Company's purchase of group annuity contracts to transfer the obligation to pay the remaining retirement benefits of approximately 530 retirees and beneficiaries from its Canadian defined benefit pension plans. The transfer of approximately $235 in both plan obligations and plan assets was completed in April 2023. As a result, Alcoa recorded a $22 increase to Accrued pension benefits and a $5 decrease to Other noncurrent assets and recognized a non-cash settlement loss of $21 ($16 after-tax) in Restructuring and other charges, net in the second quarter.

Action #	Number of affected plan participants	Weighted average discount rate as of prior plan remeasurement date	Plan remeasurement date	Weighted average discount rate as of plan remeasurement date	Increase to accrued pension benefits liability	Decrease to other noncurrent assets	Decrease to accrued other postretirement benefits liability	Settlement loss[1]
1	~370	5.58%	March 31, 2023	5.20%	$ 15	$ —	$ (9)	$ —
2	~530	5.20%	April 30, 2023	4.80%	$ 22	$ (5)	$ —	$ 21

(1) These amounts represent the net actuarial loss and were reclassified from Accumulated other comprehensive loss to Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

Funding and Cash Flows. It is Alcoa's policy to fund amounts for defined benefit pension plans sufficient to meet the minimum requirements set forth in each applicable country's benefits laws and tax laws, including the Employee Retirement Income Security Act of 1974 (ERISA) for U.S. plans. From time to time, the Company contributes additional amounts as deemed appropriate.

Under ERISA regulations, a plan sponsor that establishes a pre-funding balance by making discretionary contributions to a U.S. defined benefit pension plan may elect to apply all or a portion of this balance toward its minimum required contribution obligations to the related plan in future years.

In the first and second quarters of 2023, management made such elections related to the Company's U.S. plans and intends to do so for the remainder of 2023. As a result, Alcoa's minimum required contribution to defined benefit pension plans in 2023 is estimated to be approximately $23, of which approximately $5 was contributed to non-U.S. plans during the second quarter of 2023. In the six-month period of 2023, $9 was contributed to non-U.S. plans.

In the second quarter of 2022, $5 was contributed to non-U.S. plans. In the six-month period of 2022, $9 was contributed to non-U.S. plans.

N. Derivatives and Other Financial Instruments

Fair Value

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The fair value hierarchy distinguishes between (i) market participant assumptions developed based on market data obtained from independent sources (observable inputs) and (ii) an entity's own assumptions about market participant assumptions developed based on the best information available in the circumstances (unobservable inputs). The fair value hierarchy consists of three broad levels, which gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). The three levels of the fair value hierarchy are described below:

- Level 1 - Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities.
- Level 2 - Inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly, including quoted prices for similar assets or liabilities in active markets; quoted prices for identical or similar assets or liabilities in markets that are not active; inputs other than quoted prices that are observable for the asset or liability (e.g., interest rates); and inputs that are derived principally from or corroborated by observable market data by correlation or other means.
- Level 3 - Inputs that are both significant to the fair value measurement and unobservable.

Derivatives

Alcoa Corporation is exposed to certain risks relating to its ongoing business operations, including the risks of changing commodity prices, foreign currency exchange rates and interest rates. Alcoa Corporation's commodity and derivative activities include aluminum, energy, foreign exchange, and interest rate contracts which are held for purposes other than trading. They are used to mitigate uncertainty and volatility, and to cover underlying exposures. While Alcoa does not generally enter into derivative contracts to mitigate the risk associated with changes in aluminum price, the Company may do so in isolated cases to address discrete commercial or operational conditions. Alcoa is not involved in trading activities for energy, weather derivatives, or other nonexchange commodity trading activities.

Alcoa Corporation's aluminum and foreign exchange contracts are predominantly classified as Level 1 under the fair value hierarchy. All of the Level 1 contracts are designated as either fair value or cash flow hedging instruments (except as described below). Alcoa Corporation also has several derivative instruments classified as Level 3 under the fair value hierarchy, which are either designated as cash flow hedges or undesignated. Alcoa includes the changes in its equity method investee's Level 2 derivatives in Accumulated other comprehensive loss in the accompanying Consolidated Balance Sheet.

The following tables present the detail for Level 1 and 3 derivatives (see additional Level 3 information in further tables below):

	June 30, 2023		December 31, 2022	
	Assets	Liabilities	Assets	Liabilities
Level 1 derivative instruments	$ 69	$ 17	$ 84	$ 14
Level 3 derivative instruments	29	1,060	52	1,212
Total	$ 98	$ 1,077	$ 136	$ 1,226
Less: Current	93	165	134	200
Noncurrent	$ 5	$ 912	$ 2	$ 1,026

	2023		2022	
Second quarter ended June 30,	Unrealized gain recognized in Other comprehensive loss	Realized gain (loss) reclassed from Other comprehensive loss to earnings	Unrealized gain recognized in Other comprehensive loss	Realized loss reclassed from Other comprehensive loss to earnings
Level 1 derivative instruments	$ 42	$ 28	$ 332	$ (14)
Level 3 derivative instruments	197	(58)	850	(115)
Noncontrolling and equity interest (Level 2)	2	3	2	—
Total	$ 241	$ (27)	$ 1,184	$ (129)

For the second quarter of 2023, the realized gain of $28 on Level 1 cash flow hedges was comprised of a $32 gain recognized in Sales and a $4 loss recognized in Cost of goods sold. For the second quarter of 2022, the realized loss of $14 on Level 1 cash flow hedges was comprised of a $13 loss recognized in Sales and a $1 loss recognized in Cost of goods sold.

Six months ended June 30,	2023		2022	
	Unrealized gain recognized in Other comprehensive loss	Realized gain (loss) reclassed from Other comprehensive loss to earnings	Unrealized gain recognized in Other comprehensive loss	Realized loss reclassed from Other comprehensive loss to earnings
Level 1 and 2 derivative instruments	$ 31	$ 44	$ 99	$ (20)
Level 3 derivative instruments	23	(110)	13	(219)
Noncontrolling and equity interest (Level 2)	—	2	9	(4)
Total	$ 54	$ (64)	$ 121	$ (243)

For the six-month period of 2023, the realized gain of $44 on Level 1 cash flow hedges was comprised of a $48 gain recognized in Sales and a $4 loss recognized in Cost of goods sold. For the six-month period of 2022, the realized loss of $20 on Level 1 cash flow hedges was comprised of a $18 loss recognized in Sales and a $2 loss recognized in Cost of goods sold.

The following table presents the outstanding quantities of derivative instruments classified as Level 1:

	Classification	June 30, 2023	June 30, 2022
Aluminum (in kmt)	Commodity buy forwards	187	162
Aluminum (in kmt)	Commodity sell forwards	206	448
Foreign currency (in millions of euro)	Foreign exchange buy forwards	86	75
Foreign currency (in millions of euro)	Foreign exchange sell forwards	18	—
Foreign currency (in millions of Norwegian krone)	Foreign exchange buy forwards	232	388
Foreign currency (in millions of Brazilian real)	Foreign exchange buy forwards	1,010	1,399

Alcoa routinely uses Level 1 aluminum derivative instruments to manage exposures to changes in the fair value of firm commitments for the purchases or sales of aluminum. Additionally, Alcoa uses Level 1 aluminum derivative instruments to manage exposures to changes in the LME associated with the Alumar (Brazil) restart (expires December 2023) and the San Ciprián strike (expired October 2022). As a result of a delay with the Alumar restart, it became probable that certain of the original forecasted transactions would not occur by the end of the originally specified time period and Alcoa dedesignated certain aluminum sell forwards. The Company reclassified the related unrealized gain of $11 included in Accumulated other comprehensive loss to Sales during the second quarter of 2023. In conjunction with the dedesignations, the Company entered into aluminum buy forwards during the second quarter of 2023 for the same volume and periods which were also not designated. The unrealized and realized gains and losses on the aluminum buy and sell forwards that are not designated will offset resulting in no impact to Alcoa's earnings.

Alcoa Corporation uses Level 1 foreign exchange forward contracts to mitigate the risk of foreign exchange exposure related to euro power purchases in Norway (expires December 2026), krone capital expenditures in Norway (expires June 2025), and U.S. dollar alumina and aluminum sales in Brazil (expires December 2024).

Additional Level 3 Disclosures

The following table presents quantitative information related to the significant unobservable inputs described above for Level 3 derivative instruments (megawatt hours in MWh):

	June 30, 2023	Unobservable Input	Unobservable Input Range	
Asset Derivatives				
Financial contract (undesignated)	$ 28	Interrelationship of forward energy price, LME forward price and the Consumer Price Index	Electricity (per MWh)	2023: $78.59 2023: $44.39
			LME (per mt)	2023: $2,121 2023: $2,184
Power contract	1	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2023: $2,121 2023: $2,148
			Midwest premium (per pound)	2023: $0.2405 2023: $0.2401
			Electricity	Rate of 2 million MWh per year
Total Asset Derivatives	$ 29			
Liability Derivatives				
Power contract	$ 180	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2023: $2,121 2027: $2,637
			Electricity	Rate of 4 million MWh per year
Power contracts	880	MWh of energy needed to produce the forecasted mt of aluminum	LME (per mt)	2023: $2,121 2029: $2,822 2036: $3,118
			Midwest premium (per pound)	2023: $0.2405 2029: $0.2440 2036: $0.2440
			Electricity	Rate of 18 million MWh per year
Power contract (undesignated)	—	Estimated spread between the 30-year debt yield of Alcoa and the counterparty	Credit spread	1.37%: 30-year debt yield spread 6.48%: Alcoa (estimated) 5.11%: counterparty
Total Liability Derivatives	$ 1,060			

In addition to the instruments presented above, Alcoa had a financial contract that expired on February 28, 2023 that was designated as a cash flow hedge of forward sales of power.

The fair values of Level 3 derivative instruments recorded in the accompanying Consolidated Balance Sheet were as follows:

Asset Derivatives	**June 30, 2023**	**December 31, 2022**
Derivatives designated as hedging instruments:		
Current—financial contract	$ —	$ 20
Current—power contract	1	—
Total derivatives designated as hedging instruments	$ 1	$ 20
Derivatives not designated as hedging instruments:		
Current—financial contract	$ 28	$ 32
Total derivatives not designated as hedging instruments	$ 28	$ 32
Total Asset Derivatives	$ 29	$ 52
Liability Derivatives		
Derivatives designated as hedging instruments:		
Current—power contracts	$ 156	$ 195
Noncurrent—power contracts	904	1,017
Total derivatives designated as hedging instruments	$ 1,060	$ 1,212
Total Liability Derivatives	$ 1,060	$ 1,212

Assuming market rates remain constant with the rates at June 30, 2023, a realized loss of $156 related to power contracts is expected to be recognized in Sales over the next 12 months.

At June 30, 2023 and December 31, 2022, the power contracts with embedded derivatives designated as cash flow hedges include hedges of forecasted aluminum sales of 1,570 kmt and 1,683 kmt, respectively.

The following tables present the reconciliation of activity for Level 3 derivative instruments:

	Assets	
Second quarter ended June 30, 2023	**Power contracts**	**Financial contracts**
April 1, 2023	$ 2	$ 56
Total gains or losses included in:		
Sales (realized)	(4)	—
Other expenses, net (unrealized/realized)	—	(9)
Other comprehensive income (unrealized)	3	—
Settlements and other	—	(19)
June 30, 2023	$ 1	$ 28
Change in unrealized gains or losses included in earnings for derivative instruments held at June 30, 2023:		
Other expenses, net	$ —	$ (9)

	Liabilities
Second quarter ended June 30, 2023	**Power contracts**
April 1, 2023	$ 1,316
Total gains or losses included in:	
Sales (realized)	(62)
Other comprehensive income (unrealized)	(194)
June 30, 2023	$ 1,060

	Assets	
Six months ended June 30, 2023	**Power contracts**	**Financial contracts**
January 1, 2023	$ —	$ 52
Total gains or losses included in:		
Sales (realized)	(2)	—
Cost of goods sold (realized)	—	(20)
Other income, net (unrealized/realized)	—	17
Other comprehensive income (unrealized)	3	—
Settlements and other	—	(21)
June 30, 2023	$ 1	$ 28
Change in unrealized gains or losses included in earnings for derivative instruments held at June 30, 2023:		
Other income, net	$ —	$ 17

	Liabilities
Six months ended June 30, 2023	**Power contracts**
January 1, 2023	$ 1,212
Total gains or losses included in:	
Sales (realized)	(132)
Other comprehensive income (unrealized)	(20)
June 30, 2023	$ 1,060

There were no purchases, sales, or settlements of Level 3 derivative instruments in the periods presented.

Other Financial Instruments

The carrying values and fair values of Alcoa Corporation's other financial instruments were as follows:

	June 30, 2023		December 31, 2022	
	Carrying value	**Fair value**	**Carrying value**	**Fair value**
Cash and cash equivalents	$ 990	$ 990	$ 1,363	$ 1,363
Restricted cash	107	107	111	111
Short-term borrowings	10	10	—	—
Long-term debt due within one year	1	1	1	1
Long-term debt, less amount due within one year	1,808	1,756	1,806	1,744

The following methods were used to estimate the fair values of other financial instruments:

Cash and cash equivalents and Restricted cash. The carrying amounts approximate fair value because of the short maturity of the instruments. The fair value amounts for Cash and cash equivalents and Restricted cash were classified in Level 1 of the fair value hierarchy.

Short-term borrowings and Long-term debt, including amounts due within one year. The fair value of Long-term debt, less amounts due within one year was based on quoted market prices for public debt and on interest rates that are currently available to Alcoa Corporation for issuance of debt with similar terms and maturities for non-public debt. The fair value amounts for all Short-term borrowings and Long-term debt were classified in Level 2 of the fair value hierarchy.

O. Income Taxes – Alcoa Corporation's estimated annualized effective tax rate (AETR) for 2023 as of June 30, 2023 differs from the U.S. federal statutory rate of 21% primarily due to foreign jurisdictions with higher statutory tax rates in addition to losses in certain jurisdictions with full valuation allowances resulting in no tax benefit.

	Six months ended June 30,	
	2023	**2022**
(Loss) income before income taxes	$ (279)	$ 1,671
Estimated annualized effective tax rate	(29.3) %	26.4 %
Income tax expense	$ 82	$ 440
(Favorable) unfavorable tax impact related to losses in jurisdictions with no tax benefit	(11)	2
Discrete tax expense	3	2
Provision for income taxes	$ 74	$ 444

The Company's subsidiaries in Iceland have a full valuation allowance recorded against deferred tax assets, which was established in 2015 and 2017, as the Company believes it is more likely than not that these tax benefits will not be realized. If the subsidiaries in Iceland continue to demonstrate sustained profitability, management may conclude that Iceland's deferred tax assets may be realized, resulting in a future reversal of the valuation allowance, generating a non-cash benefit in the period recorded. Iceland's net deferred tax assets, excluding the valuation allowance, were $92 as of June 30, 2023.

On August 16, 2022, the U.S. enacted the Inflation Reduction Act of 2022 (IRA), which includes a 15% minimum tax on book income of certain large corporations, a 1% excise tax on net stock repurchases after December 31, 2022, and several tax incentives to promote clean energy. As a result of the provisions of the IRA, we will incur an excise tax of 1% for certain common stock repurchases made subsequent to December 31, 2022, which will be reflected in the cost of purchasing the underlying shares. The minimum corporate tax will not have an impact on the Company for 2023.

The IRA contains a number of tax credits and other incentives for investments in renewable energy production, carbon capture, and other climate-related actions, as well as the production of critical minerals. These provisions may result in an incremental benefit to the Company. However, given the complexity and uncertainty around the applicability of the incentives to our specific facts and circumstances, we continue to analyze the IRA provisions and seek clarity from relevant government entities to identify and quantify potential opportunities and applicable benefits included in the legislation. At this time the applicability of those provisions to the Company's specific facts and circumstances are uncertain, and an estimate of those benefits has not been recorded.

P. Asset Retirement Obligations

The Company recorded a liability of $36 in the six-month period of 2023 related to the closure of the previously curtailed Intalco aluminum smelter. The additional accrual was recorded in Restructuring and other charges, net (see Note D) on the accompanying Statement of Consolidated Operations.

The Company recorded a liability of $47 in the second quarter and six-month period of 2022 related to improvements required on both operating and closed bauxite residue areas at the Poços de Caldas refinery to comply with updated impoundment regulations in the region. The additional accruals were recorded with a charge to Cost of goods sold of $39 and a corresponding capitalized asset retirement cost of $8.

Q. Contingencies

Environmental Matters

Alcoa Corporation participates in environmental assessments and cleanups at several locations. These include currently or previously owned or operated facilities and adjoining properties, and waste sites, including Superfund (Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)) sites.

Alcoa Corporation's environmental remediation reserve balance reflects the most probable costs to remediate identified environmental conditions for which costs can be reasonably estimated. The following table details the changes in the carrying value of recorded environmental remediation reserves:

Balance at December 31, 2021	$	309
Liabilities incurred		32
Cash payments		(26)
Reversals of previously recorded liabilities		(30)
Foreign currency translation and other		(1)
Balance at December 31, 2022		284
Liabilities incurred		18
Cash payments		(23)
Reversals of previously recorded liabilities		(1)
Balance at June 30, 2023	$	278

At June 30, 2023 and December 31, 2022, the current portion of the environmental remediation reserve balance was $63 and $58, respectively.

During the second quarter and six-month period of 2023, the Company incurred liabilities of $4 and $18, respectively. The Company incurred liabilities of $14 for the six-month period of 2023 primarily related to the closure of the previously curtailed Intalco aluminum smelter, which was recorded in Restructuring and other charges, net (see Note D) on the Statement of Consolidated Operations, and incurred liabilities of $4 for the second quarter of 2023 for ongoing remediation work at various other sites, which was recorded in Cost of goods sold on the accompanying Statement of Consolidated Operations. Payments related to remediation expenses applied against the reserve were $16 and $23 in the second quarter and six-month period of 2023, respectively. These amounts include mandated expenditures as well as those not required by any regulatory authority or third party. Further, the Company recorded a reversal of a reserve of $1 during the six-month period of 2023 due to the determination that certain remaining site remediation is no longer required.

During the six-month period of 2022, the Company incurred liabilities of $5 primarily related to a new phase of work at the former East St. Louis (Illinois) site, which was recorded in Cost of goods sold on the accompanying Statement of Consolidated Operations. Payments related to remediation expenses applied against the reserve were $6 and $10 in the second quarter and six-month period of 2022, respectively. These amounts include mandated expenditures as well as those not required by any regulatory authority or third party. Further, the Company recorded a reversal of a reserve of $2 during the six-month period of 2022, due to the determination that certain remaining site remediation is no longer required.

The estimated timing of cash outflows on the environmental remediation reserve at June 30, 2023 is as follows:

2023 (excluding the six months ended June 30, 2023)	$	27
2024 - 2028		182
Thereafter		69
Total	$	278

Reserve balances at June 30, 2023 and December 31, 2022, associated with significant sites with active remediation underway or for future remediation were $222 and $234, respectively. In management's judgment, the Company's reserves are sufficient to satisfy the provisions of the respective action plans. Upon changes in facts or circumstances, a change to the reserve may be required. The Company's significant sites include:

Suriname—The reserve associated with the 2017 closure of the Suralco refinery and bauxite mine is for treatment and disposal of refinery waste and soil remediation. The work began in 2017 and is expected to be completed at the end of 2025.

Hurricane Creek, Arkansas—The reserve associated with the 1990 closure of two mining areas and refineries near Hurricane Creek, Arkansas is for ongoing monitoring and maintenance for water quality surrounding the mine areas and residue disposal areas.

Massena, New York—The reserve associated with the 2015 closure of the Massena East smelter by the Company's subsidiary, Reynolds Metals Company, is for subsurface soil remediation to be performed after demolition of the structures. Remediation work commenced in 2021 and will take four to eight years to complete.

Point Comfort, Texas—The reserve associated with the 2019 closure of the Point Comfort alumina refinery is for disposal of industrial wastes contained at the site, subsurface remediation, and post-closure monitoring and maintenance. The final remediation plan is currently under review, which may result in a change to the existing reserve.

Sherwin, Texas—In connection with the 2018 settlement of a dispute related to the previously-owned Sherwin alumina refinery, the Company's subsidiary, Copano Enterprises LLC, accepted responsibility for the final closure of four bauxite residue waste disposal areas (known as the Copano facility). Work commenced on the first residue disposal area in 2018 and will take up to three additional years to complete, depending on the nature of its potential re-use. Other than ongoing maintenance and repair activities, work on the next three areas has not commenced but is expected to be completed by 2048, depending on its potential re-use.

Longview, Washington—In connection with a 2018 Consent Decree and Cleanup Action Plan with the State of Washington Department of Ecology, the Company's subsidiary, Northwest Alloys as landowner, accepted certain responsibilities for future remediation of contaminated soil and sediments at the site located near Longview, Washington. In December 2020, the lessee of the land, who was a partner in the remediation of the site, filed for bankruptcy and exited the site in January 2021. Remediation design changes for consolidation and remediation of the onsite industrial waste landfills, groundwater remediation, and post-closure monitoring and maintenance at the site was completed in 2021.

Addy, Washington—The reserve associated with the 2022 closure of the Addy magnesium smelter facility is for site-wide remediation and investigation and post-closure monitoring and maintenance. Remediation work is not expected to begin until 2024 and will take three to five years to complete. The final remediation plan is currently being developed, which may result in a change to the existing reserve.

Ferndale, Washington—The reserve associated with the 2023 closure of the Intalco aluminum smelter in Ferndale, Washington is for below grade site remediation and five years of post-closure maintenance and monitoring. The final remediation plan is under review but is expected to be completed in three years.

Other Sites—The Company is in the process of decommissioning various other plants and remediating sites in several countries for potential redevelopment or to return the land to a natural state. In aggregate, there are remediation projects at 32 other sites that are planned or underway. These activities will be completed at various times in the future with the latest expected to be in 2026, after which ongoing monitoring and other activities may be required. At June 30, 2023 and December 31, 2022, the reserve balance associated with these activities was $56 and $50, respectively.

Tax

Brazil (AWAB)—In March 2013, AWAB was notified by the Brazilian Federal Revenue Office (RFB) that approximately $110 (R$220) of value added tax credits previously claimed were being disallowed and a penalty of 50% was assessed. Of this amount, AWAB received $41 (R$82) in cash in May 2012. The value added tax credits were claimed by AWAB for both fixed assets and export sales related to the Juruti bauxite mine and São Luís refinery expansion for tax years 2009 through 2011. The RFB has disallowed credits they allege belong to the consortium in which AWAB owns an interest and should not have been claimed by AWAB. Credits have also been disallowed as a result of challenges to apportionment methods used, questions about the use of the credits, and an alleged lack of documented proof. AWAB presented defense of its claim to the RFB on April 8, 2013. In February 2022, the RFB notified AWAB that it had inspected the value added tax credits claimed for 2012 and disallowed $4 (R$19). In its decision, the RFB allowed credits of $14 (R$65) that were similar to those previously disallowed for 2009 through 2011. In July 2022, the RFB notified AWAB that it had inspected the value added tax credits claimed for 2013 and disallowed $13 (R$70). In its decision, the RFB allowed credits of $16 (R$84) that were similar to those previously disallowed for 2009 through 2011. The decisions on the 2012 and 2013 credits provide positive evidence to support management's opinion that there is no basis for these credits to be disallowed. AWAB received the 2012 allowed credits with interest of $9 (R$44) in March 2022 and the 2013 allowed credits with interest of $6 (R$31) in August 2022. AWAB will continue to dispute the credits that were disallowed for 2012 and 2013. If AWAB is successful in this administrative process, the RFB would have no further recourse. If unsuccessful in this process, AWAB has the option to litigate at a judicial level. Separately from AWAB's administrative appeal, in June 2015, a new tax law was enacted repealing the provisions in the tax code that were the basis for the RFB assessing a 50% penalty in this matter. As such, the estimated range of reasonably possible loss for these matters is $0 to $49 (R$239). It is management's opinion that the allegations have no basis; however, at this time, the Company is unable to reasonably predict an outcome for this matter.

