UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

(Mark one)

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

For the fiscal year ended October 30, 2022

or

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

For the transition period from to

Commission file number 000-06920

Applied Materials, Inc.

(Exact name of registrant as specified in its charter)

Delaware	**94-1655526**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*

3050 Bowers Avenue
P.O. Box 58039
Santa Clara, California 95052-8039
(Address of principal executive offices)

(408) 727-5555
(Registrant's telephone number, including area code)

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

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock, par value $.01 per share	AMAT	The NASDAQ Stock Market LLC

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☑ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☑

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit). 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 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 has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C.7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☑

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☑

Aggregate market value of the voting stock held by non-affiliates of the registrant as of May 1, 2022, based upon the closing sale price reported by the NASDAQ Global Select Market on that date: $95,725,229,751

Number of shares outstanding of the registrant's Common Stock, $0.01 par value, as of December 9, 2022: 844,139,722

DOCUMENTS INCORPORATED BY REFERENCE:

Portions of Part III will be provided in accordance with Instruction G(3) to Form 10-K no later than February 27, 2023.

Caution Regarding Forward-Looking Statements

This Annual Report on Form 10-K of Applied Materials, Inc. and its subsidiaries, including “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in Item 7, contains forward-looking statements that involve a number of risks and uncertainties.

This report contains forward-looking statements that involve a number of risks and uncertainties. Examples of forward-looking statements include those regarding Applied’s future financial or operating results, customer demand and spending, end-user demand, Applied’s and market and industry trends and outlooks, the impact of new export regulations on our ability to export products and provide services to customers and on our results of operations, our intent to seek additional licenses pursuant to new export regulations, the impact of the ongoing COVID-19 pandemic and responses thereto on Applied’s operations and financial results, cash flows and cash deployment strategies, declaration of dividends, share repurchases, business strategies and priorities, costs and cost controls, products, competitive positions, management’s plans and objectives for future operations, research and development, acquisitions, investments and divestitures, growth opportunities, restructuring and severance activities, backlog, working capital, liquidity, investment portfolio and policies, taxes, supply chain, manufacturing, properties, legal proceedings and claims, and other statements that are not historical facts, as well as their underlying assumptions. Forward-looking statements may contain words such as “may,” “will,” “should,” “could,” “would,” “expect,” “plan,” “anticipate,” “believe,” “estimate,” “intend,” “potential” and “continue,” the negative of these terms, or other comparable terminology. All forward-looking statements are subject to risks and uncertainties and other important factors, including those discussed in Part I, Item 1A, “Risk Factors,” below and elsewhere in this report. These and many other factors could affect Applied’s future financial condition and operating results and could cause actual results to differ materially from expectations based on forward-looking statements made in this document or elsewhere by Applied or on its behalf. Forward-looking statements are based on management’s estimates, projections and expectations as of the date hereof, and Applied undertakes no obligation to revise or update any such statements.

The following information should be read in conjunction with the Consolidated Financial Statements and the accompanying Notes to Consolidated Financial Statements included in this report.

APPLIED MATERIALS, INC.

FORM 10-K FOR THE FISCAL YEAR ENDED OCTOBER 30, 2022

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PART I

Item 1: *Business*

Incorporated in 1967, Applied Materials, Inc. (Applied or the Company) is a Delaware corporation. A global company with a broad set of capabilities in materials engineering, Applied provides manufacturing equipment, services and software to the semiconductor, display and related industries. With its diverse technology capabilities, Applied delivers products and services that improve device performance, power, yield and cost. Applied's customers include manufacturers of semiconductor chips, liquid crystal and organic light-emitting diode (OLED) displays, and other electronic devices. These customers may use what they manufacture in their own end products or sell the items to other companies for use in electronic products. Applied's fiscal year ends on the last Sunday in October.

Applied operates in three reportable segments: Semiconductor Systems, Applied Global Services, and Display and Adjacent Markets. A summary of financial information for each reportable segment is found in Note 17 of Notes to Consolidated Financial Statements. A discussion of factors that could affect operations is set forth under "Risk Factors" in Item 1A, which is incorporated herein by reference.

Semiconductor Systems

Applied's Semiconductor Systems segment develops, manufactures and sells a wide range of manufacturing equipment used to fabricate semiconductor chips, also referred to as integrated circuits (ICs). The Semiconductor Systems segment includes semiconductor capital equipment used for many steps of the chip making process including the transfer of patterns into device structures, transistor and interconnect fabrication, metrology, inspection and review, and packaging technologies for connecting finished IC die. Applied's patterning systems and technologies address challenges resulting from shrinking pattern dimensions and the growing complexity in vertical stacking found in today's most advanced semiconductor devices. Applied's transistor and interconnect products and technologies enable continued power and performance improvements of 3D transistors. Applied's metrology, inspection and review systems' imaging capabilities and algorithms employ optical and e-beam technologies to meet the most advanced technical demands in areas including self-aligned double and quad patterning, extreme ultraviolet layers, measurement-intensive optimal proximity correction mask qualification, and new 3D architectures. Applied's packaging technologies address challenges resulting from the increasing heterogeneous integration of multiple IC dies in a single package. Applied delivers leading-edge capabilities that enable chipmakers to establish accurate statistical process control, ramp up production runs rapidly, and achieve consistently high production yields. Applied also provides manufacturing equipment that helps improve performance, power, yield and cost of semiconductor devices that use mature process technologies and serve specialty markets such as the Internet of Things, Communications, Automotive, Power and Sensors. Applied' Semiconductor Systems equipment is sold to integrated device manufacturers and foundries worldwide.

Semiconductor Systems Technologies	Product(s)
Epitaxy Epitaxy (or epi) is a technique for growing silicon (e.g. silicon with another element) as a uniform crystalline structure on a wafer to form high quality material for the device circuitry. Epi technology is used in device transistors to enhance chip speed.	Centura RP Epi
Ion Implant Ion implantation is a key technology for forming transistors and is used many times during chip fabrication. During ion implantation, wafers are bombarded by a beam of electrically-charged ions, called dopants, which can change the electrical properties of the exposed semiconductor material.	VIISta Systems
Oxidation/Nitridation Applied's systems provide critical oxidation steps - like memory gate oxide, shallow trench isolation and liner oxide - for advanced device scaling.	Vantage, Radiance and Centura Systems
Rapid Thermal Processing (RTP) RTP is used primarily for annealing, which modifies the properties of deposited films. Applied's single-wafer RTP systems are also used for growing high quality oxide and oxynitride films.	Vantage Systems
Physical Vapor Deposition (PVD) PVD is used to deposit high quality metal films. Applications include metal gate, silicides, contact liner/barrier, interconnect copper barrier seed and metal hard mask.	Endura, Charger and Axcela Systems
Chemical Vapor Deposition (CVD) CVD is used to deposit dielectric and metal films on a wafer. During the CVD process, gases that contain atoms of the material to be deposited react on the wafer surface, forming a thin film of solid material.	Endura, Centura and Producer Systems
Chemical Mechanical Planarization (CMP) CMP is used to planarize a wafer surface, a process that allows subsequent photolithography patterning and material deposition steps to occur with greater accuracy, resulting in more uniform film layers with minimal thickness variations.	Reflexion and Mirra Systems
Electrochemical Deposition (ECD) ECD is a process by which metal atoms from a chemical fluid (an electrolyte) are deposited on the surface of an immersed object.	Raider and Nokota Platforms
Atomic Layer Deposition (ALD) ALD technology enables ultra thin film growth of either a conducting or insulating material with uniform coverage in nanometer-sized structures.	Olympia, Sprinter, Morpher and P-300BV Systems
Etch Etching is used many times throughout the IC manufacturing process to selectively remove material from the surface of a wafer. Applied offers systems for etching dielectric, metal, and silicon films to meet the requirements of advanced processing.	Centris and Producer Systems
Selective Processing (Deposition and Removal) Selective processing uses specially co-designed chemical and materials interactions to enable delicate and precise deposition and removal of target materials.	Endura and Producer Systems
Metrology and Inspection Metrology and inspection tools are used to locate, measure, and analyze defects and features on the wafer during various stages of the fabrication processes. Applied enables customers to characterize and control critical dimension (CD) and defect issues, especially at advanced generation technology nodes.	SEMVision eBeam Review PROVision eBeam Metrology Enlight Optical Inspection UVision Optical Inspection VeritySEM CD-SEM Metrology Aera Mask Inspection

Applied Global Services

The Applied Global Services® (AGS) segment provides integrated solutions to optimize equipment and fab performance and productivity, including spares, upgrades, services, remanufactured earlier generation equipment and factory automation software for semiconductor, display and other products. Customer demand for products and services is fulfilled through a global distribution system in more than 170 locations and trained service engineers located in close proximity to customer sites to support over 49,000 installed Applied semiconductor, display and other manufacturing systems worldwide. Applied offers the following general types of services and products under the Applied Global Services segment.

AGS Solutions and Technology
Technology-Enabled Services®
A comprehensive service product portfolio that combines service technology and tool specific performance commitments in order to optimize customer factory productivity.
Fab Consulting
Experts using advanced analytical tools to solve production problems that have the greatest impact on customer fab productivity.
Supply Chain Assurance Programs
Spare parts product portfolio offers options to balance inventory, cost and risk to efficiently meet fab requirements.
Subfab Equipment
Applied SubFab solutions lower costs, save energy, reduce environmental impact, and meet Environmental Protection Agency reporting regulations for greenhouse gas emissions.
Legacy Equipment and Upgrades
Comprehensive 200mm equipment and upgrades portfolio to address a full spectrum of production needs and extend tool lifetime. Applied 200mm equipment supports market inflections and new technology for a broad variety of devices including analog, power, and MEMS.
Automation Software
Applied SmartFactory® automation software portfolio coordinates and streamlines every aspect of a factory (the processes, equipment and people) to provide competitive advantage to customers.

Display and Adjacent Markets

The Display and Adjacent Markets segment is comprised primarily of products for manufacturing liquid crystal displays (LCDs), organic light-emitting diodes (OLEDs), and other display technologies for TVs, monitors, laptops, personal computers (PCs), electronic tablets, smart phones, and other consumer-oriented devices. While similarities exist between the technologies utilized in semiconductor and display fabrication, the most significant differences are in the size and composition of the substrate. Substrates used to manufacture display panels and other devices are typically glass, although newer flexible materials are entering the market. Display and Adjacent Markets segment growth depends primarily on consumer demand for increasingly larger and more advanced TVs and high-resolution displays for mobile devices as well as new form factors, including thin, light, curved and flexible displays, and new applications such as augmented and virtual reality. In addition to display applications, the segment's Chemical Vapor Deposition (CVD) technology is used to manufacture solar energy cells. The Display and Adjacent Markets segment offers a variety of technologies and products, including:

Display and Adjacent Markets Technologies	Product(s)
Array Test LCD display substrates are inspected at many stages of production to maximize yield, minimize scrap, optimize equipment utilization, and monitor manufacturing processes. At the completion of the array stage, the performance of the millions of individual pixels on each display is tested.	Electron Beam Array Tester
Defect Review Defects are identified during inspection steps and reviewed by a scanning electron microscope and other analyses to determine defect root cause and composition.	Electron Beam Review (EBR)
Chemical Vapor Deposition (CVD) During CVD processing, gases containing atoms or molecules are introduced into the process chamber. The gases form reactive radicals or ions, which undergo chemical reactions to form thin films on the heated substrate.	AKT PECVD Systems
Physical Vapor Deposition (PVD) PVD is used to deposit high quality films of metals, alloys, transparent conductors and semiconductors. In Display, these films are used for contact, interconnect, transparent electrodes and transistor materials in TFT-LCD and OLED display backplanes, as well as for transparent electrodes in color filters and touch panels.	AKT Aristo and PiVot Systems

Backlog

Applied manufactures systems to meet demand represented by order backlog and customer commitments. Backlog consisted of: (1) orders for which written authorizations have been accepted, or shipment has occurred but revenue has not been recognized; and (2) contractual service revenue and maintenance fees.

Backlog by reportable segment as of October 30, 2022 and October 31, 2021 was as follows:

	2022		2021	
	(In millions, except percentages)			
Semiconductor Systems	$ 12,691	67 %	$ 6,679	57 %
Applied Global Services	5,643	30 %	4,335	37 %
Display and Adjacent Markets	581	3 %	735	6 %
Corporate and Other	96	— %	9	— %
Total	$ 19,011	100 %	$ 11,758	100 %

Of the total backlog as of October 30, 2022, approximately 32% is not reasonably expected to be filled within the next 12 months.

New export rules and regulations issued in December 2022 are expected to reduce backlog that was not reasonably expected to be filled within 12 months by approximately $989 million.

Applied's backlog on any particular date is not necessarily indicative of actual sales for any future periods, due to the potential for customer changes in delivery schedules or order cancellations. Customers may delay delivery of products or cancel orders prior to shipment, subject to possible cancellation penalties. Delays in delivery schedules or a reduction of backlog during any particular period could have a material adverse effect on Applied's business and results of operations.

Manufacturing, Raw Materials and Supplies

Applied's worldwide manufacturing activities consist primarily of assembly, integration and test of various proprietary and commercial parts, components and subassemblies that are used to manufacture systems. Applied has implemented a distributed manufacturing model under which manufacturing and supply chain activities are conducted in various countries, primarily including China, Israel, Singapore, Taiwan, the United States and other countries in Asia. Applied uses qualified vendors, including contract manufacturers, to supply parts, services and product support. Applied's supply chain strategy commits to adhere to ethical labor practices, responsible minerals sourcing, Responsible Business Alliance and SEMI guidelines, and the Applied Materials Standards of Business Conduct as defined in Applied's Environmental, Social and Governance (ESG) commitment.

Although Applied makes reasonable efforts to assure that parts are available from multiple qualified suppliers, this is not always possible. Accordingly, some key parts may be obtained from only a qualified single supplier or a limited group of qualified suppliers. Applied seeks to reduce costs and to lower the risks of manufacturing and service interruptions by selecting and qualifying alternate suppliers for parts; monitoring the financial condition of key suppliers; maintaining appropriate inventories of parts; qualifying new parts on a timely basis; and ensuring quality and performance of parts.

Research, Development and Engineering

Applied's long-term growth strategy requires continued development of new materials engineering capabilities, including products and platforms that enable expansion into new and adjacent markets. Applied's significant investments in research, development and engineering (RD&E) must generally enable it to deliver new products and technologies before the emergence of strong demand, thus allowing customers to incorporate these products into their manufacturing plans during early-stage technology selection. Applied works closely with its global customers and ecosystem partners to design systems and processes that meet planned technical and production requirements.

Applied's product development and engineering organizations are located primarily in the United States, as well as in China, Europe, India, Israel, Korea, Singapore and Taiwan. In addition, certain outsourced RD&E activities, process support and customer demonstrations are performed in the United States, India, China, Singapore and Taiwan.

Marketing and Sales

Because of the highly technical nature of its products, Applied markets and sells products worldwide almost entirely through a direct sales force.

Applied has operations in many countries, with some of its business activities concentrated in certain geographic areas, and global and regional economic and political conditions can impact the company's business and financial results. Applied's business is based on capital equipment investments by major semiconductor, display and other manufacturers, and is subject to significant variability in customer demand for Applied's products. Customers' expenditures depend on many factors, including: general economic conditions; anticipated market demand and pricing for semiconductors, display technologies and other electronic devices; the development of new technologies; customers' factory utilization; capital resources and financing; trade policies and export regulations; and government incentives. In addition, a significant driver in the semiconductor and display industries has been end-demand for mobile consumer products, which has been characterized by seasonality that impacts the timing of customer investments in manufacturing equipment and, in turn, Applied's business.

Information on net sales to unaffiliated customers and long-lived assets attributable to Applied's geographic regions is included in Note 17 of Notes to Consolidated Financial Statements. The following companies accounted for at least 10 percent of Applied's net sales in each fiscal year, which were for products and services in multiple reportable segments.

	2022	2021	2020
Samsung Electronics Co., Ltd.	12%	20%	18%
Taiwan Semiconductor Manufacturing Company Limited	20%	15%	18%
Intel Corporation	10%	*	*

* Less than 10%

Competition

The industries in which Applied operates are highly competitive and characterized by rapid technological change. Applied's ability to compete generally depends on its ability to commercialize its technology in a timely manner, continually improve its products, and develop new products that meet constantly evolving customer requirements. Significant competitive factors include technical capability and differentiation, productivity, cost-effectiveness and the ability to support a global customer base. The importance of these factors varies according to customers' needs, including product mix and respective product requirements, applications, and the timing and circumstances of purchasing decisions. Substantial competition exists in all areas of Applied's business. Competitors range from small companies that compete in a single region, which may benefit from policies and regulations that favor domestic companies, to global, diversified companies, which operate in more complex global economic and regulatory environments. Applied's ability to compete requires a high level of investment in RD&E, marketing and sales, and global customer support activities. Management believes that many of Applied's products have strong competitive positions.

The competitive environment for each segment is described below.

The semiconductor industry is driven by demand for advanced electronic products, including smartphones and other mobile devices, servers, personal computers, automotive electronics, storage, and other products. The growth of data and emerging end-market drivers such as artificial intelligence, the Internet of Things, 5G networks, smart vehicles and augmented and virtual reality are also creating the next wave of growth for the industry. As a result, products within the Semiconductor Systems segment are subject to significant changes in customer requirements, including transitions to smaller dimensions, increasingly complex chip architectures, new materials and an increasing number of applications. While certain existing technologies may be adapted to new requirements, some applications create the need for an entirely different technological approach. The rapid pace of technological change can quickly diminish the value of current technologies and products and create opportunities for existing and new competitors. Applied's broad portfolio offers a variety of differentiated products, including co-optimized and integrated materials solutions that enable unique films, structures and devices. Applied's products must continuously evolve to satisfy customers' requirements to compete effectively in the marketplace. Applied allocates resources among its numerous product offerings and therefore may decide not to invest in an individual product depending on market requirements. There are a number of competitors serving the semiconductor manufacturing equipment industry, which has experienced increased consolidation. Some of these competitors offer a single product line and others offer multiple product lines, and range from serving a single region to global, diversified companies.

Products and services within the Applied Global Services segment complement the Semiconductor Systems and Display and Adjacent Markets segments' products in markets that are characterized by demanding worldwide service requirements. Competition in the Applied Global Services segment includes a diverse group of numerous third-party service providers and customers that perform their own service.

To compete effectively, Applied offers products and services to improve tool performance, lower overall cost of ownership, and increase yields and productivity of customers' fab operations. Significant competitive factors include productivity, cost-effectiveness, and the level of technical service and support. The importance of these factors varies according to customers' needs and the type of products or services offered.

Products in the Display and Adjacent Markets segment are generally subject to strong competition from a number of major competitors primarily in Asia. Applied holds established market positions with its technically-differentiated LCD and OLED manufacturing solutions for PECVD, color filter PVD, PVD array, PVD touch panel, and TFT array testing, although its market position could change quickly due to customers' evolving requirements. Important factors affecting the competitive position of Applied's Display and Adjacent Markets products include: industry trends, Applied's ability to innovate and develop new products, and the extent to which Applied's products are technically-differentiated, as well as which customers within a highly concentrated customer base are making capital equipment investments and Applied's existing position at these customers.

Patents and Licenses

Protection of Applied's technology assets through enforcement of its intellectual property rights, including patents, is important for its competitive position. Applied's practice is to file patent applications in the United States and other countries for inventions that it considers significant. Applied has more than 17,300 patents in the United States and other countries, and additional applications are pending for new inventions. Although Applied does not consider its business materially dependent upon any one patent, the rights of Applied and the products made and sold under its patents, taken as a whole, are a significant element of its business. In addition to its patents, Applied possesses other intellectual property, including trademarks, know-how, trade secrets, and copyrights.

Applied enters into patent and technology licensing agreements with other companies when it is determined to be in its best interest. Applied pays royalties under existing patent license agreements for the use, in several of its products, of certain patented technologies. Applied also receives royalties from licenses granted to third parties. Royalties received from or paid to third parties have not been material to Applied's consolidated results of operations.

In the normal course of business, Applied periodically receives and makes inquiries regarding possible patent infringement. In responding to such inquiries, it may become necessary or useful for Applied to obtain or grant licenses or other rights. However, there can be no assurance that such licenses or rights will be available to Applied on commercially reasonable terms, or at all. If Applied is not able to resolve or settle claims, obtain necessary licenses on commercially reasonable terms, or successfully prosecute or defend its position, Applied's business, financial condition and results of operations could be materially and adversely affected.

Governmental Regulation

As a public company with global operations, Applied is subject to the laws and regulations of the United States and multiple foreign jurisdictions. These regulations, which differ among jurisdictions, include those related to financial and other disclosures, accounting standards, corporate governance, intellectual property, tax, trade, including import, export and customs, antitrust, environment, and health and safety, climate change, employment, immigration and travel regulations, privacy, data protection and localization, and anti-corruption. *See "Risk Factors – Legal, Compliance, and Other Risks – Applied is exposed to various risks related to the global regulatory environment" for further details.*

Applied is regulated under various international laws regarding the purchase and sale of goods and related items, including but not limited to those related to trade policies and export regulations, and limitations on transfer of intellectual property. *See "Risk Factors – Business and Industry Risks – Global trade issues and changes in and uncertainties with respect to trade policies and export regulations, including import and export license requirements, trade sanctions, tariffs and international trade disputes, have adversely impacted and could further adversely impact our business and operations, and reduce the competitiveness of our products relative to local and global competitors" for further details.*

With respect to environmental, health and safety regulations, Applied maintains a number of programs that are primarily preventative in nature and regularly monitors ongoing compliance with applicable laws and regulations. In addition, Applied has trained personnel to conduct investigations of any environmental, health, or safety incidents, including, but not limited to, spills, releases, or possible contamination. *See also "Risk Factors – Risks Related to Legal, Compliance, and Other Risks – Applied is subject to risks associated with environmental, health and safety regulations" for further details.*

Applied is subject to income taxes in the United States and foreign jurisdictions. Applied's provision for income taxes, effective tax rate and financial results could be affected by numerous factors, including changes in applicable tax laws, interpretations of applicable tax laws, amount and composition of pre-tax income in jurisdictions with differing tax rates, and valuation of deferred tax assets. There have been a number of proposed changes in the tax laws that could increase Applied's tax liability. *See "Risk Factors – Operational and Financial Risks – Applied is exposed to risks associated with operating in jurisdictions with complex and changing tax laws" for further details*. For additional discussions regarding the impact of compliance with income tax laws and regulations on Applied's business and operations, *see also "Management's Discussion and Analysis of Financial Condition and Results of Operations– Results of Operations – Income Taxes" and "Note 15 of the Notes to the Consolidated Financial Statements".*

Applied's People

Applied's commitment to innovation begins with the commitment to creating an environment in which Applied's employees can do their best work. Applied's ability to create differentiated value in the marketplace is driven by the capability of the Company's people to anticipate technology inflections and integrate customer requirements. To achieve this level of value creation, Applied believes it must attract, hire, develop and retain a world-class global workforce. The Company invests in its employees by providing quality training and learning opportunities; promoting inclusion, equity and diversity; and upholding a high standard of ethics and respect for human rights.

As of October 30, 2022, Applied employed approximately 33,000 regular full-time employees, of whom approximately 46%, 42% and 12% resided in the Asia-Pacific region, North America, and Europe, Middle East and Africa, respectively. Applied's team spans 24 countries, reflecting various cultures, backgrounds, race, color, national origin, religion, sex, sexual orientation, gender identity, ages, and disability, veteran and military status.

Diversity, Equity and Inclusion

Applied values great talent and different perspectives, knowing that diversity is one of its greatest strengths. The Company therefore strives to provide fair and equal opportunity for career development and advancement to all its employees and incorporates respect for diverse backgrounds and perspectives into the Company's culture at every level – from strategy and policy down to everyday interactions.

Applied expects that its commitment to strengthening the Company's culture of inclusion will broaden the diversity of its workplace and help Applied build a culture that benefits everyone. In recent years, Applied continued to make progress in its culture of inclusion journey, including, among other things, expanding gender diversity on the Company's Board to 40% female membership, increasing female representation in the U.S. and global workforce, and increasing U.S. underrepresented minority representation. As of October 30, 2022, Applied's global workforce was 80.6% male and 19.4% female, and 19% of Applied's workforce in the United States was composed of underrepresented minorities.

Additionally, Applied is investing in inclusion learning experiences. For example, the Company has various initiatives to further develop its leaders to lead even more inclusively and further deepen engagement with employees.

Talent Acquisition and Retention

Applied believes that its future success is highly dependent upon the Company's continued ability to attract, develop, retain and engage employees. As part of the Company's effort to attract and retain employees, Applied offers competitive rewards, compensation and benefits, including an Employee Stock Purchase Plan, healthcare and retirement benefits, parental and family leave, adoption credits, holiday and paid time off, and tuition assistance.

Employee Learning & Development

Applied seeks to create growth and development opportunities to support an engaged and inclusive workforce. Applied promotes holistic employee learning and development based on the 70/20/10 model--70% on-the-job learning, 20% social/collaborative and 10% formal training, with a focus on advancing technical skills as well as improving general business acumen to address increasing work complexity. Also, to help expand professional breadth, Applied uses a federated model where the segments and functions provide technical and job-specific training tied to their disciplines, while general professional, management, and leadership training is provided at the corporate level. All training is coordinated centrally and aligned with common objectives through Applied Global University. In addition to instructor-led and web-based training, Applied offers state-of-the-art training modalities, such as AI-based simulations and Augmented and Virtual Reality learning capabilities, to help develop its new products, train its manufacturing and field support employees, and collaborate remotely. Each fiscal year, employees are provided the opportunity to complete the required 40 hours of learning.

Employee Engagement, Organizational Health and Pandemic Response

Applied has historically managed and measured employee engagement and organizational health with a view to gaining insight into employees' experiences, levels of workplace satisfaction, and feelings of engagement and inclusion.

Since the onset of the COVID-19 pandemic, Applied's top priority remains protecting the health and safety of its employees and their families, customers, suppliers and community. This includes an understanding of its employees' engagement and experiences during the pandemic and developing a return to work and future of work strategy. In fiscal 2020 and fiscal 2021, Applied conducted surveys focused on employee engagement and productivity and on the future of work. Applied continues to support workplace flexibility such as remote working where possible, and follow enhanced safety and health protocols—including screenings, social distancing, and use of personal protective equipment. In fiscal 2022, the focus of the employee survey was on engagement and identifying actionable insights to enable a segmented talent strategy to address engagement and retention in targeted employee populations (e.g., early tenure employees).

Additional information regarding Applied's activities related to its people and sustainability, as well as its workforce diversity data, can be found in Applied's latest Sustainability Report and Annex thereto, which are located on its website at https://www.appliedmaterials.com/us/en/corporate-responsibility.html. The Sustainability Report and the Annex thereto are updated annually. This website address is intended to be an inactive textual reference only. None of the information on, or accessible through, Applied's website is part of this Form 10-K or is incorporated by reference herein.

Information about Applied's Executive Officers

The following table and notes set forth information about Applied's executive officers:

Name of Individual	Position
Gary E. Dickerson(1)	President, Chief Executive Officer
Brice Hill(2)	Senior Vice President, Chief Financial Officer
Teri Little(3)	Senior Vice President, Chief Legal Officer and Corporate Secretary
Omkaram Nalamasu(4)	Senior Vice President, Chief Technology Officer
Prabu Raja(5)	Senior Vice President, Semiconductor Products Group
Timothy M. Deane (6)	Group Vice President, Applied Global Services
Jeff Bodner(7)	Corporate Vice President, Corporate Controller and Chief Accounting Officer

(1) Mr. Dickerson, age 65, was named President of Applied in June 2012 and appointed Chief Executive Officer and a member of the Board of Directors in September 2013. Before joining Applied, he served as Chief Executive Officer and a director of Varian Semiconductor Equipment Associates, Inc. (Varian) from 2004 until its acquisition by Applied in November 2011. Prior to Varian, Mr. Dickerson served 18 years with KLA-Tencor Corporation (KLA-Tencor), a supplier of process control and yield management solutions for the semiconductor and related industries, where he held a variety of operations and product development roles, including President and Chief Operating Officer. Mr. Dickerson started his semiconductor career in manufacturing and engineering management at General Motors' Delco Electronics Division and then AT&T Technologies.

(2) Mr. Hill, age 56, has been Senior Vice President and Chief Financial Officer since March 2022. Prior to joining Applied, Mr. Hill was Executive Vice President and Chief Financial Officer of Xilinx, Inc., a company that designed and developed programmable devices and associated technologies, from April 2020 until its acquisition by Advanced Micro Devices, Inc. in February 2022. Prior to Xilinx, Mr. Hill served in various finance positions with Intel Corporation for 25 years, most recently as Corporate Vice President and Chief Financial Officer and Chief Operating Officer, Technology, Systems and Core Engineering Group.