Australia (AofA)—In December 2019, AofA received a statement of audit position (SOAP) from the Australian Taxation Office (ATO) related to the pricing of certain historic third-party alumina sales. The SOAP proposed adjustments that would result in additional income tax payable by AofA. During 2020, the SOAP was the subject of an independent review process within the ATO. At the conclusion of this process, the ATO determined to continue with the proposed adjustments and issued Notices of Assessment (the Notices) that were received by AofA on July 7, 2020. The Notices asserted claims for income tax payable by AofA of approximately $141 (A$214). The Notices also included claims for compounded interest on the tax amount totaling approximately $467 (A$707).

On September 17, 2020, the ATO issued a position paper with its preliminary view on the imposition of administrative penalties related to the tax assessment issued to AofA. This paper proposed penalties of approximately $85 (A$128).

AofA disagreed with the Notices and with the ATO's proposed position on penalties. In September 2020, AofA lodged formal objections to the Notices. In the fourth quarter of 2020, AofA provided a submission on the ATO's imposition of interest and also submitted a response to the ATO's position paper on penalties. After the ATO completes its review of AofA's response to the penalties position paper, the ATO could issue a penalty assessment.

To date, AofA has not received a response to its submission on the ATO's imposition of interest or its response to the ATO's position paper on penalties.

Through February 1, 2022, AofA did not receive a response from the ATO on AofA's formal objections to the Notices and, on that date, AofA submitted statutory notices to the ATO requiring the ATO to make decisions on AofA's objections within a 60-day period. On April 1, 2022, the ATO issued its decision disallowing the Company's objections related to the income tax assessment, while the position on penalties and interest remains outstanding.

On April 29, 2022, AofA filed proceedings in the Australian Administrative Appeals Tribunal (AAT) against the ATO to contest the Notices, a process which could last several years. The AAT held the first directions hearing on July 25, 2022 ordering AofA to file its evidence and related materials by November 4, 2022, ATO to file its materials by April 14, 2023 and AofA to file reply materials by May 26, 2023. AofA filed its evidence and related materials on November 4, 2022. The ATO did not file its materials by April 14, 2023. At a directions hearing on May 17, 2023, the ATO was granted an extension to file its materials by August 18, 2023. There will be a subsequent directions hearing on September 1, 2023 to determine the next steps. The Company maintains that the sales subject to the ATO's review, which were ultimately sold to Aluminium Bahrain B.S.C., were the result of arm's length transactions by AofA over two decades and were made at arm's length prices consistent with the prices paid by other third-party alumina customers.

In accordance with the ATO's dispute resolution practices, AofA paid 50% of the assessed income tax amount exclusive of interest and any penalties, or approximately $74 (A$107), during the third quarter 2020, and the ATO is not expected to seek further payment prior to final resolution of the matter. If AofA is ultimately successful, any amounts paid to the ATO as part of the 50% payment would be refunded. AofA funded the payment with cash on hand and recorded the payment within Other noncurrent assets as a noncurrent prepaid tax asset; the related June 30, 2023 balance is $70 (A$107).

Further interest on the unpaid tax will continue to accrue during the dispute. The initial interest assessment and the additional interest accrued are deductible against taxable income by AofA but would be taxable as income in the year the dispute is resolved if AofA is ultimately successful. AofA applied this deduction beginning in the third quarter of 2020, reducing cash tax payments. At June 30, 2023 and December 31, 2022, total reductions in cash tax payments were $182 (A$276) and $174 (A$260), respectively, and are reflected within Other noncurrent liabilities and deferred credits as a noncurrent accrued tax liability.

The Company continues to believe it is more likely than not that AofA's tax position will be sustained and therefore is not recognizing any tax expense in relation to this matter. However, because the ultimate resolution of this matter is uncertain at this time, the Company cannot predict the potential loss or range of loss associated with the outcome, which may materially affect its results of operations and financial condition. References to any assessed U.S. dollar amounts presented in connection with this matter have been converted into U.S. dollars from Australian dollars based on the exchange rate in the respective period.

AofA is part of the Company's joint venture with Alumina Limited, an Australian public company listed on the Australian Securities Exchange. The Company and Alumina Limited own 60% and 40%, respectively, of the joint venture entities, including AofA.

Other

Spain—In July 2019, the Company completed the divestiture of the Avilés and La Coruña aluminum facilities to PARTER Capital Group AG (PARTER) in a sale process endorsed by the Spanish government and supported by the workers' representatives following a collective dismissal process.

In early 2020, PARTER sold a majority stake in the facilities to an unrelated party. Alcoa had no knowledge of the subsequent transaction prior to its announcement and on August 28, 2020, Alcoa filed a lawsuit with the Court of First Instance in Madrid, Spain asserting that the sale was in breach of the sale agreement between Alcoa and PARTER. In June 2023, the Court of First Instance in Madrid issued a declaratory judgement in Alcoa's favor ruling that the transaction between PARTER and the unrelated party was a breach of the sale agreement. There was no financial compensation to the Company as a result of this ruling.

Related to this subsequent sale transaction, certain proceedings and investigations have been initiated by or at the request of the employees of the facilities against their current employers, the new owners of the current employers, and Alcoa, alleging that certain agreements from the 2019 collective dismissal process remain in force and that, under such agreements, Alcoa remains liable for certain related employment benefits. One such proceeding is a collective case before the Spanish National Court, filed on November 10, 2020, wherein the workers' representatives and employees are seeking to have the terms of a Collective Dismissal Agreement signed between Alcoa and the workers in January 2019 be fulfilled. Other proceedings include: a second collective claim filed in National Court on behalf of employees that were not affected by the 2019 collective dismissal process, numerous individual labor claims filed in the labor courts of Avilés and La Coruña and the initiation of a separate criminal investigation by the National Court.

On June 15, 2021, the Spanish National Court ruled that the collective dismissal agreement for the divested Avilés and La Coruña aluminum facilities should be applied to the situation of the claimant workers, and that Alcoa should be liable for the severance of those employees to the extent they were affected by the 2019 collective dismissal process. Alcoa appealed this ruling to the Supreme Court of Spain.

In July 2021, the Spanish National Court appointed a judicial director to oversee the facilities and later declared the facilities insolvent. In early 2022, the insolvency administrators appointed by the courts (one for each facility) announced their intention to collectively dismiss all employees at the two facilities.

In April 2022, the Company received unanimous acceptance of an offer made to all active workers of the divested Avilés and La Coruña facilities to settle various legal disputes related to the 2019 divestiture and a Global Settlement Agreement (GSA) was fully executed. Alcoa recorded $2 and $79 in the second quarter and six-month period of 2022 in Restructuring and other charges, net, respectively, to reflect estimated cash payments related to the GSA.

On July 6, 2023, the Supreme Court ratified the GSA. The Company expects to make substantially all cash payments in the third quarter of 2023 upon completion of the remaining administrative and judicial approvals in accordance with the GSA.

General

In addition to the matters discussed above, various other lawsuits, claims, and proceedings have been or may be instituted or asserted against Alcoa Corporation, including those pertaining to environmental, safety and health, commercial, tax, product liability, intellectual property infringement, employment, and employee and retiree benefit matters, and other actions and claims arising out of the normal course of business. While the amounts claimed in these other matters may be substantial, the ultimate liability is not readily determinable because of the considerable uncertainties that exist. Accordingly, it is possible that the Company's liquidity or results of operations in a particular period could be materially affected by one or more of these other matters. However, based on facts currently available, management believes that the disposition of these other matters that are pending or asserted will not have a material adverse effect, individually or in the aggregate, on the financial position of the Company.

R. Other Financial Information

Other Expenses (Income), Net

	Second quarter ended June 30,		Six months ended June 30,	
	2023	2022	2023	2022
Equity loss (income)	$ 44	$ (35)	$ 139	$ (53)
Foreign currency (gains) losses, net	(39)	(4)	(55)	8
Net loss from asset sales	1	4	15	5
Net loss (gain) on mark-to-market derivative instruments	9	(176)	(17)	(191)
Non-service costs – pension and other postretirement benefits	3	15	6	31
Other	(12)	(10)	(28)	(20)
	$ 6	$ (206)	$ 60	$ (220)

Other Noncurrent Assets

	June 30, 2023	December 31, 2022
Value added tax credits	$ 341	$ 294
Gas supply prepayment	291	311
Prepaid gas transmission contract	284	285
Deferred mining costs, net	170	161
Prepaid pension benefit	158	146
Goodwill	146	145
Noncurrent prepaid tax asset	70	72
Noncurrent restricted cash	63	56
Intangibles, net	39	29
Other	92	94
	$ 1,654	$ 1,593

Value added tax credits—In the fourth quarter of 2018, after an assessment of the future realizability of Brazil state VAT credits recorded, the Company established an allowance on the accumulated state VAT credit balances and stopped recording any future credit benefits. With the restart of the Alumar smelter in São Luís, Brazil and its first metal sales in June 2022, the Company had the ability to monetize these credits. In June 2022, the Company reversed the allowance with a credit of $83 to Restructuring and other charges, net and reversed the subsequent additions to the valuation allowance with a credit to Cost of goods sold of $46 (same accounts as when incurred).

Cash and Cash Equivalents and Restricted Cash

	June 30, 2023	December 31, 2022
Cash and cash equivalents	$ 990	$ 1,363
Current restricted cash	44	55
Noncurrent restricted cash	63	56
	$ 1,097	$ 1,474

S. Supplier Finance Programs

The Company has various supplier finance programs with third-party financial institutions that are made available to suppliers to facilitate payment term negotiations. Under the terms of these agreements, suppliers may elect to participate to receive payment in advance of the payment date from third-party financial institutions for qualifying invoices. Alcoa's obligations to its suppliers, including amounts due and payment terms, are not impacted by its suppliers' participation in these programs. The Company does not pledge any assets as security or provide any guarantees beyond payment of outstanding invoices at maturity under these arrangements. The Company does not pay fees to the financial institutions under these arrangements. At June 30, 2023 and December 31, 2022, qualifying supplier invoices outstanding under these programs were $132 and $185, respectively, and have payment terms ranging from 50 to 110 days. These obligations are included in Accounts payable, trade on the accompanying Consolidated Balance Sheet.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

(dollars in millions, except per-share amounts, average realized prices, and average cost amounts; metric tons in thousands (kmt); dry metric tons in millions (mdmt))

Business Update

During the second quarter of 2023, Alcoa remained focused on improving operating performance across its operations and continued to work with relevant government bodies to support its annual mine plan approvals processes in Australia.

In early July 2023, the Alumar (Brazil) refinery returned to normal production levels after the repair of the ship-to-shore conveyance system that failed on March 25, 2023 and other unplanned maintenance was completed. As a result of the conveyance system event, bauxite discharge at the Alumar port was temporarily halted and the refinery operated on existing inventory until initial repairs were completed on April 8, 2023. Bauxite flows to the refinery were fully restored by the end of April 2023. The pier was not damaged and could still berth vessels.

The Company continues to progress the restart of the Alumar smelter in São Luís, Brazil. During the second quarter, additional measures were taken to establish a controlled pace for the restart with a goal to improve operating stability of the restarted pots. The site was operating at approximately 60 percent of the site's total annual capacity of 268 kmt (Alcoa share) during the second quarter of 2023.

In the second quarter of 2023, the Company continued investments to support the phased restart of the San Ciprián aluminum smelter to begin in January 2024, in accordance with the updated viability agreement reached with the workers' representatives in February 2023. Alcoa plans to operate an initial complement of approximately 6 percent of total pots, to then restart additional pots based on favorable market conditions, and to restart all pots by October 1, 2025. From October 1, 2025 until the end of 2026, the planned minimum production will be 75 percent of the annual capacity of 228 kmt. The updated viability agreement includes increased investments in the facility and protections for the workforce.

In March 2023, the Company reduced production at the Portland smelter to approximately 75 percent of the site's annual capacity of 197 kmt (Alcoa share) due to instability and challenges related to the production of rodded anodes. As of April 2023, the Company regained operational stability at the site and continues to operate at approximately 75 percent of its capacity.

The Company announced the closure of the previously curtailed Intalco aluminum smelter after evaluating various options for the asset in March 2023. The facility has been fully curtailed since 2020.

Australia Mine Plan Approvals

In Australia, the Company seeks annual approvals from the Western Australian State Government for a rolling five-year mine plan to maintain continued operations at the Huntly and Willowdale bauxite mines. This statutory annual mine approvals process is currently taking longer than it has taken historically due to increased requirements and expectations from stakeholders. During the second quarter of 2023, the Company continued to work with relevant state government agencies to support the annual mine approvals process.

In April 2023, Alcoa began mining lower grade bauxite in areas already permitted under Mine Management Programs (MMPs) at the Huntly mine (that supplies the Pinjarra and Kwinana refineries). The reduction in grade will extend the ore supply and provide more time to work through the approvals process. Alcoa plans to continue to mine lower grade bauxite in these areas, which impacts the refineries by increasing the use of caustic, energy, and bauxite and decreasing alumina output.

In addition to the ongoing statutory process, a third party has referred the Company's future and existing mine plans in existing mine regions to the Western Australian Environmental Protection Authority (WA EPA) for assessment. The WA EPA has indicated it could decide by the end of July 2023 whether to proceed to the next stage in its evaluation of these referrals, which would include a 7-day public comment period. After a public comment period, the WA EPA would then take time to consider whether to formally assess all or part of the mine plans and, if so, at what level.

The referrals have further delayed the annual mine approvals process, and because of the lead time required to deploy new mine plans, bauxite grade impacts are expected to continue until at least the second quarter of 2024.

The Company believes the current statutory process for its MMPs, which involves input from various government agencies, provides appropriate environmental and social protections in existing mine regions, without the need for an assessment from the WA EPA. For future major mine extensions, Alcoa supports the use of the WA EPA process. Alcoa previously had initiated this process for the proposed new Myara North and Holyoake mine regions.

The Kwinana refinery has been operating four of its five digesters since January 2023 in response to a state-wide shortage of natural gas from key suppliers in Western Australia. On April 19, 2023, the Company announced its decision to keep the one digester offline due to the prolonged annual mine plan approvals process.

Other Matters

In May 2023, members of the United Steelworkers ratified a new three-year collective bargaining agreement which covers more than 800 active employees at the smelter at Warrick Operations (Indiana) and the smelter at Massena Operations (New York).

In April 2023, the Company purchased group annuity contracts to transfer approximately $235 of pension obligations and assets associated with defined benefit pension plans for approximately 530 Canadian retirees and beneficiaries. As a result, Alcoa recognized a non-cash settlement loss of $21 ($16 after-tax) in Restructuring and other charges, net on the Statement of Consolidated Operations in the second quarter of 2023. See Part I Item I of this Form 10-Q in Note M to the Consolidated Financial Statements for additional information.

In April 2023, the Company entered into a one-year unsecured revolving credit facility for $250 (available to be drawn in Japanese yen).

In the first quarter of 2023, the Company recorded an adjustment related to the Company's Ma'aden Aluminum joint venture for the settlement of a dispute with an industrial utility for periods in 2021 and 2022. Alcoa's share of this adjustment was $41 which is included in Other expenses (income), net on the Statement of Consolidated Operations for the six-month period of 2023. Alcoa's total share of this dispute of $62 includes $21 that was recorded in the fourth quarter of 2022.

The Company paid a quarterly cash dividend of $0.10 per share of the Company's common stock in June 2023, totaling $18.

See the below sections for additional details on the above-described actions.

Results of Operations

The discussion that follows includes a comparison of our results of operations and liquidity and capital resources for the quarterly and year-to-date periods outlined in the table below.

Selected Financial Data:

	Quarter ended		Six months ended	
	Sequential		*Year-to-date*	
Statement of Operations	**June 30, 2023**	**March 31, 2023**	**June 30, 2023**	**June 30, 2022**
Sales	$ 2,684	$ 2,670	$ 5,354	$ 6,937
Cost of goods sold (exclusive of expenses below)	2,515	2,404	4,919	4,948
Selling, general administrative, and other expenses	52	54	106	96
Research and development expenses	6	10	16	16
Provision for depreciation, depletion, and amortization	153	153	306	321
Restructuring and other charges, net	24	149	173	50
Interest expense	27	26	53	55
Other expenses (income), net	6	54	60	(220)
Total costs and expenses	2,783	2,850	5,633	5,266
(Loss) income before income taxes	(99)	(180)	(279)	1,671
Provision for income taxes	22	52	74	444
Net (loss) income	(121)	(232)	(353)	1,227
Less: Net (loss) income attributable to noncontrolling interest	(19)	(1)	(20)	209
Net (loss) income attributable to Alcoa Corporation	$ (102)	$ (231)	$ (333)	$ 1,018

	Quarter ended		Six months ended	
Selected Financial Metrics	**June 30, 2023**	**March 31, 2023**	**June 30, 2023**	**June 30, 2022**
Diluted (loss) income per share attributable to Alcoa Corporation common shareholders	$ (0.57)	$ (1.30)	$ (1.87)	$ 5.44
Third-party shipments of alumina (kmt)	2,136	1,929	4,065	4,715
Third-party shipments of aluminum (kmt)	623	600	1,223	1,308
Average realized price per metric ton of alumina	$ 363	$ 371	$ 367	$ 410
Average realized price per metric ton of aluminum	$ 2,924	$ 3,079	$ 3,000	$ 3,863
Average Alumina Price Index (API)[(1)]	$ 355	$ 346	$ 351	$ 395
Average London Metal Exchange (LME) 15-day lag[(2)]	$ 2,283	$ 2,379	$ 2,331	$ 3,104

(1) API (Alumina Price Index) is a pricing mechanism that is calculated by the Company based on the weighted average of a prior month's daily spot prices published by the following three indices: CRU Metallurgical Grade Alumina Price; Platts Metals Daily Alumina PAX Price; and FastMarkets Metal Bulletin Non-Ferrous Metals Alumina Index.

(2) LME (London Metal Exchange) is a globally recognized exchange for commodity trading, including aluminum. The LME pricing component represents the underlying base metal component, based on quoted prices for aluminum on the exchange.

Overview

Sequential period comparison

Net (loss) income attributable to Alcoa Corporation increased $129 primarily as a result of:

- Lower restructuring charges
- Lower equity losses
- Lower taxes in the jurisdictions where Alcoa pays taxes
- Lower raw material costs

Partially offset by:

- Lower average realized price of aluminum
- Higher costs primarily associated with direct material usage and maintenance, primarily in the Alumina segment

Year-to-date comparison

Net (loss) income attributable to Alcoa Corporation decreased $1,351 primarily as a result of:

- Lower average realized prices of aluminum and alumina
- Higher costs primarily associated with maintenance, direct material usage, and labor
- Lower equity earnings
- Unfavorable mark-to-market results on derivative instruments
- Higher raw material costs due to inflation pressures
- Higher restructuring charges

Partially offset by:

- Lower taxes on lower earnings
- Favorable currency impacts

Sales

Sequential period comparison

Sales increased $14 primarily as a result of:

- Higher shipments, mainly in the Alumina segment
- Higher trading activities and increased offtake from a joint venture supply agreement

Partially offset by:

- Lower average realized price of aluminum
- Lower volumes and price from bauxite offtake and supply agreements
- Unfavorable currency impacts

Year-to-date comparison

Sales decreased $1,583 primarily as a result of:

- Lower average realized prices of aluminum and alumina
- Lower trading activities
- Lower shipments across both segments
- Decrease in value add product sales

Partially offset by:

- Higher volumes and price from bauxite offtake and supply agreements

Cost of goods sold

Sequential period comparison

Cost of goods sold as a percentage of sales increased 4% primarily as a result of:
- Higher costs primarily associated with direct material usage and maintenance, primarily in the Alumina segment
- Lower average realized price of aluminum
- Lower premiums on value add products

Partially offset by:
- Favorable raw material costs

Year-to-date comparison

Cost of goods sold as a percentage of sales increased 21% primarily as a result of:
- Lower average realized prices of aluminum and alumina
- Higher costs primarily associated with maintenance, direct material usage, and labor
- Higher raw material costs due to inflation pressures
- Decrease in value add product sales

Partially offset by:
- Favorable currency impacts

Selling, general administrative, and other expenses

Sequential period comparison

Selling, general administrative, and other expenses decreased $2 primarily as a result of:
- Lower variable compensation

Year-to-date comparison

Selling, general administrative, and other expenses increased $10 primarily as a result of:
- Higher external legal fees and labor

Provision for depreciation, depletion, and amortization

Sequential period comparison

Depreciation did not fluctuate in comparison to the first quarter of 2023.

Year-to-date comparison

Depreciation decreased $15 primarily as a result of:
- Lower depreciation in Brazil for mine reclamation and bauxite residue storage asset retirement obligations
- Favorable currency impacts

Partially offset by:
- Higher depreciation at the Juruti mine primarily due to the completion of a mine move in the first quarter of 2023

Interest expense

Interest expense increased $1 in comparison to the first quarter of 2023 and decreased $2 in comparison to the six-month period of 2022.

Other expenses (income), net

Sequential period comparison

Other expenses (income), net was $6 in the second quarter of 2023 compared with $54 in the first quarter of 2023. The favorable change of $48 was primarily a result of:

- Lower equity losses from the Ma'aden aluminum joint venture primarily due to the absence of a charge for a utility settlement
- Favorable currency impacts, primarily due to the U.S. dollar weakening against the Brazilian real and the Canadian dollar
- Absence of costs related to site separation commitments associated with the Warrick Rolling Mill sale

Partially offset by:

- Mark-to-market results on derivative instruments due to lower power prices in the current quarter

Year-to-date comparison

Other expenses (income), net was $60 in the six-month period of 2023, compared with $(220) in the six-month period of 2022. The unfavorable change of $280 was primarily a result of:

- Mark-to-market results on derivative instruments due to lower power prices in the current year
- Decrease in equity earnings from the Ma'aden aluminum joint venture primarily due to a charge for a utility settlement, lower shipments and lower aluminum prices
- Decrease in equity earnings from the Ma'aden bauxite and alumina joint venture primarily due to lower shipments, lower alumina prices and higher raw material costs
- Higher ELYSIS capital contributions, which triggered loss recognition

Partially offset by:

- Favorable currency impacts primarily due to the U.S. dollar weakening against the Brazilian real and Canadian dollar
- Lower pension expense primarily due to a decrease in recognized net actuarial losses

Restructuring and other charges, net

Sequential period comparison

In the second quarter of 2023, Restructuring and other charges, net of $24 primarily related to:

- $21 for the settlement of certain pension benefits

In the first quarter of 2023, Restructuring and other charges, net of $149 primarily related to:

- $101 for the permanent closure of the previously curtailed Intalco aluminum smelter
- $47 for the updated viability agreement for the restart of the San Ciprián aluminum smelter

Year-to-date comparison

In the six-month period of 2023, Restructuring and other charges, net of $173 primarily related to:

- $101 for the permanent closure of the previously curtailed Intalco aluminum smelter
- $47 for the updated viability agreement for the San Ciprián aluminum smelter
- $21 for the settlement of certain pension benefits

In the six-month period of 2022, Restructuring and other charges, net of $50 primarily related to:

- $79 for the offer made to the workers of the divested Avilés and La Coruña facilities to settle various legal disputes related to the 2019 divestiture
- $58 for an asset impairment related to the sale of the Company's interest in the MRN mine
- $6 for additional take-or-pay contract costs at the previously curtailed Intalco smelter
- $2 to adjust asset retirement obligation reserves at previously closed locations

Partially offset by:

- $83 for the reversal of state value added tax valuation allowance associated with the restart of the Alumar smelter
- $12 for changes in estimated take-or-pay contract costs at the closed Wenatchee smelter

Provision for income taxes

Sequential period comparison

The Provision for income taxes in the second quarter of 2023 was $22 on a loss before taxes of $(99) or (22.2)%. In comparison, the first quarter of 2023 Provision for income taxes was $52 on a loss before taxes of $(180) or (28.9)%.

The decrease in tax expense of $30 is primarily attributable to lower income in the jurisdictions where taxes are paid.