(3) Ms. Little, age 58, joined Applied as Senior Vice President, Chief Legal Officer and Corporate Secretary in June 2020. Prior to joining Applied, Ms. Little served as Executive Vice President, Chief Legal Officer and Corporate Secretary at KLA Corporation from August 2017 to June 2020. Prior to that she was Senior Vice President, General Counsel and Corporate Secretary of KLA Corporation from October 2015 until August 2017, and prior to that she held various other positions at KLA Corporation since 2002. Prior to joining KLA Corporation, she was a Senior Corporate Associate at Wilson Sonsini Goodrich & Rosati, and a Litigation Associate at Heller Ehrman White & McAuliffe.

(4) Dr. Nalamasu, age 64, has been Senior Vice President, Chief Technology Officer since June 2013, and President of Applied Ventures, LLC, Applied's venture capital arm, since November 2013. He had served as Group Vice President, Chief Technology Officer from January 2012 to June 2013, and as Corporate Vice President, Chief Technology Officer from January 2011 to January 2012. Upon joining Applied in June 2006 until January 2011, Dr. Nalamasu was an Appointed Vice President of Research and served as Deputy Chief Technology Officer and General Manager for the Advanced Technologies Group. From 2002 to 2006, Dr. Nalamasu was a NYSTAR distinguished professor of Materials Science and Engineering at Rensselaer Polytechnic Institute, where he also served as Vice President of Research from 2005 to 2006. Prior to Rensselaer, Dr. Nalamasu served in several leadership roles at Bell Laboratories.

(5) Dr. Raja, age 60, has been Senior Vice President, Semiconductor Products Group of Applied since November 2017. He previously served in various senior management, product development and operational roles since joining Applied in 1995, including Group Vice President and General Manager of the Patterning and Packaging Group.

(6) Mr. Deane, age 57, has been Group Vice President, Applied Global Services since September 2022. He joined Applied in 1995 and previously served in various senior management and field operations roles, including head of Field Operations and Business Management for the Semiconductor Products Group, Account General Manager and Region General Manager.

(7) Mr. Bodner, age 54, has been Corporate Vice President, Corporate Controller and Chief Accounting Officer of Applied since September 2022. Prior to joining Applied, Mr. Bodner served as Chief Accounting Officer since July 2021 and as Vice President, Accounting since April 2021 at ESS Tech, Inc., a company that designs, builds and deploys iron flow batteries for commercial and energy storage applications. Prior to joining ESS Tech, Mr. Bodner served for almost 17 years at Intel Corporation in a variety of finance leadership roles, including Vice President of Finance and Director of Internal Audit. Mr. Bodner also worked nearly 12 years at PwC in its assurance practice.

Available Information

Applied’s website is http://www.appliedmaterials.com. Applied makes available free of charge, on or through its website, its annual, quarterly and current reports, and any amendments to those reports, as soon as reasonably practicable after electronically filing such reports with, or furnishing them to, the SEC. The SEC’s website, www.sec.gov, contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. These website addresses are intended to be an inactive textual references only. None of the information on, or accessible through, these websites is part of this Form 10-K or is incorporated by reference herein.

Item 1A: *Risk Factors*

The following risk factors could materially and adversely affect Applied's business, financial condition or results of operations and cause reputational harm, and should be carefully considered in evaluating the Company and its business, in addition to other information presented elsewhere in this report.

Business and Industry Risks

The industries that Applied serves can be volatile and difficult to predict.

As a supplier to the global semiconductor and display and related industries, Applied is subject to variable industry conditions, since demand for manufacturing equipment and services can change depending on several factors, including the nature and timing of technology inflections and advances in fabrication processes, the timing and requirements of new and emerging technologies and market drivers, production capacity relative to demand for chips and display technologies, end-user demand, customers' capacity utilization, production volumes, access to affordable capital, consumer buying patterns and general economic and political conditions. Applied's industries historically have been cyclical, and are subject to volatility and sudden changes in customer requirements for new manufacturing capacity and advanced technology. These changes can affect the timing and amounts of customer investments in technology and manufacturing equipment and can have a significant impact on Applied's net sales, operating expenses, gross margins and net income. The amount and mix of capital equipment spending between different products and technologies can have a significant impact on Applied's results of operations.

To meet rapidly changing demand in the industries it serves, Applied must accurately forecast demand and effectively manage its resources and production capacity across its businesses, and may incur unexpected or additional costs to align its business operations. During periods of increasing demand for its products, Applied must have sufficient manufacturing capacity and inventory to meet customer demand; effectively manage its supply chain; attract, retain and motivate a sufficient number of qualified employees; and continue to control costs. During periods of decreasing demand, Applied must reduce costs and align its cost structure with prevailing market conditions; effectively manage its supply chain; and motivate and retain key employees. If Applied does not effectively manage these challenges during periods of changing demand, its business performance and results of operations may be adversely impacted. Even with effective allocation of resources and management of costs, during periods of decreasing demand, Applied's gross margins, cash flows and earnings may be adversely impacted.

Applied is exposed to risks associated with an uncertain global economy.

Uncertain or adverse economic and business conditions, including uncertainties and volatility in the financial markets, national debt, fiscal or monetary concerns, rising inflation and interest rates in various regions, and economic recession, could materially adversely impact Applied's operating results. Markets for semiconductors and displays depend largely on business and consumer spending and demand for electronic products. Uncertain or adverse economic and business conditions could result in decreases in consumer spending and demand. Such decreases in spending and demand have in the past caused, and may in the future cause, our customers to push out, cancel or refrain from purchasing our equipment or services, which could negatively impact demand for our products and services, reduce our backlog, increase our inventory, and materially adversely impact our operating results.

Similarly, changes that result in sudden increases in consumer demand for electronic products have resulted in, and may continue to result in, a shortage of parts and materials needed to manufacture our products. Such shortages, as well as shipment delays due to transportation capacity and interruptions, have adversely impacted, and may continue to adversely impact, our suppliers' ability to meet our demand requirements. Accelerated digital transformation may further increase consumer demand and exacerbate such shortages and also strain our manufacturing capacity, which may adversely impact our ability to meet customer demands and thus have an adverse impact on our revenues, results of operations and financial condition.

Uncertain or adverse economic and market conditions, difficulties in obtaining capital, increased costs or reduced profitability may also cause some customers to scale back operations, exit businesses, merge with other manufacturers, or file for bankruptcy protection and potentially cease operations, which can also result in lower sales, additional inventory or bad debt expense for Applied. Economic and industry uncertainty may similarly affect suppliers, which could impair their ability to deliver parts and negatively affect Applied's ability to manage operations and deliver its products. These conditions may also lead to consolidation or strategic alliances among other equipment manufacturers, which could adversely affect Applied's ability to compete effectively.

Uncertain economic and industry conditions and continued supply chain disruptions also make it more challenging for Applied to forecast its operating results, make business decisions, and identify and prioritize the risks that may affect its businesses, sources and uses of cash, financial condition and results of operations. If Applied does not appropriately manage its business operations in response to changing economic and industry conditions, it could have a significant negative impact on its business performance and financial condition. Applied may be required to implement additional cost reduction efforts, including restructuring activities, which may adversely affect Applied's ability to capitalize on opportunities. Even during periods of economic uncertainty or lower revenues, Applied must continue to invest in research and development and maintain a global business infrastructure to compete effectively and support its customers, which can have a negative impact on its operating margins and earnings.

Applied maintains an investment portfolio that is subject to general credit, liquidity, market and interest rate risks. The risks to Applied's investment portfolio may be exacerbated if financial market conditions deteriorate due to rising inflation, rising interest rates, economic recession or impacts of the COVID-19 pandemic and, as a result, the value and liquidity of the investment portfolio, as well as returns on pension assets, could be negatively impacted and lead to impairment charges. Applied also maintains cash balances in various bank accounts globally in order to fund normal operations. If any of these financial institutions becomes insolvent, it could limit Applied's ability to access cash in the affected accounts, which could affect its ability to manage its operations.

Applied is exposed to the risks of operating a global business.

Applied has product development, engineering, manufacturing, sales and other operations distributed throughout many countries, and some of its business activities are concentrated in certain geographic areas. Moreover, in fiscal 2022, approximately 88% of Applied's net sales were to customers in regions outside the United States. As a result of the global nature of its operations, Applied's business performance and results of operations may be adversely affected by a number of factors, including:

- uncertain global economic and political business conditions and demands;
- global trade issues and changes in and uncertainties with respect to trade and export regulations, trade policies and sanctions, tariffs, and international trade disputes, including new and changing export regulations for certain exports to China and any retaliatory measures;
- positions taken by governmental agencies regarding possible national, commercial and/or security issues posed by the development, sale or export of certain products and technologies;
- political instability, natural disasters, regional or global health epidemics, social unrest, terrorism, acts of war or other geopolitical turmoil, or cybersecurity incidents in locations where Applied has operations, suppliers or sales, or that may influence the value chain of the industries that Applied serves;
- political and social attitudes, laws, rules, regulations and policies within countries that favor domestic companies over non-domestic companies, including customer- or government-supported efforts to promote the development and growth of local competitors;
- customer- or government-supported efforts to influence Applied to conduct more or less of its operations and sourcing in a particular country;
- variations among, and changes in, local, regional, national or international laws and regulations, including contract, intellectual property, cybersecurity, data privacy, labor, tax, and import/export laws, and the interpretation and application of such laws and regulations;
- ineffective or inadequate legal protection of intellectual property rights in certain countries;
- interruptions to Applied's or its supplier's supply chain;
- the availability or increasing costs of raw material, commodity, energy and shipping or volatility in such costs;
- delays or restrictions on personnel travel and in shipping materials or finished products between and within countries;
- geographically diverse operations and projects, and our ability to maintain appropriate business processes, procedures and internal controls, and comply with environmental, health and safety, anti-corruption and other regulatory requirements;

- failure to effectively manage a diverse workforce with different experience levels, languages, cultures, customs, business practices and worker expectations, and differing employment practices and labor issues;
- variations in the ability to develop relationships with local customers, suppliers and governments;
- fluctuations in interest rates and currency exchange rates, including the relative strength or weakness of the U.S. dollar against the Japanese yen, Israeli shekel, euro, Taiwanese dollar, Singapore dollar, Chinese yuan or Korean won;
- the need to provide sufficient levels of technical support in different locations around the world;
- performance of third-party providers of outsourced functions, including certain engineering, software development, manufacturing, information technology and other activities;
- service interruptions from utilities, transportation, data hosting or telecommunications providers, or other events beyond our control;
- impacts of climate change on the operations of Applied, its customers and suppliers;
- challenges in hiring and integration of an increasing number of workers in new countries;
- the increasing need for a mobile workforce to work in or travel to different regions; and
- uncertainties with respect to economic growth rates in various countries, including for the manufacture and sale of semiconductors and displays in the developing economies of certain countries.

Global trade issues and changes in and uncertainties with respect to trade policies and export regulations, including import and export license requirements, trade sanctions, tariffs and international trade disputes, have adversely impacted and could further adversely impact our business and operations, and reduce the competitiveness of our products relative to local and global competitors.

We sell a significant majority of our products into jurisdictions outside of the United States including China, Taiwan, Japan and Korea. We also purchase a significant portion of equipment and supplies from suppliers outside of the United States. There is inherent risk, based on the complex relationships among the United States and the countries in which we conduct our business, that political, diplomatic, and national security factors can lead to global trade issues and changes in trade policies and export regulations, in particular, with respect to those affecting the semiconductor industry. The United States and other countries have imposed and may continue to impose new trade restrictions and export regulations, and have also levied tariffs and taxes on certain goods. Trade restrictions and export regulations, or increases in tariffs and additional taxes, including any retaliatory measures, can negatively impact end-user demand and customer investment in manufacturing equipment, increase our manufacturing costs, decrease margins, reduce the competitiveness of our products, or prohibit our ability to sell products, provide services or purchase necessary equipment and supplies, any or all of which could have a material adverse effect on our business, results of operations, or financial condition.

For example, certain international sales depend on our ability to obtain export licenses, and our inability to obtain such licenses has limited and could further limit our markets and negatively impact our business. The U.S. government recently announced new export regulations for U.S. semiconductor technology sold in China, including wafer fabrication equipment and related parts and services, which have limited the market for certain of our products, adversely impacted our revenues, and increased our exposure to foreign competition. The U.S. Department of Commerce has promulgated rules and regulations expanding export license requirements for U.S. companies that sell certain products to entities in China whose actions or functions are intended to support military end uses, eliminated certain export license exceptions that applied to exports of certain items to China, added certain Chinese companies to its “Entity List” and “Unverified List,” making those companies subject to additional licensing requirements, and expanded licensing requirements for exports to China of items for use in the development or production of integrated circuits and certain technologies. These rules and regulations require us to obtain additional export licenses to supply certain of our products or provide services to certain customers in China. Obtaining export licenses may be difficult, costly and time-consuming, and there is no assurance that we will be issued licenses that we apply for on a timely basis or at all. Our inability to obtain such licenses could limit our markets in China, may cause us to be displaced by foreign businesses and competitors and adversely affect our results of operations. The implementation and interpretation of these rules and other regulatory actions taken by the U.S. government is uncertain and evolving, and may make it more challenging for Applied to manage its operations and forecast its operating results. The U.S. and other governmental agencies may in the future promulgate new or additional export licensing or other requirements that have the effect of further limiting the Company’s ability to provide certain of its products and services to customers outside the U.S., including China. These and other regulatory changes that may occur in the future could materially and adversely affect our business, results of operations or financial condition.

As a global business with customers, suppliers and operations in many countries around the world, Applied may from time to time receive inquiries from government authorities about transactions between Applied and certain foreign entities. For example, in August 2022, Applied received a subpoena from the U.S. Attorney's Office for the District of Massachusetts requesting information relating to certain China customer shipments. We are cooperating fully with the government. These inquiries are subject to uncertainties, and we cannot predict the outcome of this inquiry, or any other governmental inquires or proceedings that may occur. Any violation or alleged violation of law or regulations could result in significant legal costs or in legal proceedings in which Applied or its employees could be subjected to fines and penalties and could result in restrictions on Applied's business and damage to its reputation, and could have an adverse impact on its business operations, financial condition and results of operations.

Furthermore, government authorities may take retaliatory actions, impose conditions that require the use of local suppliers or partnerships with local companies, require the license or other transfer of intellectual property, or engage in other efforts to promote local businesses and local competitors, which could have a significant adverse impact on Applied's business. Many of these challenges are present in China and Korea, markets that represent a significant portion of Applied's business.

Applied is exposed to risks associated with a highly concentrated customer base.

Applied's customer base is highly concentrated and has become increasingly so as a result of continued consolidation. Applied's customer base is also geographically concentrated, particularly in China, Taiwan and Korea. A relatively limited number of manufacturers account for a substantial portion of Applied's business. As a result, the actions of even a single customer or export regulations that apply to customers in certain countries, such as those in China, have exposed and can further expose Applied's business and results of operations to greater volatility. The geographic concentration of Applied's customer base could shift over time as a result of government policy and incentives to develop regional semiconductor industries. The mix and type of customers, and sales to any single customer, including as a result of changes in government policy, have varied and may vary significantly from quarter to quarter and from year to year, and have had, and may continue to have, a significant impact on Applied's net sales, gross margins and net income. Applied's products are configured to customer specifications, and changing, rescheduling or canceling orders may result in significant, non-recoverable costs. If customers do not place orders, or they substantially reduce, delay or cancel orders (including as a result of uncertain or adverse economic conditions, our inability to fulfill orders due to export regulations, shortage of parts, transportation capacity/interruptions or any other reason), Applied may not be able to replace the business, which may have a significant adverse impact on its results of operations and financial condition. The concentration of Applied's customer base increases its risks related to the financial condition of its customers, and the deterioration in financial condition of a single customer or the failure of a single customer to perform its obligations could have a material adverse effect on Applied's results of operations and cash flow. To the extent its customers experience liquidity constraints, Applied may incur bad debt expense, which may have a significant impact on its results of operations. Major customers may also seek pricing, payment, intellectual property-related, or other commercial terms that are less favorable to Applied, which may have a negative impact on Applied's business, cash flow, revenue and gross margins.

Supply chain disruptions, manufacturing interruptions or delays, or the failure to accurately forecast customer demand, could affect Applied's ability to meet customer demand, lead to higher costs, or result in excess or obsolete inventory.

Applied's business depends on its timely supply of equipment, services and related products to meet the changing technical and volume requirements of its customers, which depends in part on the timely delivery of parts, materials and services, including components and subassemblies, from suppliers and contract manufacturers. Significant and sudden increases in demand for Applied's products, as well as worldwide demand for electronic products, have resulted in, and may continue to result in, a shortage of parts, materials and services needed to manufacture Applied's products. Such shortages, as well as delays in and unpredictability of shipments due to transportation interruptions, have adversely impacted, and may continue to adversely impact, our suppliers' ability to meet our demand requirements. Difficulties in obtaining sufficient and timely supply of parts, materials or services, and delays in and unpredictability of shipments due to transportation interruptions, have adversely impacted, and may continue to adversely impact, Applied's manufacturing operations and its ability to meet customer demand. Moreover, lockdowns that may from time to time be imposed in various geographic regions in response to periodic spikes in COVID-19 cases and related travel and logistics restrictions may result in additional supply chain and transportation disruptions, production delays, capacity limitations and cost increases. Our operating results may be adversely impacted if we are unable to obtain parts, materials or services needed to manufacture Applied's products, or if we are unable to do so on a timely manner or on favorable terms. Ongoing supply chain constraints may continue to increase costs of logistics and parts for our products and may cause us to pass on increased costs to our customers. Such increase in costs may lead to reduced demand for our products and materially adversely impact our operating results. Some key parts are subject to long lead-times or available only from a single supplier or limited group of suppliers, and some sourcing or subassembly is provided by suppliers located in countries other than the countries where Applied conducts its manufacturing. Supply chain disruptions have caused and may continue to cause delays in our equipment production and delivery schedules, which can lead to our business performance becoming significantly dependent on quarter-end production and delivery schedules, and could have an adverse impact on our operating and financial results. Volatility of demand for manufacturing equipment can also increase capital, technical, operational and other risks for Applied and for companies throughout its supply chain, and may cause some suppliers to exit businesses, or scale back or cease operations, which could impact our ability to meet customer demand.

Applied may also experience significant interruptions of its manufacturing operations, delays in its ability to deliver or install products or services, increased costs, customer order cancellations or reduced demand for its products as a result of:

- global trade issues and changes in and uncertainties with respect to trade and export regulations, trade policies and sanctions, tariffs, and international trade disputes, including new and changing export regulations for certain exports to China, where a significant portion of Applied's supply chain is located, and any retaliatory measures, that adversely impact Applied or its direct or sub-tier suppliers;
- the failure or inability to accurately forecast demand and obtain sufficient quantities of quality parts on a cost-effective basis;
- volatility in the availability and cost of parts, commodities, energy and shipping related to our products, including increased costs due to rising inflation or interest rates or other market conditions;
- difficulties or delays in obtaining required import or export licenses and approvals;
- shipment delays due to transportation interruptions or capacity constraints;
- a worldwide shortage of semiconductor components as a result of sharp increases in demand for semiconductor products in general;
- information technology or infrastructure failures, including those of a third party supplier or service provider; and
- natural disasters, the impacts of climate change, or other events beyond Applied's control (such as earthquakes, utility interruptions, tsunamis, hurricanes, typhoons, floods, storms or extreme weather conditions, fires, regional economic downturns, regional or global health epidemics, including the COVID-19 pandemic, geopolitical turmoil, increased trade restrictions between the U.S. and China and other countries, social unrest, political instability, terrorism, or acts of war) in locations where it or its customers or suppliers have manufacturing, research, engineering or other operations.

If a supplier fails to meet Applied's requirements concerning quality, cost, intellectual property protection, socially-responsible business practices, or other performance factors, Applied may transfer its business to alternative sources. Transferring business to alternative suppliers could result in manufacturing delays, additional costs or other difficulties, and may impair Applied's ability to protect, enforce and extract the full value of its intellectual property rights, as well as the intellectual property rights of its customers' and other third parties. These outcomes could have an adverse impact on its business and competitive position and subject Applied to legal proceedings and claims. In addition, if Applied is unable to meet its customers' demand for a prolonged period due to its inability to obtain certain parts or components from suppliers on a timely basis or at all, its business, results of operations and customer relationships could be adversely impacted.

In addition, if Applied needs to rapidly increase its business and manufacturing capacity to meet increases in demand or expedited shipment schedules, this may strain Applied's manufacturing and supply chain operations, and negatively impact Applied's working capital. Moreover, if actual demand for Applied's products is different than expected, Applied may purchase more or fewer parts than necessary or incur costs for canceling, postponing or expediting delivery of parts. If Applied purchases or commits to purchase inventory in anticipation of customer demand that does not materialize, or such inventory is rendered obsolete by the rapid pace of technological change, or if customers reduce, delay or cancel orders, Applied may incur excess or obsolete inventory charges.

The continued effects of the COVID-19 pandemic and global measures taken in response have adversely impacted, and may continue to adversely impact, Applied's operations and financial results.

The continued effects of the COVID-19 pandemic and measures taken in response by governments and businesses worldwide to contain its spread have adversely impacted and may continue to adversely impact Applied's supply chain, manufacturing, logistics, workforce and operations, as well as the operations of Applied's customers, suppliers and partners globally. There is continued uncertainty regarding the duration, scope and severity of the pandemic, particularly with the emergence of new variants of COVID-19 and periodic spikes in COVID-19 cases in various geographic regions, and the impacts on our business and the global economy from the effects of the pandemic and response measures. Travel and logistics restrictions, lockdowns, vaccine requirements and other measures from time to time implemented by foreign and domestic authorities have resulted in, and may continue to result in, supply chain and transportation disruptions, production delays and capacity limitations at Applied and some of its customers, suppliers and partners, as well as reduced workforce availability or productivity at Applied and customer sites, and additional data, information and cyber security risks associated with an extensive workforce working remotely.

As economic activity and business operations in certain regions recover, there have been and may continue to be periods of significant or sudden increases in demand for Applied's products, as well as worldwide demand for electronic products. Significant or sudden demand increases have resulted in, and may continue to result in, a shortage of parts, materials or services needed to manufacture Applied's products. We have also experienced, and may continue to experience, shipment delays due to transportation interruptions or capacity constraints. Such shortages or delays have adversely impacted, and could continue to adversely impact, our suppliers' ability to meet our demand requirements and do so on favorable terms, and our ability to meet our customer demand. There can be no assurance that Applied or its suppliers will be able to maintain manufacturing operations at levels necessary to adequately address demand for Applied products. In addition, the pandemic and measures taken in response thereto have had, and may continue to have, a significant adverse impact on the global economic activity and could also result in a reduced demand for our products, delayed deliveries or installation, cancelled orders or increase in logistics and operating costs, and materially and adversely affect Applied's business, financial condition and results of operations.

The degree to which the pandemic ultimately impacts Applied's business, financial condition and results of operations and the global economy will depend on future developments beyond our control, which are highly uncertain and difficult to predict, including the severity, duration and any resurgence of the pandemic, the extent, duration and effectiveness of periodic lockdowns and other containment actions, the availability, public adoption and efficacy of COVID vaccines, how quickly and to what extent normal economic and operating activity can resume, and the severity and duration of resulting global economic volatility.

Applied is exposed to risks as a result of ongoing changes in the various industries in which it operates.

The global semiconductor, display and related industries in which Applied operates are characterized by ongoing changes affecting some or all of these industries that impact demand for and the profitability of Applied's products and its consolidated results of operations, including:

- the nature, timing and degree of visibility of changes in end demand for electronic products, including those related to fluctuations in consumer buying patterns tied to general economic conditions, seasonality or the introduction of new products, and the effects of these changes on customers' businesses and on demand for Applied's products;
- increasing capital requirements for building and operating new fabrication plants and customers' ability to raise the necessary capital;
- trade, regulatory, tax or government incentive policies impacting the timing of customers' investment in new or expanded fabrication plants;
- differences in growth rates among the semiconductor, display and other industries in which Applied operates;
- the increasing importance of establishing, improving and maintaining strong relationships with customers;
- the increasing cost and complexity for customers to move from product design to volume manufacturing, which may slow the adoption rate of new manufacturing technology;
- the need for customers to continually reduce the total cost of manufacturing system ownership;

- the heightened importance to customers of system reliability and productivity and the effect on demand for fabrication systems as a result of their increasing productivity, device yield and reliability;
- manufacturers' ability to reconfigure and re-use fabrication systems which can reduce demand for new equipment;
- the increasing importance of, and difficulties in, developing products with sufficient differentiation to influence customers' purchasing decisions;
- requirements for shorter cycle times for the development, manufacture and installation of manufacturing equipment;
- price and performance trends for semiconductor devices and displays, and the corresponding effect on demand for such products;
- the increasing importance of the availability of spare parts to maximize the time that customers' systems are available for production;
- increasing government incentives for local suppliers;
- the increasing role for and complexity of software in Applied products; and
- the increasing focus on reducing energy usage and improving the environmental impact and sustainability associated with manufacturing operations.

Applied is exposed to risks as a result of ongoing changes specific to the semiconductor industry.

The largest proportion of Applied's consolidated net sales and profitability is derived from sales of manufacturing equipment in the Semiconductor Systems segment to the global semiconductor industry. In addition, a majority of the revenues of Applied Global Services is from sales to semiconductor manufacturers. The semiconductor industry is characterized by ongoing changes particular to this industry that impact demand for and the profitability of Applied's semiconductor manufacturing equipment and service products, including:

- the increasing frequency and complexity of technology transitions and inflections, and Applied's ability to timely and effectively anticipate and adapt to these changes;
- the increasing cost of research and development due to many factors, including shrinking geometries, the use of new materials, new and more complex device structures, more applications and process steps, increasing chip design costs, and the increasing cost and complexity of integrated manufacturing processes;
- the need to reduce product development time, despite the increasing difficulty of technical challenges;
- the growing number of types and varieties of semiconductors and number of applications across multiple substrate sizes;
- the increasing cost and complexity for semiconductor manufacturers to move more technically advanced capability and smaller geometries to volume manufacturing, and the resulting impact on the rates of technology transition and investment in capital equipment;
- challenges in generating organic growth given semiconductor manufacturers' levels of capital expenditures and the allocation of capital investment to market segments that Applied does not serve, such as lithography, or segments where Applied's products have lower relative market presence;
- customer investment in semiconductor manufacturing capabilities in China, which has been affected by changes in economic conditions and governmental regulations, including trade policies and export regulations;
- the importance of increasing market positions in segments with growing demand;
- semiconductor manufacturer's ability to reconfigure and re-use equipment, resulting in diminished need to purchase new equipment and services from us, and challenges in providing parts for reused equipment;
- shorter cycle times between order placements by customers and product shipment require greater reliance on forecasting of customer investment, which may lead to inventory write-offs and manufacturing inefficiencies that decrease gross margin;
- competitive factors that make it difficult to enhance position, including challenges in securing development-tool-of-record (DTOR) and production-tool-of-record (PTOR) positions with customers;
- consolidation in the semiconductor industry, including among semiconductor manufacturers and among manufacturing equipment suppliers;
- shifts in sourcing strategies by computer and electronics companies, and manufacturing processes for advanced circuit technologies, that impact the equipment requirements of Applied's foundry customers;

- the concentration of new wafer starts in Korea and Taiwan, where Applied's service penetration and service-revenue-per-wafer-start have been lower than in other regions;
- the increasing fragmentation of semiconductor markets, leading certain markets to become too small to support the cost of a new fabrication plant, while others require less technologically advanced products; and
- the growing importance of specialty markets (such as Internet of Things, communications, automotive, power and sensors) that use mature process technologies and have a low barrier to entry.

If Applied does not accurately forecast and allocate appropriate resources and investment towards addressing key technology changes and inflections, successfully develop and commercialize products to meet demand for new technologies, and effectively address industry trends, its business and results of operations may be adversely impacted.

Applied is exposed to risks as a result of ongoing changes specific to the display industry.

The global display industry historically has experienced considerable volatility in capital equipment investment levels, due in part to the limited number of display manufacturers, the concentrated nature of end-use applications, production capacity relative to end-use demand, and panel manufacturer profitability. Industry growth depends primarily on consumer demand for increasingly larger and more advanced TVs, and on demand for advanced smartphones and mobile device displays, which demand is highly sensitive to cost and improvements in technologies and features. The display industry is characterized by ongoing changes particular to this industry that impact demand for and the profitability of Applied's display products and services, including:

- the importance of new types of display technologies, such as organic light-emitting diode (OLED), low temperature polysilicon (LTPS) and metal oxide transistor backplanes, flexible displays, and new touch panel films;
- the increasing cost of research and development, and complexity of technology transitions and inflections, and Applied's ability to timely and effectively anticipate and adapt to these changes;
- the timing and extent of an expansion of manufacturing facilities in China, which may be affected by changes in economic conditions and governmental regulations, including trade policies and export regulations;
- the importance of increasing market positions in products and technologies with growing demand;
- the rate of transition to larger substrate sizes for TVs and to new display technologies for TVs, information technology products and mobile applications, and the resulting effect on capital intensity in the industry and on Applied's product differentiation, gross margin and return on investment; and
- fluctuations in customer spending quarter over quarter and year over year for display manufacturing equipment, concentration of display manufacturer customers and their ability to successfully commercialize new products and technologies, and uncertainty with respect to future display technology end-use applications and growth drivers.

If Applied does not successfully develop and commercialize products to meet demand for new and emerging display technologies, or if industry demand for display manufacturing equipment and technologies slows, Applied's business and its results of operations may be adversely impacted.

The industries in which Applied operates are highly competitive and subject to rapid technological and market changes.

Applied operates in a highly competitive environment in which innovation is critical, and its future success depends on many factors, including the development of new technologies and effective commercialization and customer acceptance of its equipment, services and related products, and its ability to increase its position in its current markets, expand into adjacent and new markets, and optimize operational performance. The development, introduction and support of a broadening set of products in a geographically diverse and competitive environment, and that may require greater collaboration with customers and other industry participants, have grown more complex and expensive over time. Furthermore, new or improved products may entail higher costs, longer development cycles, lower profits and may have unforeseen product design or manufacturing defects. To compete successfully, Applied must:

- identify and address technology inflections, market changes, competitor innovations, new applications, customer requirements and end-use demand in a timely and effective manner;
- develop new products and disruptive technologies, improve and develop new applications for existing products, and adapt products for use by customers in different applications and markets with varying technical requirements;
- differentiate its products from those of competitors, meet customers' performance specifications (including those related to energy consumption and environmental impact more broadly), appropriately price products, and achieve market acceptance;

- maintain operating flexibility to enable responses to changing markets, applications, customers and customer requirements;
- enhance its worldwide operations across its businesses to reduce cycle time, enable continuous quality improvement, reduce costs, and enhance design for manufacturability and serviceability;
- focus on product development and sales and marketing strategies that address customers' high value problems and strengthen customer relationships;
- effectively allocate resources between its existing products and markets, the development of new products, and expanding into new and adjacent markets;
- improve the productivity of capital invested in R&D activities;
- accurately forecast demand, work with suppliers and meet production schedules for its products;
- improve its manufacturing processes and achieve cost efficiencies across product offerings;
- adapt to changes in value offered by companies in different parts of the supply chain;
- qualify products for evaluation and volume manufacturing with its customers; and
- implement changes in its design engineering methodology to reduce material costs and cycle time, increase commonality of platforms and types of parts used in different systems, and improve product life cycle management.

If Applied does not successfully anticipate technology inflections, develop and commercialize new products and technologies, and respond to changes in customer requirements and market trends, its business performance and results of operations may be adversely impacted.

Applied is exposed to risks associated with expanding into new and related markets and industries.

As part of its growth strategy, Applied seeks to expand into related or new markets and industries, either with its existing products or with new products developed internally, or those developed in collaboration with third parties, or obtained through acquisitions. Applied's ability to successfully expand its business into new and related markets and industries may be adversely affected by a number of factors, including:

- the need to devote additional resources to develop new products for, and operate in, new markets;
- the need to develop new sales and technical marketing strategies, cultivate relationships with new customers and meet different customer service requirements;
- differing rates of profitability and growth among multiple businesses;
- Applied's ability to anticipate demand, capitalize on opportunities, and avoid or minimize risks;
- the complexity of managing multiple businesses with variations in production planning, execution, supply chain management and logistics;
- the adoption of new business models, business processes and systems;
- the complexity of entering into and effectively managing strategic alliances or partnering opportunities;
- new materials, processes and technologies;
- the need to attract, motivate and retain employees with skills and expertise in these new areas;
- new and more diverse customers and suppliers, including some with limited operating histories, uncertain or limited funding, evolving business models or locations in regions where Applied does not have, or has limited, operations;
- new or different competitors with potentially more financial or other resources, industry experience and established customer relationships;
- entry into new industries and countries, with differing levels of government involvement, laws and regulations, and business, employment and safety practices and requirements;
- third parties' intellectual property rights; and
- the need to comply with, or work to establish, industry standards and practices.

In addition, Applied from time to time receives funding from United States and other government agencies for certain strategic development programs to increase its research and development resources and address new market opportunities. As a condition to this government funding, Applied is often subject to certain record-keeping, audit, intellectual property rights-sharing, and/or other obligations.

Operational and Financial Risks

Applied is exposed to various risks related to protection and enforcement of intellectual property rights.

Applied's success depends in significant part on the protection of its technology using patents, trade secrets, copyrights and other intellectual property rights. Infringement or misappropriation of Applied's intellectual property rights, such as the unauthorized manufacture or sale of equipment or spare parts, could result in uncompensated lost market and revenue opportunities for Applied. Monitoring and detecting any unauthorized use of intellectual property is difficult and costly and Applied cannot be certain that the protective measures it has implemented will completely prevent misuse. Applied's ability to enforce its intellectual property rights is subject to litigation risks, as well as uncertainty as to the protection and enforceability of those rights in some countries. If Applied seeks to enforce its intellectual property rights, it may be subject to claims that those rights are invalid or unenforceable, and others may seek counterclaims against Applied, which could have a negative impact on its business. If Applied is unable to enforce and protect intellectual property rights, or if they are circumvented, rendered obsolete or invalidated by the rapid pace of technological change, or stolen or misappropriated by employees or third parties, it could have an adverse impact on its competitive position and business. In addition, changes in intellectual property laws or their interpretation may impact Applied's ability to protect and assert its intellectual property rights, increase costs and uncertainties in the prosecution of patent applications or related enforcement actions, and diminish the value and competitive advantage conferred by Applied's intellectual property assets.

Third parties may also assert claims against Applied and its products. Claims that Applied's products infringe the rights of others, whether or not meritorious, can be expensive and time-consuming to defend and resolve, and may divert the efforts and attention of management and personnel. The inability to obtain rights to use third party intellectual property on commercially reasonable terms could have an adverse impact on Applied's business. In addition, Applied may face claims based on the theft or unauthorized use or disclosure of third-party trade secrets and other confidential business information. Any such incidents and claims could severely harm Applied's business and reputation, result in significant expenses, harm its competitive position, and prevent Applied from selling certain products, all of which could have a significant adverse impact on Applied's business and results of operations.

Applied is exposed to risks related to cybersecurity threats and incidents.

In the conduct of its business, Applied collects, uses, transmits and stores data on information technology systems, including systems owned and maintained by Applied or its third-party providers. These data include confidential information and intellectual property belonging to Applied or its customers or other business partners, as well as personal information of individuals. All information technology systems are subject to disruption, breach or failure. Applied and its third-party providers have experienced, and expect to continue to experience, cybersecurity incidents, some of which have been, and may continue to be, successful. These cybersecurity incidents may range from employee error or misuse or unauthorized use of information technology systems or confidential information, to individual attempts to gain unauthorized access to these information systems, to sophisticated cybersecurity attacks, known as advanced persistent threats, any of which may target the Company directly or indirectly through its third party providers and global supply chain. Globally, cybersecurity attacks are increasing in number and the attackers are increasingly organized and well-financed, or at times supported by state actors. In addition, geopolitical tensions or conflicts, such as Russia's invasion of Ukraine or increasing tension with China, may create a heightened risk of cybersecurity attacks. Although no such cybersecurity incident has been material to the Company to date, Applied continues to devote significant resources to network security, data encryption, and other measures to protect its systems and data from unauthorized access or misuse, and it may be required to expend greater resources in the future, especially in the face of continuously evolving and increasingly sophisticated cybersecurity threats and privacy and data protection laws. Applied may be unable to anticipate, prevent or remediate future attacks, and in some instances Applied may be unaware of a cybersecurity incident or its magnitude and effects, particularly as attackers are becoming increasingly able to circumvent controls and remove forensic evidence. Depending on their nature and scope, cybersecurity incidents may result in business disruption, such as delay in the development and delivery of Applied's products or disruption of Applied's manufacturing processes, internal communications, interactions with customers and suppliers and processing and reporting financial results; the theft or misappropriation of intellectual property; corruption, loss of, or inability to access (e.g., through ransomware or denial of service) confidential information and critical data (i.e., that of Applied and its third party providers and customers); reputational damage; litigation or regulatory enforcement action related to contractual or regulatory privacy, cybersecurity, data protection, or other confidentiality obligations; diminution in the value of Applied's investment in research, development and engineering; and increased costs associated with the implementation of cybersecurity measures to detect, deter, protect against, and recover from such incidents. Compliance with, and changes to, laws and regulations concerning privacy, cybersecurity, and data protection, including developing restrictions on cross-border data transfer, could result in significant expense, and any failure to comply could result in proceedings against Applied by regulatory authorities or other third parties. Further, customers and third-party providers increasingly demand rigorous contractual provisions regarding privacy, cybersecurity, data protection, confidentiality, and intellectual property, which may also increase our overall compliance burden.

Applied is exposed to risks associated with business combinations, acquisitions, strategic investments and divestitures.

Applied engages in acquisitions of or investments in companies, technologies or products in existing, related or new markets for Applied. Business combinations, acquisitions and investments involve numerous risks to Applied's business, financial condition and operating results, including but not limited to:

- inability to complete proposed transactions timely or at all due to the failure to obtain regulatory or other approvals, litigation or other disputes, and any ensuing obligation to pay a termination fee;
- diversion of management's attention and disruption of ongoing businesses;
- the failure to realize expected revenues, gross and operating margins, net income and other returns from acquired businesses;
- requirements imposed by government regulators in connection with their review of a transaction, which may include, among other things, divestitures and restrictions on the conduct of Applied's existing business or the acquired business;
- following completion of acquisitions, ineffective integration of businesses, operations, systems, digital and physical security, technologies, products, employees, compliance programs, changes in laws or regulations, including tax laws, or other factors, may impact the ability to realize anticipated synergies or other benefits;
- failure to commercialize technologies from acquired businesses or developed through strategic investments;
- dependence on unfamiliar supply chains or relatively small supply partners;
- inability to capitalize on characteristics of new markets that may be significantly different from Applied's existing markets and where competitors may have stronger market positions and customer relationships;
- failure to retain and motivate key employees of acquired businesses;
- the potential impact of the announcement or consummation of a proposed transaction on relationships with third parties;
- potential changes in Applied's credit rating, which could adversely impact the Company's access to and cost of capital;
- reductions in cash balances or increases in debt obligations to finance activities associated with a transaction, which increase interest expense, and reductions in cash balances, which reduce the availability of cash flow for general corporate or other purposes, including share repurchases and dividends;
- exposure to new operational risks, rules, regulations, worker expectations, customs and practices to the extent acquired businesses are located in regions where Applied has not historically conducted business;
- challenges associated with managing new, more diverse and more widespread operations, projects and people;
- inability to obtain and protect intellectual property rights in key technologies;
- inadequacy or ineffectiveness of an acquired company's internal financial controls, disclosure controls and procedures, cybersecurity, privacy policies and compliance programs, or environmental, health and safety, anti-corruption, human resource, or other policies or practices;
- impairment of acquired intangible assets and goodwill as a result of changing business conditions, technological advancements or worse-than-expected performance of the segment;
- the risk of litigation or claims associated with a proposed or completed transaction;
- unknown, underestimated, undisclosed or undetected commitments or liabilities or non-compliance with laws, regulations or policies; and
- the inappropriate scale of acquired entities' critical resources or facilities for business needs.

Applied also makes investments in other companies, including companies formed as joint ventures, which may decline in value or not meet desired objectives. The success of these investments depends on various factors over which Applied may have limited or no control and, particularly with respect to joint ventures, requires ongoing and effective cooperation with partners. In addition, new legislation, additional regulations or global economic or political conditions may affect or impair our ability to invest in certain countries or require us to obtain regulatory approvals to do so. Applied may not receive the necessary regulatory approvals or the approvals may come with significant conditions or obligations. The risks to Applied's investment portfolio may be exacerbated by unfavorable financial market and macroeconomic conditions and, as a result, the value of the investment portfolio could be negatively impacted and lead to impairment charges.

Applied continually assesses the strategic fit of its businesses and may from time to time seek to divest portions of its business that are not deemed to fit with its strategic plan. Some divestitures may take the form of Applied contributing assets to a joint venture, and thus are subject to the joint venture risks discussed above. In addition, divestitures involve significant risks and uncertainties, such as ability to sell such businesses on satisfactory price and terms and in a timely manner (including long and costly sales processes and the possibility of lengthy and potentially unsuccessful attempts by a buyer to receive required regulatory approvals), or at all, disruption to other parts of the businesses and distraction of management, allocation of internal resources that would otherwise be devoted to completing strategic acquisitions, loss of key employees or customers, exposure to unanticipated liabilities (including, among other things, those arising from representations and warranties made to a buyer regarding the businesses) or ongoing obligations to support the businesses following such divestitures, and other adverse financial impacts.

The ability to attract, retain and motivate key employees is vital to Applied's success.

Applied's success, competitiveness and ability to execute on its global strategies and maintain a culture of innovation depend in large part on its ability to attract, retain and motivate qualified employees and leaders with the necessary expertise and capabilities, representing diverse backgrounds and experiences. Achieving this objective may be difficult due to many factors, including fluctuations in global economic and industry conditions, management or organizational changes, increasing competition for talent, the availability of qualified employees in the markets, availability of career development opportunities, the ability to obtain necessary authorizations for workers to provide services outside their home countries, and the attractiveness of Applied's compensation and benefit programs, including its share-based programs, and Applied's employment policies, including the flexibility of its remote-work arrangements. We have experienced, and may continue to experience, increasing costs to attract and retain needed talent, driven by macro-economic conditions and a highly competitive labor market. If we are unable to attract, retain and motivate qualified employees and leaders, we may be unable to fully capitalize on current and new market opportunities, which could adversely impact Applied's business and results of operations. The loss or retirement of employees presents particular challenges to the extent they involve the departure of knowledgeable and experienced employees and the resulting need to identify and train existing or new candidates to perform necessary functions, which may result in unexpected costs, reduced productivity, and/or difficulties with respect to internal processes and controls.

Applied is exposed to risks associated with operating in jurisdictions with complex and changing tax laws.

Applied is subject to income taxes in the United States and foreign jurisdictions. Significant judgment is required to determine and estimate worldwide tax liabilities. Applied's provision for income taxes and effective tax rates could be affected by numerous factors, including changes in applicable tax laws, interpretations of applicable tax laws, amount and composition of pre-tax income in jurisdictions with differing tax rates, and valuation of deferred tax assets.

Beginning in fiscal 2023, the Tax Cuts and Jobs Act enacted on December 22, 2017 eliminates the option to deduct research and development expenditures currently and requires taxpayers to capitalize and amortize them over five or fifteen years. Although Congress is considering legislation that would defer the capitalization and amortization requirement, there is no assurance that the provision will be repealed or otherwise modified. If the requirement is not modified, it may increase Applied's provision for income taxes and effective tax rates beginning in fiscal 2023.

On August 16, 2022, the U.S. government enacted the Inflation Reduction Act, which introduces a new 15% corporate minimum tax and includes an excise tax that would impose a 1% surcharge on stock repurchases, and which may impact Applied's financial results beginning in fiscal 2024 and 2023, respectively.

There have been a number of proposed changes in the tax laws that, if enacted, would increase our tax liability. While it is too early to predict the outcome of these proposals, if enacted, they could have a material impact on our provision for income taxes and effective tax rate. An increase in Applied's provision for income taxes and effective tax rate could, in turn, have a material adverse impact on Applied's results of operations and financial condition.

Consistent with the international nature of its business, Applied conducts certain manufacturing, supply chain, and other operations in Asia, bringing these activities closer to customers and reducing operating costs. In certain foreign jurisdictions, conditional reduced income tax rates have been granted to Applied. To obtain the benefit of these tax incentives, Applied must meet requirements relating to various activities. Applied's ability to realize benefits from these incentives could be materially affected if, among other things, applicable requirements are not met or Applied incurs net losses in these jurisdictions.

In addition, Applied is subject to examination by the U.S. Internal Revenue Service and other tax authorities, and from time to time amends previously filed tax returns. Applied regularly assesses the likelihood of favorable or unfavorable outcomes resulting from these examinations and amendments to determine the adequacy of its provision for income taxes, which requires estimates and judgments. Although Applied believes its tax estimates are reasonable, there can be no assurance that the tax authorities will agree with such estimates. Applied may have to engage in litigation to achieve the results reflected in the estimates, which may be time-consuming and expensive. There can be no assurance that Applied will be successful or that any final determination will not be materially different from the treatment reflected in Applied's historical income tax provisions and effective tax rates.

Applied's indebtedness and debt covenants could adversely affect its financial condition and business.

Applied has $5.5 billion in aggregate principal amount of senior unsecured notes outstanding. Under the indenture governing the senior unsecured notes, it may be required to offer to repurchase the notes at a price equal to 101% of the principal amount, plus accrued and unpaid interest, upon a change of control of Applied and a contemporaneous downgrade of the notes below investment grade. Applied also has in place a $1.5 billion revolving credit facility. While no amounts were outstanding under this credit facility as of October 30, 2022, Applied may borrow amounts in the future under this credit facility. Applied may also enter into new financing arrangements. Applied's ability to satisfy its debt obligations is dependent upon the results of its business operations and subject to other risks discussed in this section. Significant changes in Applied's credit rating, disruptions in the global financial markets or changes in the interest rate environment could have a material adverse consequence on Applied's access to and cost of capital for future financings, and financial condition. If Applied fails to satisfy its debt obligations, or comply with financial and other debt covenants, it may be in default and any borrowings may become immediately due and payable, and such default may also constitute a default under other of Applied's obligations. There can be no assurance that Applied would have sufficient financial resources or be able to arrange financing to repay any borrowings at such time.

The failure to successfully implement enterprise resource planning and other information systems changes could adversely impact Applied's business and results of operations.

Applied periodically implements new or enhanced enterprise resource planning and related information systems in order to better manage its business operations, align its global organizations and enable future growth. Implementation of new business processes and information systems requires the commitment of significant personnel, training and financial resources, and entails risks to Applied's business operations. If Applied does not successfully implement enterprise resource planning and related information systems improvements, or if there are delays or difficulties in implementing these systems, Applied may not realize anticipated productivity improvements or cost efficiencies, and may experience interruptions in service and operational difficulties, such as its ability to track orders, timely manufacture and ship products, project inventory requirements, effectively manage its supply chain and allocate human resources, aggregate financial data and report operating results, and otherwise effectively manage its business, all of which could result in quality issues, reputational harm, lost market and revenue opportunities, and otherwise adversely affect Applied's business, financial condition and results of operations.

Applied may incur impairment charges related to goodwill or long-lived assets.

Applied has a significant amount of goodwill and other acquired intangible assets related to acquisitions. Goodwill and purchased intangible assets with indefinite useful lives are not amortized, but are reviewed for impairment annually during the fourth quarter of each fiscal year, and more frequently when events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. The review compares the fair value for each of Applied's reporting units to its associated carrying value, including goodwill. Factors that could lead to impairment of goodwill and intangible assets include adverse industry or economic trends, reduced estimates of future cash flows, declines in the market price of Applied common stock, changes in Applied's strategies or product portfolio, and restructuring activities. Applied's valuation methodology for assessing impairment requires management to make judgments and assumptions based on historical experience and projections of future operating performance. Applied may be required to record future charges to earnings during the period in which an impairment of goodwill or intangible assets is determined to exist.

Legal, Compliance, and Other Risks

Applied is exposed to various risks related to legal proceedings, claims and investigations.

Applied from time to time is, and in the future may be involved in legal proceedings or claims regarding patent infringement, trade secret misappropriation, and other intellectual property rights, trade, including import, export and customs, antitrust, environmental regulations, privacy, data protection, securities, contracts, product performance, product liability, unfair competition, employment, workplace safety, and other matters. Applied also may receive, and has received, inquiries, warrants, subpoenas, and other requests for information in connection with government investigations of potential or suspected violations of law or regulations by Applied and/or its employees. Applied also on occasion receives notification from customers who believe that Applied owes them indemnification, product warranty or has other obligations related to claims made against such customers by third parties.

Legal proceedings, claims, and government investigations, whether with or without merit, and internal investigations, may be time-consuming and expensive to prosecute, defend or conduct; divert management's attention and other Applied resources; inhibit Applied's ability to sell its products; result in adverse judgments for damages, injunctive relief, penalties and fines; and negatively affect Applied's business. There can be no assurance regarding the outcome of current or future legal proceedings, claims or investigations.

Applied is exposed to various risks related to the global regulatory environment.

As a public company with global operations, Applied is subject to the laws of the United States and multiple foreign jurisdictions and the rules and regulations of various governing bodies, which may differ among jurisdictions, including those related to financial and other disclosures, accounting standards, corporate governance, intellectual property, tax, trade (including import, export and customs), antitrust, environment, health and safety (including those relating to climate change), employment, immigration and travel regulations, privacy, data protection and localization, and anti-corruption. Changing, inconsistent or conflicting laws, rules and regulations, and ambiguities in their interpretation and application create uncertainty and challenges, and compliance with laws, rules and regulations may be onerous and expensive, divert management time and attention from revenue-generating activities, and otherwise adversely impact Applied's business operations. Violations of law, rules and regulations, including, among others, those related to financial and other disclosures, trade, import and export regulations, antitrust, privacy, data protection, and anti-corruption, could result in fines, criminal penalties, restrictions on Applied's business, and damage to its reputation, and could have an adverse impact on its business operations, financial condition and results of operations.

Applied's environmental, social and governance commitments could result in additional costs, and our inability to achieve them could have an adverse impact on our reputation and performance.

From time to time Applied communicates its strategies, commitments and targets related to sustainability, carbon emissions, diversity and inclusion, human rights, and other environmental, social and governance matters. These strategies, commitments and targets reflect Applied's current plans and aspirations, and Applied may be unable to achieve them. Changing customer sustainability requirements, as well as Applied's sustainability targets, could cause Applied from time to time to alter its manufacturing, operations or equipment designs and processes, and incur substantial additional expense to meet such requirements and targets. Any failure to meet these sustainability requirements or targets could adversely impact the demand for Applied's products and subject Applied to significant costs and liabilities and reputational risks that could adversely affect Applied's business, financial condition and results of operations. In addition, standards and processes for measuring and reporting carbon emissions and other sustainability metrics may change over time, and may result in inconsistent data, or could result in significant revisions to our strategies, commitments and targets, or our ability to achieve them. Any scrutiny of our carbon emissions or other sustainability disclosures or our failure to achieve related strategies, commitments and targets could negatively impact our reputation or performance.

Applied is subject to risks associated with environmental, health and safety regulations.

Applied is subject to environmental, health and safety regulations in connection with its global business operations, including but not limited to: regulations related to the development, manufacture, sale, shipping and use of its products; handling, discharge, recycling and disposal of hazardous materials used in its products or in producing its products; the operation of its facilities; and the use of its real property. The failure or inability to comply with existing or future environmental, health and safety regulations could result in: significant remediation or other legal liabilities; the imposition of penalties and fines; restrictions on the development, manufacture, sale, shipping or use of certain of its products; limitations on the operation of its facilities or ability to use its real property; and a decrease in the value of its real property. Applied could also be required to alter its manufacturing, operations and product design, and incur substantial expense in order to comply with environmental, health and safety regulations. Any failure to comply with these regulations could subject Applied to significant costs and liabilities that could adversely affect Applied's business, financial condition and results of operations.

Item 1B: ***Unresolved Staff Comments***

None.

Item 2: *Properties*

Information concerning Applied's properties is set forth below:

(Square feet in thousands)	United States	Other Countries	Total
Owned	5,500	2,652	8,152
Leased	2,466	1,801	4,267
Total	7,966	4,453	12,419

Because of the interrelation of Applied's operations, properties within a country may be shared by the segments operating within that country. The Company's headquarters offices are in Santa Clara, California. Products in Semiconductor Systems are manufactured primarily in Singapore; Austin, Texas; Gloucester, Massachusetts; and Rehovot, Israel. Remanufactured equipment products in the Applied Global Services segment are produced primarily in Austin, Texas. Products in the Display and Adjacent Markets segment are manufactured primarily in Tainan, Taiwan.

Applied also owns and leases facilities throughout the world for use as offices, plants and warehouses, and research and development centers, primarily in the United States, Taiwan, China, Israel and Singapore.

Applied also owns a total of approximately 279 acres of buildable land in the United States, Israel, Italy and India that could accommodate additional building space.

Applied considers the properties that it owns or leases as adequate to meet its current and future requirements. Applied regularly assesses the size, capability and location of its global infrastructure and periodically makes adjustments based on these assessments.

Item 3: *Legal Proceedings*

The information set forth under "Legal Matters" in Note 16 of Notes to Consolidated Financial Statements is incorporated herein by reference. *See also "Risk Factors – Risks Related to Legal, Compliance, and Other Risks – Applied is exposed to various risks related to legal proceedings, claims and investigations."*

Item 4: *Mine Safety Disclosures*

None.

PART II

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

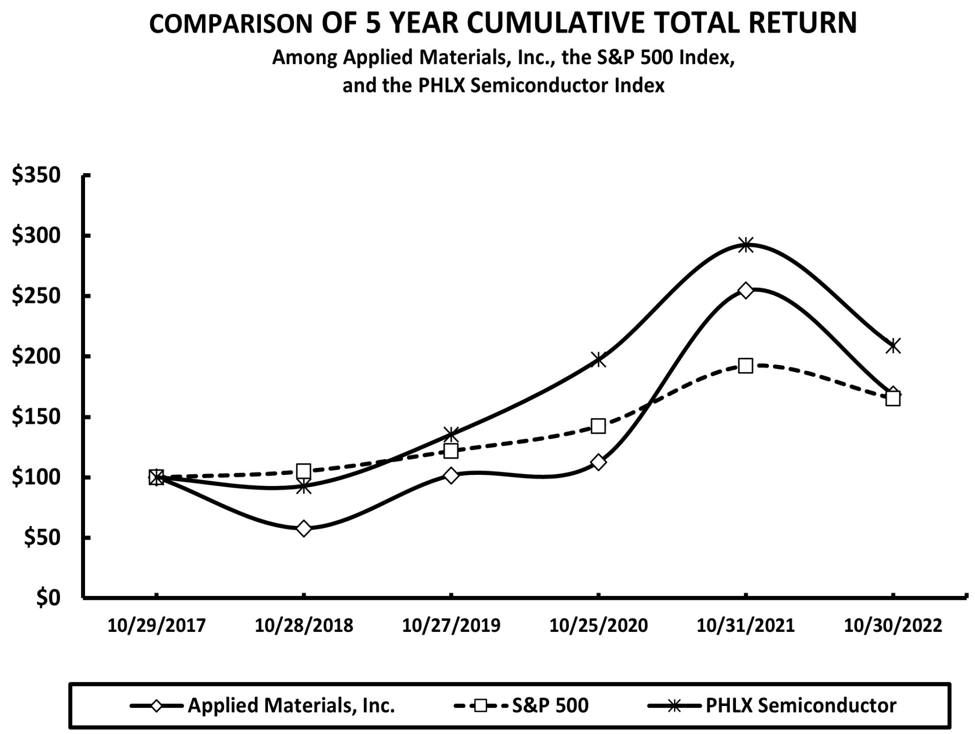
Market Information

Applied's common stock is traded on the NASDAQ Global Select Market under the symbol AMAT. As of December 9, 2022, there were 2,825 registered holders of Applied common stock. Information regarding quarterly cash dividends declared on Applied Materials' common stock during fiscal 2022, 2021 and 2020 may be found under "Management's Discussion and Analysis of Financial Condition and Results of Operations - Financial Condition, Liquidity and Capital Resources".

Performance Graph

The performance graph below shows the five-year cumulative total stockholder return on Applied common stock during the period from October 29, 2017 through October 30, 2022. This is compared with the cumulative total return of the Standard & Poor's 500 Stock Index and the PHLX Semiconductor Index over the same period. The comparison assumes $100 was invested on October 29, 2017 in Applied common stock and in each of the foregoing indices and assumes reinvestment of dividends, if any. Dollar amounts in the graph are rounded to the nearest whole dollar. The performance shown in the graph represents past performance and should not be considered an indication of future performance.

The graph below assumes that the value of the investment in Applied's common stock and in each of the indexes was $100 at October 29, 2017, and that all dividends were reinvested.



	10/29/2017	10/28/2018	10/27/2019	10/25/2020	10/31/2021	10/30/2022
Applied Materials	100.00	57.78	101.54	112.63	254.61	168.58
S&P 500 Index	100.00	105.01	121.84	142.35	192.01	165.18
PHLX Semiconductor Index	100.00	92.86	135.50	197.40	292.41	209.08

Issuer Purchases of Equity Securities

In March 2022, Applied's Board of Directors approved a common stock repurchase program authorizing $6.0 billion in repurchases, which supplemented the previously existing $7.5 billion authorization approved in March 2021.

The following table provides information as of October 30, 2022 with respect to the shares of common stock repurchased by Applied during the fourth quarter of fiscal 2022 pursuant to the foregoing Board authorization.