Year-to-date comparison

The Provision for income taxes in the six-month period of 2023 was $74 on a loss before taxes of $(279) or (26.5)%. In comparison, the six-month period of 2022 Provision for income taxes was $444 on income before taxes of $1,671 or 26.6%.

The decrease in tax expense of $370 is primarily attributable to lower income in the jurisdictions where taxes are paid.

Noncontrolling interest

Sequential period comparison

Net (loss) income attributable to noncontrolling interest was $(19) in the second quarter of 2023 compared with $(1) in the first quarter of 2023. These amounts are entirely related to Alumina Limited's 40% ownership interest in several affiliated operating entities.

The change is primarily a result of higher direct material usage and maintenance, and unfavorable mark-to-market results on derivative instruments, partially offset by lower taxes, and lower elimination of intercompany profit in inventory.

Year-to-date comparison

Net (loss) income attributable to noncontrolling interest was $(20) in the six-month period of 2023 compared with $209 in the six-month period of 2022. These amounts are entirely related to Alumina Limited's 40% ownership interest in several affiliated operating entities.

The change is primarily a result of higher direct material usage and maintenance and lower average realized price of alumina, unfavorable mark-to-market results on derivative instruments, higher elimination of intercompany profit in inventory, decrease in equity earnings from the Ma'aden bauxite and alumina joint venture, and higher restructuring charges, partially offset by lower taxes.

Segment Information

Alcoa Corporation is a producer of bauxite, alumina, and aluminum products. In January 2023, the financial information provided to the Chief Operating Decision Maker (CODM) for the activities of the bauxite mines and the alumina refineries was combined, and accordingly the Company changed its operating segments. Beginning in the first quarter of 2023, the Company's operations consisted of two worldwide reportable segments: Alumina and Aluminum. Segment information for all prior periods presented was updated to reflect the new segment structure.

Segment performance under Alcoa Corporation's management reporting system is evaluated based on a number of factors; however, the primary measure of performance is the Adjusted EBITDA (Earnings before interest, taxes, depreciation, and amortization) of each segment. The Company calculates Segment Adjusted EBITDA as Total sales (third-party and intersegment) minus the following items: Cost of goods sold; Selling, general administrative, and other expenses; and Research and development expenses. Alcoa Corporation believes that the presentation of Adjusted EBITDA is useful to management and investors because such measure provides both additional information about the operating performance of Alcoa Corporation and insight on the ability of Alcoa Corporation to meet its financial obligations. The presentation of Adjusted EBITDA is not intended to be a substitute for, and should not be considered in isolation from, the financial measures reported in accordance with GAAP. Alcoa Corporation's Adjusted EBITDA may not be comparable to similarly titled measures of other companies.

Alumina

Business Update. The average API of $355 per metric ton trended favorably compared to the prior quarter reflecting a 3% sequential increase. Compared to the six-month period of 2022, the average API trended unfavorably, reflecting an 11% decrease year-over-year.

During the second quarter, the Alumina segment experienced higher production costs primarily related to higher raw material usages due to operating certain Australian refineries with a lower grade bauxite, partially offset by lower energy costs, primarily in Europe and lower raw materials costs.

Alumina production decreased 7% in the second quarter in comparison to the first quarter of 2023 primarily due to unplanned maintenance at the Alumar refinery and operating certain Australian refineries with a lower grade bauxite, partially offset by increased production at the San Ciprián (Spain) refinery.

On March 25, 2023, a ship-to-shore conveyance system at the Alumar refinery failed, temporarily halting bauxite discharge at the Alumar port. The Alumar refinery operated on existing inventory until initial repairs were completed on April 8, 2023, and bauxite flows to the refinery were restored by the end of April 2023. The pier was not damaged and could still berth vessels.

In January 2023, in response to a state-wide shortage of natural gas from key suppliers in Western Australia, the Company reduced production at the Kwinana refinery by decreasing process flows and taking offline one of five digesters. While the supply of natural gas improved, on April 19, 2023, the Company announced its decision to keep the one digester offline due to the prolonged annual mine plan approvals process.

Mining operations are relocated periodically in support of optimizing the value extracted from bauxite reserves. In the first quarter of 2023, the Company completed the process of moving the Juruti mining operations and incurred $4 related to the mining operation relocation.

Capacity. The Alumina segment had a base capacity of 13,843 kmt with 1,452 kmt of curtailed refining capacity. There was no change in curtailed capacity during the quarter.

Total alumina shipments include metric tons that were not produced by the Alumina segment. Such alumina was purchased to satisfy certain customer commitments. The Alumina segment bears the risk of loss of the purchased alumina until control of the product has been transferred to this segment's customers. Additionally, operating costs in the table below includes all production related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

	Quarter ended		Six months ended	
	June 30, 2023	March 31, 2023	June 30, 2023	June 30, 2022
Bauxite production (mdmt)	10.0	9.9	19.9	21.2
Third-party bauxite shipments (mdmt)	1.8	1.9	3.7	1.4
Alumina production (kmt)	2,559	2,755	5,314	6,435
Third-party alumina shipments (kmt)	2,136	1,929	4,065	4,715
Intersegment alumina shipments (kmt)	944	1,039	1,983	1,924
Total alumina shipments (kmt)	3,080	2,968	6,048	6,639
Third-party bauxite sales	$ 113	$ 136	$ 249	$ 77
Third-party alumina sales	781	721	1,502	1,932
Total segment third-party sales	$ 894	$ 857	$ 1,751	$ 2,009
Intersegment alumina sales	397	421	818	896
Total sales	$ 1,291	$ 1,278	$ 2,569	$ 2,905
Segment Adjusted EBITDA	$ 33	$ 103	$ 136	$ 660
Average realized third-party price per metric ton of alumina	$ 363	$ 371	$ 367	$ 410
Operating costs	$ 1,269	$ 1,174	$ 2,443	$ 2,263
Average cost per metric ton of alumina shipped	$ 412	$ 396	$ 404	$ 341

Production

Sequential period comparison

Alumina production decreased 7% primarily as a result of:
- Reduced production at the Alumar refinery due to unplanned equipment maintenance
- Reduced production output at certain of the Australia refineries primarily due to lower grade bauxite

Partially offset by:
- Increased production at the San Ciprián refinery as the refinery moved toward 50 percent of capacity operating levels

Year-to-date comparison

Alumina production decreased 17% primarily as a result of:
- Decreased production at the San Ciprián refinery due to the curtailment of capacity in the third quarter of 2022
- Reduced production at the Kwinana refinery due to the impact of the partial curtailment in the first quarter of 2023
- Reduced production at the Australia refineries due to lower grade bauxite
- Decreased production at the Alumar refinery due to unplanned equipment maintenance

Third-party sales

Sequential period comparison

Third-party sales increased $37 primarily as a result of:
- Higher shipments of alumina primarily due to increased trading activity

Partially offset by:
- Lower volumes and price from bauxite offtake and supply agreements primarily caused by the shift to intrasegment sales due to higher production at the San Ciprián refinery

Year-to-date comparison

Third-party sales decreased $258 primarily as a result of:
- Lower shipments of alumina primarily due to lower production at the San Ciprián refinery and Australian refineries
- Lower average realized price of $43/ton principally driven by a lower average API
- Unfavorable currency impacts

Partially offset by:
- Higher volumes and price from bauxite offtake and supply agreements primarily caused by the shift to third-party sales due to reduced production at the San Ciprián refinery

Intersegment sales

Sequential period comparison

Intersegment sales decreased $24 primarily as a result of:
- Lower alumina shipments due to lower alumina production

Partially offset by:
- Higher average API on sales to the Aluminum segment

Year-to-date comparison

Intersegment sales decreased $78 primarily as a result of:
- Lower average API on sales to the Aluminum segment

Partially offset by:
- Higher alumina shipments primarily due to the Alumar smelter restart

Segment Adjusted EBITDA

Sequential period comparison

Segment Adjusted EBITDA decreased $70 primarily as a result of:

- Higher costs primarily associated with direct material usage related to operating certain of the Australian refineries with lower grade bauxite and maintenance

Partially offset by:

- Lower energy costs, primarily in Europe
- Favorable raw material costs primarily on lower prices for caustic soda

Year-to-date comparison

Segment Adjusted EBITDA decreased $524 primarily as a result of:

- Higher costs primarily associated with direct material usage related to the partial curtailment of the San Ciprián refinery and operating certain of the Australian refineries with lower grade bauxite, and increased maintenance
- Lower average realized price of $43/ton principally driven by a lower average API
- Unfavorable raw material costs primarily on higher prices for caustic soda
- Lower shipments primarily from the Australian refineries due to decreased production

Partially offset by:

- Favorable currency impacts
- Lower energy costs, primarily in Europe

Forward Look. For the third quarter in comparison to the second quarter of 2023, the Alumina segment anticipates unfavorable raw material and energy usages due to operating the Kwinana and Pinjarra refineries with a lower bauxite grade to be more than offset by lower raw material prices, and lower production costs and higher volumes as a result of the conclusion of elevated maintenance during the second quarter of 2023.

The Company expects total alumina 2023 shipments to remain unchanged from the prior projection, ranging between 12.7 and 12.9 million metric tons.

Aluminum

Business Update. Aluminum prices decreased sequentially with LME prices on a 15-day lag averaging $2,283 per metric ton in the second quarter of 2023. The Aluminum segment also experienced lower raw material costs during the second quarter of 2023.

In March 2023, Alcoa announced the closure of 279 kmt of previously curtailed capacity at the Intalco aluminum smelter. Charges related to the closure totaled $117 in the first quarter of 2023 and included a charge of $16 for the write down of remaining inventories to net realizable value recorded in Cost of goods sold on the Statement of Consolidated Operations and a charge of $101 recorded in Restructuring and other charges, net on the Statement of Consolidated Operations. The restructuring charges were comprised of $50 of asset impairments, $50 to establish reserves related to environmental and demolition obligations, and $1 of severance and employee termination costs. Cash outlays related to the permanent closure of the site are expected to be approximately $85 over the next three years, with approximately $25 to be spent in 2023.

In March 2023, the Company reduced production at the Portland smelter to approximately 75 percent of the site's total annual capacity of 197 kmt (Alcoa share) due to instability and challenges related to the production of rodded anodes. As of April 2023, the Company regained operational stability at the site and continues to operate at approximately 75 percent of its capacity.

In conjunction with the previously announced restart of the Alumar smelter in São Luís, Brazil, Alcoa incurred restart expenses of $13 and $32 during the second quarter and six-month period of 2023, respectively.

San Ciprián Smelter

The San Ciprián smelter was curtailed in January 2022 as a result of an agreement that was reached with the workers' representatives in December 2021. On February 3, 2023, the Company reached an updated viability agreement with the workers' representatives to commence the restart process in phases beginning in January 2024. The Company recorded charges of $47 in the first quarter of 2023 in Restructuring and other charges, net on the Statement of Consolidated Operations for certain employee obligations during the extended curtailment period. The Company also made additional commitments of $78 for capital improvements at the site. Cash outlays related to the employee obligations and capital improvements are expected in 2024 and 2025.

In connection with the agreements, the Company has restricted cash of $96 remaining at June 30, 2023 to be made available for $133 in capital improvements at the site and $35 in smelter restart costs. The Company incurred $8 and $13 of capital investment expenditures against the commitments during the second quarter and six-month period of 2023, respectively, which is expected to be released from restricted cash in subsequent periods.

During the first quarter of 2023, relevant authorities denied some permits related to the development of windfarms included in two long-term power purchase agreements (PPAs) signed in 2022 with renewable energy providers. As a result, those PPAs are now expected to supply up to 50 percent of the smelter's future power needs at its full capacity; the supply of energy will continue to depend on the permitting and development of the remaining windfarms included in the PPAs. The Company continues to negotiate with other suppliers to secure the remaining power supply needs for the smelter.

Total aluminum third-party shipments include metric tons that were not produced by the Aluminum segment. Such aluminum was purchased by this segment to satisfy certain customer commitments. The Aluminum segment bears the risk of loss of the purchased aluminum until control of the product has been transferred to this segment's customer. Additionally, Total shipments includes offtake from a joint venture supply agreement.

The average realized third-party price per metric ton of aluminum includes three elements: a) the underlying base metal component, based on quoted prices from the LME; b) the regional premium, which represents the incremental price over the base LME component that is associated with the physical delivery of metal to a particular region (e.g., the Midwest premium for metal sold in the United States); and c) the product premium, which represents the incremental price for receiving physical metal in a particular shape (e.g., billet, slab, rod, etc.) or alloy.

Operating costs includes all production-related costs: raw materials consumed; conversion costs, such as labor, materials, and utilities; depreciation and amortization; and plant administrative expenses.

	Quarter ended		Six months ended	
	June 30, 2023	March 31, 2023	June 30, 2023	June 30, 2022
Production (kmt)	523	518	1,041	997
Total shipments (kmt)	623	600	1,223	1,308
Third-party aluminum sales	$ 1,824	$ 1,846	$ 3,670	$ 5,071
Other[(1)]	(36)	(36)	(72)	(144)
Total segment third-party sales	$ 1,788	$ 1,810	$ 3,598	$ 4,927
Intersegment sales	4	3	7	15
Total sales	$ 1,792	$ 1,813	$ 3,605	$ 4,942
Segment Adjusted EBITDA	$ 110	$ 184	$ 294	$ 1,309
Average realized third-party price per metric ton	$ 2,924	$ 3,079	$ 3,000	$ 3,863
Operating costs	$ 1,665	$ 1,616	$ 3,281	$ 3,613
Average cost per metric ton of aluminum shipped	$ 2,669	$ 2,695	$ 2,682	$ 2,763

(1) Other includes third-party sales of energy, as well as realized gains and losses related to embedded derivative instruments designated as cash flow hedges of forward sales of aluminum.

Production

Sequential period comparison

Production increased 1% primarily as a result of:
- Increased production in North America, Europe and Brazil

Partially offset by:
- Partial curtailment of the Portland smelter in March 2023

Year-to-date comparison

Production increased 4% primarily as a result of:
- Alumar smelter restart

Partially offset by:
- Partial curtailment of the Warrick smelter in July 2022
- Partial curtailment of the Lista (Norway) smelter in August 2022

Third-party sales

Sequential period comparison

Third-party sales decreased $22 primarily as a result of:
- Lower average realized price of $155/ton driven by a lower average LME (on a 15-day lag) and lower regional premiums
- Unfavorable currency impacts

Partially offset by:
- Higher trading activities and increased offtake from a joint venture supply agreement

Year-to-date comparison

Third-party sales decreased $1,329 primarily as a result of:
- Lower average realized price of $863/ton driven by a lower average LME (on a 15-day lag) and lower regional premiums
- Lower trading activities
- Lower shipments due to partial curtailments at the Warrick smelter, the Lista smelter and the Portland smelter and the absence of sales of accumulated inventory at the San Ciprián smelter due to the strike in 2021
- Decrease in value add product sales

Partially offset by:
- Higher shipments due to improved availability of railcars or vessels for outbound product from North American smelters and the Alumar smelter restart

Segment Adjusted EBITDA

Sequential period comparison

Segment Adjusted EBITDA decreased $74 primarily as a result of:
- Lower average realized price based on LME (on a 15-day lag) and lower regional premiums
- Unfavorable currency impacts

Partially offset by:
- Favorable raw material costs, primarily on lower market prices for carbon materials, partially offset by higher average alumina input costs

Year-to-date comparison

Segment Adjusted EBITDA decreased $1,015 primarily as a result of:
- Lower average realized price based on LME (on a 15-day lag) and lower regional premiums
- Higher costs primarily associated with increased maintenance costs and higher labor costs
- Decrease in value add product sales
- Lower Warrick power plant energy sales
- Unfavorable raw material costs, primarily on higher market prices for carbon materials, partially offset by lower average alumina input costs

Partially offset by:
- Favorable currency impacts

The following table provides consolidated capacity and curtailed capacity (each in kmt) for each smelter owned by Alcoa Corporation:

		June 30, 2023		March 31, 2023		June 30, 2022	
Facility	**Country**	**Capacity [1]**	**Curtailed**	**Capacity [1]**	**Curtailed**	**Capacity [1]**	**Curtailed**
Portland [2]	Australia	197	49	197	49	197	30
São Luís (Alumar) [3]	Brazil	268	118	268	118	268	239
Baie Comeau	Canada	314	—	314	—	312	—
Bécancour	Canada	350	—	350	—	347	—
Deschambault	Canada	287	—	287	—	287	—
Fjarðaál	Iceland	351	—	351	—	351	—
Lista	Norway	95	31	95	31	94	—
Mosjøen	Norway	200	—	200	—	200	—
San Ciprián [4]	Spain	228	228	228	228	228	228
Intalco [5]	U.S.	—	—	—	—	279	279
Massena West	U.S.	130	—	130	—	130	—
Warrick	U.S.	269	162	269	162	269	108
		2,689	**588**	**2,689**	**588**	**2,962**	**884**

[1] These figures represent Alcoa Corporation's share of the facility Nameplate Capacity based on its ownership interest in the respective smelter.
[2] On March 15, 2023, the Company announced the curtailment of the Portland smelter in Australia to 75% of its current capacity.
[3] In 2021, the Company announced the restart of its 268,000 metric tons per year (mtpy) share of capacity at the Alumar smelter in São Luís, Brazil. Production began in the second quarter of 2022. Curtailed capacity decreased from June 30, 2022 as a result of the restart process.
[4] In December 2021, the Company announced a two-year curtailment of the San Ciprián smelter's 228,000 mtpy of annual smelting capacity. In February 2023, the Company and the workers' representatives reached an updated viability agreement for the phased restart of the smelter beginning in January 2024.
[5] In March 2023, the Company announced the permanent closure of 279,000 mtpy smelting capacity at the Intalco smelter in the state of Washington that had been fully curtailed since 2020.

Forward Look. For the third quarter in comparison to the second quarter of 2023, the segment expects lower raw materials and production costs to be partially offset by lower value add aluminum products sales, primarily due to softer billet demand.

The Company expects total Aluminum segment shipments to remain unchanged from the prior projection, ranging between 2.5 and 2.6 million metric tons in 2023.

Reconciliations of Certain Segment Information

Reconciliation of Total Segment Third-Party Sales to Consolidated Sales

	Quarter ended		Six months ended	
	June 30, 2023	**March 31, 2023**	**June 30, 2023**	**June 30, 2022**
Alumina	$ 894	$ 857	$ 1,751	$ 2,009
Aluminum	1,788	1,810	3,598	4,927
Total segment third-party sales	$ 2,682	$ 2,667	$ 5,349	$ 6,936
Other	2	3	5	1
Consolidated sales	$ 2,684	$ 2,670	$ 5,354	$ 6,937

Reconciliation of Total Segment Operating Costs to Consolidated Cost of Goods Sold

	Quarter ended		Six months ended	
	June 30, 2023	**March 31, 2023**	**June 30, 2023**	**June 30, 2022**
Alumina	$ 1,269	$ 1,174	$ 2,443	$ 2,263
Aluminum	1,665	1,616	3,281	3,613
Other[1]	120	129	249	266
Total segment operating costs	3,054	2,919	5,973	6,142
Eliminations[2]	(431)	(416)	(847)	(1,022)
Provision for depreciation, depletion, and amortization[3]	(148)	(147)	(295)	(309)
Other[4]	40	48	88	137
Consolidated cost of goods sold	$ 2,515	$ 2,404	$ 4,919	$ 4,948

(1) Other largely relates to the Aluminum segment's energy product division.
(2) Represents the elimination of Cost of goods sold related to intersegment sales between Alumina and Aluminum.
(3) Provision for depreciation, depletion, and amortization is included in the operating costs used to calculate average cost for each of the alumina and aluminum product divisions (see Alumina and Aluminum above). However, for financial reporting purposes, Provision for depreciation, depletion, and amortization is presented as a separate line item on Alcoa Corporation's Statement of Consolidated Operations.
(4) Other includes costs related to Transformation, and certain other items that are not included in the operating costs of segments (see footnotes 1 and 3 in the Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net (Loss) Income Attributable to Alcoa Corporation below).

Reconciliation of Total Segment Adjusted EBITDA to Consolidated Net (Loss) Income Attributable to Alcoa Corporation

	Quarter ended		Six months ended	
	June 30, 2023	March 31, 2023	June 30, 2023	June 30, 2022
Total Segment Adjusted EBITDA	$ 143	$ 287	$ 430	$ 1,969
Unallocated amounts:				
Transformation[1]	(17)	(8)	(25)	(25)
Intersegment eliminations	31	(8)	23	110
Corporate expenses[2]	(24)	(30)	(54)	(64)
Provision for depreciation, depletion, and amortization	(153)	(153)	(306)	(321)
Restructuring and other charges, net	(24)	(149)	(173)	(50)
Interest expense	(27)	(26)	(53)	(55)
Other (expenses) income, net	(6)	(54)	(60)	220
Other[3]	(22)	(39)	(61)	(113)
Consolidated (loss) income before income taxes	(99)	(180)	(279)	1,671
Provision for income taxes	(22)	(52)	(74)	(444)
Net loss (income) attributable to noncontrolling interest	19	1	20	(209)
Consolidated net (loss) income attributable to Alcoa Corporation	$ (102)	$ (231)	$ (333)	$ 1,018

(1) Transformation includes, among other items, the Adjusted EBITDA of previously closed operations.
(2) Corporate expenses are composed of general administrative and other expenses of operating the corporate headquarters and other global administrative facilities, as well as research and development expenses of the corporate technical center.
(3) Other includes certain items that are not included in the Adjusted EBITDA of the reportable segments.

Environmental Matters

See the Environmental Matters section of Note Q to the Consolidated Financial Statements in Part I Item 1 of this Form 10-Q.

Liquidity and Capital Resources

Management believes that the Company's cash on hand, future operating cash flows, and liquidity options, combined with its strategic actions, are adequate to fund its short term and long term operating and investing needs for at least twelve months and the foreseeable future thereafter. Further, the Company has flexibility related to its use of cash; the Company has no significant debt maturities until 2027 and no significant cash contribution requirements related to its U.S. pension plan obligations for the foreseeable future.

Although management believes that Alcoa's future cash from operations and other liquidity options will provide adequate resources to fund operating and investing needs, the Company's access to, and the availability of, financing on acceptable terms in the future will be affected by many factors, including: (i) Alcoa Corporation's credit rating; (ii) the liquidity of the overall capital markets; (iii) the current state of the economy and commodity markets, and (iv) short- and long-term debt ratings. There can be no assurances that the Company will continue to have access to capital markets on terms acceptable to Alcoa Corporation.

Changes in market conditions caused by global or macroeconomic events, such as the ongoing conflict between Russia and Ukraine, high inflation, and changing global monetary policies could have adverse effects on Alcoa's ability to obtain additional financing and cost of borrowing. Inability to generate sufficient earnings could impact the Company's ability to meet the financial covenants in our outstanding debt and revolving credit facility agreements and limit our ability to access these sources of liquidity or refinance or renegotiate our outstanding debt or credit agreements on terms acceptable to the Company. Additionally, the impact on market conditions from such events could adversely affect the liquidity of Alcoa's customers, suppliers, and joint venture partners and equity method investments, which could negatively impact the collectability of outstanding receivables and our cash flows.

Cash from Operations

Cash used for operations was $176 in the six-month period of 2023 compared with cash provided from operations of $570 in the same period of 2022. Notable changes to sources and (uses) of cash include:

- $(1,457) lower net income generation, excluding the impacts from restructuring charges, primarily due to lower aluminum pricing, higher production and raw material costs, and the absence of favorable mark-to-market derivative results;
- $528 in certain working capital accounts, primarily an increase in inventories in the six-month period of 2022 due to higher raw material prices, as well as higher volumes on hand, and an increase in receivables in the six-month period of 2022 due to increased realized aluminum price. The decrease in accounts payable in the six-month period of 2023 is due to lower raw material prices; and,
- $(160) in income taxes paid on prior year earnings, as well as on lower current year earnings in the jurisdictions where taxes are paid.