Period	Total Number of Shares Purchased	Average Price Paid per Share	Aggregate Price Paid	Total Number of Shares Purchased as Part of Publicly Announced Programs	Maximum Dollar Value of Shares That May Yet be Purchased Under the Programs
	(In millions, except per share amounts)				
Month #1					
(August 1, 2022 to August 28, 2022)	2.2	$ 106.73	$ 230	2.2	$ 6,192
Month #2					
(August 29, 2022 to September 25, 2022)	5.4	$ 90.52	493	5.4	$ 5,699
Month #3					
(September 26, 2022 to October 30, 2022)	9.4	$ 82.36	777	9.4	$ 4,922
Total	17.0	$ 88.05	$ 1,500	17.0	

Item 6: [Reserved]

Item 7: *Management’s Discussion and Analysis of Financial Condition and Results of Operations*

Introduction

Management’s Discussion and Analysis of Financial Condition and Results of Operations (MD&A) is intended to facilitate an understanding of Applied’s business and results of operations. This MD&A should be read in conjunction with Applied’s Consolidated Financial Statements and the accompanying Notes to Consolidated Financial Statements included elsewhere in this Form 10-K. The following discussion contains forward-looking statements and should also be read in conjunction with the cautionary statement set forth at the beginning of this Form 10-K. MD&A consists of the following sections:

- *Applied's Pandemic Response*
- *Overview:* a summary of Applied’s business and measurements
- *Results of Operations:* a discussion of operating results
- *Segment Information:* a discussion of segment operating results
- *Recent Accounting Pronouncements:* a discussion of new accounting pronouncements and its impact to Applied’s consolidated financial statements
- *Financial Condition, Liquidity and Capital Resources:* an analysis of cash flows, sources and uses of cash
- *Contractual Obligations and Off-Balance Sheet Arrangements*
- *Critical Accounting Policies and Estimates:* a discussion of critical accounting policies that require the exercise of judgments and estimates
- *Non-GAAP Adjusted Results:* a presentation of results reconciling GAAP to non-GAAP adjusted measures

Applied’s Pandemic Response

As the COVID-19 pandemic emerged in 2020, Applied Materials responded quickly to put in place precautionary measures to keep its workplaces healthy and safe, while ensuring compliance with orders and restrictions imposed by government authorities, everywhere Applied operates in the world. Applied’s top priority remains protecting the health and safety of its employees and their families, customers, suppliers and community. Applied continues to support workplace flexibility and will work to respond appropriately to the impact of COVID-19 on its business, its customers’ and suppliers’ businesses and its communities.

Overview

Applied provides manufacturing equipment, services and software to the semiconductor, display, and related industries. Applied’s customers include manufacturers of semiconductor wafers and chips, liquid crystal and organic light-emitting diode (OLED) displays, and other electronic devices. These customers may use what they manufacture in their own end products or sell the items to other companies for use in electronic products. Each of Applied’s segments is subject to variable industry conditions, as demand for manufacturing equipment and services can change depending on supply and demand for chips, display technologies, and other electronic devices, as well as other factors, such as global economic, political and market conditions, and the nature and timing of technological advances in fabrication processes.

Applied operates in three reportable segments: Semiconductor Systems, Applied Global Services, and Display and Adjacent Markets. A summary of financial information for each reportable segment is found in Note 17 of Notes to Consolidated Financial Statements. A discussion of factors that could affect Applied’s operations is set forth under “Risk Factors” in Part I, Item 1A, which is incorporated herein by reference. Product development and manufacturing activities occur primarily in the United States, Europe, Israel, and Asia. Applied’s broad range of equipment and service products are highly technical and are sold primarily through a direct sales force.

Applied's results are driven primarily by customer spending on capital equipment and services to support key technology transitions or to increase production volume in response to worldwide demand for semiconductors and displays. Spending by semiconductor customers, which include companies that operate in the foundry, logic, memory, and other semiconductor chip markets, is driven by demand for electronic products, including smartphones and other mobile devices, servers, personal computers, automotive devices, storage, and other products. The growth of data and emerging end-market drivers such as artificial intelligence, the Internet of Things, 5G networks, smart vehicles and augmented and virtual reality are also creating the next wave of growth for the industry. As a result, products within the Semiconductor Systems segment are subject to significant changes in customer requirements, including transitions to smaller dimensions, increasingly complex chip architectures, new materials and an increasing number of applications. Demand for display manufacturing equipment spending depends primarily on consumer demand for increasingly larger and more advanced TVs as well as larger and higher resolution displays for next-generation mobile devices, and investments in new types of display technologies. While certain existing technologies may be adapted to new requirements, some applications create the need for an entirely different technological approach. The timing of customer investment in manufacturing equipment is also affected by the timing of next-generation process development and the timing of capacity expansion to meet end-market demand. In light of these conditions, Applied's results can vary significantly year-over-year, as well as quarter-over-quarter.

Applied's strategic priorities include developing products that help solve customers' challenges at technology inflections; expanding its served market opportunities in the semiconductor and display industries; and growing its services business. Applied's long-term growth strategy requires continued development of new materials engineering capabilities, including products and platforms that enable expansion into new and adjacent markets. Applied's significant investments in research, development and engineering must generally enable it to deliver new products and technologies before the emergence of strong demand, thus allowing customers to incorporate these products into their manufacturing plans during early-stage technology selection. Applied works closely with its global customers to design systems and processes that meet their planned technical and production requirements.

The following table presents certain significant measurements for the past three fiscal years:

				Change	
	2022	**2021**	**2020**	**2022 over 2021**	**2021 over 2020**
	(In millions, except per share amounts and percentages)				
Net sales	$ 25,785	$ 23,063	$ 17,202	$ 2,722	$ 5,861
Gross margin	46.5 %	47.3 %	44.7 %	(0.8) points	2.6 points
Operating income	$ 7,788	$ 6,889	$ 4,365	$ 899	$ 2,524
Operating margin	30.2 %	29.9 %	25.4 %	0.3 points	4.5 points
Net income	$ 6,525	$ 5,888	$ 3,619	$ 637	$ 2,269
Earnings per diluted share	$ 7.44	$ 6.40	$ 3.92	$ 1.04	$ 2.48

Fiscal 2022 and fiscal 2020 each contained 52 weeks, while fiscal 2021 contained 53 weeks.

Semiconductor equipment customers continued to make strategic investments in new technology transitions and new capacity during fiscal 2022. Foundry and logic spending increased in fiscal 2022 compared to fiscal 2021 driven by customer investments in both advanced and mature nodes. Overall spending by memory customers was flat in fiscal 2022 compared to fiscal 2021 as they continued to maintain balance between supply and demand and invested in new technology.

Applied saw continued growth in its services business in fiscal 2022 compared to fiscal 2021 driven by an increase in the installed base of equipment, the rate of customer equipment utilization, long-term service agreements and spares and legacy systems sales. Applied's Display and Adjacent Markets revenue decreased in fiscal 2022 compared to fiscal 2021 primarily due to decreased investment in display manufacturing equipment for TVs and mobile products.

While customer demand increased during fiscal 2022 compared to fiscal 2021, supply chain and logistics constraints impacted Applied's ability to fulfill demand in fiscal 2022. Although there have been improvements in supply chain performance, Applied expects some shortages to persist into fiscal 2023 and managing these supply chain constraints to increase shipments to customers remains a top priority.

In fiscal 2023, Applied expects memory customers' spending to be lower as compared to fiscal 2022 due to some customers deferring capacity additions as a result of weakness in consumer electronics and personal computer markets. Advanced foundry and logic demand is expected to remain strong in fiscal 2023 as customers continue to invest in new technology.

On October 7, 2022, the United States government announced new export regulations for U.S. semiconductor technology sold in China, including wafer fabrication equipment and related parts and services, that require export licenses and authorizations. These new export regulations resulted in lower net sales in China than expected for fiscal 2022. Applied is pursuing additional export licenses and authorizations where needed. While Applied currently estimates lower net sales to China of up to $2.5 billion and lower overall gross margin of up to 1% in fiscal 2023, Applied is continuing to assess the implication of these complex regulations to its business. *See also "Risk Factors – Global trade issues and changes in and uncertainties with respect to trade policies and export regulations, including import and export license requirements, trade sanctions, tariffs and international trade disputes, have adversely impacted and could further adversely impact our business and operations, and reduce the competitiveness of our products relative to local and global competitors" for further details.*

In response to the ongoing COVID-19 pandemic and evolving conditions and worldwide response, Applied made adjustments to its global operations and is actively managing its responses in collaboration with its employees, customers and suppliers. However, the situation remains fluid and uncertain. For additional risks associated with the ongoing COVID-19 pandemic, see the risk factor entitled "*The continued effects of COVID-19 pandemic and global measures taken in response have adversely impacted, and may continue to adversely impact, Applied's operations and financial results*" in Part I, Item 1A, "Risk Factors."

Results of Operations

Net Sales

Net sales for the periods indicated were as follows:

	2022		2021		2020		Change	
							2022 over 2021	2021 over 2020
	(In millions, except percentages)							
Semiconductor Systems	$ 18,797	73%	$ 16,286	71%	$ 11,367	66%	15 %	43 %
Applied Global Services	5,543	22%	5,013	22%	4,155	24%	11 %	21 %
Display and Adjacent Markets	1,331	5%	1,634	7%	1,607	9%	(19)%	2 %
Corporate and Other	114	—%	130	—%	73	1%	(12)%	78 %
Total	$ 25,785	100%	$ 23,063	100%	$ 17,202	100%	12 %	34 %

The Semiconductor Systems segment continued to represent the largest contributor of net sales. Net sales in fiscal 2022 compared to fiscal 2021 and fiscal 2021 compared to fiscal 2020 increased primarily due to increased customer investments in semiconductor equipment as well as customer spending on spares and comprehensive service agreements.

Net sales by geographic region, determined by the location of customers' facilities to which products were shipped, were as follows:

	2022		2021		2020		Change	
							2022 over 2021	2021 over 2020
	(In millions, except percentages)							
China	$ 7,254	28%	$ 7,535	33%	$ 5,456	32%	(4)%	38 %
Korea	4,395	17%	5,012	22%	3,031	18%	(12)%	65 %
Taiwan	6,262	24%	4,742	20%	3,953	23%	32 %	20 %
Japan	2,012	8%	1,962	8%	1,996	11%	3 %	(2)%
Southeast Asia	1,084	4%	677	3%	411	2%	60 %	65 %
Asia Pacific	21,007	81%	19,928	86%	14,847	86%	5 %	34 %
United States	3,104	12%	2,038	9%	1,619	10%	52 %	26 %
Europe	1,674	7%	1,097	5%	736	4%	53 %	49 %
Total	$ 25,785	100%	$ 23,063	100%	$ 17,202	100%	12 %	34 %

The increases in net sales in all regions other than China and Korea in fiscal 2022 compared to fiscal 2021 primarily reflected changes in semiconductor equipment spending and customer spending on comprehensive service agreements. The decrease in net sales to customers in China for fiscal 2022 compared to fiscal 2021 primarily reflected decreased investment in display manufacturing equipment and semiconductor equipment, partially offset by increased spending on spares and comprehensive service agreements. The decrease in net sales to customers in Korea for fiscal 2022 compared to fiscal 2021 primarily reflected decreased investment in semiconductor equipment, partially offset by increased investment in display manufacturing equipment.

The changes in net sales in all regions in fiscal 2021 compared to fiscal 2020 primarily reflected changes in investments in semiconductor manufacturing equipment and customer spending on comprehensive service agreements. The decrease in net sales to customers in Japan for fiscal 2021 compared to fiscal 2020 primarily reflected a decrease in investments in semiconductor manufacturing equipment, partially offset by an increase in customer spending on comprehensive service agreements.

Gross margins for the periods indicated were as follows:

	2022	2021	2020	Change 2022 over 2021	Change 2021 over 2020
	(In millions, except percentages)				
Gross margin	46.5 %	47.3 %	44.7 %	(0.8) points	2.6 points

Gross margin in fiscal 2022 decreased compared to fiscal 2021 primarily driven by higher material, freight, and logistics costs and higher personnel costs due to an increase in headcount to provide manufacturing capacity and flexibility, partially offset by favorable changes in product mix and an increase in average selling prices.

Gross margin in fiscal 2021 increased compared to fiscal 2020 primarily due to the increase in net sales and favorable changes in customer and product mix, partially offset by higher freight costs and higher personnel costs due to an increase in headcount to provide manufacturing capacity and flexibility.

Gross margin during fiscal 2022, 2021 and 2020 included $147 million, $118 million and $103 million, respectively, of share-based compensation expense.

Research, Development and Engineering

Research, Development and Engineering (RD&E) expenses for the periods indicated were as follows:

	2022	2021	2020	Change 2022 over 2021	Change 2021 over 2020
	(In millions)				
Research, development and engineering	$ 2,771	$ 2,485	$ 2,234	$ 286	$ 251

Applied’s future operating results depend to a considerable extent on its ability to maintain a competitive advantage in the equipment and service products it provides. Development cycles range from 12 to 36 months depending on whether the product is an enhancement of an existing product, which typically has a shorter development cycle, or a new product, which typically has a longer development cycle. Most of Applied’s existing products resulted from internal development activities and innovations involving new technologies, materials and processes. In certain instances, Applied acquires technologies, either in existing or new product areas, to complement its existing technology capabilities and to reduce time to market.

Management believes that it is critical to continue to make substantial investments in RD&E to assure the availability of innovative technology that meets the current and projected requirements of its customers’ most advanced designs. Applied has maintained and intends to continue its commitment to investing in RD&E in order to continue to offer new products and technologies.

Applied continued its RD&E investments across Semiconductor Systems and Display and Adjacent Markets on the development of new unit process systems and integrated materials solutions. Areas of investment include etch, deposition, metrology and inspection, patterning, packaging and other technologies to improve chip performance, power, area, cost and time-to-market. In Display and Adjacent Markets, RD&E investments were focused on expanding the Company’s market opportunity with new display technologies.

The increases in RD&E expenses during fiscal 2022 compared to fiscal 2021 were primarily due to additional headcount, higher consumable and equipment costs associated with ongoing product development and share-based compensation expense. The increases in RD&E expenses during fiscal 2021 compared to fiscal 2020 were primarily due to additional headcount and higher expense associated with share-based compensation and variable compensation. These increases reflect Applied's ongoing investments in product development initiatives, consistent with the Company's growth strategy. Applied continued to prioritize existing RD&E investments in technical capabilities and critical research and development programs in current and new markets, with a focus on semiconductor technologies.

RD&E expenses during fiscal 2022, 2021 and 2020 included $151 million, $129 million and $116 million, respectively, of share-based compensation expense.

Marketing and Selling

Marketing and selling expenses for the periods indicated were as follows:

	2022	2021	2020	Change	
				2022 over 2021	2021 over 2020
			(In millions)		
Marketing and selling	$ 703	$ 609	$ 526	$ 94	$ 83

Marketing and selling expenses for fiscal 2022 increased compared to fiscal 2021 primarily due to additional headcount. Marketing and selling expenses for fiscal 2021 increased compared to fiscal 2020 primarily due to additional headcount and higher variable compensation. Marketing and selling expenses for fiscal years 2022, 2021 and 2020 included $49 million, $43 million and $36 million, respectively, of share-based compensation expense.

General and Administrative

General and administrative (G&A) expenses for the periods indicated were as follows:

	2022	2021	2020	Change	
				2022 over 2021	2021 over 2020
			(In millions)		
General and administrative	$ 735	$ 620	$ 567	$ 115	$ 53

G&A expenses in fiscal 2022 increased compared to fiscal 2021 primarily due to additional headcount and higher travel related expenses. G&A expenses in fiscal 2021 increased compared to fiscal 2020 primarily due to additional headcount and higher variable compensation.

G&A expenses during fiscal 2022, 2021 and 2020 included $66 million, $56 million and $52 million, respectively, of share-based compensation expense.

Severance and Related Charges

Severance and related charges for the periods indicated were as follows:

	2022	2021	2020	Change	
				2022 over 2021	2021 over 2020
			(In millions)		
Severance and related charges	$ (4)	$ 157	$ —	$ (161)	$ 157

In the first quarter of fiscal 2021, Applied enacted a severance plan (Fiscal 2021 Severance Plan) to realign its workforce. Under this plan, Applied implemented a one-time voluntary retirement program and other workforce reduction actions. The voluntary retirement program was available to certain U.S. employees who met minimum age and length of service requirements, as well as other business-specific criteria. In addition, Applied implemented other workforce reduction actions globally across the Display and Adjacent Markets business.

Deal Termination Fee

Operating income (loss) for fiscal 2021 included a $154 million deal termination fee associated with the termination of a Share Purchase Agreement with Kokusai Electric Corporation and KKR HKE Investment L. P. during the second quarter of fiscal 2021.

Interest Expense and Interest and Other Income (loss), net

Interest expense and interest and other income (loss), net for the periods indicated were as follows:

	2022	2021	2020	Change 2022 over 2021	Change 2021 over 2020
			(In millions)		
Interest expense	$ 228	$ 236	$ 240	$ (8)	$ (4)
Interest and other income, net	$ 39	$ 118	$ 41	$ (79)	$ 77

Interest expense incurred was primarily associated with the senior unsecured notes. Interest expense in fiscal 2022 remained relatively flat compared fiscal 2021 and fiscal 2020 due to the average principal balance of the senior unsecured notes remained consistent at $5.5 billion in each of the last three years.

Interest and other income, net in fiscal 2022 decreased compared to fiscal 2021, primarily driven by higher net loss from equity investments, partially offset by higher interest income during fiscal 2022 compared to fiscal 2021. Interest and other income, net in fiscal 2021 increased compared to fiscal 2020, primarily driven by a higher net gain from equity investments, partially offset by lower interest income during fiscal 2021 compared to fiscal 2020.

Income Taxes

Provision for income taxes and effective tax rates for the periods indicated were as follows:

	2022	2021	2020	Change 2022 over 2021	Change 2021 over 2020
			(In millions, except percentages)		
Provision for income taxes	$ 1,074	$ 883	$ 547	$ 191	$ 336
Effective income tax rate	14.1 %	13.0 %	13.1 %	1.1 points	(0.1) points

Applied's provision for income taxes and effective tax rate are affected by the geographical composition of pre-tax income which includes jurisdictions with differing tax rates, conditional reduced tax rates and other income tax incentives. It is also affected by events that vary from period to period, such as changes in income tax laws and the resolution of prior years' income tax filings.

The effective tax rate for fiscal 2022 was higher than fiscal 2021 primarily due to a reduction of deferred tax assets related to a new tax incentive in Singapore, partially offset by changes in uncertain tax positions. Applied's effective tax rate for fiscal 2021 was slightly lower than fiscal 2020 primarily due to higher proportion of pre-tax income in lower tax jurisdictions, partially offset by resolutions of prior years' income tax filings.

On August 9, 2022, the U.S. government enacted the U.S. CHIPS and Science Act ("CHIPS Act"). The CHIPS Act creates a 25% investment tax credit for certain investments in domestic semiconductor manufacturing. The credit is provided for qualifying property, which is placed in service after December 31, 2022, and any impact to Applied would start in fiscal 2023.

On August 16, 2022, the U.S. government enacted the Inflation Reduction Act. The Inflation Reduction Act introduces a new 15% corporate minimum tax, based on adjusted financial statement income of certain large corporations. Applicable corporations would be allowed to claim a credit for the minimum tax paid against regular tax in future years. The minimum tax impacts Applied starting in fiscal 2024. The Inflation Reduction Act also includes an excise tax that would impose a 1% surcharge on stock repurchases. This excise tax is effective January 1, 2023.

Applied is currently evaluating the effect the CHIPS Act and the Inflation Reduction Act will have on its consolidated financial statements.

Segment Information

Applied reports financial results in three segments: Semiconductor Systems, Applied Global Services, and Display and Adjacent Markets. A description of the products and services, as well as financial data, for each reportable segment can be found in Note 17 of Notes to Consolidated Financial Statements.

The Corporate and Other category includes revenues from products, as well as costs of products sold, for fabricating solar photovoltaic cells and modules and certain operating expenses that are not allocated to its reportable segments and are managed separately at the corporate level. These operating expenses include costs for share-based compensation; certain management, finance, legal, human resource, and RD&E functions provided at the corporate level; and unabsorbed information technology and occupancy. In addition, Applied does not allocate to its reportable segments restructuring, severance and asset impairment charges and any associated adjustments related to restructuring actions, unless these actions pertain to a specific reportable segment.

The results for each reportable segment are discussed below.

Semiconductor Systems Segment

The Semiconductor Systems segment is comprised primarily of capital equipment used to fabricate semiconductor chips. Semiconductor industry spending on capital equipment is driven by demand for electronic products, including smartphones and other mobile devices, servers, personal computers, automotive electronics, storage, and other products, and the nature and timing of technological advances in fabrication processes, and as a result is subject to variable industry conditions. Development efforts are focused on solving customers' key technical challenges in transistor, interconnect, patterning and packaging performance.

Certain significant measures for the periods indicated were as follows:

				Change			
	2022	2021	2020	2022 over 2021		2021 over 2020	
	(In millions, except percentages and ratios)						
Net sales	$ 18,797	$ 16,286	$ 11,367	$ 2,511	15 %	$ 4,919	43 %
Operating income	$ 6,969	$ 6,311	$ 3,714	$ 658	10 %	$ 2,597	70 %
Operating margin	37.1 %	38.8 %	32.7 %	(1.7) points		6.1 points	

Net sales for Semiconductor Systems by end use application for the periods indicated were as follows:

	2022	2021	2020
Foundry, logic and other	66 %	60 %	59 %
Dynamic random-access memory (DRAM)	19 %	19 %	20 %
Flash memory	15 %	21 %	21 %
	100 %	100 %	100 %

Semiconductor equipment customers continued to make strategic investments in new technology transitions and new capacity during fiscal 2022. Foundry and logic spending increased in fiscal 2022 compared to fiscal 2021 driven by customer investment in both advanced and mature nodes. Spending by DRAM customers increased and flash memory customers decreased in fiscal 2022 compared to fiscal 2021 due to changes in investments in new technology and capacity. Operating margin for fiscal 2022 decreased compared to fiscal 2021, primarily driven by higher material, freight, logistics costs and higher personnel costs due to the hiring of additional headcount to provide manufacturing capacity and flexibility, partially offset by favorable changes in product mix and an increase in average selling prices. In fiscal 2022, three customers each accounted for at least 10 percent of this segment's total net sales, and together they accounted for approximately 49 percent of this segment's total net sales.

Foundry and logic spending increased in fiscal 2021 compared to fiscal 2020 driven by customer investment in both advanced and mature nodes. Spending by memory customers also increased in fiscal 2021 compared to the prior year. Operating margin for fiscal 2021 increased compared to fiscal 2020, primarily reflecting higher net sales and favorable changes in customer and product mix, partially offset by higher personnel costs due to the hiring of additional headcount to provide manufacturing capacity and flexibility, and higher freight costs.

There was no single region that accounted for at least 30 percent of total net sales for the Semiconductor Systems segment for any of the past three fiscal years.

Applied Global Services Segment

The Applied Global Services segment provides integrated solutions to optimize equipment and fab performance and productivity, including spares, upgrades, services, certain remanufactured earlier generation equipment and factory automation software for semiconductor, display and solar products.

Demand for Applied Global Services' solutions are driven by Applied's large and growing installed base of manufacturing systems, and customers' needs to shorten ramp times, improve device performance and yield, and optimize factory output and operating costs. Industry conditions that affect Applied Global Services' sales of spares and services are primarily characterized by increases in semiconductor manufacturers' wafer starts and higher utilization rates, growth of the installed base of equipment, growing service intensity of newer tools, and the Company's ability to sell more comprehensive service agreements.

Certain significant measures for the periods indicated were as follows:

				Change	
	2022	2021	2020	2022 over 2021		2021 over 2020	
	(In millions, except percentages and ratios)						
Net sales	$ 5,543	$ 5,013	$ 4,155	$ 530	11 %	$ 858	21 %
Operating income	$ 1,661	$ 1,508	$ 1,127	$ 153	10 %	$ 381	34 %
Operating margin	30.0 %	30.1 %	27.1 %	(0.1) points		3.0 points	

Net sales for fiscal 2022 increased compared to fiscal 2021 primarily due to higher customer spending on comprehensive service agreements, spares and legacy systems. Operating margin for fiscal 2022 decreased compared to fiscal 2021 primarily due to higher expense related to an increase in headcount to support business growth and higher freight costs, partially offset by higher net sales in fiscal 2022. In fiscal 2022, one customer accounted for at least 10 percent of this segment's total net sales.

Net sales for fiscal 2021 increased compared to fiscal 2020 primarily due to higher customer spending on comprehensive service agreements and spares, and the impact of an additional one week during fiscal 2021. Operating margin for fiscal 2021 increased compared to fiscal 2020 primarily due to higher net sales, partially offset by higher expense related to an increase in headcount to support business growth and higher freight costs.

There was no single region that accounted for at least 30 percent of total net sales for the Applied Global Services segment for any of the past three fiscal years.

Display and Adjacent Markets Segment

The Display and Adjacent Markets segment encompasses products for manufacturing liquid crystal and OLED displays, and other display technologies for TVs, monitors, laptops, personal computers, electronic tablets, smart phones, other consumer-oriented devices, equipment upgrades and solar energy cells. The segment is focused on expanding its presence through technologically-differentiated equipment for manufacturing large-scale LCD TVs, OLEDs, low temperature polysilicon (LTPS), metal oxide, and touch panel sectors; and development of products that provide customers with improved performance and yields.

Display industry growth depends primarily on consumer demand for increasingly larger and more advanced TVs as well as larger and higher resolution displays for next-generation mobile devices. Uneven spending patterns by customers in the Display and Adjacent Markets segment can cause significant fluctuations quarter-over-quarter, as well as year-over-year.

Certain significant measures for the periods presented were as follows:

				Change			
	2022	2021	2020	2022 over 2021		2021 over 2020	
	(In millions, except percentages and ratios)						
Net sales	$ 1,331	$ 1,634	$ 1,607	$ (303)	(19)%	$ 27	2 %
Operating income	$ 260	$ 314	$ 291	$ (54)	(17)%	$ 23	8 %
Operating margin	19.5 %	19.2 %	18.1 %	0.3 points		1.1 points	

Net sales for fiscal 2022 decreased compared to fiscal 2021 primarily due to lower customer investments in display manufacturing equipment for TVs and mobile products. Operating margin for fiscal 2022 increased compared to fiscal 2021 primarily due to reduction in headcount related costs as headcount moved to open positions within Semiconductor Systems and Applied Global Services segments, offset by higher material costs. In fiscal 2022, three customers each accounted for at least 10 percent of this segment's net sales, and together they accounted for approximately 60 percent of this segment's total net sales.

Net sales for fiscal 2021 remained relatively flat compared to fiscal 2020 primarily due to higher customer investment in display manufacturing equipment for TVs, offset by a decrease in customer investments in display manufacturing equipment for mobile products. Operating margin for fiscal 2021 increased compared to fiscal 2020 primarily due to higher net sales and favorable changes in customer and product mix.

The following region accounted for at least 30 percent of total net sales for the Display and Adjacent Markets segment for one or more of the periods presented:

							Change			
	2022		2021		2020		2022 over 2021		2021 over 2020	
	(In millions, except percentages)									
China	$ 1,029	77 %	$ 1,361	83 %	$ 1,343	84 %	$ (332)	(24)%	$ 18	1 %

Recent Accounting Pronouncements

For a description of recent accounting pronouncements, including the expected dates of adoption and estimated effects, if any, on Applied's consolidated financial statements, see Note 1, "Summary of Significant Accounting Policies," of the Notes to Consolidated Financial Statements.

Financial Condition, Liquidity and Capital Resources

Applied's cash, cash equivalents and investments consist of the following:

	October 30, 2022	October 31, 2021
	(In millions)	
Cash and cash equivalents	$ 1,995	$ 4,995
Short-term investments	586	464
Long-term investments	1,980	2,055
Total cash, cash-equivalents and investments	$ 4,561	$ 7,514

Sources and Uses of Cash

A summary of cash provided by (used in) operating, investing, and financing activities is as follows:

	2022	2021	2020
		(In millions)	
Cash provided by operating activities	$ 5,399	$ 5,442	$ 3,804
Cash used in investing activities	$ (1,357)	$ (1,216)	$ (130)
Cash used in financing activities	$ (7,043)	$ (4,591)	$ (1,337)

Operating Activities

Cash from operating activities for fiscal 2022 was $5.4 billion, which reflects net income adjusted for the effect of non-cash charges and changes in working capital components. Non-cash charges included depreciation, amortization, severance and related charges, share-based compensation and deferred income taxes. Cash provided by operating activities remained relatively flat in fiscal 2022 compared to fiscal 2021 primarily due to higher inventory and income tax payments, partially offset by higher net income and lower year over year increase in accounts receivable. Cash provided by operating activities increased in fiscal 2021 compared to fiscal 2020 primarily due to higher net income, partially offset by an increase in the accounts receivable balance.

Applied has agreements with various financial institutions to sell accounts receivable and discount promissory notes from selected customers. Applied sells its accounts receivable generally without recourse. Applied, from time to time, also discounts letters of credit issued by customers through various financial institutions. The discounting of letters of credit depends on many factors, including the willingness of financial institutions to discount the letters of credit and the cost of such arrangements. Applied sold $1.0 billion, $1.3 billion and $1.2 billion of accounts receivable during fiscal 2022, 2021 and 2020, respectively. Applied did not discount letters of credit issued by customers in fiscal 2022 and 2021. Applied discounted letters of credit issued by customers of $105 million in fiscal 2020. There was no discounting of promissory notes in each of fiscal 2022, 2021 and 2020. Financing charges on the sale of receivables and discounting of letters of credit are included in interest expense in the accompanying Consolidated Statements of Operations and were not material for all years presented.

Applied's working capital was $8.5 billion at October 30, 2022 and $9.8 billion at October 31, 2021.

Days sales outstanding at the end of fiscal 2022, 2021 and 2020 was 82 days, 74 days, and 57 days, respectively. Days sales outstanding varies due to the timing of shipments and payment terms. The increase in days sales outstanding at the end of fiscal 2022 was primarily due to higher accounts receivable balance as a result of the timing of customer payments and lower accounts receivables factoring compared to the end of fiscal 2021. The increase in days sales outstanding at the end of fiscal 2021 was primarily due to unfavorable revenue linearity and lower account receivable factoring compared to the end of fiscal 2020.

Investing Activities

Applied used $1.4 billion, $1.2 billion and $130 million of cash in investing activities in fiscal 2022, 2021 and 2020, respectively. Capital expenditures in fiscal 2022, 2021 and 2020 were $787 million, $668 million and $422 million, respectively. Capital expenditures were primarily for investments in demonstration and testing equipment, real property acquisitions and improvements, and network equipment. Net cash paid for acquisitions in fiscal 2022, 2021 and 2020 were $441 million, $12 million and $107 million, respectively. Purchases of investments, net of proceeds from sales and maturities of investments, for 2022 and 2021 was $129 million and $536 million, respectively. Proceeds from sales and maturities of investments, net of purchase of investments were $399 million for fiscal 2020. Investing activities also included investments in technology to allow Applied to access new market opportunities or emerging technologies.

Applied's investment portfolio consists principally of investment grade money market mutual funds, U.S. Treasury and agency securities, municipal bonds, corporate bonds and mortgage-backed and asset-backed securities, as well as equity securities. Applied regularly monitors the credit risk in its investment portfolio and takes appropriate measures, which may include the sale of certain securities, to manage such risks prudently in accordance with its investment policies.

Financing Activities

Applied used $7.0 billion of cash in financing activities in fiscal 2022, consisting primarily of repurchases of common stock of $6.1 billion, cash dividends to stockholders of $873 million and tax withholding payments for vested equity awards of $266 million, offset by proceeds received from common stock issuances of $199 million.

Applied used $4.6 billion of cash in financing activities in fiscal 2021, consisting primarily of repurchases of common stock of $3.8 billion, cash dividends to stockholders of $838 million and tax withholding payments for vested equity awards of $178 million, offset by proceeds received from common stock issuances of $175 million.

Applied used $1.3 billion of cash in financing activities in fiscal 2020, consisting primarily of the repayment of $1.4 billion senior notes, repurchases of common stock of $649 million, cash dividends to stockholders of $787 million and tax withholding payments for vested equity awards of $172 million, offset by net proceeds received from the issuance of senior unsecured notes of $1.5 billion and proceeds from common stock issuances of $174 million.

In March 2022, Applied's Board of Directors approved a common stock repurchase program authorizing $6.0 billion in repurchases, which supplemented the previously existing $7.5 billion authorization approved in March 2021. At October 30, 2022, approximately $4.9 billion remained available for future stock repurchases under the repurchase program.

During fiscal 2022, Applied's Board of Directors declared one quarterly cash dividend of $0.24 per share and three quarterly cash dividends of $0.26 per share. During fiscal 2021, Applied's Board of Directors declared one quarterly cash dividend of $0.22 per share and three quarterly cash dividends of $0.24 per share. During fiscal 2020, Applied's Board of Directors declared one quarterly cash dividend of $0.21 per share and three quarterly cash dividends of $0.22 per share. Dividends paid during fiscal 2022, 2021 and 2020 amounted to $873 million, $838 million and $787 million, respectively. Applied currently anticipates that cash dividends will continue to be paid on a quarterly basis, although the declaration of any future cash dividend is at the discretion of the Board of Directors and will depend on Applied's financial condition, results of operations, capital requirements, business conditions and other factors, as well as a determination by the Board of Directors that cash dividends are in the best interests of Applied's stockholders.

Applied has credit facilities for unsecured borrowings in various currencies of up to $1.6 billion, of which $1.5 billion is comprised of a committed revolving credit agreement (Revolving Credit Agreement) with a group of banks. The Revolving Credit Agreement includes a provision under which Applied may request an increase in the amount of the facility of up to $500 million for a total commitment of no more than $2.0 billion, subject to the receipt of commitments from one or more lenders for any such increase and other customary conditions. The Revolving Credit Agreement is scheduled to expire in February 2025, unless extended as permitted under the Revolving Credit Agreement. The Revolving Credit Agreement provides for borrowings in United States dollars that bear interest for each advance at one of two rates selected by Applied, plus an applicable margin, which varies according to Applied's public debt credit ratings. In July 2022, Applied entered into an amendment to the Revolving Credit Agreement which replaced the London interbank offered rate (LIBOR) as a reference rate for borrowings with the secured overnight financing rate (SOFR). The Revolving Credit Agreement includes financial and other covenants with which Applied was in compliance as of October 30, 2022.

Remaining credit facilities in the amount of approximately $54 million are with Japanese banks. Applied's ability to borrow under these facilities is subject to bank approval at the time of the borrowing request, and any advances will be at rates indexed to the banks' prime reference rate denominated in Japanese yen.

Applied has a short-term commercial paper program under which Applied may issue unsecured commercial paper notes of up to a total amount of $1.5 billion. As of October 30, 2022, Applied did not have any commercial paper outstanding but may issue commercial paper notes under this program from time to time in the future. Subsequent to the end of fiscal 2022, Applied issued $200 million of short-term commercial paper with a weighted-average interest rate of 4.30% and maturities ranging from 43 days to 71 days. The commercial paper program is backstopped by the Revolving Credit Agreement and borrowings under the Revolving Credit Agreement reduce the amount of commercial paper notes Applied can issue.

Applied had senior unsecured notes in the aggregate principal amount of $5.5 billion outstanding as of October 30, 2022. See Note 10 of the Notes to the Consolidated Condensed Financial Statements for additional discussion of existing debt. Applied may seek to refinance its existing debt and may incur additional indebtedness depending on Applied's capital requirements and the availability of financing.

Others

On December 22, 2017, the U.S. government enacted the Tax Cuts and Jobs Act (Tax Act). The Tax Act requires a one-time transition tax on certain unrepatriated earnings of foreign subsidiaries. The transition tax expense is payable in installments over eight years, with eight percent due in each of the first five years starting with fiscal 2018. As of October 30, 2022, Applied had $694 million of total payments remaining, payable in installments in the next four years.

Beginning in fiscal 2023, the Tax Act eliminates the option to deduct research and development expenditures currently and requires taxpayers to capitalize and amortize them over five or fifteen years. Although Congress is considering legislation that would defer the capitalization and amortization requirement, there is no assurance that the provision will be repealed or otherwise modified. If the requirement is not modified, it may reduce our cash flows beginning in fiscal 2023.

Although cash requirements will fluctuate based on the timing and extent of factors such as those discussed above, Applied's management believes that cash generated from operations, together with the liquidity provided by existing cash balances and borrowing capability, will be sufficient to satisfy Applied's liquidity requirements for the next 12 months. For further details regarding Applied's operating, investing and financing activities, see the Consolidated Statements of Cash Flows in this report.

For details on standby letters of credit, guarantee instruments and other agreements with banks, see Off-Balance Sheet Arrangements below.

Contractual Obligations and Off-Balance Sheet Arrangements

Applied has certain on-balance sheet and off-balance sheet obligation arrangements to make future payments under various contracts. Certain contractual arrangements which are recorded on Applied's balance sheet include borrowing facilities and debts and operating leases obligations.

Borrowing Facilities and Debt Obligations

As of October 30, 2022, Applied has $5.5 billion in aggregate principal amount of senior unsecured notes with varying maturities. Future interest payments associated with these unsecured notes were $3.0 billion, of which $205 million is due within 12 months and the remaining interest payments are due beyond 12 months. See Note 10**,** Borrowing Facilities and Debt, of the Notes to the Consolidated Financial Statements for further discussion related to Applied's borrowing facilities and debt obligations.

Operating Lease Obligations

As of October 30, 2022, Applied's operating lease obligation was $407 million related to various operating lease arrangements for certain facilities and equipment. See Note 11, Lease, of the Notes to the Consolidated Financial Statements for further discussion relating to these operating lease obligations.

Purchase Obligations

As of October 30, 2022, Applied has $7.3 billion of purchase obligations for goods and services, of which $7.0 billion is payable within 12 months and the remaining amount is payable beyond 12 months.

Deemed Repatriation Tax Payable

As of October 30, 2022, Applied has $694 million of transition tax liability, of which $82 million is payable within 12 months and the remaining amount is payable beyond 12 months. This transition tax liability is associated with the deemed repatriation of accumulated foreign earnings as a result of the enactment of the Tax Cuts and Jobs Act into law on December 22, 2017.

Other Long-term Liabilities

Applied also has the obligation to fund its pension, postretirement and deferred compensation plans. Applied evaluates the need to make contributions to its pension and postretirement benefit plans after considering the funded status of the plans, movements in the discount rate, performance of the plan assets and related tax consequences. Payments to the plans would be dependent on these factors and could vary across a wide range of amounts and time periods. Payments for deferred compensation plans are dependent on activity by participants, making the timing of payments uncertain. Information on Applied's pension, postretirement benefit and deferred compensation plans is presented in Note 14, Employee Benefit Plans, of the Notes to the Consolidated Financial Statements.

As of October 30, 2022, the gross liability for unrecognized tax benefits that was not expected to result in payment of cash within one year was $489 million. Interest and penalties related to uncertain tax positions that were not expected to result in payment of cash within one year of October 30, 2022 was $103 million. At this time, Applied is unable to reliably estimate the timing of payments due to uncertainties in the timing of tax audit outcomes.

Off-Balance Sheet Arrangements

In the ordinary course of business, Applied provides standby letters of credit or other guarantee instruments to third parties as required for certain transactions initiated by either Applied or its subsidiaries. These include agreements with various banks to facilitate subsidiary banking operations worldwide, including overdraft arrangements. Applied also has agreements with various banks to facilitate subsidiary banking operations worldwide, including overdraft arrangements, issuance of bank guarantees, and letters of credit. See Note 16, Warranty, Guarantees, Commitments and Contingencies, of the Notes to the Consolidated Financial Statements for further discussion relating to these arrangements.

Critical Accounting Policies and Estimates

The preparation of consolidated financial statements and related disclosures in conformity with accounting principles generally accepted in the United States of America requires management to make judgments, assumptions and estimates that affect the amounts reported. Note 1 of Notes to Consolidated Financial Statements describes the significant accounting policies used in the preparation of the consolidated financial statements. Certain of these significant accounting policies are considered to be critical accounting policies.

A critical accounting policy is defined as one that is both material to the presentation of Applied's consolidated financial statements and that requires management to make difficult, subjective or complex judgments that could have a material effect on Applied's financial condition or results of operations. Specifically, these policies have the following attributes: (1) Applied is required to make assumptions about matters that are highly uncertain at the time of the estimate; and (2) different estimates Applied could reasonably have used, or changes in the estimate that are reasonably likely to occur, would have a material effect on Applied's financial condition or results of operations.

Estimates and assumptions about future events and their effects cannot be determined with certainty. Applied bases its estimates on historical experience and on various other assumptions believed to be applicable and reasonable under the circumstances. These estimates may change as new events occur, as additional information is obtained and as Applied's operating environment changes. These changes have historically been minor and have been included in the consolidated financial statements as soon as they became known. In addition, management is periodically faced with uncertainties, the outcomes of which are not within its control and will not be known for prolonged periods of time. These uncertainties include those discussed in Part I, Item 1A, "Risk Factors." Based on a critical assessment of its accounting policies and the underlying judgments and uncertainties affecting the application of those policies, management believes that Applied's consolidated financial statements are fairly stated in accordance with accounting principles generally accepted in the United States of America, and provide a meaningful presentation of Applied's financial condition and results of operations.

Management believes that the following are critical accounting policies and estimates:

Revenue Recognition

Applied recognizes revenue when promised goods or services (performance obligations) are transferred to a customer in an amount that reflects the consideration to which Applied expects to be entitled in exchange for those goods or services. Applied performs the following five steps to determine when to recognize revenue: (1) identification of the contract(s) with customers, (2) identification of the performance obligations in the contract, (3) determination of the transaction price, (4) allocation of the transaction price to the performance obligations in the contract, and (5) recognition of revenue when, or as, a performance obligation is satisfied. Management uses judgment to identify performance obligations within a contract and to determine whether multiple promised goods or services in a contract should be accounted for separately or as a group. Judgment is also used in interpreting commercial terms and determining when transfer of control occurs. Moreover, judgment is used to estimate the contract's transaction price and allocate it to each performance obligation. Any material changes in the identification of performance obligations, determination and allocation of the transaction price to performance obligations, and determination of when transfer of control occurs to the customer, could impact the timing and amount of revenue recognition, which could have a material effect on Applied's financial condition and results of operations.

Warranty Costs

Applied provides for the estimated cost of warranty when revenue is recognized. Estimated warranty costs are determined by analyzing specific product, current and historical configuration statistics and regional warranty support costs. Applied's warranty obligation is affected by product and component failure rates, material usage and labor costs incurred in correcting product failures during the warranty period. As Applied's customer engineers and process support engineers are highly trained and deployed globally, labor availability is a significant factor in determining labor costs. The quantity and availability of critical replacement parts is another significant factor in estimating warranty costs. Unforeseen component failures or exceptional component performance can also result in changes to warranty costs. If actual warranty costs differ substantially from Applied's estimates, revisions to the estimated warranty liability would be required, which could have a material effect on Applied's business, financial condition and results of operations.

Allowance for Credit Losses

Applied maintains an allowance for credit losses for estimated losses resulting from the inability of its customers to make required payments. This allowance is based on historical experience, credit evaluations, specific customer collection history and any customer-specific issues Applied has identified. Changes in circumstances, such as an unexpected material adverse change in a major customer's ability to meet its financial obligation to Applied or its payment trends, may require Applied to further adjust its estimates of the recoverability of amounts due to Applied, which could have a material adverse effect on Applied's business, financial condition and results of operations.

Inventory Valuation

Inventories are generally stated at the lower of cost or net realizable value, with cost determined on a first-in, first-out (FIFO) basis. The carrying value of inventory is reduced for estimated obsolescence by the difference between its cost and the estimated net realizable value based upon assumptions about future demand. Applied evaluates the inventory carrying value for potential excess and obsolete inventory exposures by analyzing historical and anticipated demand. In addition, inventories are evaluated for potential obsolescence due to the effect of known and anticipated engineering change orders and new products. If actual demand were to be substantially lower than estimated, additional adjustments for excess or obsolete inventory may be required, which could have a material adverse effect on Applied's business, financial condition and results of operations.

Goodwill and Intangible Assets

Applied reviews goodwill and intangible assets for impairment annually during the fourth quarter of each fiscal year and whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. The process of evaluating the potential impairment of goodwill and intangible assets requires significant judgment, especially in emerging markets. When reviewing goodwill for impairment, Applied first performs a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value.

In performing a qualitative assessment, Applied considers business conditions and other factors including, but not limited to (i) adverse industry or economic trends, (ii) restructuring actions and lower projections that may impact future operating results, (iii) sustained decline in share price, and (iv) overall financial performance and other events affecting the reporting units. If Applied concludes that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, then a quantitative impairment test is performed by estimating the fair value of the reporting unit and comparing it to its carrying value. If the carrying value of a reporting unit exceeds its fair value, Applied would record an impairment charge equal to the excess of the carrying value of the reporting unit over its fair value.

Applied determines the fair value of each reporting unit based on a weighting of an income and a market approach. Applied bases the fair value estimates on assumptions that it believes to be reasonable but that are unpredictable and inherently uncertain. Under the income approach, Applied estimates the fair value based on discounted cash flow method.

The estimates used in the impairment testing are consistent with the discrete forecasts that Applied uses to manage its business, and considers any significant developments during the period. Under the discounted cash flow method, cash flows beyond the discrete forecasts are estimated using a terminal growth rate, which considers the long-term earnings growth rate specific to the reporting units. The estimated future cash flows are discounted to present value using each reporting unit's weighted average cost of capital. The weighted average cost of capital measures a reporting unit's cost of debt and equity financing weighted by the percentage of debt and equity in a reporting unit's target capital structure. In addition, the weighted average cost of capital is derived using both known and estimated market metrics, and is adjusted to reflect both the timing and risks associated with the estimated cash flows. The tax rate used in the discounted cash flow method is the median tax rate of comparable companies and reflects Applied's current international structure, which is consistent with the market participant perspective. Under the market approach, Applied uses the guideline company method which applies market multiples to forecasted revenues and earnings before interest, taxes, depreciation and amortization. Applied uses market multiples that are consistent with comparable publicly-traded companies and considers each reporting unit's size, growth and profitability relative to its comparable companies.

Intangible assets, such as purchased technology, are generally recorded in connection with a business acquisition. The value assigned to intangible assets is usually based on estimates and judgments regarding expectations for the success and life cycle of products and technology acquired. If actual product acceptance differs significantly from the estimates, Applied may be required to record an impairment charge to reduce the carrying value of the reporting unit to its estimated fair value.

Income Taxes

Applied's provision for income taxes and effective tax rate are affected by the geographical composition of pre-tax income which includes jurisdictions with differing tax rates, conditional reduced tax rates and other income tax incentives. It is also affected by events that are not consistent from period to period, such as changes to income tax laws and the resolution of prior years' income tax filings.

Applied recognizes a current tax liability for the estimated amount of income tax payable on tax returns for the current fiscal year. Deferred tax assets and liabilities are recognized for the estimated future tax effects of temporary differences between the book and tax bases of assets and liabilities. Deferred tax assets are also recognized for net operating loss and tax credit carryforwards. Deferred tax assets are offset by a valuation allowance to the extent it is more likely than not that they are not expected to be realized.

Applied recognizes tax benefits from uncertain tax positions only if it is more likely than not that the tax position will be sustained upon examination by the taxing authorities based on the technical merits of the position. The tax benefits recognized from such positions are estimated based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement. Any changes in judgment related to uncertain tax positions are recognized in Applied's provision for income taxes in the quarter in which such change occurs. Interest and penalties related to uncertain tax positions are recognized in Applied's provision for income taxes.

The calculation of Applied's provision for income taxes and effective tax rate involves significant judgment in estimating the impact of uncertainties in the application of complex tax laws. Resolution of these uncertainties in a manner inconsistent with Applied's expectations could have a material impact on Applied's results of operations and financial condition.

Non-GAAP Adjusted Financial Results

Management uses non-GAAP adjusted financial measures to evaluate the Company's operating and financial performance and for planning purposes, and as performance measures in its executive compensation program. Applied believes these measures enhance an overall understanding of its performance and investors' ability to review the Company's business from the same perspective as the Company's management and facilitate comparisons of this period's results with prior periods on a consistent basis by excluding items that management does not believe are indicative of Applied's ongoing operating performance.

The non-GAAP adjusted financial measures presented below are adjusted to exclude the impact of certain costs, expenses, gains and losses, including certain items related to mergers and acquisitions; restructuring and severance charges and any associated adjustments; certain incremental expenses related to COVID-19; impairments of assets; gain or loss on strategic investments; loss on early extinguishment of debt; certain income tax items and other discrete adjustments. Reconciliations of these non-GAAP measures to the most directly comparable financial measures calculated and presented in accordance with GAAP are provided in the financial tables presented below. There are limitations in using non-GAAP financial measures because the non-GAAP financial measures are not prepared in accordance with generally accepted accounting principles, may be different from non-GAAP financial measures used by other companies, and may exclude certain items that may have a material impact upon our reported financial results. The presentation of this additional information is not meant to be considered in isolation or as a substitute for the directly comparable financial measures prepared in accordance with GAAP.

The following tables present a reconciliation of the GAAP and non-GAAP adjusted consolidated results for the past three fiscal years:

APPLIED MATERIALS, INC.
UNAUDITED RECONCILIATION OF GAAP TO NON-GAAP ADJUSTED RESULTS

(In millions, except percentages)	2022	2021	2020
Non-GAAP Adjusted Gross Profit			
Reported gross profit - GAAP basis	$ 11,993	$ 10,914	$ 7,692
Certain items associated with acquisitions[1]	26	27	37
Certain incremental expenses related to COVID-19[2]	—	12	23
Other charges	—	2	—
Non-GAAP adjusted gross profit	$ 12,019	$ 10,955	$ 7,752
Non-GAAP adjusted gross margin	46.6 %	47.5 %	45.1 %
Non-GAAP Adjusted Operating Income			
Reported operating income - GAAP basis	$ 7,788	$ 6,889	$ 4,365
Certain items associated with acquisitions[1]	39	47	54
Acquisition integration and deal costs	38	45	80
Certain incremental expenses related to COVID-19[2]	—	24	30
Severance and related charges[3]	(4)	157	—
Deal termination fee	—	154	—
Other charges	—	6	—
Non-GAAP adjusted operating income	$ 7,861	$ 7,322	$ 4,529
Non-GAAP adjusted operating margin	30.5 %	31.7 %	26.3 %
Non-GAAP Adjusted Net Income			
Reported net income - GAAP basis	$ 6,525	$ 5,888	$ 3,619
Certain items associated with acquisitions[1]	39	47	54
Acquisition integration and deal costs	34	46	80
Certain incremental expenses related to COVID-19[2]	—	24	30
Severance and related charges[3]	(4)	157	—
Deal termination fee	—	154	—
Realized loss (gain) on strategic investments, net	(3)	(43)	(1)
Unrealized loss (gain) on strategic investments, net	(4)	(56)	(8)
Loss on early extinguishment of debt	—	—	33
Other charges	—	6	—
Income tax effects related to intra-entity intangible asset transfers	252	64	114
Resolution of prior years' income tax filings and other tax items	(80)	33	(41)
Income tax effect of non-GAAP adjustments[4]	(3)	(33)	(35)
Non-GAAP adjusted net income	$ 6,756	$ 6,287	$ 3,845

1 These items are incremental charges attributable to completed acquisitions, consisting of amortization of purchased intangible assets.
2 Temporary incremental employee compensation during the COVID-19 pandemic.
3 The severance and related charges primarily related to a one-time voluntary retirement program offered to certain eligible employees.
4 Adjustment to provision for income taxes related to non-GAAP adjustments reflected in income before income taxes.

APPLIED MATERIALS, INC.
UNAUDITED RECONCILIATION OF GAAP TO NON-GAAP ADJUSTED RESULTS

(In millions, except per share amounts)	2022	2021	2020
Non-GAAP Adjusted Earnings Per Diluted Share			
Reported earnings per diluted share - GAAP basis	$ 7.44	$ 6.40	$ 3.92
Certain items associated with acquisitions	0.04	0.04	0.05
Acquisition integration and deal costs	0.03	0.04	0.07
Certain incremental expenses related to COVID-19	—	0.02	0.03
Severance and related charges	—	0.13	—
Deal termination fee	—	0.17	—
Realized loss (gain) on strategic investments, net	—	(0.03)	—
Unrealized loss (gain) on strategic investments, net	(0.01)	(0.05)	(0.01)
Loss on early extinguishment of debt	—	—	0.03
Other charges	—	0.01	—
Income tax effects related to intra-entity intangible asset transfers	0.29	0.07	0.12
Resolution of prior years' income tax filings and other tax items	(0.09)	0.04	(0.04)
Non-GAAP adjusted earnings per diluted share	$ 7.70	$ 6.84	$ 4.17
Weighted average number of diluted shares	877	919	923

The following table presents a reconciliation of the GAAP and non-GAAP adjusted segment results for the past three fiscal years:

APPLIED MATERIALS, INC.
UNAUDITED RECONCILIATION OF GAAP TO NON-GAAP ADJUSTED RESULTS

(In millions, except percentages)	2022	2021	2020
Semiconductor Systems Non-GAAP Adjusted Operating Income			
Reported operating income - GAAP basis	$ 6,969	$ 6,311	$ 3,714
Certain items associated with acquisitions[1]	31	38	41
Acquisition integration costs	—	(2)	3
Certain incremental expenses related to COVID-19[2]	—	12	20
Other charges	—	3	—
Non-GAAP adjusted operating income	$ 7,000	$ 6,362	$ 3,778
Non-GAAP adjusted operating margin	37.2 %	39.1 %	33.2 %
AGS Non-GAAP Adjusted Operating Income			
Reported operating income - GAAP basis	$ 1,661	$ 1,508	$ 1,127
Certain incremental expenses related to COVID-19[2]	—	8	8
Other charges	—	1	—
Non-GAAP adjusted operating income	$ 1,661	$ 1,517	$ 1,135
Non-GAAP adjusted operating margin	30.0 %	30.3 %	27.3 %
Display and Adjacent Markets Non-GAAP Adjusted Operating Income			
Reported operating income - GAAP basis	$ 260	$ 314	$ 291
Certain items associated with acquisitions[1]	3	4	12
Certain incremental expenses related to COVID-19[2]	—	1	1
Severance and related charges[3]	—	8	—
Non-GAAP adjusted operating income	$ 263	$ 327	$ 304
Non-GAAP adjusted operating margin	19.8 %	20.0 %	18.9 %

1 These items are incremental charges attributable to completed acquisitions, consisting of amortization of purchased intangible assets.

2 Temporary incremental employee compensation during the COVID-19 pandemic.

3 The severance and related charges related to workforce reduction actions globally across the Display and Adjacent Markets business.

Note: The reconciliation of GAAP and non-GAAP adjusted segment results above does not include certain revenues, costs of products sold and operating expenses that are reported within corporate and other and included in consolidated operating income.

Item 7A: ***Quantitative and Qualitative Disclosures About Market Risk***

Applied is exposed to financial market risks, including fluctuations in interest rate and foreign currency exchange rates.

Interest Rate Risk

Available-for-sale Debt Securities. The market value of Applied's investments in available-for-sale securities was approximately $1.8 billion at October 30, 2022. An immediate hypothetical 100 basis point increase in interest rates would result in a decrease in the fair value of investments as of October 30, 2022 of approximately $23 million.

Debt. At October 30, 2022, the aggregate principal of long-term senior unsecured notes issued by Applied was $5.5 billion with an estimated fair value of $4.8 billion. A hypothetical decrease in interest rates of 100 basis points would result in an increase in the fair value of Applied's long-term senior notes issuances of approximately $454 million at October 30, 2022. From time to time Applied uses interest rate swaps or rate lock agreements to mitigate the potential impact of changes in benchmark interest rates on interest expense and cash flows.

Foreign Currency Risk

Certain operations of Applied are conducted in foreign currencies, such as Japanese yen, Israeli shekel, euro and Taiwanese dollar. Hedges are used to reduce, but not eliminate, the impact of foreign currency exchange rate movements on the consolidated balance sheet, statement of operations, and statement of cash flows.

Applied uses primarily foreign currency forward contracts to offset the impact of foreign exchange movements on non-U.S. dollar denominated monetary assets and liabilities. The foreign exchange gains and losses on the assets and liabilities are recorded in interest and other income (net) and are offset by the gains and losses on the hedges.

Applied uses foreign currency forward and option contracts to hedge a portion of anticipated non-U.S. dollar denominated revenues and expenses expected to occur within the next 24 months. Gains and losses on these hedging contracts generally mitigate the effect of currency movements on Applied's net sales, cost of products sold, and operating expenses. A hypothetical 10% adverse change in foreign currency exchange rates relative to the U.S. Dollar would result in a decrease in the fair value of these hedging contracts of $196 million at October 30, 2022.

Applied does not use foreign currency forward or option contracts for trading or speculative purposes.

Item 8: ***Financial Statements and Supplementary Data***

The consolidated financial statements required by this Item are set forth on the pages indicated at Item 15(a).

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

None.

Item 9A: *Controls and Procedures*

Disclosure Controls and Procedures

As of the end of the period covered by this report, management of Applied conducted an evaluation, under the supervision and with the participation of Applied's Chief Executive Officer and Chief Financial Officer, of the effectiveness of Applied's disclosure controls and procedures, as such term is defined in Rule 13a-15(e) of the Securities Exchange Act of 1934 (the Exchange Act). Based upon that evaluation, Applied's Chief Executive Officer and Chief Financial Officer concluded that Applied's disclosure controls and procedures were effective as of the end of the period covered by this report in ensuring that information required to be disclosed was recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and to provide reasonable assurance that information required to be disclosed by Applied in such reports is accumulated and communicated to the Company's management, including its Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Management's Report on Internal Control over Financial Reporting

Applied's management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) of the Exchange Act. Under the supervision and with the participation of Applied's Chief Executive Officer and Chief Financial Officer, management of Applied conducted an evaluation of the effectiveness of Applied's internal control over financial reporting based upon the framework in "Internal Control — Integrated Framework (2013)" issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on that evaluation, Applied's management concluded that Applied's internal control over financial reporting was effective as of October 30, 2022.

KPMG LLP, an independent registered public accounting firm, has audited the consolidated financial statements included in this Form 10-K and, as part of the audit, has issued a report, included herein, on the effectiveness of Applied's internal control over financial reporting as of October 30, 2022.