During 2023, AofA will continue to record its tax provision and tax liability without effect of the ATO assessment, since it expects to prevail. The tax payable will remain on AofA's balance sheet as a noncurrent liability, increased by the tax effect of subsequent periods' interest deductions, until dispute resolution, which is expected to take several years. At June 30, 2023, the noncurrent liability resulting from the cumulative interest deductions was approximately $182 (A$276). See description of the tax dispute in Note Q to the Consolidated Financial Statements in Part I Item 1 of this Form 10-Q.

The Company utilizes a Receivables Purchase Agreement facility to sell up to $150 of certain receivables through an SPE to a financial institution on a revolving basis. Alcoa Corporation guarantees the performance obligations of the Company subsidiaries, and unsold customer receivables are pledged as collateral to the financial institution to secure the sold receivables. At June 30, 2023, the SPE held unsold customer receivables of $184 pledged as collateral against the sold receivables.

The Company continues to service the customer receivables that were transferred to the financial institution. As Alcoa collects customer payments, the SPE transfers additional receivables to the financial institution rather than remitting cash. In the six-month period of 2023, the Company sold gross customer receivables of $174, and reinvested collections of $127 from previously sold receivables, resulting in net cash proceeds from the financial institution of $47. Cash collections from previously sold receivables yet to be reinvested of $29 were included in Accounts payable, trade on the accompanying Consolidated Balance Sheet as of June 30, 2023. Cash received from sold receivables under the agreement are presented within operating activities in the Statement of Consolidated Cash Flows. See Note I to the Consolidated Financial Statements in Part I Item 1 of this Form 10-Q.

Financing Activities

Cash provided from financing activities was $16 in the six-month period of 2023 compared to cash used for financing activities of $558 in the same period of 2022.

The source of cash in the six-month period of 2023 was primarily $100 of net contributions from Alumina Limited (see Noncontrolling interest in Results of Operations above) and $9 related to the net issuance of short-term borrowings (see below), partially offset by $36 of dividends paid, $34 for payments related to tax withholding on stock-based compensation awards, and $25 in financial contributions primarily related to the sale of the Warrick Rolling Mill.

In March 2023, the Company entered into agreements with a financial institution for the sale and subsequent repurchases of $25 of aluminum inventory. The Company did not record a sale upon shipment of the inventory, and the cash received of $25 was recorded in Short-term borrowings within Other current liabilities on the Consolidated Balance Sheet.

During the second quarter and six-month period of 2023, the Company repurchased $15 of inventory related to this agreement. The cash received and subsequently paid under the inventory repurchase agreement is included in cash provided from (used for) financing activities on the Statement of Consolidated Cash Flows for the six-month period of 2023.

The use of cash in the six-month period of 2022 was primarily $162 of net cash paid to Alumina Limited, $350 from the repurchase of common stock, and $37 of dividends paid.

Credit Facilities

The Company has an unsecured $1,250 revolving credit and letter of credit facility in place for working capital and/or other general corporate purposes (the Revolving Credit Facility). The Revolving Credit Facility established on September 16, 2016 and amended and restated in 2022, is scheduled to mature in June 2027. Subject to the terms and conditions under the Revolving Credit Facility, the Company or ANHBV may borrow funds or issue letters of credit. See Part II Item 8 of Alcoa Corporation's Annual Report on Form 10-K in Note M to the Consolidated Financial Statements for the year ended December 31, 2022 for more information on the Revolving Credit Facility.

In April 2023, the Company entered into a one-year unsecured revolving credit facility for $250 (available to be drawn in Japanese yen). Subject to the terms and conditions under the facility, the Company or ANHBV may borrow funds. The facility includes covenants that are substantially the same as those included in the Revolving Credit Facility. If Alcoa Corporation or ANHBV, as applicable, fails to have a rating of at least Ba1 from Moody's and BB+ from S&P, then no lending party to this facility would have any commitment or obligation to lend.

As of June 30, 2023, the Company was in compliance with all covenants and may access the entire amount of commitments under both of these facilities. There were no borrowings outstanding at June 30, 2023 and December 31, 2022, and no amounts were borrowed during the six-month period of 2023 and 2022 under either of these facilities.

Dividend

On May 4, 2023, the Board of Directors declared a quarterly cash dividend of $0.10 per share of the Company's common stock to stockholders of record as of the close of business on May 16, 2023. On June 2, 2023, the Company paid cash dividends of $18.

Investing Activities

Cash used for investing activities was $222 in the six-month period of 2023 compared to cash used for investing activities of $186 for the same period of 2022.

In the six-month period of 2023, the use of cash was primarily attributable to $198 related to capital expenditures and $36 of cash contributions to the ELYSIS joint venture.

In the six-month period of 2022, the use of cash was primarily attributable to $181 related to capital expenditures and $21 of cash contributions to the ELYSIS joint venture, partially offset by the sale of the Company's interest in the MRN mine of $10.

Recently Adopted and Recently Issued Accounting Guidance

See Note B to the Consolidated Financial Statements in Part I Item 1 of this Form 10-Q.

Dissemination of Company Information

Alcoa Corporation intends to make future announcements regarding company developments and financial performance through its website, http://www.alcoa.com, as well as through press releases, filings with the Securities and Exchange Commission, conference calls, and webcasts.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

See Part II Item 7A Quantitative and Qualitative Disclosures About Market Risk of Alcoa Corporation's Annual Report on Form 10-K for the year ended December 31, 2022. Our exposure to market risk has not changed materially since December 31, 2022. Refer to Part I Item 1 of this Form 10-Q in Note N to the Consolidated Financial Statements under caption Derivatives for additional information.

Item 4. Controls and Procedures.

(a) Evaluation of Disclosure Controls and Procedures

Alcoa Corporation's Chief Executive Officer and Chief Financial Officer have evaluated the Company's disclosure controls and procedures, as defined in Rules 13a-15(e) and 15d-15(e) of the U.S. Securities Exchange Act of 1934, as amended, as of the end of the period covered by this report, and they have concluded that these controls and procedures were effective as of June 30, 2023.

(b) Changes in Internal Control over Financial Reporting

There have been no changes in internal control over financial reporting during the second quarter of 2023, that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

PART II – OTHER INFORMATION

Item 1. Legal Proceedings.

In the ordinary course of its business, Alcoa is involved in a number of lawsuits and claims, both actual and potential. Various lawsuits, claims, and proceedings have been or may be instituted or asserted against Alcoa Corporation, including those pertaining to environmental, safety and health, commercial, tax, product liability, intellectual property infringement, employment, employee and retiree benefit matters, and other actions and claims arising out of the normal course of business. While the amounts claimed in these other matters may be substantial, the ultimate liability is not readily determinable because of the considerable uncertainties that exist. Accordingly, it is possible that the Company's liquidity or results of operations in a particular period could be materially affected by one or more of these other matters. However, based on facts currently available, management believes that the disposition of these other matters that are pending or asserted will not have a material adverse effect, individually or in the aggregate, on the financial position of the Company.

A discussion of our material pending lawsuits and claims can be found in Part I Item 3 Legal Proceedings of Alcoa Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2022. See Part I Item 1 of this Form 10-Q in Note Q to the Consolidated Financial Statements for additional information regarding legal proceedings.

Item 1A. Risk Factors.

We face a number of risks that could materially and adversely affect our business, results of operations, cash flow, liquidity, or financial condition. A full discussion of our risk factors can be found in Part I Item 1A. Risk Factors of Alcoa Corporation's Annual Report on Form 10-K for the fiscal year ended December 31, 2022.

Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.

Issuer Purchases of Equity Securities

The table below sets forth information regarding the repurchase of shares of our common stock during the periods indicated.

Period	Total Number of Shares Purchased	Weighted Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Program	Approximate Dollar Value of Shares that May Yet be Purchased Under the Program [1]
April 1 to April 30	—	—	—	$ 500,000,000
May 1 to May 31	—	—	—	500,000,000
June 1 to June 30	—	—	—	500,000,000
Total	—	—	—	

[1] On July 20, 2022, Alcoa Corporation announced that its Board of Directors approved a common stock repurchase program under which the Company may purchase shares of its outstanding common stock up to an aggregate transactional value of $500, depending on the Company's continuing analysis of market, financial, and other factors (the July 2022 authorization).

As of the date of this report, the Company is currently authorized to repurchase up to a total of $500, in the aggregate, of its outstanding shares of common stock under the July 2022 authorization. Repurchases under this program may be made using a variety of methods, which may include open market purchases, privately negotiated transactions, or pursuant to a Rule 10b5-1 plan. This program may be suspended or discontinued at any time and does not have a predetermined expiration date. Alcoa Corporation intends to retire repurchased shares of common stock.

Item 5. Other Information.

Trading Arrangements

None of the Company's directors or "officers," as defined in Rule 16a-1(f) of the Exchange Act, adopted, modified, or terminated a "Rule 10b5-1 trading arrangement" or a "non-Rule 10b5-1 trading arrangement," as each term is defined in Item 408 of Regulation S-K, during the Company's fiscal quarter ended June 30, 2023.

Amended and Restated Bylaws

On July 26, 2023, the Company's Board of Directors approved the Amended and Restated Bylaws of Alcoa Corporation, effective as of such date (the Amended and Restated Bylaws). Among other updates, the Amended and Restated Bylaws:

- address matters relating to Rule 14a-19 (the Universal Proxy Rule) under the Securities Exchange Act of 1934, as amended (the Exchange Act), including (i) requiring that any stockholder submitting a nomination notice make a representation as to whether such stockholder intends to solicit proxies in support of director nominees other than the Company's nominees in accordance with the Universal Proxy Rule, and if so, agree in writing that such stockholder will comply with the requirements of the Universal Proxy Rule; (ii) providing the Company a remedy if a stockholder fails to satisfy the Universal Proxy Rule requirements; (iii) requiring that a stockholder inform the Company if such stockholder no longer plans to solicit proxies in accordance with the Universal Proxy Rule; and (iv) requiring stockholders intending to use the Universal Proxy Rule to provide reasonable evidence of the satisfaction of the requirements under the Universal Proxy Rule at least five business days before the meeting upon request by the Company;
- revise and enhance the procedures and disclosure requirements set forth in the advance notice bylaw provisions for director nominations made and business proposals submitted by stockholders (other than proposals submitted pursuant to Rule 14a-8 under the Exchange Act), including (i) requiring additional information, representations and disclosures regarding proposing stockholders, proposed nominees, proposed business, and other persons related to, and acting in concert with, a stockholder and the stockholder's solicitation of proxies; (ii) clarifying that stockholders are not entitled to make additional or substitute nominations or proposals after the submission deadline and may only nominate a number of candidates to the Board of Directors that does not exceed the number of directors to be elected at such meeting; (iii) requiring that if requested by the Secretary of the Company, the Board of Directors or any committee of the Board of Directors, proposed nominees make themselves available for interviews by the Board of Directors and any committee of the Board of Directors within five business days following the date of such request; and (iv) clarifying the authority of the Secretary of the Company, the Board of Directors, or any committee of the Board of Directors to request additional information or written verification to demonstrate the accuracy of previously-provided information with respect to proposing stockholders, proposed nominees, and proposed business;
- require any stockholders directly or indirectly soliciting proxies from other stockholders to use a proxy card color other than white, with the white proxy card being reserved for exclusive use by the Board of Directors;
- adopt an exclusive forum provision designating the federal district courts of the United States of America as the exclusive forum for all claims arising under the Securities Act of 1933, as amended;
- provide that the vote standard applicable to the proposal on the frequency of future advisory votes on executive compensation required by Section 14A(a)(2) of the Exchange Act (to determine whether the advisory vote on executive compensation will occur every one year, two years or three years) is a plurality of the votes cast by the Company's stockholders; and
- incorporate certain administrative, modernizing, and conforming changes to provide clarification and consistency, including regarding meetings of the Board of Directors.

The foregoing description of the Amended and Restated Bylaws does not purport to be complete and is qualified in its entirety by reference to the full text of the Amended and Restated Bylaws, which is filed as Exhibit 3.1 to this Quarterly Report on Form 10-Q and incorporated herein by reference.

New Director

On July 26, 2023, the Company's Board of Directors voted to increase the size of the Board of Directors from nine directors to ten directors and elected Mr. Roberto Marques to serve as a director, each effective immediately. Mr. Marques will serve for a term expiring on the date of the Company's 2024 Annual Meeting of Stockholders (the 2024 Annual Meeting). The Board of Directors has appointed Mr. Marques to serve as a member of the Compensation and Benefits Committee of the Board of Directors and the Safety, Sustainability and Public Issues Committee of the Board of Directors.

Mr. Marques will participate in the Company's non-employee director compensation program, as described on page 24 of the Company's proxy statement for its 2023 Annual Meeting of Stockholders, filed with the Securities and Exchange Commission on March 16, 2023. In connection with his appointment to the Board of Directors, for his service until the 2024 Annual Meeting, Mr. Marques will receive a pro-rated annual cash retainer and on July 26, 2023 (the Grant Date) received a pro-rated grant of restricted share units (RSUs) in accordance with the terms of the Company's Non-Employee Director Compensation Policy and the terms and conditions applicable to the equity awards, filed with the Securities and Exchange Commission as Exhibits 10.38 and 10.43 to the Company's Annual Report on Form 10-K for the fiscal year ending December 31, 2022. The RSUs granted to Mr. Marques will vest upon the earlier of the first anniversary of the Grant Date or the next subsequent annual meeting of stockholders following the Grant Date, subject to accelerated vesting under certain circumstances such as death or disability or change in control of the Company. In addition, the Company will enter into its standard Amended and Restated Indemnification Agreement with Mr. Marques. There are no arrangements or understandings between Mr. Marques and any other persons pursuant to which he was selected as director of the Company. Mr. Marques does not have any direct or indirect material interest in any transaction or proposed transaction required to be reported under Item 404(a) of Regulation S-K.

Item 6. Exhibits.

3.1	Amended and Restated Bylaws of Alcoa Corporation, as adopted on July 26, 2023 (filed herewith)
31.1	Certification of Principal Executive Officer required by Rule 13a-14(a) or 15d-14(a)
31.2	Certification of Principal Financial Officer required by Rule 13a-14(a) or 15d-14(a)
32.1	Certification of Principal Executive Officer required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code
32.2	Certification of Principal Financial Officer required by Rule 13a-14(b) or Rule 15d-14(b) and Section 1350 of Chapter 63 of Title 18 of the United States Code
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)

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.

Alcoa Corporation

July 27, 2023	/s/ Molly S. Beerman
Date	Molly S. Beerman Executive Vice President and Chief Financial Officer (Principal Financial Officer and Principal Accounting Officer)

Exhibit 3.1

AMENDED AND RESTATED BYLAWS
OF
ALCOA CORPORATION

Incorporated under the Laws of the State of Delaware

These Amended and Restated Bylaws (as amended, the "Bylaws") of ALCOA CORPORATION, a Delaware corporation, are effective as of July 26, 2023 and hereby amend and restate the previous bylaws of ALCOA CORPORATION, which are hereby deleted in their entirety and replaced with the following:

ARTICLE I
OFFICES AND RECORDS

Section 1.1 Delaware Office. The registered office of ALCOA CORPORATION (the "Corporation") in the State of Delaware shall be located in the City of Wilmington, County of New Castle, and the name and address of its registered agent is The Corporation Trust Company, 1209 Orange Street, Wilmington, Delaware 19801.

Section 1.2 Other Offices. The Corporation may have such other offices, either inside or outside the State of Delaware, as the Board of Directors of the Corporation (the "Board of Directors") may from time to time designate or as the business of the Corporation may require.

Section 1.3 Books and Records. The books and records of the Corporation may be kept inside or outside the State of Delaware at such place or places as may from time to time be designated by the Board of Directors.

ARTICLE II
STOCKHOLDERS

Section 2.1 Annual Meeting. The annual meeting of the stockholders of the Corporation shall be held at such date and time and in such manner as may be fixed by resolution of the Board of Directors.

Section 2.2 Special Meeting.

(A) Subject to the rights of the holders of any series of stock having a preference over the Common Stock of the Corporation as to dividends, voting or upon liquidation (the "Preferred Stock") with respect to such series of Preferred Stock, special meetings of the stockholders may be called only by or at the direction of (1) the Chairman of the Board of Directors or the Chief Executive Officer, or (2) the Board of Directors pursuant to a resolution adopted by a majority of the total number of directors which the Corporation would have if there were no vacancies (the "Whole Board"), or (3) the Secretary of the Corporation at the written request of a stockholder of record who owns and has owned, or is acting on behalf of one or more beneficial owners who own and have owned, continuously for at least one year as of the record date fixed in accordance with these Bylaws to determine who may deliver a written request to call such special meeting, capital stock representing at least twenty-five percent (25%) of the outstanding shares of capital stock of the Corporation entitled to vote generally in the election of directors (the "Special Meeting Request

Required Shares"), and who continue to own the Special Meeting Request Required Shares at all times between such record date and the date of the applicable meeting of stockholders. For purposes of this Section 2.2, a record or beneficial owner shall be deemed to "own" shares of capital stock of the Corporation that such record or beneficial owner would be deemed to own in accordance with clause (3) of the first paragraph of Section 9.1 (without giving effect to any reference to Constituent Holder or any stockholder fund comprising a Qualifying Fund contained therein).

(B) Any record stockholder (whether acting for him, her or itself, or at the direction of a beneficial owner) may, by written notice to the Secretary, demand that the Board of Directors fix a record date to determine the record stockholders who are entitled to deliver a written request to call a special meeting (such record date, the "Ownership Record Date"). A written demand to fix an Ownership Record Date shall include all of the information that must be included in a written request to call a special meeting, as set forth in paragraph (D) of this Section 2.2. The Board of Directors may fix the Ownership Record Date within ten (10) days of the Secretary's receipt of a valid demand to fix the Ownership Record Date. The Ownership Record Date shall not precede, and shall not be more than ten (10) days after, the date upon which the resolution fixing the Ownership Record Date is adopted by the Board of Directors. If an Ownership Record Date is not fixed by the Board of Directors within the period set forth above, the Ownership Record Date shall be the date that the first written request to call a special meeting in accordance with the requirements of this Section 2.2 is received by the Secretary with respect to the proposed business to be submitted for stockholder approval at a special meeting.

(C) A beneficial owner who wishes to deliver a written request to call a special meeting must cause the nominee or other person who serves as the record stockholder of such beneficial owner's stock to sign the written request to call a special meeting. If a record stockholder is the nominee for more than one beneficial owner of stock, the record stockholder may deliver a written request to call a special meeting solely with respect to the capital stock of the Corporation beneficially owned by the beneficial owner who is directing the record stockholder to sign such written request to call a special meeting.

(D) Each written request to call a special meeting shall include the following and shall be delivered to the Secretary of the Corporation: (i) the signature of the record stockholder submitting such request and the date such request was signed, (ii) the complete text of each business proposal desired to be submitted for stockholder approval at the special meeting, and (iii) as to the beneficial owner, if any, directing such record stockholder to sign the written request to call a special meeting and as to such record stockholder (unless such record stockholder is acting solely as a nominee for a beneficial owner) (each such beneficial owner and each record stockholder who is not acting solely as a nominee, a "Disclosing Party"):

(1) all of the information required to be disclosed pursuant to Section 2.9(C)(1) of these Bylaws (which information shall be supplemented by delivery to the Secretary) by each Disclosing Party, (i) not later than ten (10) days after the record date for determining the record stockholders entitled to notice of the special meeting (such record date, the "Meeting Record Date"), to disclose the foregoing information as of the Meeting Record Date and (ii) not later than the 5th day before the special meeting, to disclose the foregoing

information as of the date that is ten (10) days prior to the special meeting or any adjournment or postponement thereof;

(2) with respect to each business proposal to be submitted for stockholder approval at the special meeting, a statement whether or not any Disclosing Party will deliver a proxy statement and form of proxy to holders of at least the percentage of voting power of all of the outstanding shares of capital stock of the Corporation generally entitled to vote in the election of directors ("Voting Stock") required under applicable law to carry such proposal (such statement, a "Solicitation Statement"); and

(3) any additional information reasonably requested by the Board of Directors to verify the Voting Stock ownership position of such Disclosing Party.

Each time the Disclosing Party's Voting Stock ownership position decreases following the delivery of the foregoing information to the Secretary, such Disclosing Party shall notify the Corporation of his, her or its decreased Voting Stock ownership position, together with any information reasonably requested by the Board of Directors to verify such position, within ten (10) days of such decrease or as of the 5th day before the special meeting, whichever is earlier.

(E) The Secretary shall not accept, and shall consider ineffective, a written request to call a special meeting pursuant to clause (A)(3) of this Section 2.2:

(1) that does not comply with the provisions of this Section 2.2;

(2) that relates to an item of business that (i) is not a proper subject for stockholder action under the Corporation's Amended and Restated Certificate of Incorporation (the "Certificate of Incorporation"), these Bylaws or applicable law; or (ii) is expressly reserved for action by the Board of Directors under the Certificate of Incorporation, these Bylaws or applicable law;

(3) if such written request to call a special meeting is delivered between the time beginning on the 61st day after the earliest date of signature on a written request to call a special meeting, that has been delivered to the Secretary, relating to an identical or substantially similar item (as determined by the Board of Directors, a "Similar Item"), other than the election or removal of directors, and ending on the one (1)-year anniversary of such earliest date;

(4) if a Similar Item will be submitted for stockholder approval at any stockholder meeting to be held on or before the 120th day after the Secretary receives such written request to call a special meeting (and, for purposes of this clause (4), the election of directors shall be deemed to be a Similar Item with respect to all items of business involving the election or removal of directors, changing the size of the Board of Directors and the filling of vacancies or newly created directorships resulting from any increase in the authorized number of directors); or

(5) if a Similar Item has been presented at any meeting of stockholders held within 180 days prior to receipt by the Secretary of such written request to call a special meeting (and, for purposes of this clause (5), the election of directors shall be deemed to

be a Similar Item with respect to all items of business involving the election or removal of directors, changing the size of the Board of Directors and the filling of vacancies or newly created directorships resulting from any increase in the authorized number of directors).

(F) Revocations:

(1) A record stockholder may revoke a request to call a special meeting at any time before the special meeting by sending written notice of such revocation to the Secretary of the Corporation.

(2) All written requests for a special meeting shall be deemed revoked:

(a) upon the first date that, after giving effect to revocation(s) and notices of ownership position decreases (pursuant to Section 2.2(D)(3) and the last sentence of Section 2.2(D), respectively), the aggregate Voting Stock ownership position of all the Disclosing Parties who are listed on the unrevoked written requests to call a special meeting with respect to a Similar Item decreases to a number of shares of Voting Stock less than the Special Meeting Request Required Shares;

(b) if any Disclosing Party who has provided a Solicitation Statement with respect to any business proposal to be submitted for stockholder approval at such special meeting does not act in accordance with the representations set forth therein; or

(c) if any Disclosing Party does not provide the supplemental information required by Section 2.2(D)(3) or by the final sentence of Section 2.2(D), in accordance with such provisions.

(3) If a deemed revocation of all written requests to call a special meeting has occurred after the special meeting has been called by the Secretary, the Board of Directors shall have the discretion to determine whether or not to proceed with the special meeting.

(G) The Board of Directors may submit its own proposal or proposals for consideration at a special meeting called at the request of one or more stockholders. The Meeting Record Date for, and the place, date and time of, any special meeting shall be fixed by the Board of Directors; provided, that the date of any such special meeting shall not be more than 120 days after the date on which valid special meeting request(s) from holders of the Special Meeting Request Required Shares are delivered to the Secretary of the Corporation.

Section 2.3 Place of Meeting. The Board of Directors, the Chairman of the Board of Directors, or the Chief Executive Officer, as the case may be, may designate the place of meeting for any annual or special meeting of the stockholders or may designate that the meeting be held by means of remote communications. If no designation is so made, the place of meeting, if any, shall be the principal office of the Corporation.