Changes in Internal Control over Financial Reporting

During the fourth quarter of fiscal 2022, there were no changes in the internal control over financial reporting that materially affected, or are reasonably likely to materially affect, Applied's internal control over financial reporting.

Inherent Limitations of Disclosure Controls and Procedures and Internal Control over Financial Reporting

It should be noted that any system of controls, however well designed and operated, can provide only reasonable, and not absolute, assurance that the objectives of the system will be met. In addition, the design of any control system is based in part upon certain assumptions about the likelihood of future events.

Item 9B: *Other Information*

None.

Item 9C: *Disclosure Regarding Foreign Jurisdictions that Prevent Inspections*

Not applicable.

PART III

Item 10: *Directors, Executive Officers and Corporate Governance*

Except for the information regarding executive officers required by Item 401 of Regulation S-K (which is included in Part I, Item 1 of this Annual Report on Form 10-K, under "Information about our Executive Officers") and code of ethics (which is set forth below), the information required by this item will be provided in accordance with Instruction G(3) to Form 10-K no later than February 27, 2023.

Applied has implemented the Standards of Business Conduct, a code of ethics with which every person who works for Applied and every member of the Board of Directors is expected to comply. If any substantive amendments are made to the Standards of Business Conduct or any waiver is granted, including any implicit waiver, from a provision of the code to Applied's Chief Executive Officer, Chief Financial Officer or Chief Accounting Officer, Applied will disclose the nature of such amendment or waiver on its website or in a report on Form 8-K. The above information, including the Standards of Business Conduct, is available on Applied's website under the Corporate Governance section at *https://www.appliedmaterials.com/us/en/about/corporate-governance.html.* This website address is intended to be an inactive, textual reference only. None of the materials on, or accessible through, this website is part of this report or is incorporated by reference herein.

Item 11: *Executive Compensation*

The information required by this Item will be provided in accordance with Instruction G(3) to Form 10-K no later than February 27, 2023.

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

Except for the information regarding securities authorized for issuance under equity compensation plans (which is set forth below), the information required by this Item will be provided in accordance with Instruction G(3) to Form 10-K no later than February 27, 2023.

The following table summarizes information with respect to equity awards under Applied's equity compensation plans as of October 30, 2022:

Equity Compensation Plan Information

Plan Category	(a) Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights(1)	(b) Weighted Average Exercise Price of Outstanding Options, Warrants and Rights(2)	(c) Number of Securities Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column(a))
		(In millions, except prices)	
Equity compensation plans approved by security holders	11	$ —	45 (3)
Total	11	$ —	45

(1) Includes only restricted stock units and performance share units outstanding under Applied's equity compensation plans, as no options, stock warrants or other rights were outstanding as of October 30, 2022.

(2) The weighted average exercise price calculation does not take into account any restricted stock units or performance shares.

(3) Includes 14 million shares of Applied common stock available for future issuance under the Applied Materials, Inc. Omnibus Employees' Stock Purchase Plan. Of these 14 million shares, 1 million are subject to purchase during the purchase period in effect as of October 30, 2022.

Applied has the following equity compensation plan that has not been approved by stockholders:

Applied Materials Profit Sharing Scheme. The Applied Materials Profit Sharing Scheme was adopted effective July 3, 1996 to enable employees of Applied Materials Ireland Limited and its participating subsidiaries to purchase Applied common stock at 100% of fair market value on the purchase date. Under this plan, eligible employees may elect to forego a certain portion of their base salary and certain bonuses they have earned and that otherwise would be payable in cash to purchase shares of Applied common stock at full fair market value. Since the eligible employees pay full fair market value for the shares, there is no reserved amount of shares under this plan and, accordingly, the table above does not include any set number of shares available for future issuance under the plan.

Item 13: ***Certain Relationships and Related Transactions, and Director Independence***

The information required by this Item will be provided in accordance with Instruction G(3) to Form 10-K no later than February 27, 2023.

Item 14: ***Principal Accounting Fees and Services***

Applied's independent registered public accounting firm is KPMG LLP, Santa Clara, California, Auditor Firm ID: 185.

The information required by this Item will be provided in accordance with Instruction G(3) to Form 10-K no later than February 27, 2023.

PART IV

Item 15: ***Exhibits, Financial Statement Schedules***

(a) The following documents are filed as part of this Annual Report on Form 10-K:

All other schedules are omitted because they are not applicable or the required information is shown in the Consolidated Financial Statements or Notes thereto.

Item 16: ***Form 10-K Summary***

None.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors
Applied Materials, Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Applied Materials, Inc. and subsidiaries (the Company) as of October 30, 2022 and October 31, 2021, the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended October 30, 2022, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of October 30, 2022 and October 31, 2021, and the results of its operations and its cash flows for each of the years in the three-year period ended October 30, 2022, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of October 30, 2022, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated December 16, 2022 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Basis for Opinion

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

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

Critical Audit Matter

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

Evaluation of net realizable value adjustments to inventories for excess or obsolescence

As discussed in notes 1 and 8 to the consolidated financial statements, the Company has inventories with a carrying value of $5,932 million as of October 30, 2022. The Company adjusts inventory carrying value for estimated excess or obsolescence equal to the difference between cost of inventory and the estimated net realizable value based upon assumptions about future demand and market conditions. If actual demand were to be substantially lower than estimated, there could be a significant adverse impact on the carrying value of inventories and results of operations.

We identified the evaluation of net realizable value adjustments to certain inventories for excess or obsolescence as a critical audit matter. Evaluation of the Company's estimates regarding forecasted sales and inventory consumption involved a high degree of auditor judgment.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls over the Company's process for determining net realizable value adjustments for inventory excess or obsolescence, including controls related to estimating forecasted sales and inventory consumption. We evaluated certain inventories for excess or obsolescence by comparing the Company's sales and inventory consumption forecast to historical sales, historical inventory usage, known customer orders, and industry outlook reports. In addition, for certain inventories, we compared the Company's historical estimates of net realizable value adjustments for excess and obsolescence to the actual physical inventory disposals to evaluate the Company's ability to accurately estimate the net realizable value adjustments.

/s/ KPMG LLP

KPMG LLP

We have served as the Company's auditor since 2004.

Santa Clara, California
December 16, 2022

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Stockholders and Board of Directors
Applied Materials, Inc.:

Opinion on Internal Control Over Financial Reporting

We have audited Applied Materials, Inc. and subsidiaries' (the Company) internal control over financial reporting as of October 30, 2022, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of October 30, 2022, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of October 30, 2022 and October 31, 2021, the related consolidated statements of operations, comprehensive income, stockholders' equity, and cash flows for each of the years in the three-year period ended October 30, 2022, and the related notes (collectively, the consolidated financial statements), and our report dated December 16, 2022 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

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

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

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ KPMG LLP
KPMG LLP

Santa Clara, California
December 16, 2022

APPLIED MATERIALS, INC.

CONSOLIDATED STATEMENTS OF OPERATIONS
(In millions, except per share amounts)

Fiscal Year	2022	2021	2020
Net sales	$ 25,785	$ 23,063	$ 17,202
Cost of products sold	13,792	12,149	9,510
Gross profit	11,993	10,914	7,692
Operating expenses:			
Research, development and engineering	2,771	2,485	2,234
Marketing and selling	703	609	526
General and administrative	735	620	567
Severance and related charges	(4)	157	—
Deal termination fee	—	154	—
Total operating expenses	4,205	4,025	3,327
Income from operations	7,788	6,889	4,365
Interest expense	228	236	240
Interest and other income, net	39	118	41
Income before income taxes	7,599	6,771	4,166
Provision for income taxes	1,074	883	547
Net income	$ 6,525	$ 5,888	$ 3,619
Earnings per share:			
Basic	$ 7.49	$ 6.47	$ 3.95
Diluted	$ 7.44	$ 6.40	$ 3.92
Weighted average number of shares:			
Basic	871	910	916
Diluted	877	919	923

See accompanying Notes to Consolidated Financial Statements.

APPLIED MATERIALS, INC.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In millions)

Fiscal Year	2022	2021	2020
Net income	$ 6,525	$ 5,888	$ 3,619
Other comprehensive income (loss), net of tax:			
Change in unrealized gain (loss) on available-for-sale investments	(74)	(21)	9
Change in unrealized net loss on derivative instruments	51	30	(117)
Change in defined and postretirement benefit plans	81	30	(11)
Other comprehensive income (loss), net of tax	58	39	(119)
Comprehensive income	$ 6,583	$ 5,927	$ 3,500

See accompanying Notes to Consolidated Financial Statements.

APPLIED MATERIALS, INC.

CONSOLIDATED BALANCE SHEETS
(In millions, except per share amounts)

	October 30, 2022	October 31, 2021
ASSETS		
Current assets:		
Cash and cash equivalents	$ 1,995	$ 4,995
Short-term investments	586	464
Accounts receivable, net	6,068	4,953
Inventories	5,932	4,309
Other current assets	1,344	1,386
Total current assets	15,925	16,107
Long-term investments	1,980	2,055
Property, plant and equipment, net	2,307	1,934
Goodwill	3,700	3,479
Purchased technology and other intangible assets, net	339	104
Deferred income taxes and other assets	2,475	2,146
Total assets	$ 26,726	$ 25,825
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable and accrued expenses	$ 4,237	$ 4,268
Contract liabilities	3,142	2,076
Total current liabilities	7,379	6,344
Long-term debt	5,457	5,452
Income taxes payable	964	1,090
Other liabilities	732	692
Total liabilities	14,532	13,578
Commitments and contingencies (Note 16)		
Stockholders' equity:		
Preferred stock: $0.01 par value per share; 1 shares authorized; no shares issued	—	—
Common stock: $0.01 par value per share; 2,500 shares authorized; 844 and 892 shares outstanding at 2022 and 2021, respectively	8	9
Additional paid-in capital	8,593	8,247
Retained earnings	37,892	32,246
Treasury stock: 1,173 and 1,119 shares at 2022 and 2021, respectively	(34,097)	(27,995)
Accumulated other comprehensive loss	(202)	(260)
Total stockholders' equity	12,194	12,247
Total liabilities and stockholders' equity	$ 26,726	$ 25,825

See accompanying Notes to Consolidated Financial Statements.

APPLIED MATERIALS, INC.

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(In millions)

	Common Stock		Additional Paid-In Capital	Retained Earnings	Treasury Stock		Accumulated Other Comprehensive Income (Loss)	Total
	Shares	Amount			Shares	Amount		
Balance at October 27, 2019	916	$ 9	$ 7,595	$ 24,386	1,079	$ (23,596)	$ (180)	$ 8,214
Net income	—	—	—	3,619	—	—	—	3,619
Other comprehensive loss, net of tax	—	—	—	—	—	—	(119)	(119)
Dividends declared ($0.87 per common share)	—	—	—	(796)	—	—	—	(796)
Share-based compensation	—	—	307	—	—	—	—	307
Issuance under stock plans	10	—	2	—	—	—	—	2
Common stock repurchases	(12)	—	—	—	12	(649)	—	(649)
Balance at October 25, 2020	914	$ 9	$ 7,904	$ 27,209	1,091	$ (24,245)	$ (299)	$ 10,578
Net income	—	—	—	5,888	—	—	—	5,888
Other comprehensive income, net of tax	—	—	—	—	—	—	39	39
Dividends declared ($0.94 per common share)	—	—	—	(851)	—	—	—	(851)
Share-based compensation	—	—	346	—	—	—	—	346
Issuance under stock plans	6	—	(3)	—	—	—	—	(3)
Common stock repurchases	(28)	—	—	—	28	(3,750)	—	(3,750)
Balance at October 31, 2021	892	$ 9	$ 8,247	$ 32,246	1,119	$ (27,995)	$ (260)	$ 12,247
Net income	—	—	—	6,525	—	—	—	6,525
Other comprehensive income, net of tax	—	—	—	—	—	—	58	58
Dividends declared ($1.02 per common share)	—	—	—	(879)	—	—	—	(879)
Share-based compensation	—	—	413	—	—	—	—	413
Issuance under stock plans	6	—	(67)	—	—	—	—	(67)
Common stock repurchases	(54)	(1)	—	—	54	(6,102)	—	(6,103)
Balance at October 30, 2022	844	$ 8	$ 8,593	$ 37,892	1,173	$ (34,097)	$ (202)	$ 12,194

See accompanying Notes to Consolidated Financial Statements.

APPLIED MATERIALS, INC.

CONSOLIDATED STATEMENTS OF CASH FLOWS

(In millions)

Fiscal Year	2022	2021	2020
Cash flows from operating activities:			
Net income	$ 6,525	$ 5,888	$ 3,619
Adjustments required to reconcile net income to cash provided by operating activities:			
Depreciation and amortization	444	394	376
Severance and related charges	(4)	148	—
Deferred income taxes	(223)	80	80
Other	36	(70)	60
Share-based compensation	413	346	307
Changes in operating assets and liabilities, net of amounts acquired:			
Accounts receivable	(1,109)	(1,989)	(427)
Inventories	(1,590)	(405)	(421)
Other current and non-current assets	(16)	(602)	(161)
Accounts payable and accrued expenses	390	465	327
Contract liabilities	1,039	755	(16)
Income taxes payable	(541)	396	(10)
Other liabilities	35	36	70
Cash provided by operating activities	5,399	5,442	3,804
Cash flows from investing activities:			
Capital expenditures	(787)	(668)	(422)
Cash paid for acquisitions, net of cash acquired	(441)	(12)	(107)
Proceeds from sales and maturities of investments	1,363	1,471	1,754
Purchases of investments	(1,492)	(2,007)	(1,355)
Cash used in investing activities	(1,357)	(1,216)	(130)
Cash flows from financing activities:			
Debt borrowings, net of issuance costs	—	—	2,979
Debt repayments	—	—	(2,882)
Proceeds from common stock issuances	199	175	174
Common stock repurchases	(6,103)	(3,750)	(649)
Tax withholding payments for vested equity awards	(266)	(178)	(172)
Payments of dividends to stockholders	(873)	(838)	(787)
Cash used in financing activities	(7,043)	(4,591)	(1,337)
Increase (decrease) in cash, cash equivalents and restricted cash equivalents	(3,001)	(365)	2,337
Cash, cash equivalents and restricted cash equivalents — beginning of period	5,101	5,466	3,129
Cash, cash equivalents and restricted cash equivalents — end of period	$ 2,100	$ 5,101	$ 5,466
Reconciliation of cash, cash equivalents, and restricted cash equivalents			
Cash and cash equivalents	$ 1,995	$ 4,995	$ 5,351
Restricted cash equivalents included in deferred income taxes and other assets	105	106	115
Total cash, cash equivalents, and restricted cash equivalents	$ 2,100	$ 5,101	$ 5,466
Supplemental cash flow information:			
Cash payments for income taxes	$ 1,869	$ 851	$ 542
Cash refunds from income taxes	$ 156	$ 27	$ 68
Cash payments for interest	$ 205	$ 205	$ 219

See accompanying Notes to Consolidated Financial Statements.

Note 1 Summary of Significant Accounting Policies

Principles of Consolidation and Basis of Presentation

The consolidated financial statements include the accounts of Applied Materials, Inc. and its subsidiaries (Applied or the Company) after elimination of intercompany balances and transactions. All references to a fiscal year apply to Applied's fiscal year which ends on the last Sunday in October. Fiscal 2022, 2021 and 2020 contained 52, 53 and 52 weeks, respectively. Each fiscal quarter of 2022 and 2020 contained 13 weeks. The first fiscal quarter of 2021 contained 14 weeks, while the second, third and fourth quarters of fiscal 2021 contained 13 weeks.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make judgments, estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ materially from those estimates. On an ongoing basis, Applied evaluates its estimates, including those related to standalone selling price (SSP) related to revenue recognition, accounts receivable and sales allowances, fair values of financial instruments, inventories, intangible assets and goodwill, useful lives of intangible assets and property and equipment, fair values of share-based awards, and income taxes, among others. Applied bases its estimates on historical experience and on various other assumptions that are believed to be reasonable, the results of which form the basis for making judgments about the carrying values of assets and liabilities.

As of October 30, 2022, the COVID-19 pandemic and worldwide response remains fluid. As a result, many of Applied's estimates and assumptions are subject to increased judgment and volatility. These estimates may differ materially in future periods as the pandemic continues to evolve and additional information becomes available.

Cash Equivalents

All highly-liquid investments with a remaining maturity of three months or less at the time of purchase are considered to be cash equivalents. Cash equivalents consist primarily of investments in institutional money market funds.

Investments

All of Applied's investments, except equity investments, are classified as available-for-sale at the respective balance sheet dates. Investments classified as available-for-sale are measured and recorded in the Consolidated Balance Sheets at fair value, and unrealized gains and losses, net of tax, is reported as a separate component of other comprehensive income. Interest earned on cash and investments, as well as realized gains and losses on sale of securities, are included in interest and other income, net in the Consolidated Statements of Operations.

Applied's equity investments with readily determinable values consist of publicly traded equity securities. These investments are measured at fair value using quoted prices for identical assets in an active market. Privately-held equity investments without readily determinable fair value are measured at cost, less impairment, adjusted by observable price changes. Adjustments resulting from impairments and observable prices changes are recorded in the Consolidated Statements of Operations.

Allowance for Credit Losses

Applied maintains an allowance for credit losses for estimated losses resulting from the inability of its customers to make required payments. This allowance is based on historical experience, credit evaluations, specific customer collection history and any customer-specific issues Applied has identified. Changes in circumstances, such as an unexpected material adverse change in a major customer's ability to meet its financial obligation to Applied or its payment trends, may require Applied to further adjust its estimates of the recoverability of amounts due to Applied. Bad debt expense and any reversals are recorded in marketing and selling expenses in the Consolidated Statement of Operations.

Inventories

Inventories are stated at the lower of cost or net realizable value, with cost determined on a first-in, first-out (FIFO) basis. Applied adjusts inventory carrying value for estimated obsolescence equal to the difference between the cost of inventory and the estimated net realizable value based upon assumptions about future demand and market conditions. Applied fully writes down inventories and noncancelable purchase orders for inventory deemed obsolete. Applied performs periodic reviews of inventory items to identify excess inventories on hand by comparing on-hand balances to anticipated usage using recent historical activity as well as anticipated or forecasted demand. If estimates of customer demand diminish further or market conditions become less favorable than those projected by Applied, additional inventory adjustments may be required.

Property, Plant and Equipment

Property, plant and equipment is stated at cost. Depreciation is provided over the estimated useful lives of the assets using the straight-line method. Estimated useful lives for financial reporting purposes are as follows: buildings and improvements, 3 to 30 years; demonstration and manufacturing equipment, 3 to 5 years; software, 3 to 5 years; and furniture, fixtures and other equipment, 3 to 5 years. Land improvements are amortized over the shorter of 15 years or the estimated useful life. Leasehold improvements are amortized over the shorter of five years or the lease term.

Intangible Assets

Goodwill and indefinite-lived assets are not amortized, but are reviewed for impairment annually during the fourth quarter of each fiscal year and whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. Purchased technology and other intangible assets are presented at cost, net of accumulated amortization, and are amortized over their estimated useful lives of 1 to 15 years using the straight-line method.

Long-Lived Assets

Applied reviews long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of these assets or asset group may not be recoverable. Applied assesses these assets for impairment based on estimated future cash flows from these assets.

Revenue Recognition from Contracts with Customers

Applied recognizes revenue when promised goods or services are transferred to a customer in an amount that reflects the consideration to which Applied expects to be entitled in exchange for those goods or services. Applied determines revenue recognition through the following five steps: (1) identification of the contract(s) with customers, (2) identification of the performance obligations in the contract, (3) determination of the transaction price, (4) allocation of the transaction price to the performance obligations in the contract, and (5) recognition of revenue when, or as, a performance obligation is satisfied.

Identifying the contract(s) with customers. Applied sells manufacturing equipment, services, and spare parts directly to its customers in the semiconductor, display, and related industries. The Company generally considers written documentation including, but not limited to, signed purchase orders, master agreements, and sales orders as contracts provided that collection is probable. Collectability is assessed based on the customer's creditworthiness determined by reviewing the customer's published credit and financial information, historical payment experience, as well as other relevant factors.

Identifying the performance obligations. Applied's performance obligations include delivery of manufacturing equipment, service agreements, spare parts, installation, extended warranty and training. Applied's service agreements are considered one performance obligation and may include multiple goods and services that Applied provides to the customer to deliver against a performance metric. Judgment is used to determine whether multiple promised goods or services in a contract should be accounted for separately or as a group.

Determine the transaction price. The transaction price for Applied's contracts with customers may include fixed and variable consideration. Applied includes variable consideration in the transaction price to the extent that it is probable that a significant reversal of revenue will not occur when the uncertainty associated with the variable consideration is subsequently resolved.

Allocate the transaction price to the performance obligations. A contract's transaction price is allocated to each distinct performance obligation identified within the contract. Applied generally estimates the standalone selling price of a distinct performance obligation based on historical cost plus an appropriate margin. For contracts with multiple performance obligations, Applied allocates the contract's transaction price to each performance obligation using the relative standalone selling price of each distinct good or service in the contract.

Recognizing the revenue as performance obligations are satisfied. Applied recognizes revenue from equipment and spares parts at a point in time when Applied has satisfied its performance obligation by transferring control of the goods to the customer which typically occurs at shipment or delivery. Revenue from service agreements is recognized over time, typically within 12 months, as customers receive the benefits of services.

The incremental costs to obtain a contract are not material.

Payment Terms. Payment terms vary by contract. Generally, the majority of payments are due within a certain number of days from shipment of goods or performance of service. The remainder is typically due upon customer technical acceptance. Applied typically receives deposits on future deliverables from customers in the Semiconductor Systems and Display and Adjacent Markets segments and, in certain instances, may also receive deposits from customers in the Applied Global Services segment. Applied's payment terms do not generally contain a significant financing component.

Shipping and Handling Costs

Applied accounts for shipping and handling activities related to contracts with customers as costs to fulfill our promise to transfer the associated products. Accordingly, amounts billed for shipping and handling costs are recorded as a component of net sales and costs as a component of cost of products sold.

Warranty

Applied provides for the estimated cost of warranty when revenue is recognized. Estimated warranty costs are determined by analyzing specific product, current and historical configuration statistics and regional warranty support costs. Applied's warranty obligation is affected by product and component failure rates, material usage and labor costs incurred in correcting product failures during the warranty period. If actual warranty costs differ substantially from Applied's estimates, revisions to the estimated warranty liability would be required.

Applied also sells extended warranty contracts to its customers which provide an extension of the standard warranty coverage period of up to 2 years. Applied receives payment at the inception of the contract and recognizes revenue ratably over the extended warranty coverage period, as the customer simultaneously receives and consumes the benefits of the extended warranty.

Sales and Value Added Taxes

Taxes collected from customers and remitted to governmental authorities are presented on a net basis in the Consolidated Statements of Operations.

Research, Development and Engineering Costs

Research, development and engineering costs are expensed as incurred.

Income Taxes

Applied recognizes a current tax liability for the estimated amount of income tax payable on tax returns for the current fiscal year. Deferred tax assets and liabilities are recognized for the estimated future tax effects of temporary differences between the book and tax bases of assets and liabilities. Deferred tax assets are also recognized for net operating loss and tax credit carryovers. Deferred tax assets are offset by a valuation allowance to the extent it is more likely than not that they are not expected to be realized.

Applied recognizes tax benefits from uncertain tax positions only if it is more likely than not that the tax position will be sustained upon examination by the taxing authorities, based on the technical merits of the position. The tax benefits recognized from such positions are estimated based on the largest benefit that has a greater than 50% likelihood of being realized upon ultimate settlement. Any changes in judgment related to uncertain tax positions are recognized in Applied's provision for income taxes in the quarter in which such change occurs. Interest and penalties related to uncertain tax positions are recognized in Applied's provision for income taxes.

Derivative Financial Instruments

Applied uses financial instruments, such as foreign currency forward and option contracts, to hedge a portion of, but not all, existing and anticipated foreign currency denominated transactions typically expected to occur within 24 months. The purpose of Applied's foreign currency management is to mitigate the effect of exchange rate fluctuations on certain foreign currency denominated revenues, costs and eventual cash flows. In certain cases, Applied also uses interest rate swap or lock agreements to hedge against the variability of cash flows due to changes in the benchmark interest rate of fixed rate debt. The terms of derivative financial instruments used for hedging purposes are generally consistent with the timing of the transactions being hedged. Applied's derivative financial instruments are recorded as assets or liabilities at fair value and reported at gross on its Consolidated Balance Sheets. However, under master netting agreements in place with its counterparties, Applied may net settle transactions of the same currency under certain circumstances. For derivative instruments designated and qualifying as cash flow hedges, the gain or loss is reported as a component of accumulated other comprehensive income (loss) in stockholders' equity, and is reclassified into earnings when the hedged transaction affects earnings. Any portion excluded from the assessment of effectiveness is recognized in the same line as the hedged transaction but may be recognized in a different manner, e.g. amortized. If a hedged transaction becomes probable of not occurring according to the original strategy, the hedge relationship is discontinued and the gain or loss on the associated derivative is recorded promptly in earnings. For hedges of existing foreign currency denominated assets or liabilities, the gain or loss is recorded promptly in earnings to offset the changes in the fair value of the assets or liabilities being hedged.

Foreign Currency

As of October 30, 2022, all of Applied's subsidiaries use the United States dollar as their functional currency. Accordingly, assets and liabilities of these subsidiaries are remeasured using exchange rates in effect at the end of the period, except for non-monetary assets, such as inventories and property, plant and equipment, which are remeasured using historical exchange rates. Foreign currency-denominated revenues and costs are remeasured using average exchange rates for the period, except for costs related to the non-monetary assets and liabilities, which are remeasured using historical exchange rates. The resulting remeasurement gains and losses are included in interest and other income, net in the Consolidated Statements of Operations as incurred.

Concentrations of Credit Risk

Financial instruments that potentially subject Applied to significant concentrations of credit risk consist principally of cash equivalents, investments, trade accounts receivable and derivative financial instruments used in hedging activities. Applied invests in a variety of financial instruments, such as, but not limited to, commercial paper, corporate and municipal bonds, United States Treasury and agency securities, and asset-backed and mortgage-backed securities, and, by policy, limits the amount of credit exposure with any one financial institution or commercial issuer. Applied is exposed to credit-related losses in the event of nonperformance by counterparties to derivative financial instruments, but does not expect any counterparties to fail to meet their obligations. Applied performs ongoing credit evaluations of its customers' financial condition and generally requires no collateral to secure accounts receivable. Applied maintains an allowance for potentially uncollectible accounts receivable based on its assessment of the collectability of accounts receivable. Applied regularly reviews the allowance by considering factors such as historical experience, credit quality, age of the accounts receivable balances, and current economic conditions that may affect a customer's ability to pay. In addition, Applied utilizes deposits and/or letters of credit to mitigate credit risk when considered appropriate.

Recent Accounting Pronouncements

Accounting Standards Adopted

Simplifying the Accounting for Income Taxes. In December 2019, the Financial Accounting Standard Board (FASB) issued an accounting standard update to simplify the accounting for income taxes (Topic 740). This amendment removes certain exceptions and improves consistent application of accounting principles for certain areas in Topic 740. Applied adopted this authoritative guidance in the first quarter of fiscal 2022. The adoption of this guidance did not have a significant impact on Applied's consolidated financial statements.

Accounting Standards Not Yet Adopted

Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions. In June 2022, the FASB issued an accounting standard update which clarifies how the fair value of equity securities subject to contractual sale restrictions is determined (Topic 820). The amendment clarifies that a contractual sale restriction should not be considered in measuring fair value. It also requires certain qualitative and quantitative disclosures related to equity securities subject to contractual sale restrictions. This authoritative guidance will be effective for Applied in the first quarter of fiscal 2025, with early adoption permitted. Applied is currently evaluating the effect of this new guidance on Applied's consolidated financial statements.

Contract Assets and Contract Liabilities from Revenue Contracts with Customers in a Business Combination. In October 2021, the FASB issued an accounting standard update to improve the accounting for contract assets and contract liabilities from revenue contracts with customers in a business combination (Topic 805). This amendment improves comparability for both the recognition and measurement of acquired revenue contracts with customers at the date of and after a business combination. This authoritative guidance will be effective for Applied in the first quarter of fiscal 2024, with early adoption permitted. Applied is currently evaluating the effect of this new guidance on Applied's consolidated financial statements.

Note 2 Earnings Per Share

Basic earnings per share is determined using the weighted average number of common shares outstanding during the period. Diluted earnings per share is determined using the weighted average number of common shares and potential common shares (representing the dilutive effect of restricted stock units, and employee stock purchase plan shares) outstanding during the period. Applied's net income has not been adjusted for any period presented for purposes of computing basic or diluted earnings per share due to the Company's non-complex capital structure.

Fiscal Year	2022	2021	2020
	(In millions, except per share amounts)		
Numerator:			
Net income	$ 6,525	$ 5,888	$ 3,619
Denominator:			
Weighted average common shares outstanding	871	910	916
Effect of weighted dilutive restricted stock units and employee stock purchase plan shares	6	9	7
Denominator for diluted earnings per share	877	919	923
Basic earnings per share	$ 7.49	$ 6.47	$ 3.95
Diluted earnings per share	$ 7.44	$ 6.40	$ 3.92
Potentially weighted dilutive securities	3	—	—

Potentially weighted dilutive securities attributable to outstanding restricted stock units are excluded from the calculation of diluted earnings per share where the combined exercise price and average unamortized fair value are greater than the average market price of Applied common stock, and therefore their inclusion would be anti-dilutive.

Note 3 Cash, Cash Equivalents and Investments

Summary of Cash, Cash Equivalents and Investments

The following tables summarize Applied's cash, cash equivalents and investments by security type:

October 30, 2022	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
	(In millions)			
Cash	$ 1,199	$ —	$ —	$ 1,199
Cash equivalents:				
Money market funds	660	—	—	660
U.S. Treasury and agency securities	4	—	—	4
Municipal securities	13	—	—	13
Commercial paper, corporate bonds and medium-term notes	119	—	—	119
Total Cash equivalents	796	—	—	796
Total Cash and Cash equivalents	$ 1,995	$ —	$ —	$ 1,995
Short-term and long-term investments:				
Bank certificate of deposit	$ 7	$ —	$ —	$ 7
U.S. Treasury and agency securities	435	—	13	422
Non-U.S. government securities*	7	—	1	6
Municipal securities	389	—	16	373
Commercial paper, corporate bonds and medium-term notes	595	—	21	574
Asset-backed and mortgage-backed securities	432	—	19	413
Total fixed income securities	1,865	—	70	1,795
Publicly traded equity securities	85	63	26	122
Equity investments in privately-held companies	567	86	4	649
Total equity investments	652	149	30	771
Total short-term and long-term investments	$ 2,517	$ 149	$ 100	$ 2,566
Total Cash, Cash equivalents and Investments	$ 4,512	$ 149	$ 100	$ 4,561

* Includes Canadian provincial government debt

October 31, 2021	Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
	(In millions)			
Cash	$ 1,407	$ —	$ —	$ 1,407
Cash equivalents:				
Money market funds	3,556	—	—	3,556
Municipal securities	22	—	—	22
Commercial paper, corporate bonds and medium-term notes	10	—	—	10
Total Cash equivalents	3,588	—	—	3,588
Total Cash and Cash equivalents	$ 4,995	$ —	$ —	$ 4,995
Short-term and long-term investments:				
U.S. Treasury and agency securities	$ 314	$ —	$ —	$ 314
Non-U.S. government securities*	5	—	—	5
Municipal securities	367	3	1	369
Commercial paper, corporate bonds and medium-term notes	587	2	2	587
Asset-backed and mortgage-backed securities	555	3	1	557
Total fixed income securities	1,828	8	4	1,832
Publicly traded equity securities	22	39	3	58
Equity investments in privately-held companies	561	82	14	629
Total equity investments	583	121	17	687
Total short-term and long-term investments	$ 2,411	$ 129	$ 21	$ 2,519
Total Cash, Cash equivalents and Investments	$ 7,406	$ 129	$ 21	$ 7,514

*Includes Canadian provincial government debt.

Maturities of Investments

The following table summarizes the contractual maturities of Applied's investments at October 30, 2022:

	Cost	Estimated Fair Value
	(In millions)	
Due in one year or less	$ 538	$ 531
Due after one through five years	888	844
Due after five years	7	7
No single maturity date**	1,084	1,184
Total	$ 2,517	$ 2,566

** Securities with no single maturity date include publicly-traded and privately-held equity securities and asset-backed and mortgage-backed securities.

Gains and Losses on Investments

At October 30, 2022, gross unrealized losses related to Applied’s debt investment portfolio were not material. Applied regularly reviews its debt investment portfolio to identify and evaluate investments that have indications of possible impairment from credit losses or other factors. Factors considered in determining whether an unrealized loss is considered to be a credit loss include: the significance of the decline in value compared to the cost basis; the financial condition; credit quality and near-term prospects of the investee; and whether it is more likely than not that Applied will be required to sell the security prior to recovery. Credit losses related to available-for-sale debt securities are recorded as an allowance for credit losses through interest and other income, net. Any additional changes in fair value that are not related to credit losses are recognized in accumulated other comprehensive income.

During fiscal 2022, 2021 and 2020, gross realized gains and losses related to Applied’s debt investment portfolio investments were not material.

During fiscal 2022 and 2021, Applied did not recognize significant credit losses and the ending allowance for credit losses was not material. Applied determined that the gross unrealized losses on its marketable fixed-income securities at October 25, 2020 were temporary in nature and therefore it did not recognize any impairment of its marketable fixed-income securities for fiscal 2020. During fiscal 2022, 2021 and 2020, impairment charges on equity investments in privately-held companies were not material. These impairment charges are included in interest and other income, net in the Consolidated Statement of Operations.

The components of gain (loss) on equity investments for each fiscal year were as follows:

	2022	2021	2020
		(In millions)	
Publicly traded equity securities			
Unrealized gain	$ 30	$ 14	$ 14
Unrealized loss	(62)	(11)	(17)
Realized gain on sales	7	2	1
Equity investments in privately-held companies			
Unrealized gain	41	65	18
Unrealized loss	(5)	(12)	(7)
Realized gain on sales	3	48	8
Realized loss on sales or impairment	(7)	(7)	(8)
Total gain (loss) on equity investments, net	$ 7	$ 99	$ 9

Note 4 Fair Value Measurements

Applied’s financial assets are measured and recorded at fair value on a recurring basis, except for equity investments in privately-held companies. These equity investments are generally accounted for under the measurement alternative, defined as cost, less impairments, adjusted for subsequent observable price changes and are periodically assessed for impairment when events or circumstances indicate that a decline in value may have occurred. Applied’s nonfinancial assets, such as goodwill, intangible assets, and property, plant and equipment, are recorded at cost and are assessed for impairment whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable.

Fair Value Hierarchy

Applied uses the following fair value hierarchy, which prioritizes the inputs to valuation techniques used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement:

- Level 1 — Quoted prices in active markets for identical assets or liabilities;
- Level 2 — Inputs other than Level 1 that are observable, either directly or indirectly, such as quoted prices for similar assets or liabilities, quoted prices in markets that are not active, or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities; and
- Level 3 — Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Applied’s investments consist primarily of debt securities that are classified as available-for-sale and recorded at their fair values. In determining the fair value of investments, Applied uses pricing information from pricing services that value securities based on quoted market prices and models that utilize observable market inputs. In the event a fair value estimate is unavailable from a pricing service, Applied generally obtains non-binding price quotes from brokers. Applied then reviews the information provided by the pricing services or brokers to determine the fair value of its short-term and long-term investments. In addition, to validate pricing information obtained from pricing services, Applied periodically performs supplemental analysis on a sample of securities. Applied reviews any significant unanticipated differences identified through this analysis to determine the appropriate fair value. As of October 30, 2022, substantially all of Applied’s available-for-sale, short-term and long-term investments were recognized at fair value that was determined based upon observable inputs.

Applied’s equity investments with readily determinable values consist of publicly traded equity securities. These investments are measured at fair value using quoted prices for identical assets in an active market and the changes in fair value of these equity investments are recognized in the consolidated statements of operations.

Investments with remaining effective maturities of 12 months or less from the balance sheet date are classified as short-term investments. Investments with remaining effective maturities of more than 12 months from the balance sheet date are classified as long-term investments.

Assets Measured at Fair Value on a Recurring Basis

Financial assets (excluding cash balances) measured at fair value on a recurring basis are summarized below:

	October 30, 2022			October 31, 2021		
	Level 1	Level 2	Total	Level 1	Level 2	Total
	(In millions)					
Assets:						
Available-for-sale debt security investments						
Money market funds*	$ 765	$ —	$ 765	$ 3,662	$ —	$ 3,662
Bank certificate of deposit	—	7	7	—	—	—
U.S. Treasury and agency securities	404	22	426	296	18	314
Non-U.S. government securities	—	6	6	—	5	5
Municipal securities	—	386	386	—	391	391
Commercial paper, corporate bonds and medium-term notes	—	693	693	—	597	597
Asset-backed and mortgage-backed securities	—	413	413	—	557	557
Total available-for-sale debt security investments	$ 1,169	$ 1,527	$ 2,696	$ 3,958	$ 1,568	$ 5,526
Equity investments with readily determinable values						
Publicly traded equity securities	$ 122	$ —	$ 122	$ 58	$ —	$ 58
Total equity investments with readily determinable values	$ 122	$ —	$ 122	$ 58	$ —	$ 58
Total	$ 1,291	$ 1,527	$ 2,818	$ 4,016	$ 1,568	$ 5,584

* Amounts as of October 30, 2022 and October 31, 2021 include $105 million and $106 million, respectively, invested in money market funds related to deferred compensation plans. Due to restrictions on the distribution of these funds, they are classified as restricted cash equivalents and are included in deferred income taxes and other assets in the Consolidated Condensed Balance Sheets.

Applied did not have any financial assets measured at fair value on a recurring basis within Level 3 fair value measurements as of October 30, 2022 or October 31, 2021.

Assets and Liabilities without Readily Determinable Values Measured on a Non-recurring Basis

Applied's equity investments without readily determinable values consist of equity investments in privately-held companies. Applied elected the measurement alternative, defined as cost, less impairments, adjusted for subsequent observable price changes on a prospective basis for certain equity investments without readily determinable fair values and is required to account for any subsequent observable changes in fair value within the statements of operations. These investments are classified as Level 3 within the fair value hierarchy and periodically assessed for impairment when an event or circumstance indicates that a decline in value may have occurred.

During fiscal 2022, 2021 and 2020, impairment charges on equity investments in privately-held companies were not material.

Other

The carrying amounts of Applied's financial instruments, including cash and cash equivalents, restricted cash equivalents, accounts receivable, notes payable - short term, and accounts payable and accrued expenses, approximate fair value due to their short maturities. At October 30, 2022, the aggregate principal amount of long-term senior unsecured notes was $5.5 billion, and the estimated fair value was $4.8 billion. At October 31, 2021, the aggregate principal amount of long-term senior unsecured notes was $5.5 billion and the estimated fair value was $6.4 billion. The estimated fair value of long-term senior unsecured notes is determined by Level 2 inputs and is based primarily on quoted market prices for the same or similar issues. See Note 10 of the Notes to the Consolidated Financial Statements for further detail of existing debt.

Note 5 Derivative Instruments and Hedging Activities

Derivative Financial Instruments

Applied conducts business in a number of foreign countries, with certain transactions denominated in local currencies, such as the Japanese yen, Israeli shekel, euro and Taiwanese dollar. Applied uses derivative financial instruments, such as foreign currency forward and option contracts, to hedge certain forecasted foreign currency denominated transactions expected to occur typically within the next 24 months. The purpose of Applied's foreign currency management is to mitigate the effect of exchange rate fluctuations on certain foreign currency denominated revenues, costs and eventual cash flows. The terms of currency instruments used for hedging purposes are generally consistent with the timing of the transactions being hedged.

Applied does not use derivative financial instruments for trading or speculative purposes. Derivative instruments and hedging activities, including foreign exchange and interest rate contracts, are recognized on the balance sheet at fair value. Changes in the fair value of derivatives that do not qualify for hedge accounting treatment are recognized currently in earnings. All of Applied's derivative financial instruments are recorded at their fair value in other current assets or in accounts payable and accrued expenses.

Hedges related to anticipated transactions are designated and documented at the inception of the hedge as cash flow hedges and foreign exchange derivatives are typically entered into once per month. Cash flow hedges are evaluated for effectiveness quarterly. The effective portion of the gain or loss on these hedges is reported as a component of AOCI in stockholders' equity and is reclassified into earnings when the hedged transaction affects earnings. The majority of the after-tax net income or loss related to foreign exchange derivative instruments included in AOCI at October 30, 2022 is expected to be reclassified into earnings within 12 months. Changes in fair value caused by changes in time value of option contracts designated as cash flow hedges are excluded from the assessment of effectiveness. The initial value of this excluded component is amortized on a straight-line basis over the life of the hedging instrument and recognized in the financial statement line item to which the hedge relates. If the transaction being hedged is probable not to occur, Applied promptly recognizes the gain or loss on the associated financial instrument in the consolidated condensed statement of operations. The amount recognized due to discontinuance of cash flow hedges that were probable of not occurring by the end of the originally specified time period was not significant for fiscal years 2022, 2021 or 2020.

Foreign currency forward contracts are generally used to hedge certain foreign currency denominated assets or liabilities. Accordingly, changes in the fair value of these hedges are recorded in earnings to offset the changes in the fair value of the assets or liabilities being hedged.

As of October 30, 2022 and October 31, 2021, the total outstanding notional amounts of foreign exchange contracts were both $2.1 billion. The fair values of foreign exchange derivative instruments at October 30, 2022 and October 31, 2021 were not material.

The gain (loss) on derivatives in cash flow hedging relationships recognized in AOCI for derivatives designated as hedging instruments for the indicated periods were as follows:

	Derivatives in Cash Flow Hedging Relationships		
	2022	2021	2020
	(In millions)		
Foreign exchange contracts	$ 128	$ 36	$ 3
Interest rate contracts	—	—	(151)
Total	$ 128	$ 36	$ (148)

The effects of derivative instruments and hedging activities on the Consolidated Statements of Operations were as follows:

	Total Amount Presented in the Consolidated Statement of Operations in which the Effects of Cash Flow Hedges are Recorded	Derivatives in Cash Flow Hedging Relationships: Amount of Gain or (Loss) Reclassified from AOCI into Consolidated Statement of Operations	Derivatives in Cash Flow Hedging Relationships: Amounts of Gain (Loss) Excluded from Effectiveness Testing Recognized in Consolidated Statement of Operations
	(In millions)		
2022			
Foreign Exchange Contracts:			
Net Sales	$ 25,785	$ 100	$ —
Cost of products sold	$ 13,792	(12)	—
Research, development and engineering	$ 2,771	(7)	(1)
Marketing and selling	$ 703	(3)	—
General and administrative	$ 735	(3)	—
Interest Rate Contracts:			
Interest expense	$ 228	(13)	—
		$ 62	$ (1)
2021			
Foreign Exchange Contracts:			
Net Sales	$ 23,063	$ 4	$ —
Cost of products sold	$ 12,149	2	(2)
Research, development and engineering	$ 2,485	3	—
General and administrative	$ 620	1	—
Interest Rate Contracts:			
Interest expense	$ 236	(13)	—
		$ (3)	$ (2)
2020			
Foreign Exchange Contracts:			
Net Sales	$ 17,202	$ (2)	$ 4
Cost of products sold	$ 9,510	6	(3)
Research, development and engineering	$ 2,234	4	—
General and administrative	$ 567	1	—
Interest Rate Contracts:			
Interest expense	$ 240	(7)	—
		$ 2	$ 1

	Location of Gain or (Loss) Recognized in Consolidated Statement of Operations	Amount of Gain or (Loss) Recognized in Consolidated Statement of Operations		
		2022	2021	2020
		(In millions)		
Derivatives Not Designated as Hedging Instruments				
Foreign exchange contracts	Interest and other income, net	$ 67	$ 29	$ (10)
Total return swaps - deferred compensation	Cost of products sold	(3)	3	1
Total return swaps - deferred compensation	Operating expenses	(29)	29	6
Total return swaps - deferred compensation	Interest and other income, net	(2)	(1)	(1)
Total		$ 33	$ 60	$ (4)

Credit Risk Contingent Features

If Applied's credit rating were to fall below investment grade, it would be in violation of credit risk contingent provisions of the derivative instruments discussed above, and certain counterparties to the derivative instruments could request immediate payment on derivative instruments in net liability positions. The aggregate fair value of all derivative instruments with credit-risk related contingent features that were in a net liability position was immaterial as of October 30, 2022 and October 31, 2021.

Entering into derivative contracts with banks exposes Applied to credit-related losses in the event of the banks' nonperformance. However, Applied's exposure is not considered significant.

Note 6 Accounts Receivable, Net

Applied has agreements with various financial institutions to sell accounts receivable and discount promissory notes from selected customers. Applied sells its accounts receivable generally without recourse. Applied, from time to time, also discounts letters of credit issued by customers through various financial institutions. The discounting of letters of credit depends on many factors, including the willingness of financial institutions to discount the letters of credit and the cost of such arrangements.

Applied sold $1.0 billion, $1.3 billion and $1.2 billion of accounts receivable during fiscal 2022, 2021 and 2020, respectively. Applied did not discount letters of credit issued by customers in fiscal 2022 and 2021. Applied discounted letters of credit issued by customers of $105 million in fiscal 2020. There was no discounting of promissory notes in each of fiscal 2022, 2021 and 2020. Financing charges on the sale of receivables and discounting of letters of credit are included in interest expense in the accompanying Consolidated Statements of Operations and were not material for all years presented.

Accounts receivable are presented net of allowance for credit losses of $29 million at October 30, 2022 and October 31, 2021. Changes in allowance for credit losses in each fiscal year were as follows:

	2022	2021	2020
		(In millions)	
Beginning balance	$ 29	$ 30	$ 30
Provision	—	—	—
Deductions[1]	—	(1)	—
Ending balance	$ 29	$ 29	$ 30

[1] Deductions primarily represent releases of credit losses credited to expense as a result of an overall lower risk profile of Applied's customers and cash collections.

Applied sells its products principally to manufacturers within the semiconductor and display industries. While Applied believes that its allowance for credit losses is adequate and represents its best estimate as of October 30, 2022, it continues to closely monitor customer liquidity and industry and economic conditions, which may result in changes to Applied's estimates.

Note 7 Contract Balances

Contract assets primarily result from receivables for goods transferred to customers where payment is conditional upon technical sign off and not just the passage of time. Contract liabilities consist of unsatisfied performance obligations related to advance payments received and billings in excess of revenue recognized. Applied's contract assets and liabilities are reported in a net position on a contract-by-contract basis at the end of each reporting period.

Contract assets are generally classified as current and are included in Other Current Assets in the Consolidated Balance Sheets. Contract liabilities are classified as current or non-current based on the timing of when performance obligations will be satisfied and associated revenue is expected to be recognized.

Contract balances at the end of each reporting period were as follows:

	October 30, 2022	October 31, 2021
	(In millions)	
Contract assets	$ 173	$ 201
Contract liabilities	$ 3,142	$ 2,076

The decrease in contract assets during fiscal 2022, was primarily due to an increase in unsatisfied performance obligations related to goods transferred to customers where payment was conditional upon technical sign off.

During fiscal 2022, Applied recognized revenue of approximately $1.9 billion related to contract liabilities at October 31, 2021. This reduction in contract liabilities was offset by new billings for products and services for which there were unsatisfied performance obligations to customers and revenue had not yet been recognized as of October 30, 2022.

There were no credit losses recognized on Applied's accounts receivables and contract assets during fiscal 2022 and 2021.

As of October 30, 2022, the amount of remaining unsatisfied performance obligations on contracts with an original estimated duration of one year or more was approximately $4.8 billion, of which approximately 28% is expected to be recognized within 12 months and the remainder is expected to be recognized within the following 24 months thereafter.

New export rules and regulations issued in December 2022 are expected to reduce remaining unsatisfied performance obligations on contracts with an original estimated duration of one year or more by approximately $944 million, none of which was expected to be recognized within 12 months.

Applied has elected the available practical expedient to exclude the value of unsatisfied performance obligations for contracts with an original expected duration of one year or less.

Note 8 Balance Sheet Detail

	October 30, 2022	October 31, 2021
	(In millions)	
Inventories		
Customer service spares	$ 1,409	$ 1,251
Raw materials	1,807	1,136
Work-in-process	1,029	873
Finished goods	1,687	1,049
	$ 5,932	$ 4,309

Included in finished goods inventory are $704 million at October 30, 2022 and $325 million at October 31, 2021 of systems at customer locations where the sales transaction did not meet Applied's revenue recognition criteria as set forth in Note 1, of which $45 million at October 30, 2022 and $58 million at October 31, 2021 is related to newly-introduced systems. Finished goods inventory includes $422 million and $380 million of evaluation inventory at October 30, 2022 and October 31, 2021, respectively.

	October 30, 2022	October 31, 2021
	(In millions)	
Other Current Assets		
Prepaid income taxes and income taxes receivable	$ 461	$ 593
Prepaid expenses and other	883	793
	$ 1,344	$ 1,386

	Useful Life	October 30, 2022	October 31, 2021
	(In years)	(In millions)	
Property, Plant and Equipment, Net			
Land and improvements		$ 387	$ 334
Buildings and improvements	3-30	2,027	1,780
Demonstration and manufacturing equipment	3-5	2,083	1,820
Furniture, fixtures and other equipment	3-5	743	720
Construction in progress		389	326
Gross property, plant and equipment		5,629	4,980
Accumulated depreciation		(3,322)	(3,046)
		$ 2,307	$ 1,934

Depreciation expense was $404 million, $345 million and $320 million for fiscal 2022, 2021 and 2020 respectively.

	October 30, 2022	October 31, 2021
	(In millions)	
Deferred Income Taxes and Other Assets		
Non-current deferred income taxes	$ 1,395	$ 1,623
Operating lease right-of-use assets	389	294
Income tax receivables and other assets	691	229
	$ 2,475	$ 2,146

	October 30, 2022	October 31, 2021
	(In millions)	
Accounts Payable and Accrued Expenses		
Accounts payable	$ 1,755	$ 1,472
Compensation and employee benefits	905	924
Warranty	286	242
Dividends payable	220	214
Income taxes payable	319	734
Other accrued taxes	30	24
Interest payable	39	39
Operating lease liabilities, current	85	73
Other	598	546
	$ 4,237	$ 4,268

	October 30, 2022	October 31, 2021
	(In millions)	
Other Liabilities		
Defined and postretirement benefit plans	$ 107	$ 193
Operating lease liabilities, non-current	287	228
Other	338	271
	$ 732	$ 692

Note 9 Goodwill, Purchased Technology and Other Intangible Assets

Goodwill and Purchased Intangible Assets

Applied's methodology for allocating the purchase price relating to purchase acquisitions is determined through established and generally accepted valuation techniques. Goodwill is measured as the excess of the purchase price over the sum of the amounts assigned to tangible and identifiable intangible assets acquired less liabilities assumed. Applied assigns assets acquired (including goodwill) and liabilities assumed to one or more reporting units as of the date of acquisition. Typically, acquisitions relate to a single reporting unit and thus do not require the allocation of goodwill to multiple reporting units. If the products obtained in an acquisition are assigned to multiple reporting units, the goodwill is distributed to the respective reporting units as part of the purchase price allocation process.

Goodwill and purchased intangible assets with indefinite useful lives are not amortized but are reviewed for impairment annually during the fourth quarter of each fiscal year and whenever events or changes in circumstances indicate that the carrying value of an asset may not be recoverable. The process of evaluating the potential impairment of goodwill and intangible assets requires significant judgment, especially in emerging markets. When reviewing goodwill for impairment, Applied first performs a qualitative assessment to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value.

In performing a qualitative assessment, Applied considers business conditions and other factors including, but not limited to (i) adverse industry or economic trends, (ii) restructuring actions and lower projections that may impact future operating results, (iii) sustained decline in share price, and (iv) overall financial performance and other events affecting the reporting units. If Applied concludes that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, then a quantitative impairment test is performed by estimating the fair value of the reporting unit and comparing it to its carrying value. If the carrying value of a reporting unit exceeds its fair value, Applied would record an impairment charge equal to the excess of the carrying value of the reporting unit over its fair value.

As of October 30, 2022, Applied's reporting units include Semiconductor Products Group and Imaging and Process Control Group, which combine to form the Semiconductor Systems reporting segment, Applied Global Services, Display and Adjacent Markets and other reporting units recorded under Corporate and Other.

In the fourth quarter of fiscal 2022, Applied performed a qualitative assessment to test goodwill for all of its reporting units for impairment. Applied determined that it was more likely than not that each of its reporting units' fair values exceeded their respective carrying values and that it was not necessary to perform the quantitative goodwill impairment test for any of its reporting units. The evaluation of goodwill and intangible assets for impairment requires the exercise of significant judgment. In the event of future changes in business conditions, Applied will be required to reassess and update its forecasts and estimates used in future impairment analyses. If the results of these future analyses are lower than current estimates, a material impairment charge may result at that time.

Details of goodwill and indefinite-lived intangible assets as of:

	October 30, 2022			October 31, 2021		
	Goodwill	Indefinite-lived Intangible Assets	Total	Goodwill	Indefinite-lived Intangible Assets	Total
	(In millions)					
Semiconductor Systems	$ 2,428	$ 16	$ 2,444	$ 2,207	$ —	$ 2,207
Applied Global Services	1,032	—	1,032	1,032	—	1,032
Display and Adjacent Markets	199	—	199	199	—	199
Corporate and Other	41	1	42	41	—	41
Carrying amount	$ 3,700	$ 17	$ 3,717	$ 3,479	$ —	$ 3,479

From time to time, Applied makes acquisitions of companies related to existing or new markets for Applied. During fiscal 2022, goodwill and indefinite-lived intangible assets increased by $221 million and $17 million, respectively, primarily due to the preliminary purchase accounting for acquisitions during the third quarter of fiscal 2022, which were not material to Applied's results of operations.

A summary of Applied's purchased technology and intangible assets is set forth below:

	October 30, 2022	October 31, 2021
	(In millions)	
Purchased technology, net	$ 256	$ 46
Intangible assets - finite-lived, net	66	58
Intangible assets - indefinite-lived	17	—
Total	$ 339	$ 104

The increase in purchased technology and intangible assets during fiscal 2022 was primarily due to the preliminary purchase accounting for acquisitions during the third quarter of fiscal 2022, which were not material to Applied's results of operations.

Intangible assets that are not subject to amortization consist primarily of in-process technology, which will be subject to amortization upon commercialization. If an in-process technology project is abandoned, the acquired technology attributable to the project will be written-off.

Finite-Lived Purchased Intangible Assets

Applied amortizes purchased intangible assets with finite lives using the straight-line method over the estimated economic lives of the assets, ranging from 1 to 15 years.

Applied evaluates long-lived assets for impairment whenever events or changes in circumstances indicate the carrying value of an asset group may not be recoverable. Applied assesses the fair value of the assets based on the amount of the undiscounted future cash flow that the assets are expected to generate and recognizes an impairment loss when estimated undiscounted future cash flow expected to result from the use of the asset, plus net proceeds expected from disposition of the asset, if any, are less than the carrying value of the asset. When Applied identifies an impairment, Applied reduces the carrying value of the group of assets to comparable market values, when available and appropriate, or to its estimated fair value based on a discounted cash flow approach.

Intangible assets, such as purchased technology, are generally recorded in connection with a business acquisition. The value assigned to intangible assets is usually based on estimates and judgments regarding expectations for the success and life cycle of products and technology acquired. Applied evaluates the useful lives of its intangible assets each reporting period to determine whether events and circumstances require revising the remaining period of amortization. In addition, Applied reviews intangible assets for impairment when events or changes in circumstances indicate their carrying value may not be recoverable. Management considers such indicators as significant differences in actual product acceptance from the estimates, changes in the competitive and economic environments, technological advances, and changes in cost structure.

Details of finite-lived intangible assets were as follows:

	October 30, 2022			October 31, 2021		
	Purchased Technology	Other Intangible Assets	Total	Purchased Technology	Other Intangible Assets	Total
	(In millions)					
Gross carrying amount:						
Semiconductor Systems	$ 1,707	$ 278	$ 1,985	$ 1,476	$ 256	$ 1,732
Applied Global Services	35	44	79	35	44	79
Display and Adjacent Markets	158	36	194	163	38	201
Corporate and Other	18	18	36	13	16	29
Gross carrying amount	$ 1,918	$ 376	$ 2,294	$ 1,687	$ 354	$ 2,041
Accumulated amortization:						
Semiconductor Systems	$ (1,461)	$ (214)	$ (1,675)	$ (1,446)	$ (203)	$ (1,649)
Applied Global Services	(33)	(44)	(77)	(32)	(44)	(76)
Display and Adjacent Markets	(158)	(36)	(194)	(161)	(38)	(199)
Corporate and Other	(10)	(16)	(26)	(2)	(11)	(13)
Accumulated amortization	$ (1,662)	$ (310)	$ (1,972)	$ (1,641)	$ (296)	$ (1,937)
Carrying amount	$ 256	$ 66	$ 322	$ 46	$ 58	$ 104

Details of amortization expense for each fiscal year by segment were as follows:

	2022	2021	2020
	(In millions)		
Semiconductor Systems	$ 31	$ 41	$ 40
Applied Global Services	1	1	1
Display and Adjacent Markets	2	5	13
Corporate and Other	6	2	2
Total	$ 40	$ 49	$ 56

Amortization expense for each fiscal year was charged to the following categories:

	2022	2021	2020
	(In millions)		
Cost of products sold	$ 27	$ 29	$ 37
Research, development and engineering	—	1	1
Marketing and selling	13	19	18
Total	$ 40	$ 49	$ 56

As of October 30, 2022, future estimated amortization expense of intangible assets with finite lives is expected to be as follows:

	Amortization Expense
	(In millions)
2023	$ 42
2024	39
2025	37
2026	37
2027	24
Thereafter	143
Total	$ 322

Note 10 Borrowing Facilities and Debt

Revolving Credit Facilities

In February 2020, Applied entered into a five-year $1.5 billion committed unsecured revolving credit agreement (Revolving Credit Agreement) with a group of banks. The Revolving Credit Agreement includes a provision under which Applied may request an increase in the amount of the facility of up to $500 million for a total commitment of no more than $2.0 billion, subject to the receipt of commitments from one or more lenders for any such increase and other customary conditions. The Revolving Credit Agreement is scheduled to expire in February 2025, unless extended as permitted under the Revolving Credit Agreement. The Revolving Credit Agreement provides for borrowings that bear interest for each advance at one of two rates selected by Applied, plus an applicable margin, which varies according to Applied's public debt credit ratings. In July 2022, Applied entered into an amendment to the Revolving Credit Agreement which replaced the London interbank offered rate (LIBOR) as a reference rate for borrowings with the secured overnight financing rate (SOFR).