Section 2.4 Notice of Meeting. Written or printed notice, stating the place, if any, date and hour of the meeting, the means of remote communications, if any, by which stockholders and proxy holders may be deemed to be present in person and vote at such meeting, and in the case of

a special meeting, the purpose or purposes for which the meeting is called, shall be delivered by the Corporation not less than ten (10) days nor more than sixty (60) days before the date of the meeting, either personally, by electronic transmission in the manner provided in Section 232 of the General Corporation Law of the State of Delaware (as amended, the "DGCL") (except to the extent prohibited by Section 232(e) of the DGCL) or by mail, to each stockholder of record entitled to vote at such meeting. If mailed, such notice shall be deemed to be delivered when deposited in the United States mail with postage thereon prepaid, addressed to the stockholder at such stockholder's address as it appears on the records of the Corporation. If notice is given by electronic transmission, such notice shall be deemed to be given at the times provided in the DGCL. Such further notice shall be given as may be required by applicable law. Meetings may be held without notice if all stockholders entitled to vote are present, or if notice is waived by those not present in accordance with Section 7.4 of these Bylaws. Any previously scheduled meeting of the stockholders may be postponed, and unless the Certificate of Incorporation otherwise provides, any special meeting of the stockholders may be cancelled, by resolution of the Board of Directors upon public notice given prior to the date previously scheduled for such meeting of stockholders.

Section 2.5 Quorum and Adjournment. Except as otherwise provided by law or by the Certificate of Incorporation, the holders of a majority of the Voting Stock, represented in person or by proxy, shall constitute a quorum at a meeting of stockholders, except that when specified business is to be voted on by a class or series of stock voting as a class, the holders of a majority of the shares of such class or series shall constitute a quorum of such class or series for the transaction of such business. The Chairman of the Board of Directors or the Chief Executive Officer may adjourn the meeting from time to time, whether or not there is a quorum. No notice of the time, date and place, if any, of adjourned meetings need be given except as required by applicable law. The stockholders present at a duly called meeting at which a quorum is present may continue to transact business until adjournment, notwithstanding the withdrawal of enough stockholders to leave less than a quorum.

Section 2.6 Organization. Meetings of stockholders shall be presided over by such person as the Board of Directors may designate as chairman of the meeting, or in the absence of such a person, the Chairman of the Board of Directors or the Chief Executive Officer, or if none or in their absence or inability to act, the President, or if none or in the President's absence or inability to act, a Vice President, or, if none of the foregoing is present or able to act, by a chairman to be chosen by the holders of a majority of the shares entitled to vote who are present in person or by proxy at the meeting. The Secretary, or in the Secretary's absence, an Assistant Secretary, shall act as secretary of every meeting, but if neither the Secretary nor an Assistant Secretary is present, the presiding officer of the meeting shall appoint any person present to act as secretary of the meeting. The Board of Directors shall be entitled to make such rules or regulations for the conduct of meetings of stockholders as it shall deem necessary, appropriate or convenient. Subject to such rules and regulations of the Board of Directors, if any, the chairman of the meeting shall have the right and authority to prescribe such rules, regulations and procedures and to do all such acts as, in the judgment of such chairman, are necessary, appropriate or convenient for the proper conduct of the meeting, including, without limitation, establishing an agenda or order of business for the meeting, rules and procedures for maintaining order at the meeting and the safety of those present, limitations on participation in the meeting to stockholders of record of the Corporation or their qualified representatives, their duly authorized and constituted proxies and such other persons as the chairman shall permit, restrictions on entry to the meeting after the time fixed for the

commencement thereof, limitations on the time allotted to questions or comments by participants and regulation of the opening and closing of the polls for balloting and matters which are to be voted on by ballot.

Section 2.7 Proxies. At all meetings of stockholders, a stockholder may vote by proxy executed in writing (or in such manner prescribed by the DGCL) by the stockholder, or by such stockholder's duly authorized attorney in fact. Any stockholder directly or indirectly soliciting proxies from other stockholders must use a proxy card color other than white, which shall be reserved for the exclusive use by the Board of Directors.

Section 2.8 Order of Business.

(A) Annual Meetings of Stockholders. At any annual meeting of the stockholders, only such nominations of individuals for election to the Board of Directors shall be made, and only such other business shall be conducted or considered, as shall have been properly brought before the meeting in accordance with these Bylaws, the Certificate of Incorporation and applicable law. For nominations to be properly made at an annual meeting, and proposals of other business to be properly brought before an annual meeting, nominations and proposals of other business must be: (a) specified in the Corporation's notice of meeting (or any supplement thereto) given by or at the direction of the Board of Directors (or any duly authorized committee thereof), (b) otherwise properly made at the annual meeting by or at the direction of the Board of Directors (or any duly authorized committee thereof), or (c) otherwise properly requested to be brought before the annual meeting by a stockholder of the Corporation Present in Person (as defined below) in accordance with these Bylaws. In addition, for proposals of business, including, but not limited to, those relating to proposed nominations of directors, to be properly brought before an annual meeting for action by the Corporation's stockholders, they must relate to an item of business that (i) is a proper subject for stockholder action under the Certificate of Incorporation, these Bylaws or applicable law; and (ii) is not expressly reserved for action by the Board of Directors under the Certificate of Incorporation, these Bylaws or applicable law. For nominations of individuals for election to the Board of Directors or proposals of other business to be properly requested by a stockholder to be made at an annual meeting, a stockholder must (i) be a stockholder of record at the time of delivering the advance notice to the Corporation contemplated by Section 2.9 of these Bylaws, on the record date for the determination of stockholders entitled to notice of and to vote at the annual meeting at the time of giving of notice of such annual meeting by or at the direction of the Board of Directors (or any duly authorized committee thereof) and at the time of the annual meeting, (ii) be entitled to vote at such annual meeting, (iii) nominate (in the case of a nomination) a number of candidates that does not exceed the number of directors to be elected at such meeting and (iv) comply with the procedures set forth in these Bylaws as to such proposed business or nominations. Subject to Article IX of these Bylaws, this Section 2.8(A) shall be the exclusive means for a stockholder to make nominations or other business proposals (other than matters properly brought under Rule 14a-8 under the Securities Exchange Act of 1934, as amended (the "Exchange Act") and included in the Corporation's notice of meeting) before an annual meeting of stockholders. For purposes of these Bylaws, "Present in Person" shall mean that the stockholder proposing that the business be brought before a meeting, or, if the proposing stockholder is not an individual, a qualified representative of such proposing stockholder, is in attendance at such meeting (unless such meeting is held by means of the Internet or other electronic technology in which case the proposing stockholder or its qualified representative shall be present at such meeting by means of

the Internet or other electronic technology). A "qualified representative" of such proposing stockholder shall be, if such proposing stockholder is (i) a general or limited partnership, any general partner or person who functions as a general partner of the general or limited partnership or who controls the general or limited partnership, (ii) a corporation or a limited liability company, any officer or person who functions as an officer of the corporation or limited liability company or any officer, director, general partner or person who functions as an officer, director or general partner of any entity ultimately in control of the corporation or limited liability company, or (iii) a trust, any trustee of such trust.

(B) Special Meetings of Stockholders. At any special meeting of the stockholders, only such business shall be conducted or considered as shall have been properly brought before the special meeting. To be properly brought before a special meeting, proposals of business must be (i) specified in the Corporation's notice of meeting (or any supplement thereto) given by or at the direction of the Board of Directors (or any duly authorized committee thereof), (ii) otherwise properly brought before the special meeting by or at the direction of the Board of Directors (or any duly authorized committee thereof), (iii) with respect to the election of directors, provided that the Board of Directors has called a special meeting of stockholders for the purpose of electing one or more directors to the Board of Directors, by any stockholder of the Company Present in Person who meets the requirements set forth below in this Section 2.8(B) and who complies in all respects with the advance notice and other requirements set forth elsewhere in these Bylaws relating to bringing such nominations before a special meeting, including, but not limited to, this Section 2.8(B) and Section 2.9(B) hereof, or (iv) specified in the Corporation's notice of meeting (or any supplement thereto) given by the Corporation pursuant to a valid stockholder request in accordance with Section 2.2 of these Bylaws, it being understood that business transacted at such a special meeting shall be limited to the matters stated in such valid stockholder request; provided, however, that nothing herein shall prohibit the Board of Directors (or any duly authorized committee thereof) from submitting additional matters to stockholders at any such special meeting. In addition, for proposals of business to be properly brought before a special meeting, they must (i) relate to an item of business that is a proper subject for stockholder action under the Certificate of Incorporation, these Bylaws or applicable law; and (ii) not be expressly reserved for action by the Board of Directors under the Certificate of Incorporation, these Bylaws or applicable law.

Nominations of individuals for election to the Board of Directors may be made at a special meeting of stockholders if they are brought before the meeting (a) pursuant to the Corporation's notice of meeting by or at the direction of the Board of Directors (or any duly authorized committee thereof), or (b) provided that the Board of Directors has determined that directors shall be elected at such meeting, by any stockholder of the Corporation who (1) is a stockholder of record at the time of giving of notice of such special meeting and at the time of the special meeting, (2) is entitled to vote at the special meeting, and (3) complies with the advance notice and other requirements set forth in these Bylaws relating to bringing such nominations before a special meeting, including, but not limited to, this Section 2.8(B) and Section 2.9(B) hereof. Subject to Article IX of these Bylaws, this Section 2.8(B) shall be the exclusive means for a stockholder to make nominations or other business proposals (other than matters properly brought under Rule 14a-8 under the Exchange Act and included in the Corporation's notice of meeting) before a special meeting of stockholders.

(C) General. Except as otherwise provided by law, the Certificate of Incorporation or these Bylaws, the chairman of any annual or special meeting shall have the power to determine, based on the facts and circumstances and in consultation with counsel (who may be the Corporation's internal counsel), whether a nomination or any other business proposed to be brought before the meeting was made or proposed, as the case may be, in accordance with these Bylaws and, if any proposed nomination or other business is not in compliance with these Bylaws, to declare that no action shall be taken on such nomination or other proposal and such nomination or other proposal shall be disregarded. In addition, a nomination or other business proposed to be brought by a stockholder may not be brought before a meeting if such stockholder takes action contrary to the representations made in the stockholder notice applicable to such nomination or other business or if (i) when submitted to the Corporation prior to the deadline for submitting a stockholder notice, the stockholder notice applicable to such nomination or other business contained an untrue statement of a fact or omitted to state a fact necessary to make the statements therein not misleading, or (ii) after being submitted to the Corporation, the stockholder notice applicable to such nomination or other business was not updated in accordance with these Bylaws to cause the information provided in the stockholder notice to be true, correct, and complete in all respects.

Section 2.9 Advance Notice of Stockholder Business and Nominations.

(A) Annual Meeting of Stockholders. Without qualification or limitation, subject to Section 2.9(C)(10) of these Bylaws, for any nominations or any other business to be properly brought before an annual meeting by a stockholder pursuant to Section 2.8(A) of these Bylaws, the stockholder must have given timely notice thereof (including, in the case of nominations, the completed and signed questionnaire, representation, and agreement required by Section 2.10 of these Bylaws), and timely updates and supplements thereof, in each case in proper form, in writing to the Secretary, and such other business must otherwise be a proper matter for stockholder action pursuant to the Certificate of Incorporation, these Bylaws and applicable law.

To be timely, a stockholder's notice shall be delivered to the Secretary at the principal executive offices of the Corporation not earlier than the close of business on the 120th day and not later than the close of business on the 90th day prior to the first anniversary of the preceding year's annual meeting; provided, however, that in the event that the date of the annual meeting is more than thirty (30) days before or more than sixty (60) days after such anniversary date, notice by the stockholder must be so delivered not earlier than the close of business on the 120th day prior to the date of such annual meeting and not later than the close of business on the later of the 90th day prior to the date of such annual meeting or, if the first public announcement of the date of such annual meeting is less than one hundred (100) days prior to the date of such annual meeting, the 10th day following the day on which public announcement of the date of such meeting is first made by the Corporation. In no event shall any adjournment or postponement of an annual meeting, or the public announcement thereof, commence a new time period for the giving of a stockholder's notice as described above.

Notwithstanding anything in the immediately preceding paragraph to the contrary, in the event that the number of directors to be elected to the Board of Directors is increased by the Board of Directors, and there is no public announcement by the Corporation naming all of the nominees for director or specifying the size of the increased Board of Directors at least one hundred (100)

days prior to the first anniversary of the preceding year's annual meeting, a stockholder's notice required by this Section 2.9(A) shall also be considered timely, but only with respect to nominees for any new positions created by such increase, and only with respect to a stockholder who had, prior to such increase in the size of the Board of Directors, previously submitted, on a timely basis and in proper written form, a stockholder notice, if it shall be delivered to the Secretary at the principal executive offices of the Corporation not later than the close of business on the 10th day following the day on which such public announcement is first made by the Corporation.

In addition, to be considered timely, a stockholder's notice shall further be updated and supplemented, if necessary, so that the information provided or required to be provided in such notice shall be true and correct as of the record date for the meeting and as of the date that is ten (10) business days prior to the meeting or any adjournment or postponement thereof, and such update and supplement shall be delivered to the Secretary at the principal executive offices of the Corporation not later than five (5) business days after the record date for the meeting in the case of the update and supplement required to be made as of the record date, and not later than eight (8) business days prior to the date for the meeting or any adjournment or postponement thereof in the case of the update and supplement required to be made as of ten (10) business days prior to the meeting or any adjournment or postponement thereof. For the avoidance of doubt, the obligation to update and supplement as set forth in this paragraph or any other Section of these Bylaws shall not limit the Corporation's rights with respect to, or cure, any deficiencies in any notice provided by a stockholder, extend any applicable deadlines hereunder or under any other provision of the Bylaws or enable or be deemed to permit a stockholder who has previously submitted notice hereunder or under any other provision of the Bylaws to amend or update any proposal or to submit any new or substitute proposal, including by changing or adding nominees, matters, business, and/or resolutions proposed to be brought before a meeting of the stockholders.

(B) Special Meetings of Stockholders. Subject to Section 2.9(C)(10) of these Bylaws, in the event the Corporation calls a special meeting of stockholders for the purpose of electing one or more directors to the Board of Directors, any stockholder meeting the requirements set forth in Section 2.8(B) hereof may nominate an individual or individuals (as the case may be) for election to such position(s) as specified in the Corporation's notice of meeting, provided that the stockholder gives timely notice of such nomination (including the notice of nomination contemplated by Section 2.9(C) of these Bylaws and the completed and signed questionnaire, representation and agreement required by Section 2.10 of these Bylaws), and timely updates and supplements thereof in each case in proper form, in writing, to the Secretary. To be timely, a stockholder's notice pursuant to the preceding sentence shall be delivered to the Secretary at the principal executive offices of the Corporation not earlier than the close of business on the one hundred twentieth (120th) day prior to the date of such special meeting and not later than the close of business on the later of the ninetieth (90th) day prior to the date of such special meeting or, if the first public announcement of the date of such special meeting is less than one hundred (100) days prior to the date of such special meeting, the 10th day following the day on which public announcement is first made of the date of the special meeting and of the nominees proposed by the Board of Directors to be elected at such meeting. In no event shall any adjournment or postponement of a special meeting of stockholders, or the public announcement thereof, commence a new time period for the giving of a stockholder's notice as described above. In addition, to be considered timely, a stockholder's notice pursuant to the first sentence of this paragraph shall further be updated and supplemented, if necessary, so that the information

provided or required to be provided in such notice shall be true and correct as of the record date for the meeting and as of the date that is ten (10) business days prior to the meeting or any adjournment or postponement thereof, and such update and supplement shall be delivered to the Secretary at the principal executive offices of the Corporation not later than five (5) business days after the record date for the meeting in the case of the update and supplement required to be made as of the record date, and not later than eight (8) business days prior to the date for the meeting, any adjournment or postponement thereof in the case of the update and supplement required to be made as of ten (10) business days prior to the meeting or any adjournment or postponement thereof.

(C) Disclosure Requirements.

(1) To be in proper form, a stockholder's notice (whether given pursuant to Section 2.2, Section 2.8, this Section 2.9 or Section 2.10) to the Secretary must include the following, as applicable:

(a) As to the stockholder giving the notice and the beneficial owner(s), if any, on whose behalf the nomination or proposal, as applicable, is made, a stockholder's notice must set forth: (i) the name and address of such stockholder, as they appear on the Corporation's books, of such beneficial owner(s), if any, and of their respective affiliates or associates or others acting in concert therewith, (ii) (A) the class or series and number of shares of the Corporation which are, directly or indirectly, owned beneficially and of record by such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith; (B) any "derivative security" (as such term is defined in Rule 16a-1(c) under the Exchange Act) that constitutes a "call equivalent position" (as such term is defined in Rule 16a-1(b) under the Exchange Act) and that is, directly or indirectly, held or maintained by such stockholder with respect to any shares of any class or series of shares of the Corporation, or any contract, derivative, swap or other transaction or series of transactions designed to produce economic benefits and risks that correspond substantially to the ownership of any class or series of shares of the Corporation, including due to the fact that the value of such contract, derivative, swap or other transaction or series of transactions is determined by reference to the price, value or volatility of any class or series of shares of the Corporation, whether or not such instrument, contract or right shall be subject to settlement in the underlying class or series of shares of the Corporation, through the delivery of cash or other property, or otherwise, and without regard to whether the stockholder of record, the beneficial owner(s), if any, or any affiliates or associates or others acting in concert therewith, may have entered into transactions that hedge or mitigate the economic effect of such instrument, contract or right, or any other direct or indirect opportunity to profit or share in any profit derived from any increase or decrease in the value of shares of the Corporation directly or indirectly owned beneficially by such stockholder, the beneficial owner(s), if any, or any affiliates or associates or others acting in concert therewith (any of the foregoing, a "Derivative Instrument"), provided, however, that for the purpose of defining the term "Derivative Instrument" the term "derivative security" shall also include any security or instrument that would not otherwise constitute a "derivative security" (as such term is defined in Rule 16a-1(c) under the Exchange Act) as a

result of any feature that would make any conversion, exercise or similar right or privilege of such security or instrument becoming determinable only at some future date or upon the happening of a future occurrence, in which case the determination of the amount of securities into which such security or instrument would be convertible or exercisable shall be made assuming that such security or instrument is immediately convertible or exercisable at the time of such determination, or otherwise include rights with an exercise or conversion privilege that is not fixed; and, provided, further, that any stockholder satisfying the requirements of Rule 13d-1(b)(1) under the Exchange Act (other than a stockholder that so satisfies Rule 13d-1(b)(1) under the Exchange Act solely by reason of Rule 13d-1(b)(1)(ii)(E)) shall not be required to disclose a Derivative Instrument held by such stockholder as a hedge with respect to a bona fide derivatives trade or position of such stockholder arising in the ordinary course of such stockholder's business as a derivatives dealer; (C) any proxy, contract, arrangement, understanding, or relationship pursuant to which such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith have any right to vote any class or series of shares of the Corporation; (D) any agreement, arrangement, understanding, relationship or otherwise, including any repurchase or similar so-called "stock borrowing" agreement or arrangement (including any short position or any borrowing or lending of shares of stock), involving such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith, directly or indirectly, the purpose or effect of which is to mitigate loss to, reduce the economic risk (of ownership or otherwise) of any class or series of the shares of the Corporation by, manage the risk of share price changes for, or increase or decrease the voting power of, such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith with respect to any class or series of the shares of the Corporation, or which provides, directly or indirectly, the opportunity to profit or share in any profit derived from any decrease in the price or value of any class or series of the shares of the Corporation, including without limitation any "put equivalent position" (as such term is defined in Rule 16a-1(h) under the Exchange Act) related to any shares of any class or series of shares of the Corporation (any of the foregoing, a "Short Interest"); (E) any rights to dividends on the shares of the Corporation owned beneficially by such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith that are separated or separable from the underlying shares of the Corporation; (F) any proportionate interest in shares of the Corporation, Derivative Instruments, or Short Interests held, directly or indirectly, by a general or limited partnership in which such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith is a general partner or, directly or indirectly, beneficially owns an interest in a general partner of such general or limited partnership; (G) any performance-related fees (other than an asset-based fee) that such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith are entitled to based on any increase or decrease in the value of shares of the Corporation, Derivative Instruments, or Short Interests, if any, including without limitation any such

interests held by members of the immediate family sharing the same household of such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith; and (H) any significant equity interests or any Derivative Instruments or Short Interests in any principal competitor of the Corporation held by such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith (provided that, solely for purposes of this clause (H), references to the words "the Corporation" within the definitions of "Derivative Instrument" and "Short Interests" shall be replaced with the words "such competitor"), (iii) any direct or indirect interest of such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith in any contract or agreement with the Corporation, any affiliate of the Corporation or any significant competitor of the Corporation (including, in any such case, any employment agreement, collective bargaining agreement or consulting agreement), (iv) any material pending or threatened legal proceeding in which such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith is a party, material participant or has an interest (other than an interest that is substantially the same as all stockholders) involving the Corporation or any of its officers or directors, or any affiliate of the Corporation, (v) any other material relationship between such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith, on the one hand, and the Corporation, any affiliate of the Corporation or any significant competitor of the Corporation, on the other hand, (vi) all information that would be required to be set forth in a Schedule 13D filed pursuant to Rule 13d-1(a) or an amendment pursuant to Rule 13d-2(a) if such a statement were required to be filed under the Exchange Act and the rules and regulations promulgated thereunder by such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith, if any, (vii) any other information relating to such stockholder, such beneficial owner(s) and their respective affiliates or associates or others acting in concert therewith, if any, that would be required to be disclosed in a proxy statement and form of proxy or other filings required to be made in connection with solicitations of proxies for, as applicable, the proposal and/or for the election of directors in a contested election pursuant to Section 14 of the Exchange Act and the rules and regulations promulgated thereunder, (viii) with respect to a director nomination, a representation as to whether such stockholder, such beneficial owner(s) or their respective affiliates or associates or others acting in concert therewith intend, or are part of a group that intends, to solicit proxies in support of director nominees other than the Corporation's nominees in accordance with Rule 14a-19 promulgated under the Exchange Act, and, in the event that such a person so intends, or is part of a group that so intends, a written agreement (in the form provided by the Secretary of the Corporation upon written request), on behalf of such person and any group of which it is a member, that such person acknowledges and agrees (A) that it, or the group of which it is a part, intends to solicit the holders of shares representing at least 67% of the voting power of the Corporation's shares entitled to vote on the election of directors in support of such director nominees other than the Corporation's nominees in accordance with Rule

14a-19(a)(3) promulgated under the Exchange Act, (B) that it shall notify the Secretary of the Corporation promptly if any change occurs with respect to the intent of such person or the group of which such person is a part to solicit the holders of shares representing at least 67% of the voting power of shares entitled to vote on the election of directors in support of director nominees other than the Corporation's nominees or with respect to the names of such person's nominees, (C) that if such person or the group of which it is a part (i) provides notice pursuant to Rule 14a-19(a)(1) promulgated under the Exchange Act and (ii) subsequently fails to comply with the requirements of Rule 14a-19(a)(2) and Rule 14a-19(a)(3) promulgated under the Exchange Act, then the Corporation shall disregard any proxies or votes solicited for such person's nominees, and (D) that, upon request by the Corporation, if such person or the group of which it is a part provides notice pursuant to Rule 14a-19(a)(1) promulgated under the Exchange Act, such person shall deliver to the Corporation, no later than five business days prior to the applicable meeting, reasonable documentary evidence (as determined by the Corporation or one of its representatives, acting in good faith) that it has met the requirements of Rule 14a-19(a)(3) promulgated under the Exchange Act, and (ix) a representation as to whether or not such stockholder or any person with whom such stockholder is acting in concert intends to or will submit any other proposal for consideration at the meeting;

(b) If the notice relates to any business other than a nomination of a director or directors that the stockholder proposes to bring before the meeting, a stockholder's notice must, in addition to the matters set forth in paragraph (a) above, also set forth: (i) a reasonably detailed description of the business proposed to be brought before the meeting, the reasons for conducting such business at the meeting, the reasons why such stockholder, such beneficial owner(s) and each of their respective affiliates or associates or others acting in concert therewith, if any, believe that the taking of the action(s) proposed to be taken would be in the best interests of the Corporation and its stockholders and any material interest of such stockholder, such beneficial owner(s) and each of their respective affiliates or associates or others acting in concert therewith, if any, including any anticipated benefit to the stockholder, such beneficial owner(s) or each of their respective affiliates or associates or others acting in concert therewith, in such business, (ii) the complete text of the proposal or business (including the complete text of any resolutions proposed for consideration and, in the event that such proposal or business includes a proposal to amend the Bylaws of the Corporation, the complete text of the proposed amendment), (iii) a reasonably detailed description of all agreements, arrangements and understandings (written or oral) between such stockholder, such beneficial owner(s) and any of their respective affiliates or associates or others acting in concert therewith, if any, and any other person or persons (including their names) in connection with the proposal of such business by such stockholder, and (iv) any other information relating to the proposal of such business that would be required to be disclosed in a proxy statement or other filing required to be made with the Securities and Exchange Commission in connection with any solicitations of proxies or special meeting demands by such stockholder pursuant to Section 14(a) of the Exchange Act;

(c) As to each individual, if any, whom the stockholder proposes to nominate for election or reelection to the Board of Directors, a stockholder's notice must, in addition to the matters set forth in paragraph (a) above, also set forth: (i) all information relating to such individual that would be required to be disclosed pursuant to paragraph (a) above if such individual was the stockholder giving the advance notice of nomination to the Corporation, (ii) all information relating to such individual that would be required to be disclosed in a proxy statement or other filings required to be made in connection with solicitations of proxies for election of directors in a contested election pursuant to Section 14 of the Exchange Act and the rules and regulations promulgated thereunder (including such individual's written consent to being named in the proxy materials as a nominee and to serving as a director of the Corporation if elected), and (iii) a reasonably detailed description of all direct and indirect compensation, reimbursement, indemnification, benefits and other agreements, arrangements and understandings (written or oral and formal or informal and whether monetary or non-monetary) during the past three (3) years, and any other relationships, between or among such stockholder and beneficial owner, if any, and their respective affiliates and associates, or others acting in concert therewith, on the one hand, and each proposed nominee, and his or her respective affiliates and associates, or others acting in concert therewith, on the other hand, including, without limitation all information that would be required to be disclosed pursuant to Item 404 or any successor provision promulgated under Regulation S-K if the stockholder making the nomination and any beneficial owner on whose behalf the nomination is made, if any, or any affiliate or associate thereof or person acting in concert therewith, were the "registrant" for purposes of such Item and the nominee were a director or executive officer of such registrant. For the avoidance of doubt, a stockholder shall not be entitled to make additional or substitute nominations following the expiration of the time periods set forth in this Section 2.9; and

(d) With respect to each individual, if any, whom the stockholder proposes to nominate for election or reelection to the Board of Directors, a stockholder's notice must, in addition to the matters set forth in paragraphs (a) and (c) above, also include a completed and signed questionnaire, representation and agreement required by Section 2.10 of these Bylaws. The Corporation may require any proposed nominee to furnish such other information as may reasonably be required by the Corporation to determine the eligibility of such proposed nominee to serve as an independent director of the Corporation or that could be material to a reasonable stockholder's understanding of the independence, or lack thereof, of such nominee. Notwithstanding anything to the contrary, only persons who are nominated in accordance with the procedures set forth in these Bylaws, including without limitation Section 2.8, this Section 2.9 and Section 2.10 hereof, shall be eligible for election as directors.

(2) For purposes of these Bylaws, "public announcement" shall mean disclosure in a press release reported by a national news service or in a document publicly filed by the Corporation with the Securities and Exchange Commission pursuant to Section 13, 14 or 15(d) of the Exchange Act and the rules and regulations promulgated thereunder.

(3) Upon written request by the Secretary of the Corporation, the Board of Directors or any duly authorized committee thereof, any stockholder submitting a stockholder notice (whether given pursuant to Section 2.2, Section 2.8, this Section 2.9 or Section 2.10) proposing a nomination or other business for consideration at a meeting shall provide, within five (5) business days of delivery of such request (or such other period as may be specified in such request), (i) written verification, satisfactory in the reasonable discretion of the Board of Directors, any duly authorized committee thereof or any duly authorized officer of the Corporation, to demonstrate the accuracy of any information submitted by the stockholder in the stockholder notice delivered pursuant to the requirements of the Bylaws (including, if requested, written confirmation by such stockholder that it continues to intend to bring the nomination or other business proposed in the stockholder notice before the meeting) and (ii) such other information reasonably required by the Secretary of the Corporation, the Board of Directors or any duly authorized committee thereof, acting in good faith, to determine compliance with these Bylaws by such stockholder or candidate whom such stockholder proposes to nominate for election as a director or the accuracy and completeness of any notice or solicitation given or made on behalf of such stockholder or candidate whom such stockholder proposes to nominate for election as a director. If a stockholder fails to provide such written verification or other information within such period, the information as to which written verification or other information was requested may be deemed not to have been provided in accordance with the requirements of these Bylaws.

(4) Upon written request by the Secretary of the Corporation, the Board of Directors or any duly authorized committee thereof, any stockholder submitting a stockholder notice (whether given pursuant to Section 2.2, Section 2.8, this Section 2.9 or Section 2.10) proposing a nomination or other business for consideration at a meeting shall provide, within five (5) business days of delivery of such request (or such other period as may be specified in such request), a written supplement, satisfactory in the reasonable discretion of the Board of Directors, any duly authorized committee thereof or any duly authorized officer of the Corporation, to update the information contained in any previously submitted stockholder notice and provide the disclosures required by Section 2.9(C)(1) such that they are current and true, correct and complete as of the date that such supplement is submitted to the Secretary. If a stockholder fails to provide such written supplement within such period, the information as to which a written supplement was requested may be deemed not to have been provided in accordance with the requirements of these Bylaws.

(5) For a stockholder notice (whether given pursuant to Section 2.2, Section 2.8, this Section 2.9 or Section 2.10) to comply with the requirements of this Section 2.9, each of the requirements of this Section 2.9 shall be directly and expressly responded to and a stockholder notice must clearly indicate and expressly reference which provisions of this Section 2.9 the information disclosed is intended to be responsive to. Information disclosed in one section of the stockholder notice in response to one provision of this Section 2.9 shall not be deemed responsive to any other provision of this Section 2.9 unless it is expressly cross-referenced to such other provision and it is clearly apparent how the information included in one section of the stockholder notice is directly and expressly responsive to the information required to be included in another section of the stockholder notice pursuant to this Section 2.9. For the avoidance of doubt, statements purporting to

provide global cross-references that purport to provide that all information provided shall be deemed to be responsive to all requirements of this Section 2.9 shall be disregarded and shall not satisfy the requirements of this Section 2.9.

(6) For a stockholder notice (whether given pursuant to Section 2.2, Section 2.8, this Section 2.9 or Section 2.10) to comply with the requirements of this Section 2.9, it must set forth in writing directly within the body of the stockholder notice (as opposed to being incorporated by reference from any other document or writing not prepared solely in response to the requirements of these Bylaws) all the information required to be included therein as set forth in this Section 2.9 and each of the requirements of this Section 2.9 shall be directly responded to in a manner that makes it clearly apparent how the information provided is specifically responsive to any requirements of this Section 2.9. For the avoidance of doubt, a stockholder notice shall not be deemed to be in compliance with this Section 2.9 if it attempts to include the required information by incorporating by reference into the body of the stockholder notice any other document, writing or part thereof, including, but not limited to, any documents publicly filed with the Securities and Exchange Commission not prepared solely in response to the requirements of these Bylaws. For the further avoidance of doubt, the body of the stockholder notice shall not include any documents that are not prepared solely in response to the requirements of these Bylaws.

(7) A stockholder submitting a stockholder notice (whether given pursuant to Section 2.2, Section 2.8, this Section 2.9 or Section 2.10), by its delivery to the Corporation, represents and warrants that all information contained therein, as of the deadline for submitting the stockholder notice, is true, accurate and complete in all respects, contains no false or misleading statements and such stockholder acknowledges that it intends for the Corporation and the Board of Directors to rely on such information as (i) being true, accurate and complete in all respects and (ii) not containing any false or misleading statements. If the information submitted pursuant to this Section 2.9 by any stockholder proposing a nomination or other business for consideration at a meeting shall not be true, correct, and complete in all respects prior to the deadline for submitting the stockholder notice, such information may be deemed not to have been provided in accordance with this Section 2.9.

(8) Notwithstanding any notice of the meeting sent to stockholders on behalf of the Corporation, a stockholder must separately comply with this Section 2.9 to propose a nomination or other business at any meeting and is still required to deliver its own separate and timely stockholder notice to the Secretary of the Corporation prior to the deadline for submitting a stockholder notice that complies in all respects with the requirements of this Section 2.9. For the avoidance of doubt, if the stockholder's proposed business is the same or relates to business brought by the Corporation and included in the Corporation's meeting notice or any supplement thereto, the stockholder is nevertheless still required to comply with this Section 2.9 and deliver, prior to the deadline for submitting the stockholder notice, its own separate and timely stockholder notice to the Secretary of the Corporation that complies in all respects with the requirements of this Section 2.9.

(9) Notwithstanding the provisions of these Bylaws, a stockholder shall also comply with all applicable requirements of the Exchange Act, the rules and regulations thereunder (including Rule 14a-19) and any other requirements of the Securities and Exchange Commission or other applicable law in connection with the matters set forth in, or contemplated by, this Section 2.9, any solicitation of proxies contemplated by any notices delivered pursuant to Section 2.2, Section 2.8, this Section 2.9 or Section 2.10 and any filings required to be made with the Securities and Exchange Commission in connection therewith; provided, however, that any references in these Bylaws to the Exchange Act or the rules promulgated thereunder are not intended to and shall not limit the separate and additional requirements set forth in these Bylaws with respect to nominations or proposals as to any other business to be considered.

(10) Nothing in this Section 2.9 or elsewhere in these Bylaws shall be deemed to affect any rights (i) of stockholders to request inclusion of proposals in the Corporation's proxy statement pursuant to Rule 14a-8 under the Exchange Act or (ii) of the holders of any series of Preferred Stock if and to the extent provided for under any applicable law, the Certificate of Incorporation or these Bylaws. Nothing in this Section 2.9, separate and independent of Rule 14a-8 under the Exchange Act or Article IX hereof, shall be construed to permit any stockholder, or give any stockholder the right, to include or have disseminated or described in the Corporation's proxy statement any nomination of director or directors or any other business proposal.

(11) For purposes of these Bylaws, a person shall be deemed to be "acting in concert" with another person if such person knowingly acts (whether or not pursuant to an express agreement, arrangement or understanding) in concert with, or towards a common goal relating to the management, governance or control of the corporation in parallel with, such other person where (A) each person is conscious of the other person's conduct or intent and this awareness is an element in their decision-making processes and (B) at least one additional factor suggests that such persons intend to act in concert or in parallel, which such additional factors may include, without limitation, exchanging information (whether publicly or privately), attending meetings, conducting discussions, or making or soliciting invitations to act in concert or in parallel; provided, however, that a person shall not be deemed to be "acting in concert" with any other person solely as a result of the solicitation or receipt of revocable proxies, or special meeting demands from such other person in response to a solicitation made pursuant to, and in accordance with, Section 14(a) of the Exchange Act by way of a proxy statement filed on Schedule 14A. A person deemed to be "acting in concert" with another person shall be deemed to be "acting in concert" with any third party who is also "acting in concert" with such other person.

(D) Other Requirements.

(1) Upon written request by the Secretary of the Corporation, the Board of Directors or any duly authorized committee thereof, each candidate whom a stockholder proposes to nominate for election as a director shall, and such stockholder shall cause such nominee to, make himself or herself available for interviews with the Board of Directors and any duly authorized committee thereof within five (5) business days of delivery of such request (or such other period as may be specified in such request).

(2) Without limiting the other provisions and requirements of this Section 2.9, unless otherwise required by applicable law, if any stockholder (i) provides notice pursuant to Rule 14a-19(a)(1) promulgated under the Exchange Act and (ii) subsequently fails to comply with the requirements of Rule 14a-19(a)(2) and Rule 14a-19(a)(3) promulgated under the Exchange Act, then the Corporation shall disregard any proxies or votes solicited for such stockholder's nominees. Upon request by the Corporation, if any stockholder provides notice pursuant to Rule 14a-19(a)(1) promulgated under the Exchange Act, such stockholder shall deliver to the Corporation, no later than five (5) business days prior to the applicable meeting, reasonable documentary evidence (as determined by the Corporation or one of its representatives, acting in good faith) that it has met the requirements of Rule 14a-19(a)(3) promulgated under the Exchange Act.

Section 2.10 Submission of Questionnaire, Representation and Agreement. To be eligible to be a nominee for election or reelection as a director of the Corporation, a person nominated by a stockholder for election or reelection to the Board of Directors must deliver (in accordance with the time periods prescribed for delivery of notice under Section 2.9 of these Bylaws) to the Secretary at the principal executive offices of the Corporation a completed written questionnaire with respect to the identity, background and qualifications of such individual and any other person or entity on whose behalf, directly or indirectly, the nomination is being made (which questionnaire shall be provided by the Secretary upon written request), and a written representation and agreement (in the form provided by the Secretary upon written request) that such individual (A) is not and will not become a party to (1) any agreement, arrangement or understanding (written or oral) with, and has not given any commitment or assurance to, any person or entity as to how such person, if elected as a director of the Corporation, will act or vote on any issue or question (a "Voting Commitment") that has not been expressly disclosed in writing to the Corporation, or (2) any Voting Commitment that could limit or interfere with such individual's ability to comply, if elected as a director of the Corporation, with such individual's fiduciary duties under applicable law, (B) is not and will not become a party to any agreement, arrangement or understanding (written or oral) with any person or entity other than the Corporation with respect to any direct or indirect compensation, reimbursement or indemnification in connection with service or action as a director that has not been expressly disclosed therein, (C) is not a party to any agreement, arrangement or understanding (written or oral) with any person or entity, that contemplates such person resigning as a member of the Board of Directors prior to the conclusion of the term of office to which such person was elected, and has not given any commitment or assurance (written or oral) to any person or entity that such person intends to, or if asked by such person or entity would, resign as a member of the Board of Directors prior to the end of the conclusion of the term of office to which such person was elected, except as expressly disclosed therein, (D) has expressly disclosed therein whether all or any portion of securities of the Corporation were purchased with any financial assistance provided by any other person and whether any other person has any interest in such securities, (E) in such individual's personal capacity and on behalf of any person or entity on whose behalf, directly or indirectly, the nomination is being made, would be in compliance, if elected as a director of the Corporation, with these Bylaws and all applicable policies and guidelines of the Corporation, including, without limitation, those relating to codes of ethics and/or business conduct, corporate governance, conflicts of interest, confidentiality, and stock ownership and stock trading (including with respect to hedging and pledging of the Corporation's securities) and will continue to comply with these Bylaws and all applicable policies and guidelines of the Corporation adopted or amended from time to time, (F) has disclosed to the

Corporation any and all potential and actual conflicts of interest of such nominee with the Corporation, (G) is qualified, and consents to being named in the proxy materials as, a nominee, and agrees to serve as a member of the Board of Directors if elected as a director for the entire term for which such proposed nominee is standing for election, and (H) will abide by the requirements of Section 2.11 of these Bylaws.

Section 2.11 Procedure for Election of Directors; Required Vote.

(A) Except as set forth below, election of directors at all meetings of the stockholders at which directors are to be elected shall be by ballot, and, subject to the rights of the holders of any series of Preferred Stock to elect directors, a majority of the votes cast at any meeting for the election of directors at which a quorum is present shall elect directors. For purposes of this Section 2.11, a majority of votes cast shall mean that the number of shares voted "for" a director's election exceeds fifty percent (50%) of the number of votes cast with respect to that director's election. Votes cast shall include direction to withhold authority in each case and exclude abstentions with respect to that director's election. Notwithstanding the foregoing, in the event of a "contested election" of directors, directors shall be elected by the vote of a plurality of the votes cast at any meeting for the election of directors at which a quorum is present. For purposes of this Section 2.11, a "contested election" shall mean any election of directors in which the number of candidates for election as directors exceeds the number of directors to be elected, with the determination thereof being made by the Secretary as of the later of (i) the close of the applicable notice of nomination period set forth in Section 2.9 of these Bylaws or under applicable law and (ii) the last day on which a Proxy Access Notice may be delivered in accordance with the procedures set forth in Section 9.1, based on whether one or more notice(s) of nomination or Proxy Access Notice(s) were timely filed in accordance with said Section 2.9 and/or Section 9.1, as applicable; provided, however, that the determination that an election is a "contested election" shall be determinative only as to the timeliness of a notice of nomination and not otherwise as to its validity. If, prior to the time the Corporation mails its initial proxy statement in connection with such election of directors (regardless of whether or not such proxy statement is thereafter revised or supplemented), one or more notices of nomination are withdrawn such that the number of candidates for election as director no longer exceeds the number of directors to be elected, the election shall not be considered a contested election, but in all other cases, once an election is determined to be a contested election, directors shall be elected by the vote of a plurality of the votes cast.

(B) If a nominee for director who is an incumbent director is not elected and no successor has been elected at such meeting, the director is expected to promptly tender his or her resignation to the Board of Directors in accordance with the agreement contemplated by Section 2.10 of these Bylaws. The Governance and Nominating Committee shall make a recommendation to the Board of Directors as to whether to accept or reject the tendered resignation, or whether other action should be taken. The Board of Directors shall act on the tendered resignation, taking into account the Governance and Nominating Committee's recommendation, and publicly disclose (by a press release, a filing with the Securities and Exchange Commission or other broadly disseminated means of communication) its decision regarding the tendered resignation and the rationale behind the decision within ninety (90) days from the date of the certification of the election results. The Governance and Nominating Committee in making its recommendation, and the Board of Directors in making its decision, may each consider any factors or other information that it considers appropriate and relevant. The director who tenders his or her resignation shall not

participate in the recommendation of the Governance and Nominating Committee or the decision of the Board of Directors with respect to his or her resignation. If such incumbent director's resignation is not accepted by the Board of Directors, such director shall continue to serve until the next annual meeting and until his or her successor is duly elected, or his or her earlier resignation or removal. If a director's resignation is accepted by the Board of Directors pursuant to this Section 2.11, or if a nominee for director is not elected and the nominee is not an incumbent director, then the Board of Directors, in its sole discretion, may fill any resulting vacancy pursuant to the provisions of Section 3.10 of these Bylaws or may decrease the size of the Board of Directors pursuant to the provisions of Section 3.2 of these Bylaws.

(C) Except as otherwise provided by law, the Certificate of Incorporation, or these Bylaws, in all matters other than the election of directors, the affirmative vote of a majority of the shares present in person or represented by proxy at the meeting and entitled to vote on the matter shall be the act of the stockholders. To the extent required, the vote of a plurality of the votes cast shall be the act of the stockholders with respect to the non-binding advisory vote pursuant to Section 14A(a)(2) of the Exchange Act to determine whether the advisory vote on executive compensation shall occur every one year, every two years, or every three years; provided that for purposes of any vote required pursuant to this sentence, neither abstentions nor broker non-votes shall count as votes cast.

(D) Any individual who is nominated for election to the Board of Directors and included in the Corporation's proxy materials for an annual meeting, including pursuant to Section 9.1, is expected to tender an irrevocable resignation, effective immediately, upon a determination by the Board of Directors or any committee thereof that (1) the information provided to the Corporation by such individual or, if applicable, by the Eligible Stockholder (or any stockholder, fund comprising a Qualifying Fund and/or beneficial owner whose stock ownership is counted for the purposes of qualifying as an Eligible Stockholder) who nominated such individual, was untrue in any material respect or omitted to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading or (2) such individual or, if applicable, the Eligible Stockholder (including each stockholder, fund comprising a Qualifying Fund and/or beneficial owner whose stock ownership is counted for the purposes of qualifying as an Eligible Stockholder) who nominated such individual, shall have breached any representations or obligations owed to the Corporation under these Bylaws.

Section 2.12 Inspectors of Elections; Opening and Closing the Polls. The Board of Directors by resolution shall appoint one or more inspectors, which inspector or inspectors may, but do not need to, include individuals who serve the Corporation in other capacities, including, without limitation, as officers, employees, agents or representatives, to act at the meetings of stockholders and make a written report thereof. One or more persons may be designated as alternate inspectors to replace any inspector who fails to act. If no inspector or alternate has been appointed to act or is able to act at a meeting of stockholders, the chairman of the meeting shall appoint one or more inspectors to act at the meeting. Each inspector, before discharging his or her duties, shall take and sign an oath faithfully to execute the duties of inspector with strict impartiality and according to the best of his or her ability. The inspectors shall have the duties prescribed by law.

The chairman of the meeting shall fix and announce at the meeting the date and time of the opening and the closing of the polls for each matter upon which the stockholders will vote at a meeting.

Section 2.13 Stockholder Action by Written Consent. Subject to the rights of the holders of any series of Preferred Stock with respect to such series of Preferred Stock, any action required or permitted to be taken by the stockholders of the Corporation at an annual or special meeting of stockholders of the Corporation may be taken without a meeting, without prior notice, and without a vote, if a consent or consents in writing, setting forth the action so taken, shall be signed by holders of all of the shares entitled to vote with respect to the action that is the subject of the consent. No written consent shall be effective to take the action referred to therein unless written consents signed by holders of all of the shares entitled to vote with respect to such action are delivered to and received by the Corporation within sixty (60) days of the date the earliest dated written consent was received by the Corporation. Every written consent shall be signed by one or more persons who as of the record date are stockholders of record on such record date, shall bear the date of signature of each such stockholder, and shall set forth the name and address, as they appear in the Corporation's books, of each stockholder signing such consent and the class and number of shares of the Corporation which are owned of record and beneficially by each such stockholder and shall be delivered to and received by the Secretary of the Corporation at the Corporation's principal office by hand or by certified or registered mail, return receipt requested.

Section 2.14 Record Date for Action by Written Consent. In order that the Corporation may determine the stockholders entitled to consent to corporate action in writing without a meeting, the Board of Directors may fix a record date, which record date shall not precede the date upon which the resolution fixing the record date is adopted by the Board of Directors, and which date shall not be more than ten (10) days after the date upon which the resolution fixing the record date is adopted by the Board of Directors. Any stockholder of record seeking to have the stockholders authorize or take corporate action by written consent shall request the Board of Directors to fix a record date, which request shall be in proper form and delivered to the Secretary at the principal executive offices of the Corporation. To be in proper form, such request must be in writing and shall state the purpose or purposes of the action or actions proposed to be taken by written consent.

The Board of Directors shall promptly, but in all events within ten (10) days after the date on which such a request is received, adopt a resolution fixing the record date. If no record date has been fixed by the Board of Directors within ten (10) days of the date on which such a request is received, the record date for determining stockholders entitled to consent to corporate action in writing without a meeting, when no prior action by the Board of Directors is required by applicable law, shall be the first date on which a signed written consent setting forth the action taken or proposed to be taken is delivered to the Corporation by delivery to its registered office in Delaware, its principal place of business or to any officer or agent of the Corporation having custody of the book in which proceedings of meetings of stockholders are recorded. Delivery made to the Corporation's registered office shall be by hand or by certified or registered mail, return receipt requested. If no record date has been fixed by the Board of Directors and prior action by the Board of Directors is required by applicable law, the record date for determining stockholders entitled to consent to corporate action in writing without a meeting shall be at the close of business on the date on which the Board of Directors adopts the resolution taking such prior action.

Section 2.15 Inspectors of Written Consent. In the event of the delivery, in the manner provided by Section 2.13 of these Bylaws, to the Corporation of the requisite written consents to take corporate action and/or any related revocation or revocations, the Corporation shall engage nationally recognized independent inspectors of elections for the purpose of promptly performing a ministerial review of the validity of the consents and revocations. For the purpose of permitting the inspectors to perform such review, no action by written consent without a meeting shall be effective until such date as the independent inspectors certify to the Corporation that the consents delivered to the Corporation in accordance with Section 2.13 of these Bylaws represent all of the shares entitled to vote with respect to the action that is the subject of the consent. Nothing contained in this paragraph shall in any way be construed to suggest or imply that the Corporation or any stockholder shall not be entitled to contest the validity of any consent or revocation thereof, whether before or after such certification by the independent inspectors, or to take any other action (including, without limitation, the commencement, prosecution or defense of any litigation with respect thereto, and the seeking of injunctive relief in such litigation).

ARTICLE III
BOARD OF DIRECTORS

Section 3.1 General Powers. The business and affairs of the Corporation shall be managed by or under the direction of the Board of Directors. In addition to the powers and authorities by these Bylaws expressly conferred upon them, the Board of Directors may exercise all such powers of the Corporation and do all such lawful acts and things as are not by statute or by the Certificate of Incorporation or by these Bylaws required to be exercised or done by the stockholders.

Section 3.2 Number and Tenure. Subject to the rights of the holders of any series of Preferred Stock to elect directors, the number of directors shall be fixed from time to time exclusively pursuant to a resolution adopted by a majority of the Whole Board. No decrease in the number of authorized directors constituting the Whole Board shall shorten the term of any incumbent director.

Section 3.3 Election of Directors. The directors shall be elected at the annual meetings of stockholders as specified in the Certificate of Incorporation except as otherwise provided in the Certificate of Incorporation and in these Bylaws, and each director of the Corporation shall hold office until such director’s successor is elected and qualified or until such director’s earlier death, resignation or removal.

Section 3.4 Regular Meetings. Regular meetings of the Board of Directors may be held without notice at such times and at such places as may be determined from time to time by the Board of Directors.

Section 3.5 Special Meetings. Special meetings of the Board of Directors shall be called at the request of the Chairman of the Board of Directors, the Chief Executive Officer or a majority of the Board of Directors then in office. The person or persons authorized to call special meetings of the Board of Directors may fix the place, if any, date and time of the meetings.

Section 3.6 Notice of Meeting. Notice of any special meeting of directors shall be given to each director at such person's business or residence in writing by hand delivery, first-class or overnight mail or courier service, email or electronic or facsimile transmission, or orally by telephone in accordance with the applicable provisions of the DGCL. Neither the business to be transacted at, nor the purpose of, any regular or special meeting of the Board of Directors need be specified in the notice of such meeting. A meeting may be held at any time without notice if all the directors are present or if those not present waive notice of the meeting in accordance with Section 7.4 of these Bylaws.

Section 3.7 Action by Consent of Board of Directors. Any action required or permitted to be taken at any meeting of the Board of Directors or of any committee thereof may be taken without a meeting if all members of the Board of Directors or committee, as the case may be, consent thereto in writing, or by electronic transmission and the writing(s) or electronic transmission(s) are filed with the minutes of proceedings of the Board of Directors or committee. Such filing shall be in paper form if the minutes are maintained in paper form and shall be in electronic form if the minutes are maintained in electronic form.

Section 3.8 Meetings by Conference Telephone or by Use of Other Communications Equipment. Members of the Board of Directors, or any committee thereof, may participate in a meeting of the Board of Directors or such committee by means of conference telephone or other communications equipment by means of which all persons participating in the meeting can hear each other, and such participation in a meeting shall constitute presence in person at such meeting.

Section 3.9 Quorum. Subject to Section 3.10 of these Bylaws, a whole number of directors equal to at least a majority of the Whole Board shall constitute a quorum for the transaction of business, but if at any meeting of the Board of Directors there shall be less than a quorum present, a majority of the directors present may adjourn the meeting from time to time without further notice. The act of the majority of the directors present at a meeting at which a quorum is present shall be the act of the Board of Directors. The directors present at a duly organized meeting may continue to transact business until adjournment, notwithstanding the withdrawal of enough directors to leave less than a quorum.

Section 3.10 Vacancies. Subject to applicable law and the rights of the holders of any series of Preferred Stock with respect to such series of Preferred Stock, and unless the Board of Directors otherwise determines, vacancies resulting from death, resignation, retirement, disqualification, removal from office or other cause, and newly created directorships resulting from any increase in the authorized number of directors, may be filled only by the affirmative vote of a majority of the remaining directors, though less than a quorum of the Board of Directors, or by a sole remaining director, and directors so chosen shall hold office for a term expiring at the next annual meeting of stockholders and until such director's successor shall have been duly elected and qualified. No decrease in the number of authorized directors constituting the Whole Board shall shorten the term of any incumbent director.

Section 3.11 Committees. The Board of Directors may designate any such committee as the Board of Directors considers appropriate, which shall consist of one or more directors of the Corporation. The Board of Directors may designate one or more directors as alternate members of any committee, who may replace any absent or disqualified member at any meeting of the

committee. Any such committee may to the extent permitted by law exercise such powers and shall have such responsibilities as shall be specified in the designating resolution. Each committee shall keep written minutes of its proceedings and shall report such proceedings to the Board of Directors as appropriate.

A majority of any committee may determine its action and fix the time and place of its meetings, unless the Board of Directors shall otherwise provide. Notice of such meetings shall be given to each member of the committee in the manner provided for in Section 3.6 of these Bylaws. The Board of Directors shall have power at any time to fill vacancies in, to change the membership of, or to dissolve, any such committee. Nothing herein shall be deemed to prevent the Board of Directors from appointing one or more committees consisting in whole or in part of persons who are not directors of the Corporation; provided, however, that no such committee shall have or may exercise any authority of the Board of Directors.

Section 3.12 Removal. Subject to the rights of the holders of any series of Preferred Stock with respect to such series of Preferred Stock, any director, or the entire Board of Directors, may be removed from office at any time by the stockholders, with or without cause, by the affirmative vote of the holders of a majority of the then-outstanding shares of Voting Stock, voting together as a single class.

ARTICLE IV
OFFICERS

Section 4.1 Elected Officers. The elected officers of the Corporation shall be a Chief Executive Officer, a President, a Chief Financial Officer, a Secretary, a Treasurer, and such other officers as the Board of Directors from time to time may deem proper. Any number of offices may be held by the same person. All officers elected by the Board of Directors shall each have such powers and duties as generally pertain to their respective offices, subject to the specific provisions of this Article IV. Such officers shall also have such powers and duties as from time to time may be conferred by the Board of Directors or by any committee thereof. The Board or any committee thereof may from time to time elect, or the Chief Executive Officer may appoint, such other officers (including one or more Assistant Vice Presidents, Assistant Secretaries, and Assistant Treasurers) and such agents, as may be necessary or desirable for the conduct of the business of the Corporation. Such other officers and agents shall have such duties and shall hold their offices for such terms as shall be provided in these Bylaws or as may be prescribed by the Board of Directors or such committee or by the Chief Executive Officer, as the case may be.

Section 4.2 Election and Term of Office. The elected officers of the Corporation shall be elected by the Board of Directors. Each officer shall hold office until such officer’s successor shall have been duly elected and shall have qualified or until such officer’s earlier death, resignation or removal.

Section 4.3 Chairman of the Board of Directors. The Chairman of the Board of Directors shall be chosen from among the directors and may be the Chief Executive Officer. The Chairman of the Board of Directors shall preside over all meetings of the Board of Directors.

Section 4.4 Chief Executive Officer. The Chief Executive Officer shall be responsible for the general management of the affairs of the Corporation and shall perform all duties incidental to the office which may be required by applicable law and all such other duties as are properly required of the Chief Executive Officer by the Board of Directors. The Chief Executive Officer shall make reports to the Board of Directors and the stockholders, and shall see that all orders and resolutions of the Board of Directors and of any committee thereof are carried into effect. The Chief Executive Officer of the Corporation may also serve as President, if so elected by the Board of Directors.

Section 4.5 President. If the President is not the Chief Executive Officer, the President shall act in a general executive capacity and shall assist the Chief Executive Officer in the administration and operation of the Corporation's business and general supervision of its policies and affairs.

Section 4.6 Vice Presidents. Each Vice President shall have such powers and shall perform such duties as shall be assigned to such Vice President by the Board of Directors, the Chief Executive Officer or the President.

Section 4.7 Chief Financial Officer. The Chief Financial Officer shall act in an executive financial capacity. The Chief Financial Officer shall assist the Chief Executive Officer and the President in the general supervision of the Corporation's financial policies and affairs.

Section 4.8 Treasurer. The Treasurer shall exercise general supervision over the receipt, custody and disbursement of corporate funds. The Treasurer shall cause the funds of the Corporation to be deposited in such banks as may be authorized by the Board of Directors, or in such banks as may be designated as depositaries in the manner provided by resolution of the Board of Directors. The Treasurer shall have such further powers and duties as shall be prescribed from time to time by the Board of Directors, the Chief Executive Officer, or the President.

Section 4.9 Secretary. The Secretary shall keep or cause to be kept in one or more books provided for that purpose, the minutes of all meetings of the Board of Directors, the committees of the Board of Directors and the stockholders; the Secretary shall see that all notices are duly given in accordance with the provisions of these Bylaws and as required by applicable law; the Secretary shall be custodian of the records and the seal of the Corporation and affix and attest the seal to all stock certificates of the Corporation (unless the seal of the Corporation on such certificates shall be a facsimile, as hereinafter provided) and affix and attest the seal to all other documents to be executed on behalf of the Corporation under its seal; and the Secretary shall see that the books, reports, statements, certificates and other documents and records required by applicable law to be kept and filed are properly kept and filed; and in general, the Secretary shall perform all the duties incident to the office of Secretary and such other duties as from time to time may be assigned to such Secretary by the Board of Directors, the Chief Executive Officer, or the President.

Section 4.10 Removal. The Chief Executive Officer, the President, and the Chief Financial Officer may be removed from office with or without cause by the affirmative vote of a majority of the Whole Board. Any other officer elected, or agent appointed, by the Board of Directors may be removed from office with or without cause by the affirmative vote of a majority of the Board of

Directors then in office. Any officer or agent appointed by the Chief Executive Officer, the President or the Chief Financial Officer may be removed by the officer that appointed such officer or agent with or without cause.

Section 4.11 Vacancies. A newly created elected office and a vacancy in any elected office because of death, resignation, or removal may be filled by the Board of Directors. Any vacancy in an office appointed by the Chief Executive Officer or the President because of death, resignation, or removal may be filled by the Chief Executive Officer or the President.

ARTICLE V
STOCK CERTIFICATES AND TRANSFERS

Section 5.1 Certificated and Uncertificated Stock; Transfers. The interest of each stockholder of the Corporation may be evidenced by certificates for shares of stock in such form as the appropriate officers of the Corporation may from time to time prescribe or may be uncertificated.

The shares of the stock of the Corporation shall be transferred on the books of the Corporation, in the case of certificated shares of stock, by the holder thereof in person or by such person's attorney duly authorized in writing, upon surrender for cancellation of certificates for at least the same number of shares, with an assignment and power of transfer endorsed thereon or attached thereto, duly executed, with such proof of the authenticity of the signature as the Corporation or its agents may reasonably require; and, in the case of uncertificated shares of stock, upon receipt of proper transfer instructions from the registered holder of the shares or by such person's attorney duly authorized in writing, and upon compliance with appropriate procedures for transferring shares in uncertificated form. No transfer of stock shall be valid as against the Corporation for any purpose until it shall have been entered in the stock records of the Corporation by an entry showing from and to whom transferred.

The certificates of stock shall be signed, countersigned and registered in such manner as the Board of Directors may by resolution prescribe, which resolution may permit all or any of the signatures on such certificates to be in facsimile. In case any officer, transfer agent or registrar who has signed or whose facsimile signature has been placed upon a certificate has ceased to be such officer, transfer agent or registrar before such certificate is issued, it may be issued by the Corporation with the same effect as if such person were such officer, transfer agent or registrar at the date of issue.

Notwithstanding anything to the contrary in these Bylaws, at all times that the Corporation's stock is listed on a stock exchange, the shares of the stock of the Corporation shall comply with all direct registration system eligibility requirements established by such exchange, including any requirement that shares of the Corporation's stock be eligible for issue in book-entry form. All issuances and transfers of shares of the Corporation's stock shall be entered on the books of the Corporation with all information necessary to comply with such direct registration system eligibility requirements, including the name and address of the person to whom the shares of stock are issued, the number of shares of stock issued and the date of issue. The Board of Directors shall have the power and authority to make such rules and regulations as it may deem necessary or

proper concerning the issue, transfer and registration of shares of stock of the Corporation in both the certificated and uncertificated form.

Section 5.2 Lost, Stolen or Destroyed Certificates. No certificate for shares of stock in the Corporation shall be issued in place of any certificate alleged to have been lost, destroyed or stolen, except on production of such evidence of such loss, destruction or theft and on delivery to the Corporation of a bond of indemnity in such amount, upon such terms and secured by such surety, as the Board of Directors or any financial officer may in its or such person's discretion require.

Section 5.3 Record Owners. The Corporation shall be entitled to recognize the exclusive right of a person registered on its books as the owner of shares to receive dividends, and to vote as such owner, and to hold liable for calls and assessments a person registered on its books as the owner of shares, and shall not be bound to recognize any equitable or other claim to or interest in such share or shares on the part of any other person, whether or not it shall have express or other notice thereof, except as otherwise required by applicable law.

Section 5.4 Transfer and Registry Agents. The Corporation may from time to time maintain one or more transfer offices or agencies and registry offices or agencies at such place or places as may be determined from time to time by the Board of Directors or by the Chief Executive Officer or President.

ARTICLE VI
INDEMNIFICATION

Section 6.1 Indemnification. Each person who was or is a party to, or is otherwise threatened to be made a party to, any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (a "Proceeding"), by reason of the fact that he or she (or a person of whom he or she is the legal representative), is or was, at any time during which this Section 6.1 is in effect (whether or not such person continues to serve in such capacity at the time any indemnification or advancement of expenses pursuant hereto is sought or at the time any Proceeding relating thereto exists or is brought), a director or officer of the Corporation or, while serving as a director or officer of the Corporation, is or was serving at the request of the Corporation as a director, officer, trustee, employee or agent of another corporation, or of a partnership, joint venture, trust or other enterprise, including service with respect to employee benefit plans maintained or sponsored by the Corporation (each such director or officer, a "Covered Person"), shall be (and shall be deemed to have a contractual right to be) indemnified and held harmless by the Corporation (and any successor of the Corporation by merger or otherwise) to the fullest extent permitted by the DGCL as the same exists or may hereafter be amended or modified from time to time (but, in the case of any such amendment or modification, only to the extent that such amendment or modification permits the Corporation to provide greater indemnification rights than the DGCL permitted the Corporation to provide prior to such amendment or modification), against all expenses, liability and loss (including attorneys' fees, judgments, fines, ERISA excise taxes and penalties and amounts paid or to be paid in settlement) reasonably incurred or suffered by such person in connection therewith; provided, however, that the Corporation shall indemnify any such Covered Person seeking indemnification in connection

with a Proceeding (or part thereof) initiated by such Covered Person only if such Proceeding (or part thereof) was authorized by the Board of Directors of the Corporation.

Section 6.2 Advance of Expenses. To the fullest extent permitted by the DGCL as the same exists or may hereafter be amended or modified from time to time (but, in the case of any such amendment or modification, only to the extent that such amendment or modification permits the Corporation to provide greater rights to advancement of expenses than said law permitted the Corporation to provide prior to such amendment or modification), each Covered Person shall have (and shall be deemed to have a contractual right to have) the right, without the need for any action by the Board of Directors, to be paid by the Corporation (and any successor of the Corporation by merger or otherwise) the expenses incurred in connection with any Proceeding in advance of its final disposition, such advances to be paid by the Corporation within twenty (20) days after the receipt by the Corporation of a statement or statements from the claimant requesting such advance or advances from time to time; provided, that if the DGCL requires, the payment of such expenses incurred by a director or officer in his or her capacity as a director or officer (and not, except to the extent specifically required by applicable law, in any other capacity in which service was or is rendered by such person while a director or officer, including, without limitation, service to an employee benefit plan) shall be made only upon delivery to the Corporation of an undertaking (hereinafter, the "Undertaking") by or on behalf of such director or officer, to repay all amounts so advanced if it shall ultimately be determined by final judicial decision from which there is no further right of appeal (a "final disposition") that such director or officer is not entitled to be indemnified for such expenses under this Section 6.2 or otherwise.

Section 6.3 Non-Exclusivity of Rights. The rights conferred on any person in this Article VI, shall not be exclusive of any other right that such person may have or hereafter acquire under any statute, provision of the Certificate of Incorporation, Bylaws, agreement, vote or consent of stockholders or directors. Additionally, nothing in this Article VI shall limit the ability of the Corporation, in its discretion, to indemnify or advance expenses to persons whom the Corporation is not obligated to indemnify or advance expenses pursuant to this Article VI. The Board of Directors shall have the power to delegate to such officer or other person as the Board of Directors shall specify the determination of whether indemnification shall be given to any person pursuant to this Section 6.3.

Section 6.4 Indemnification Contracts. The Board of Directors is authorized to cause the Corporation to enter into indemnification contracts with any director, officer, employee or agent of the Corporation, or any person serving at the request of the Corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, including employee benefit plans, providing indemnification rights to such person. Such rights may be greater than those provided in this Article VI.

Section 6.5 Continuation of Indemnification. The rights to indemnification and to advancement of expenses provided by, or granted pursuant to, this Article VI shall continue notwithstanding that the person has ceased to be a Covered Person and shall inure to the benefit of his or her estate, heirs, executors, administrators, legatees and distributees; provided, however, that the Corporation shall indemnify any such person seeking indemnity in connection with a Proceeding (or part thereof) initiated by such person only if such Proceeding (or part thereof) was authorized by the Board of Directors.

Section 6.6 Effect of Amendment or Repeal. The provisions of this Article VI shall constitute a contract between the Corporation, on the one hand, and, on the other hand, each individual who serves or has served as a Covered Person (whether before or after the adoption of these Bylaws), in consideration of such person's performance of such services, and pursuant to this Article VI, the Corporation intends to be legally bound to each such current or former Covered Person. With respect to current and former Covered Persons, the rights conferred under this Article VI are present contractual rights and such rights are fully vested, and shall be deemed to have vested fully, immediately upon adoption of these Bylaws. With respect to any Covered Persons who commence service following adoption of these Bylaws, the rights conferred under this Article VI shall be present contractual rights, and such rights shall fully vest, and be deemed to have vested fully, immediately upon such Covered Person's service in the capacity which is subject to the benefits of this Article VI.

Section 6.7 Notice. Any notice, request or other communication required or permitted to be given to the Corporation under this Article VI shall be in writing and either delivered in person or sent by telecopy, overnight mail or courier service, or certified or registered mail, postage prepaid, return receipt requested, to the Secretary of the Corporation and shall be effective only upon receipt by the Secretary.

Section 6.8 Severability. If any provision or provisions of this Article VI shall be held to be invalid, illegal or unenforceable for any reason whatsoever: (1) the validity, legality and enforceability of the remaining provisions of this Article VI (including, without limitation, each portion of any paragraph of this Article VI containing any such provision held to be invalid, illegal or unenforceable, that is not itself held to be invalid, illegal or unenforceable) shall not in any way be affected or impaired thereby; and (2) to the fullest extent possible, the provisions of this Article VI (including, without limitation, each such portion of any paragraph of this Article VI containing any such provision held to be invalid, illegal or unenforceable) shall be construed so as to give effect to the intent manifested by the provision held invalid, illegal or unenforceable.

ARTICLE VII
MISCELLANEOUS PROVISIONS

Section 7.1 Fiscal Year. The fiscal year of the Corporation shall end on the 31st day of December; provided, that the Board of Directors shall have the power, from time to time, to fix a different fiscal year of the Corporation by a duly adopted resolution.

Section 7.2 Dividends. The Board of Directors may from time to time declare, and the Corporation may pay, dividends on its outstanding shares in the manner and upon the terms and conditions provided by law and the Certificate of Incorporation.

Section 7.3 Seal. The corporate seal, if the Corporation shall have a corporate seal, shall have inscribed thereon the words "Corporate Seal, Delaware," the name of the Corporation and the year of its organization. The seal may be used by causing it or a facsimile thereof to be impressed or affixed or in any other manner reproduced.

Section 7.4 Waiver of Notice. Whenever any notice is required to be given to any stockholder or director of the Corporation under the provisions of the DGCL, the Certificate of

Incorporation or these Bylaws, a waiver thereof in writing, signed by the person or persons entitled to such notice, or a waiver by electronic transmission by the person entitled to notice, whether before or after the time stated therein, shall be deemed equivalent to the giving of such notice. Neither the business to be transacted at, nor the purpose of, any annual or special meeting of the stockholders or the Board of Directors or committee thereof need be specified in any waiver of notice of such meeting.

Section 7.5 Resignations. Any director or any officer, whether elected or appointed, may resign at any time by giving written notice of such resignation to the Chairman of the Board of Directors, the Chief Executive Officer, or the Secretary, and such resignation shall be deemed to be effective as of the close of business on the date said notice is received by the Chairman of the Board of Directors, the Chief Executive Officer, or the Secretary, or at such later time as is specified therein. Except to the extent specified in such notice, no formal action shall be required of the Board of Directors or the stockholders to make any such resignation effective.

ARTICLE VIII
CONTRACTS, PROXIES, ETC.

Section 8.1 Contracts. Except as otherwise required by applicable law, the Certificate of Incorporation or these Bylaws, any contracts or other instruments may be executed and delivered in the name and on behalf of the Corporation by such officer or officers of the Corporation as the Board of Directors may from time to time direct. Such authority may be general or confined to specific instances as the Board of Directors may determine. The Chairman of the Board of Directors, the Chief Executive Officer, any President, and any Executive or Senior Vice President may execute bonds, contracts, deeds, leases, and other instruments to be made or executed by or on behalf of the Corporation. Subject to any restrictions imposed by the Board of Directors or the Chairman of the Board of Directors, the Chief Executive Officer, the President or any Vice President of the Corporation may delegate contractual powers to others under his or her jurisdiction, it being understood, however, that any such delegation of power shall not relieve such officer of responsibility with respect to the exercise of such delegated power.

Section 8.2 Proxies. Unless otherwise provided by resolution adopted by the Board of Directors, the Chairman of the Board of Directors, the Chief Executive Officer, the President or any Executive or Senior Vice President may from time to time appoint an attorney or attorneys or agent or agents of the Corporation, in the name and on behalf of the Corporation, to cast the votes which the Corporation may be entitled to cast as the holder of stock or other securities in any other corporation, any of whose stock or other securities may be held by the Corporation, at meetings of the holders of the stock or other securities of such other corporation, or to consent in writing, in the name of the Corporation as such holder, to any action by such other corporation, and may instruct the person or persons so appointed as to the manner of casting such votes or giving such consent, and may execute or cause to be executed in the name and on behalf of the Corporation and under its corporate seal or otherwise, all such written proxies or other instruments as he or she may deem necessary or proper in the premises.

ARTICLE IX
PROXY ACCESS

Section 9.1 Inclusion of Stockholder Director Nominations in the Corporation's Proxy Materials. Subject to the terms and conditions set forth in these Bylaws, the Corporation shall include in its proxy statement for an annual meeting of stockholders the name, together with the Required Information (as defined in paragraph (A) below), of an eligible person nominated for election (the "Stockholder Nominee") to the Board of Directors by a stockholder or group of stockholders that satisfy the requirements of this Section 9.1, including qualifying as an Eligible Stockholder (as defined in paragraph (D) below) and that expressly elects at the time of providing the written notice required by this Section 9.1 (a "Proxy Access Notice") to have its nominee(s) included in the Corporation's proxy statement pursuant to this Section 9.1. For the purposes of this Section 9.1:

(1) "Constituent Holder" shall mean any stockholder, collective investment fund included within a Qualifying Fund (as defined in paragraph (D) below) or beneficial holder whose stock ownership is counted for the purposes of qualifying as holding the Proxy Access Request Required Shares (as defined in paragraph (D) below) or qualifying as an Eligible Stockholder (as defined in paragraph (D) below);

(2) "affiliate" and "associate" shall have the meanings ascribed thereto in Rule 405 under the Securities Act of 1933, as amended; provided, however, that the term "partner" as used in the definition of "associate" shall not include any limited partner that is not involved in the management of the relevant partnership; and

(3) a stockholder (including any Constituent Holder) shall be deemed to "own" only those outstanding shares of Voting Stock as to which the stockholder itself, such Constituent Holder itself, or any stockholder fund comprising a Qualifying Fund, possesses both (a) the full voting and investment rights pertaining to the shares and (b) the full economic interest in (including the opportunity for profit and risk of loss on) such shares; provided that the number of shares calculated in accordance with clauses (a) and (b) shall be deemed not to include (and to the extent any of the following arrangements have been entered into by affiliates of the stockholder, shall be reduced by) any shares (x) sold by such stockholder (or its affiliates) in any transaction that has not been settled or closed, including any short sale, (y) borrowed by such stockholder (or its affiliates) for any purposes or purchased by such stockholder (or its affiliates) pursuant to an agreement to resell, or (z) subject to any option, warrant, forward contract, swap, contract of sale, other derivative or similar agreement entered into by such stockholder (or its affiliates), whether any such instrument or agreement is to be settled with shares or with cash based on the notional amount or value of Voting Stock, in any such case which instrument or agreement has, or is intended to have, or if exercised by either party thereto would have, the purpose or effect of (i) reducing in any manner, to any extent or at any time in the future, such stockholder's (or its affiliate's) full right to vote or direct the voting of any such shares, and/or (ii) hedging, offsetting or altering to any degree gain or loss arising from the full economic ownership of such shares by such stockholder (or its affiliate), other than any such arrangements solely involving an exchange listed multi-industry market index fund in which Voting Stock represents at the time of entry into such arrangement less than ten

percent (10%) of the proportionate value of such index. A stockholder shall "own" shares held in the name of a nominee or other intermediary so long as the stockholder itself retains the right to instruct how the shares are voted with respect to the election of directors and the right to direct the disposition thereof and possesses the full economic interest in the shares. A stockholder's ownership of shares shall be deemed to continue during any period in which such person has loaned such shares or delegated any voting power over such shares by means of a proxy, power of attorney or other instrument or arrangement which in all such cases is revocable at any time by the stockholder. The terms "owned," "owning" and other variations of the word "own" shall have correlative meanings.

(A) For purposes of this Section 9.1, the "Required Information" that the Corporation shall include in its proxy statement is (1) the information concerning the Stockholder Nominee and the Eligible Stockholder that the Corporation determines is required to be disclosed in the Corporation's proxy statement by the regulations promulgated under the Exchange Act; and (2) if the Eligible Stockholder so elects, a Statement (as defined in paragraph (F) below). The Corporation shall also include the name of the qualifying Stockholder Nominee in its proxy card. For the avoidance of doubt, and any other provision of these Bylaws notwithstanding, the Corporation may in its sole discretion solicit against, and include in the proxy statement its own statements or other information relating to, any Eligible Stockholder and/or Stockholder Nominee, including any information provided to the Corporation with respect to the foregoing.

(B) To be timely, a stockholder's Proxy Access Notice must be delivered to the principal executive offices of the Corporation no earlier than one hundred and fifty (150) days and no later than one hundred and twenty (120) days before the one-year anniversary of the date that the Corporation commenced mailing of its definitive proxy statement (as stated in such proxy statement) for the immediately preceding annual meeting with the Securities and Exchange Commission. In no event shall any adjournment or postponement of an annual meeting, the date of which has been announced by the Corporation, commence a new time period for the giving of a Proxy Access Notice.

(C) The number of Stockholder Nominees (including Stockholder Nominees that were submitted by an Eligible Stockholder for inclusion in the Corporation's proxy materials pursuant to this Section 9.1 but either are subsequently withdrawn or that the Board of Directors decides to nominate as Board of Directors' nominees or otherwise appoint to the Board of Directors) appearing in the Corporation's proxy materials with respect to an annual meeting of stockholders shall not exceed the greater of (x) two (2) and (y) the largest whole number that does not exceed twenty percent (20%) of the number of directors in office as of the last day on which a Proxy Access Notice may be delivered in accordance with the procedures set forth in this Section 9.1 (such greater number, the "Permitted Number"); provided, however, that the Permitted Number shall be reduced by the number of:

(1) directors in office with respect to whom a Proxy Access Notice was previously provided to the Corporation pursuant to this Section 9.1, other than (a) any such director whose term of office will expire at such annual meeting and who is not nominated by the Corporation at such annual meeting for another term of office and who is not seeking or agreeing to be nominated at such meeting for another term of office, and (b) any such

director who at the time of such annual meeting will have served continuously, as a nominee of the Board of Directors, for at least two (2) years; and

(2) directors in office or director candidates that, in either case, were elected or appointed to the Board of Directors or will be included in the Corporation's proxy statement with respect to such annual meeting as an unopposed (by the Corporation) nominee pursuant to an agreement, arrangement or other understanding with a stockholder or group of stockholders (other than any such agreement, arrangement or understanding entered into in connection with an acquisition of shares of Voting Stock, by such stockholder or group of stockholders, from the Corporation), other than any such director referred to in this clause (2) who at the time of such annual meeting will have served as a director continuously, as a nominee of the Board of Directors, for at least two (2) years, but only to the extent the Permitted Number after such reduction with respect to this clause (2) equals or exceeds one (1);

provided, further, that in no circumstance shall the Permitted Number exceed the number of directors to be elected at the applicable annual meeting as noticed by the Corporation; provided, further, that in the event the Board of Directors resolves to reduce the size of the Board of Directors effective on or prior to the date of the annual meeting, the Permitted Number shall be calculated based on the number of directors in office as so reduced. Any Eligible Stockholder submitting more than one Stockholder Nominee for inclusion in the Corporation's proxy statement pursuant to this Section 9.1 shall (i) rank such Stockholder Nominees based on the order that the Eligible Stockholder desires such Stockholder Nominees to be selected for inclusion in the Corporation's proxy statement in the event that the number of Stockholder Nominees submitted by the Eligible Stockholder pursuant to this Section 9.1 exceeds the Permitted Number and (ii) explicitly specify and include the respective rankings referred to in the foregoing clause (i) in the Proxy Access Notice delivered to the Corporation with respect to all Stockholder Nominees submitted pursuant thereto. In the event that the number of Stockholder Nominees submitted by Eligible Stockholders pursuant to this Section 9.1 exceeds the Permitted Number, each Eligible Stockholder will have its highest ranking Stockholder Nominee (as ranked pursuant to the preceding sentence) who meets the requirements of this Section 9.1 selected for inclusion in the Corporation's proxy materials until the Permitted Number is reached, going in order of the amount (largest to smallest) of shares of Voting Stock each Eligible Stockholder disclosed as owned in its Proxy Access Notice submitted to the Corporation (with the understanding that an Eligible Stockholder may not ultimately have any of its Stockholder Nominees included if the Permitted Number has previously been reached). If the Permitted Number is not reached after each Eligible Stockholder has had one (1) Stockholder Nominee selected, this selection process shall continue as many times as necessary, following the same order each time, until the Permitted Number is reached. After reaching the Permitted Number of Stockholder Nominees, if any Stockholder Nominee who satisfies the eligibility requirements in this Section 9.1 thereafter withdraws, has his or her nomination withdrawn or is thereafter not submitted for director election, no other nominee or nominees shall be required to be substituted for such Stockholder Nominee and included in the Corporation's proxy statement or otherwise submitted for director election pursuant to this Section 9.1.

(D) An "Eligible Stockholder" is one or more stockholders of record who own and have owned, or are acting on behalf of one or more beneficial owners who own and have owned

(in each case as defined above), in each case continuously for at least three (3) years as of both the date that the Proxy Access Notice is received by the Corporation pursuant to this Section 9.1, and as of the record date for determining stockholders eligible to vote at the annual meeting, at least three percent (3%) of the aggregate voting power of the Voting Stock (the "Proxy Access Request Required Shares"), and who continue to own the Proxy Access Request Required Shares at all times between the date such Proxy Access Notice is received by the Corporation and the date of the applicable annual meeting, provided that the aggregate number of stockholders, and, if and to the extent that a stockholder is acting on behalf of one or more beneficial owners, of such beneficial owners, whose stock ownership is counted for the purpose of satisfying the foregoing ownership requirement may not exceed twenty (20). Two or more collective investment funds that are (I) under common management and investment control, (II) under common management and funded primarily by the same employers or (III) a "group of investment companies" as such term is defined in Section 12(d)(1)(G)(ii) of the Investment Company Act of 1940 (a "Qualifying Fund") will be treated as one stockholder for the purpose of determining the aggregate number of stockholders in this paragraph (D), provided that each fund included within a Qualifying Fund otherwise meets the requirements set forth in this Section 9.1. No shares may be attributed to more than one group constituting an Eligible Stockholder under this Section 9.1 (and, for the avoidance of doubt, no stockholder may be a member of more than one group constituting an Eligible Stockholder). A record holder acting on behalf of one or more beneficial owners will not be counted separately as a stockholder with respect to the shares owned by beneficial owners on whose behalf such record holder has been directed in writing to act, but each such beneficial owner will be counted separately, subject to the other provisions of this paragraph (D), for purposes of determining the number of stockholders whose holdings may be considered as part of an Eligible Stockholder's holdings. For the avoidance of doubt, Proxy Access Request Required Shares will qualify as such if and only if the beneficial owner of such shares as of the date of the Proxy Access Notice has itself individually beneficially owned such shares continuously for the three-year period ending on that date and through the other applicable dates referred to above (in addition to the other applicable requirements being met).

(E) No later than the final date when a Proxy Access Nomination pursuant to this Section 9.1 may be timely delivered to the Corporation, an Eligible Stockholder (including each Constituent Holder) must provide the following information in writing to the Secretary of the Corporation:

(1) with respect to each Constituent Holder, the information, representations and agreements that would be required to be provided in a stockholder's notice of nomination pursuant to the requirements of Section 2.9(C) and Section 2.10 of these Bylaws (other than any such information, representations and agreements to be made relating specifically to the requirements of Rule 14a-19 promulgated under the Exchange Act);

(2) a description of all direct and indirect compensation and other material monetary agreements, arrangements and understandings (written or oral) during the past three (3) years, and any other material relationships, between or among the Eligible Stockholder (including any Constituent Holder) and its or their respective affiliates and associates, or others acting in concert therewith, on the one hand, and each of such Eligible Stockholder's Stockholder Nominee(s), and his or her respective affiliates and associates, or others acting in concert therewith, on the other hand, including without limitation all

information that would be required to be disclosed pursuant to Item 404 promulgated under Regulation S-K if the Eligible Stockholder (including any Constituent Holder), or any affiliate or associate thereof or person acting in concert therewith, were the "registrant" for purposes of such Item and the Stockholder Nominee were a director or executive officer of such registrant;

(3) one or more written statements from the record holder of the shares (and from each intermediary through which the shares are or have been held during the requisite three-year holding period) verifying that, as of a date within seven (7) calendar days prior to the date the Proxy Access Notice is delivered to the Corporation, such person owns, and has owned continuously for the preceding three (3) years, the Proxy Access Request Required Shares, and such person's agreement to provide:

(a) within ten (10) days after the record date for the annual meeting, written statements from the record holder and intermediaries verifying such person's continuous ownership of the Proxy Access Request Required Shares through the record date, together with any additional information reasonably requested to verify such person's ownership of the Proxy Access Request Required Shares; and

(b) immediate notice if the Eligible Stockholder ceases to own any of the Proxy Access Request Required Shares prior to the date of the applicable annual meeting of stockholders;

(4) a representation that such person:

(a) acquired the Proxy Access Request Required Shares in the ordinary course of business and not with the intent to change or influence control of the Corporation, and does not presently have such intent;

(b) has not nominated and will not nominate for election to the Board of Directors at the annual meeting any person other than the Stockholder Nominee(s) being nominated pursuant to this Section 9.1;

(c) has not engaged and will not engage in, and has not and will not be a "participant" in another person's, "solicitation" within the meaning of Rule 14a-1(l) under the Exchange Act in support of the election of any individual as a director at the annual meeting other than its Stockholder Nominee(s) or a nominee of the Board of Directors;

(d) will not distribute to any stockholder any form of proxy for the annual meeting other than the form distributed by the Corporation; and

(e) will provide facts, statements and other information in all communications with the Corporation and its stockholders that are and will be true and correct in all material respects and do not and will not omit to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading, and will otherwise comply with all

applicable laws, rules and regulations in connection with any actions taken pursuant to this Section 9.1;

(5) in the case of a nomination by a group of stockholders that together is such an Eligible Stockholder, the designation by all group members of one group member that is authorized to act on behalf of all members of the nominating stockholder group with respect to the nomination and matters related thereto, including withdrawal of the nomination; and

(6) an undertaking that such person agrees to:

(a) assume all liability stemming from, and indemnify and hold harmless the Corporation and its affiliates and each of its and their directors, officers, and employees individually against any liability, loss or damages in connection with any threatened or pending action, suit or proceeding, whether legal, administrative or investigative, against the Corporation or any of its affiliates, or any of its or their directors, officers or employees arising out of any legal or regulatory violation arising out of the Eligible Stockholder's communications with the stockholders of the Corporation or out of the information that the Eligible Stockholder (including such person) provided to the Corporation or out of any failure of the Eligible Stockholder to comply with, or any breach of, its obligations, agreements or representations pursuant to these Bylaws;

(b) comply with all laws, rules, regulations, and listing standards applicable to nominations or solicitations in connection with the annual meeting of stockholders, and promptly provide the Corporation with such other information as the Corporation may reasonably request; and

(c) file with the Securities and Exchange Commission any solicitation by the Eligible Stockholder of stockholders of the Corporation relating to the annual meeting at which the Stockholder Nominee will be nominated.

In addition, no later than the final date when a Proxy Access Notice pursuant to this Section 9.1 may be timely delivered to the Corporation, a Qualifying Fund whose stock ownership is counted for purposes of qualifying as an Eligible Stockholder must provide to the Secretary of the Corporation documentation reasonably satisfactory to the Board of Directors that demonstrates that the funds included within the Qualifying Fund satisfy the definition thereof. In order to be considered timely, any information required by this Section 9.1 to be provided to the Corporation must be supplemented (by delivery to the Secretary of the Corporation) (1) no later than ten (10) days following the record date for the applicable annual meeting, to disclose the foregoing information as of such record date, and (2) no later than the fifth day before the annual meeting, to disclose the foregoing information as of the date that is no earlier than ten (10) days prior to such annual meeting. For the avoidance of doubt, the requirement to update and supplement such information shall not permit any Eligible Stockholder or other person to change or add any proposed Stockholder Nominee or be deemed to cure any defects or limit the remedies (including without limitation under these Bylaws) available to the Corporation relating to any defect.

(F) The Eligible Stockholder may provide to the Secretary of the Corporation, at the time the information required by this Section 9.1 is originally provided, a written statement for inclusion in the Corporation's proxy statement for the annual meeting, not to exceed five hundred (500) words, in support of the candidacy of such Eligible Stockholder's Stockholder Nominee (the "Statement"). Notwithstanding anything to the contrary contained in this Section 9.1, the Corporation may omit from its proxy materials any information or Statement that it, in good faith, believes is materially false or misleading, omits to state any material fact, or would violate any applicable law or regulation.

(G) No later than the final date when a Proxy Access Notice pursuant to this Section 9.1 may be timely delivered to the Corporation, each Stockholder Nominee must:

(1) provide an executed agreement, in a form deemed satisfactory by the Board of Directors or its designee (which form shall be provided by the Corporation reasonably promptly upon written request of a stockholder), that such Stockholder Nominee consents to being named in the proxy materials as a nominee;

(2) complete, sign and submit all questionnaires, representations, and agreements required by these Bylaws, including Section 2.9(C) and Section 2.10 of these Bylaws, or of the Corporation's directors generally; and

(3) provide such additional information as necessary to permit the Board of Directors to determine if such Stockholder Nominee:

(a) is independent under the listing standards of each principal U.S. exchange upon which the common stock of the Corporation is listed, any applicable rules of the Securities and Exchange Commission, and any publicly disclosed standards used by the Board of Directors in determining and disclosing the independence of the Corporation's directors;

(b) has any direct or indirect relationship with the Corporation other than those relationships that have been deemed categorically immaterial pursuant to the Corporation's corporate governance guidelines;

(c) would, by serving on the Board of Directors, violate or cause the Corporation to be in violation of these Bylaws, the Certificate of Incorporation, the rules and listing standards of the principal U.S. exchange upon which the common stock of the Corporation is listed or any applicable law, rule or regulation; and

(d) is or has been subject to any event specified in Item 401(f) of Regulation S-K (or successor rule) of the Securities and Exchange Commission.

In the event that any information or communications provided by the Eligible Stockholder (or any Constituent Holder) or the Stockholder Nominee to the Corporation or its stockholders ceases to be true and correct in all material respects or omits a material fact necessary to make the statements made, in light of the circumstances under which they were made, not misleading, each Eligible Stockholder or Stockholder Nominee, as the case may be, shall promptly notify the Secretary of the Corporation of any defect in such previously provided information and of the information that

is required to correct any such defect; it being understood for the avoidance of doubt that providing any such notification will not be deemed to cure any such defect or limit the remedies (including without limitation under these Bylaws) available to the Corporation relating to any such defect.

(H) Any Stockholder Nominee who is included in the Corporation's proxy materials for a particular annual meeting of stockholders but withdraws from or becomes ineligible or unavailable for election at that annual meeting (other than by reason of such Stockholder Nominee's disability or other health reason) shall be ineligible to be a Stockholder Nominee pursuant to this Section 9.1 for the next two annual meetings. Any Stockholder Nominee who is included in the Corporation's proxy statement for a particular annual meeting of stockholders, but subsequently is determined not to satisfy the eligibility requirements of this Section 9.1 or any other provision of these Bylaws, the Certificate of Incorporation or other applicable rules or regulation any time before the annual meeting of stockholders, shall not be eligible for election at the relevant annual meeting of stockholders.

(I) The Corporation will not be required to include, pursuant to this Section 9.1, any Stockholder Nominee in its proxy materials for any annual meeting of stockholders, or, if the proxy statement already has been filed, to allow the nomination of a Stockholder Nominee, notwithstanding that proxies in respect of such vote may have been received by the Corporation:

(1) who is not independent under the listing standards of the principal U.S. exchange upon which the common stock of the Corporation is listed, any applicable rules of the Securities and Exchange Commission and any publicly disclosed standards used by the Board of Directors in determining and disclosing independence of the Corporation's directors, in each case as determined by the Board of Directors;

(2) whose service as a member of the Board of Directors would violate or cause the Corporation to be in violation of these Bylaws, the Certificate of Incorporation, the rules and listing standards of the principal U.S. exchange upon which the common stock of the Corporation is traded, or any applicable law, rule or regulation;

(3) who is or has been, within the past three (3) years, an officer or director of a competitor, as defined in Section 8 of the Clayton Antitrust Act of 1914, 15 U.S.C. §19;

(4) who is a named subject of a pending criminal proceeding (excluding traffic violations and other minor offenses) or has been convicted in such a criminal proceeding within the past ten (10) years;

(5) who is subject to any order of the type specified in Rule 506(d) of Regulation D promulgated under the Securities Act of 1933;

(6) if the Eligible Stockholder (or any Constituent Holder) or applicable Stockholder Nominee otherwise breaches or fails to comply in any material respect with its obligations pursuant to this Section 9.1 or any agreement, representation or undertaking required by this Section;

(7) if the Eligible Stockholder ceases to be an Eligible Stockholder for any reason, including but not limited to not owning the Proxy Access Request Required Shares through the date of the applicable annual meeting; or

(8) if the Secretary of the Corporation receives a notice that any stockholder has nominated or intends to nominate a person for election to the Board of Directors at such annual meeting pursuant to Section 2.9 of these Bylaws.

For the purposes of this paragraph (I), clauses (1), (2), (3), (4) and (5) and, to the extent related to a breach or failure by the Stockholder Nominee, clause (6) will result in the exclusion from the proxy materials pursuant to this Section 9.1 of the specific Stockholder Nominee to whom the ineligibility applies, or, if the proxy statement already has been filed, the ineligibility of such Stockholder Nominee to be nominated; provided, however, that clause (7) and, to the extent related to a breach or failure by an Eligible Stockholder (or any Constituent Holder), clause (6) will result in the Voting Stock owned by such Eligible Stockholder (or Constituent Holder) being excluded from the Proxy Access Request Required Shares (and, if as a result the Proxy Access Notice will no longer have been filed by an Eligible Stockholder, the exclusion from the proxy materials pursuant to this Section 9.1 of all of the applicable stockholder's Stockholder Nominees from the applicable annual meeting of stockholders or, if the proxy statement has already been filed, the ineligibility of all of such stockholder's Stockholder Nominees to be nominated).

Notwithstanding anything to the contrary set forth herein, the Board of Directors or the person presiding at the annual meeting shall declare a nomination by an Eligible Stockholder to be invalid, and such nomination shall be disregarded and no vote on any such Stockholder Nominee shall occur, notwithstanding that proxies in respect of such vote may have been received by the Corporation, if (i) the Eligible Stockholder (or a qualified representative thereof) is not in attendance at the annual meeting to present any nomination pursuant to this Section 9.1 or (ii) the Eligible Stockholder (or any Constituent Holder) becomes ineligible to nominate a director for inclusion in the Corporation's proxy materials pursuant to this Section 9.1 or withdraws its nomination or a Stockholder Nominee becomes unwilling, unavailable or ineligible to serve on the Board of Directors, whether before or after the Corporation's issuance of the definitive proxy statement.

ARTICLE X
AMENDMENTS

Section 10.1 By the Stockholders. Subject to the provisions of the Certificate of Incorporation, these Bylaws may be altered, amended or repealed, or new Bylaws enacted, at any special meeting of the stockholders if duly called for that purpose (provided that in the notice of such special meeting, notice of such purpose shall be given), or at any annual meeting, by the affirmative vote of a majority of the Voting Stock.

Section 10.2 By the Board of Directors. Subject to the laws of the State of Delaware, the Certificate of Incorporation and these Bylaws, these Bylaws may also be altered, amended or repealed, or new Bylaws enacted, by the Board of Directors.

ARTICLE XI
FORUM PROVISION

Section 11.1 Forum for Securities Act Claims. Unless the Corporation consents in writing to the selection of an alternative forum, the federal district courts of the United States of America shall be, to the fullest extent permitted by law, the sole and exclusive forum for any action asserting a claim arising under the Securities Act of 1933.

EXHIBIT 31.1

Certifications

I, Roy C. Harvey, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Alcoa Corporation;

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 the registrant as of, and for, the periods presented in this report;

4. The registrant'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 the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: July 27, 2023

/s/ Roy C. Harvey

Name: Roy C. Harvey

Title: President and Chief Executive Officer

EXHIBIT 31.2

Certifications

I, Molly S. Beerman, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Alcoa Corporation;
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 the registrant as of, and for, the periods presented in this report;
4. The registrant'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 the registrant and have:
   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: July 27, 2023

/s/ Molly S. Beerman

Name: Molly S. Beerman

Title: Executive Vice President and Chief Financial Officer

EXHIBIT 32.1

Certification
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code), the undersigned officer of Alcoa Corporation, a Delaware corporation (the "Company"), does hereby certify that:

1. The Quarterly Report on Form 10-Q for the quarter ended June 30, 2023 (the "Form 10-Q") of the Company fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and,

2. The information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: July 27, 2023

/s/ Roy C. Harvey
Name: Roy C. Harvey
Title: President and Chief Executive Officer

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished to the Securities and Exchange Commission as an exhibit to the Form 10-Q and shall not be considered filed as part of the Form 10-Q.

EXHIBIT 32.2

Certification
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of Section 1350, Chapter 63 of Title 18, United States Code), the undersigned officer of Alcoa Corporation, a Delaware corporation (the "Company"), does hereby certify that:

1. The Quarterly Report on Form 10-Q for the quarter ended June 30, 2023 (the "Form 10-Q") of the Company fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934; and,

2. The information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: July 27, 2023

/s/ Molly S. Beerman

Name: Molly S. Beerman
Title: Executive Vice President and Chief Financial Officer

A signed original of this written statement required by Section 906, or other document authenticating, acknowledging, or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.

The foregoing certification is being furnished to the Securities and Exchange Commission as an exhibit to the Form 10-Q and shall not be considered filed as part of the Form 10-Q.