No amounts were outstanding under the Revolving Credit Agreement as of October 30, 2022 and October 31, 2021.

In addition, Applied has revolving credit facilities with Japanese banks pursuant to which it may borrow up to approximately $54 million in aggregate at any time. Applied's ability to borrow under these facilities is subject to bank approval at the time of the borrowing request, and any advances will be at rates indexed to the banks' prime reference rate denominated in Japanese yen. As of October 30, 2022 and October 31, 2021, no amounts were outstanding under these revolving credit facilities.

Short-term Commercial Paper

Applied has a short-term commercial paper program under which Applied may issue unsecured commercial paper notes of up to a total amount of $1.5 billion. At October 30, 2022 and October 31, 2021, Applied did not have any commercial paper outstanding. Subsequent to the end of fiscal 2022, Applied issued $200 million of short-term commercial paper with a weighted-average interest rate of 4.30% and maturities ranging from 43 days to 71 days.

Senior Unsecured Notes

Debt outstanding as of October 30, 2022 and October 31, 2021 was as follows:

	Principal Amount			
	October 30, 2022	October 31, 2021	Effective Interest Rate	Interest Pay Dates
	(In millions)			
Long-term debt:				
3.900% Senior Notes Due 2025	$ 700	$ 700	3.944%	April 1, October 1
3.300% Senior Notes Due 2027	1,200	1,200	3.342%	April 1, October 1
1.750% Senior Notes Due 2030	750	750	1.792%	June 1, December 1
5.100% Senior Notes Due 2035	500	500	5.127%	April 1, October 1
5.850% Senior Notes Due 2041	600	600	5.879%	June 15, December 15
4.350% Senior Notes Due 2047	1,000	1,000	4.361%	April 1, October 1
2.750% Senior Notes Due 2050	750	750	2.773%	June 1, December 1
	5,500	5,500		
Total unamortized discount	(12)	(14)		
Total unamortized debt issuance costs	(31)	(34)		
Total long-term debt	$ 5,457	$ 5,452		

Note 11 Leases

A contract contains a lease when Applied has the right to control the use of an identified asset for a period of time in exchange for consideration. Applied leases certain facilities, vehicles and equipment under non-cancelable operating leases, many of which include options to renew. Options that are reasonably certain to be exercised are included in the calculation of the right-of-use asset and lease liability. Applied's leases do not contain residual value guarantees or significant restrictions that impact the accounting for leases. As implicit rates are not available for the leases, Applied uses the incremental borrowing rate as of the lease commencement date in order to measure the right-of-use asset and liability. Operating lease expense is generally recognized on a straight-line basis over the lease term.

Applied elected the practical expedient to account for lease and non-lease components as a single lease component for all leases. For leases with a term of one year or less, Applied elected not to record a right-of-use asset or lease liability and to account for the associated lease payments as they become due.

The components of lease expense and supplemental information were as follows:

	2022	2021	2020
	(In millions, except percentage)		
Operating lease cost	$ 93	$ 79	$ 69
Weighted-average remaining lease term (in years)	6.3	5.1	5.2
Weighted-average discount rate	2.5 %	1.7 %	1.8 %

Supplemental cash flow information related to leases are as follows:

	2022	2021	2020
	(In millions)		
Operating cash flows paid for operating leases	$ 107	$ 79	$ 70
Right-of-use assets obtained in exchange for operating lease liabilities	$ 204	$ 123	$ 156

As of October 30, 2022, the maturities of lease liabilities are as follows:

Fiscal	Operating Leases (In millions)
2023	$ 93
2024	84
2025	65
2026	34
2027	26
Thereafter	105
Total lease payments	407
Less imputed interest	(35)
Total	$ 372

Note 12 Severance and Related Charges

Fiscal 2021 Severance Plan

In the first quarter of fiscal 2021, Applied enacted a severance plan to realign its workforce. Under this plan, Applied implemented a one-time voluntary retirement program and other workforce reduction actions. The voluntary retirement program was available to certain U.S. employees who met minimum age and length of service requirements, as well as other business-specific criteria. The payments under this plan are paid at the time of termination and the related costs were not allocated to the segments. In addition, Applied implemented other workforce reduction actions globally across the Display and Adjacent Markets business. These costs were recorded under the Display and Adjacent Markets segment.

During fiscal 2022 and 2021, Applied recorded an adjustment of $4 million and recognized a total expense of $157 million, of severance and related charges, respectively, in connection with the Fiscal 2021 Severance Plan.

Severance and related charges and adjustments by segment were as follows:

	2022	2021
	(In millions)	
Display and Adjacent Markets	$ —	$ 8
Corporate and Other	(4)	149
Total	$ (4)	$ 157

Changes in severance and related charges reserves related to the Fiscal 2021 Severance Plan described above were as follows:

	Severance and Related Charges Reserves (In millions)
Balance as of October 25, 2020	$ —
Provision for severance	158
Adjustment to provision for severance	(1)
Consumption of reserves	(140)
Balance as of October 31, 2021	17
Adjustment to provision for severance	(4)
Consumption of reserves	(13)
Balance as of October 30, 2022	$ —

Note 13 Stockholders' Equity, Comprehensive Income and Share-Based Compensation

Accumulated Other Comprehensive Income (Loss)

Changes in the components of accumulated other comprehensive income (AOCI), net of tax, were as follows:

	Unrealized Gain (Loss) on Investments, Net	Unrealized Gain (Loss) on Derivative Instruments Qualifying as Cash Flow Hedges	Defined and Postretirement Benefit Plans	Cumulative Translation Adjustments	Total
	(In millions)				
Balance at October 27, 2019	$ 11	$ (16)	$ (188)	$ 13	(180)
Other comprehensive income (loss) before reclassifications	16	(115)	(21)	—	(120)
Amounts reclassified out of AOCI	(7)	(2)	10	—	1
Other comprehensive income (loss), net of tax	9	(117)	(11)	—	(119)
Balance at October 25, 2020	$ 20	$ (133)	$ (199)	$ 13	$ (299)
Other comprehensive income (loss) before reclassifications	(14)	28	20	—	34
Amounts reclassified out of AOCI	(7)	2	10	—	5
Other comprehensive income, net of tax	(21)	30	30	—	39
Balance at October 31, 2021	$ (1)	$ (103)	$ (169)	$ 13	$ (260)
Other comprehensive income (loss) before reclassifications	(60)	100	71	—	111
Amounts reclassified out of AOCI	(14)	(49)	10	—	(53)
Other comprehensive income (loss), net of tax	(74)	51	81	—	58
Balance at October 30, 2022	$ (75)	$ (52)	$ (88)	$ 13	$ (202)

The tax effects on net income of amounts reclassified from AOCI for the fiscal years 2022, 2021 and 2020 were $36 million, $19 million and $35 million, respectively.

Stock Repurchase Program

In March 2022, Applied's Board of Directors approved a common stock repurchase program authorizing $6.0 billion in repurchases, which supplemented the previously existing $7.5 billion authorization approved in March 2021. At October 30, 2022, approximately $4.9 billion remained available for future stock repurchases under the repurchase program.

The following table summarizes Applied's stock repurchases for each fiscal year:

	2022	2021	2020
	(In millions, except per share amounts)		
Shares of common stock repurchased	54	28	12
Cost of stock repurchased	$ 6,103	$ 3,750	$ 649
Average price paid per share	$ 113.84	$ 134.03	$ 56.32

Applied records treasury stock purchases under the cost method using the first-in, first-out (FIFO) method. Upon reissuance of treasury stock, amounts in excess of the acquisition cost are credited to additional paid in capital. If Applied reissues treasury stock at an amount below its acquisition cost and additional paid in capital associated with prior treasury stock transactions is insufficient to cover the difference between the acquisition cost and the reissue price, this difference is recorded against retained earnings.

Dividends

During fiscal 2022, Applied's Board of Directors declared one quarterly cash dividend of $0.24 per share and three quarterly cash dividends of $0.26 per share. During fiscal 2021, Applied's Board of Directors declared one quarterly cash dividend of $0.22 per share and three quarterly cash dividends of $0.24 per share. During fiscal 2020, Applied's Board of Directors declared one quarterly cash dividend of $0.21 per share and three quarterly cash dividends of $0.22 per share. Dividends paid during fiscal 2022, 2021 and 2020 amounted to $873 million, $838 million and $787 million, respectively. Applied currently anticipates that cash dividends will continue to be paid on a quarterly basis, although the declaration of any future cash dividend is at the discretion of the Board of Directors and will depend on Applied's financial condition, results of operations, capital requirements, business conditions and other factors, as well as a determination by the Board of Directors that cash dividends are in the best interests of Applied's stockholders.

Share-Based Compensation

Applied has a stockholder-approved equity plan, the Employee Stock Incentive Plan (ESIP), which permits grants to employees of share-based awards, including stock options, stock appreciation rights, restricted stock, restricted stock units, performance share units and performance units. In addition, the plan provides for the automatic grant of restricted stock units to non-employee directors and permits the grant of share-based awards to non-employee directors and consultants. Share-based awards made under the plan may be subject to accelerated vesting under certain circumstances in the event of a change in control of Applied. In addition, Applied has an Omnibus Employees' Stock Purchase Plan (ESPP), which enables eligible employees to purchase Applied common stock.

Applied recognized share-based compensation expense related to equity awards and ESPP shares. The effect of share-based compensation on the results of operations and the related tax benefits for each fiscal year were as follows:

	2022	2021	2020
		(In millions)	
Cost of products sold	$ 147	$ 118	$ 103
Research, development, and engineering	151	129	116
Marketing and selling	49	43	36
General and administrative	66	56	52
Total share-based compensation	$ 413	$ 346	$ 307
Income tax benefits recognized	$ 51	$ 43	$ 39

The cost associated with share-based awards is recognized over the awards' service period for the entire award on a straight-line basis, adjusting for estimated forfeitures. Applied calculates estimated forfeiture rate on an annual basis, based on historical forfeiture activities. Share-based awards granted to certain members of senior management allow for partial accelerated vesting in the event of a qualifying retirement based on age and years of service. The cost associated with performance-based equity awards, which include performance and/or market goals, is recognized for each tranche over the service period. The cost of the portion of performance-based equity awards subject to performance goals is recognized based on an assessment of the likelihood that the applicable performance goals will be achieved, and the cost of the portion of performance-based equity awards subject to market goals is recognized based on the assumption of 100% achievement of the goal.

At October 30, 2022, Applied had $678 million in total unrecognized compensation expense, net of estimated forfeitures, related to grants of share-based awards and shares issued under the ESPP, which will be recognized over a weighted average period of 2.6 years. At October 30, 2022, there were 31 million shares available for grant of share-based awards under the ESIP, and an additional 14 million shares available for issuance under the ESPP.

Stock Options

Stock options are rights to purchase, at future dates, shares of Applied common stock. The exercise price of each stock option equals the fair market value of Applied common stock on the date of grant. Options typically vest over three to four years, subject to the grantee's continued service with Applied through the scheduled vesting date, and expire no later than seven years from the grant date. There were no stock options granted during fiscal 2022, 2021 and 2020. There were no outstanding stock options at the end of fiscal 2022.

Restricted Stock Units, Restricted Stock, Performance Share Units and Performance Units

Restricted stock units are converted into shares of Applied common stock upon vesting on a one-for-one basis. Restricted stock has the same rights as other issued and outstanding shares of Applied common stock except these shares generally have no right to dividends and are held in escrow until the award vests. Performance share units and performance units are awards that result in a payment to a grantee, generally in shares of Applied common stock on a one-for-one basis, if performance goals, market goals and/or other vesting criteria are achieved or the awards otherwise vest. Restricted stock units, restricted stock, performance share units and performance units typically vest over three to four years and vesting is usually subject to the grantee's continued service with Applied and, in some cases, achievement of specified performance and/or market goals. The compensation expense related to share-based awards subject solely to time-based vesting requirements (Service-Based Awards) is determined using the market value of Applied common stock, adjusted to exclude the present value of expected dividends during the vesting period. The market value of Applied common stock is calculated using the closing price of Applied common stock on the date of grant or if the grant date is not a trading date, the average of the closing prices on the trading dates immediately preceding and following the grant date. The compensation expense is recognized over the vesting period.

During fiscal 2022, 2021 and 2020, certain members of senior management were granted awards that are subject to the achievement of certain levels of specified performance and/or market goals, in addition to time-based vesting requirements (Performance Based-Awards).

Certain of Performance-Based Awards are subject to the achievement of targeted levels of adjusted operating margin and targeted levels of total shareholder return (TSR) relative to the TSR of the companies in the Standard & Poor's 500 Index. Each of these two metrics will be weighted 50% and will be measured over a three-year period. The number of shares that may vest in full after three years ranges from 0% to 200% of the target amount. The awards become eligible to vest only if the goals are achieved and will vest only if the grantee remains employed by Applied through each applicable vesting date, subject to a qualifying retirement based on age and years of service. The awards provide for a partial payout based on actual performance at the conclusion of the three-year performance period in the event of a qualifying retirement.

During fiscal 2021, certain executive officers were also granted non-recurring long-term Performance-Based Awards that are subject to the achievement of targeted levels of Applied's absolute TSR. The awards become eligible to vest only if targeted levels of TSR are achieved during a five-year performance period and will vest only if the grantee remains employed by Applied through the vesting date in October 2025, except in the event of involuntary termination of employment without cause, death or following a change of control. The number of shares that may vest in full after five years ranges from 0% to 200% of the target amount.

The fair value of the portion of the Performance-Based Awards subject to targeted levels of adjusted operating margin is estimated on the date of grant based on the market value of Applied common stock, adjusted to exclude the present value of expected dividends during the vesting period. The market value of Applied common stock is calculated using the closing price of Applied common stock on the date of the grant or if the grant date is not a trading date, the average of the closing prices on the trading dates immediately preceding and following the grant date. If the performance goals are not met as of the end of the performance period, no compensation expense is recognized and any previously recognized compensation expense is reversed. The expected cost is based on the portion of the awards that is probable to vest and is reflected over the service period and reduced for estimated forfeitures.

The fair value of the portion of the Performance-Based Awards subject to targeted levels of relative TSR or absolute TSR is estimated on the date of grant using a Monte Carlo simulation model. Compensation expense is recognized based upon the assumption of 100% achievement of the TSR goal and will not be reversed even if the threshold level of TSR is never achieved, and is reflected over the service period and reduced for estimated forfeitures.

The following tables summarize the assumptions used for the valuation of share-based awards for the periods presented:

	2022	2021	2020
Service-Based Awards and the portion of Performance-Based Awards subject to performance goals:			
Grant date market value	$74.62 - $157.29	$74.37 - $143.05	$39.18 - $66.43
Risk-free interest rate	0.16% - 4.48%	0.04% - 0.82%	0.11% - 1.70%
Dividend yield	0.47% - 3.83%	0.20% - 3.09%	1.69% - 6.23%
Fair value	$72.24 - $154.88	$72.20 - $140.66	$37.02 - $64.37

	2022	2021*	2020
Portion of Performance-Based Awards subject to market goals:			
Grant date market value	$146.49	$86.10 - $88.84	$55.84
Risk-free interest rate	0.87 %	0.20% - 0.41%	1.59 %
Dividend yield	0.66 %	0.99% - 1.02%	1.50 %
Expected volatility	47.35 %	40.51% - 47.00%	34.96 %
Fair value	$210.69	$129.27 - $136.81	$74.00

*Fiscal 2021 included both annual and non-recurring long-term Performance-Based Awards.

A summary of the changes in restricted stock units, restricted stock, performance shares and performance units outstanding under Applied's equity compensation plans is presented below:

	Shares	Weighted Average Grant Date Fair Value	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value
	(In millions, except per share amounts)			
Non-vested restricted stock units, restricted stock, performance shares and performance units at October 27, 2019	18	$ 35.78	2.1 years	$ 985
Granted	6	$ 53.89		
Vested	(8)	$ 31.25		
Canceled	(1)	$ 42.61		
Non-vested restricted stock units, restricted stock, performance shares and performance units at October 25, 2020	15	$ 45.36	2.2 years	$ 914
Granted	5	$ 92.04		
Vested	(6)	$ 43.11		
Canceled	(1)	$ 59.41		
Non-vested restricted stock units, restricted stock, performance shares and performance units at October 31, 2021	13	$ 63.29	2.2 years	$ 1,752
Granted	4	$ 132.44		
Vested	(5)	$ 54.00		
Canceled	(1)	$ 82.54		
Non-vested restricted stock units, restricted stock, performance shares and performance units at October 30, 2022	11	$ 92.31	2.2 years	$ 1,024
Non-vested restricted stock units, restricted stock, performance shares and performance units expected to vest	11	$ 90.78	2.0 years	$ 997

At October 30, 2022, 0.9 million additional Performance-Based Awards could be earned based upon achievement of certain levels of specified performance and/or market goals.

Employee Stock Purchase Plans

Under the ESPP, substantially all employees may purchase Applied common stock through payroll deductions at a price equal to 85 percent of the lower of the fair market value of Applied common stock at the beginning or end of each 6-month purchase period, subject to certain limits. Applied's purchasing cycle began in March and September of each of fiscal 2022, 2021 and 2020. Applied issued 2 million shares in fiscal 2022 at a weighted average price of $93.30 per share, 3 million shares in fiscal 2021 at a weighted average price of $70.29 per share and 3 million shares in fiscal 2020 at a weighted average price of $45.37 per share, under the ESPP. Compensation expense is calculated using the fair value of the employees' purchase rights under the Black-Scholes model. Underlying assumptions used in the model are outlined in the following table:

	2022	2021	2020
ESPP:			
Dividend yield	0.97 %	0.72 %	1.41 %
Expected volatility	46.8 %	41.3 %	48.2 %
Risk-free interest rate	2.24 %	0.05 %	0.58 %
Expected life (in years)	0.5	0.5	0.5
Weighted average estimated fair value	$30.23	$33.77	$17.30

Note 14 Employee Benefit Plans

Employee Bonus Plans

Applied has various employee bonus plans. A discretionary bonus plan provides for the distribution of a percentage of pre-tax income to Applied employees who are not participants in other performance-based incentive plans, up to a maximum percentage of eligible compensation. Other plans provide for bonuses to Applied's executives and other key contributors based on the achievement of profitability and/or other specified performance criteria. Charges under these plans for fiscal 2022, 2021 and 2020 were $623 million, $631 million and $471 million, respectively.

Employee Savings and Retirement Plan

Applied's Employee Savings and Retirement Plan (the 401(k) Plan) is qualified under Sections 401(a) and (k) of the Internal Revenue Code (the Code). Eligible employees may make salary deferral and catch-up contributions under the 401(k) Plan on a pre-tax basis and on a Roth basis, subject to an annual dollar limit established by the Code. Applied matches 100% of participant salary and/or Roth deferral contributions up to the first 3% of eligible contribution and then 50% of every dollar between 4% and 6% of eligible contribution. Applied does not make matching contributions on any catch-up contributions made by participants. Plan participants who were employed by Applied or any of its affiliates became 100% vested in their Applied matching contribution account balances. Applied's matching contributions under the 401(k) Plan were approximately $67 million for fiscal 2022, $61 million for fiscal 2021 and $52 million for fiscal 2020.

Defined Benefit Pension Plans of Foreign Subsidiaries and Other Postretirement Benefits

Several of Applied's foreign subsidiaries have defined benefit pension plans covering substantially all of their eligible employees. Benefits under these plans are typically based on years of service and final average compensation levels. The plans are managed in accordance with applicable local statutes and practices. Applied deposits funds for certain of these plans with insurance companies, pension trustees, government-managed accounts, and/or accrues the expense for the unfunded portion of the benefit obligation on its Consolidated Financial Statements. Applied's practice is to fund the various pension plans in amounts sufficient to meet the minimum requirements as established by applicable local governmental oversight and taxing authorities. Depending on the design of the plan, local custom and market circumstances, the liabilities of a plan may exceed the qualified plan assets. The differences between the aggregate projected benefit obligations and aggregate plan assets of these plans have been recorded as liabilities by Applied and are included in other liabilities and accrued expenses in the Consolidated Balance Sheets.

A summary of the changes in benefit obligations and plan assets, which includes post-retirement benefits, for each fiscal year is presented below:

	2022	2021	2020
	(In millions, except percentages)		
Change in projected benefit obligation			
Beginning projected benefit obligation	$ 685	$ 674	$ 617
Service cost	14	15	13
Interest cost	9	8	8
Plan participants' contributions	1	1	1
Actuarial (gain) loss	(201)	(1)	6
Foreign currency exchange rate changes	(84)	3	33
Benefits paid	(10)	(15)	(10)
Plan amendments and other adjustments	—	—	6
Ending projected benefit obligation	$ 414	$ 685	$ 674
Ending accumulated benefit obligation	$ 371	$ 626	$ 627
Range of assumptions to determine benefit obligations			
Discount rate	1.5% - 7.3%	0.6% - 6.6%	0.4% - 6.5%
Rate of compensation increase	2.7% - 10.0%	2.4% - 10.0%	2.3% - 10.0%
Change in plan assets			
Beginning fair value of plan assets	$ 491	$ 431	$ 409
Return on plan assets	(78)	49	—
Employer contributions	11	22	12
Plan participants' contributions	1	1	1
Foreign currency exchange rate changes	(64)	3	19
Benefits paid	(10)	(15)	(10)
Ending fair value of plan assets	$ 351	$ 491	$ 431
Funded status	$ (63)	$ (194)	$ (243)
Amounts recognized in the consolidated balance sheets			
Noncurrent asset	$ 45	$ 1	$ —
Current liability	(1)	(2)	(2)
Noncurrent liability	(107)	(193)	(241)
Total	$ (63)	$ (194)	$ (243)
Estimated amortization from accumulated other comprehensive loss into net periodic benefit cost over the next fiscal period			
Actuarial loss	$ 4	$ 11	$ 14
Prior service credit	—	—	—
Total	$ 4	$ 11	$ 14
Amounts recognized in accumulated other comprehensive loss			
Net actuarial loss	$ 98	$ 200	$ 242
Prior service credit	1	1	—
Total	$ 99	$ 201	$ 242
Plans with projected benefit obligations in excess of plan assets			
Projected benefit obligation	$ 126	$ 472	$ 674
Fair value of plan assets	$ 17	$ 277	$ 431
Plans with accumulated benefit obligations in excess of plan assets			
Accumulated benefit obligation	$ 88	$ 413	$ 627
Fair value of plan assets	$ 17	$ 277	$ 431

	2022	2021
Plan assets — allocation		
Equity securities	26 %	35 %
Debt securities	37 %	33 %
Insurance contracts	21 %	23 %
Other investments	15 %	9 %
Cash	1 %	— %

The following table presents a summary of the ending fair value of the plan assets:

	October 30, 2022				October 31, 2021			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
	(In millions)							
Equity securities	$ 84	$ —	$ —	$ 84	$ 137	$ —	$ —	$ 137
Debt securities	56	—	—	56	79	—	—	79
Insurance contracts	—	—	72	72	—	—	110	110
Other investments	—	52	—	52	—	17	—	17
Cash	3	—	—	3	2	—	—	2
Total assets at fair value	$ 143	$ 52	$ 72	267	$ 218	$ 17	$ 110	345
Assets measured at net asset value				84				146
Total				$ 351				$ 491

The following table presents the activity in Level 3 instruments for each fiscal year:

	2022	2021
	(In millions)	
Balance, beginning of year	$ 110	$ 39
Actual return on plan assets:		
Relating to assets still held at reporting date	(24)	—
Purchases, sales, settlements, net	—	72
Currency impact	(14)	(1)
Balance, end of year	$ 72	$ 110

Applied's investment strategy for its defined benefit plans is to invest plan assets in a prudent manner, maintaining well-diversified portfolios with the long-term objective of meeting the obligations of the plans as they come due. Asset allocation decisions are typically made by plan fiduciaries with input from Applied's international pension committee. Applied's asset allocation strategy incorporates a sufficient equity exposure in order for the plans to benefit from the expected better long-term performance of equities relative to the plans' liabilities. Applied retains investment managers, where appropriate, to manage the assets of the plans. Performance of investment managers is monitored by plan fiduciaries with the assistance of local investment consultants. The investment managers make investment decisions within the guidelines set forth by plan fiduciaries. Risk management practices include diversification across asset classes and investment styles, and periodic rebalancing toward target asset allocation ranges. Investment managers may use derivative instruments for efficient portfolio management purposes.

A summary of the components of net periodic benefit costs and the weighted average assumptions used for net periodic benefit cost calculations for each fiscal year is presented below:

	2022	2021	2020
	(In millions, except percentages)		
Components of net periodic benefit cost			
Service cost	$ 14	$ 15	$ 13
Interest cost	9	8	8
Expected return on plan assets	(21)	(21)	(22)
Amortization of actuarial loss and prior service credit	10	14	12
Net periodic benefit cost	$ 12	$ 16	$ 11
Weighted average assumptions			
Discount rate	1.41 %	1.18 %	1.23 %
Expected long-term return on assets	4.56 %	4.80 %	5.10 %
Rate of compensation increase	2.89 %	2.74 %	2.69 %

Asset return assumptions are derived based on actuarial and statistical methodologies, from analysis of long-term historical data relevant to the country in which each plan is in effect and the investments applicable to the corresponding plan. The discount rate for each plan was derived by reference to appropriate benchmark yields on high quality corporate bonds, allowing for the approximate duration of both plan obligations and the relevant benchmark yields.

Future expected benefit payments for the pension plans and the postretirement plan over the next ten fiscal years are as follows:

	Benefit Payments
	(In millions)
2023	$ 8
2024	13
2025	13
2026	13
2027	14
2028-2032	94
Total	$ 155

Company contributions to these plans for fiscal 2023 are expected to be approximately $6 million.

Executive Deferred Compensation Plans

Applied sponsors two unfunded deferred compensation plans, the Executive Deferred Compensation Plan (Predecessor EDCP) and the 2016 Deferred Compensation Plan (2016 DCP) (formerly known as the 2005 Executive Deferred Compensation Plan), under which certain employees may elect to defer a portion of their following year’s eligible earnings. The Predecessor EDCP was frozen as of December 31, 2004 such that no new deferrals could be made under the plan after that date and the plan would qualify for “grandfather” relief under Section 409A of the Code. The Predecessor EDCP participant accounts continue to be maintained under the plan and credited with deemed interest. The 2016 DCP was originally implemented by Applied effective as of January 1, 2005, and amended and restated as of October 12, 2015, and is intended to comply with the requirements of Section 409A of the Code. In addition, Applied also sponsors a non-qualified deferred compensation plan as a result of the acquisition of Varian. Amounts payable for all plans, including accrued deemed interest, totaled $200 million and $206 million at October 30, 2022 and October 31, 2021, respectively, which were included in other liabilities in the Consolidated Balance Sheets.

Note 15 Income Taxes

The components of income before income taxes for each fiscal year were as follows:

	2022	2021	2020
		(In millions)	
U.S.	$ 1,171	$ 512	$ 92
Foreign	6,428	6,259	4,074
	$ 7,599	$ 6,771	$ 4,166

The components of the provision for income taxes for each fiscal year were as follows:

	2022	2021	2020
		(In millions)	
Current:			
U.S.	$ 590	$ 462	$ 196
Foreign	275	344	263
State	14	17	20
	879	823	479
Deferred:			
U.S.	(62)	(3)	(3)
Foreign	265	67	76
State	(8)	(4)	(5)
	195	60	68
	$ 1,074	$ 883	$ 547

A reconciliation between the statutory U.S. federal income tax rate and Applied's actual effective income tax rate for each fiscal year is presented below:

	2022	2021	2020
Tax provision at U.S. statutory rate	21.0 %	21.0 %	21.0 %
Effect of foreign operations taxed at various rates	(4.4)	(7.0)	(5.9)
Changes in prior years' unrecognized tax benefits	(0.9)	0.2	0.5
Resolutions of prior years' income tax filings	(0.2)	(0.1)	(1.0)
Research and other tax credits	(1.0)	(0.9)	(1.3)
Other	(0.4)	(0.2)	(0.2)
	14.1 %	13.0 %	13.1 %

Applied's provision for income taxes and effective tax rate are affected by the geographical composition of pre-tax income which includes jurisdictions with differing tax rates, conditional reduced tax rates and other income tax incentives. It is also affected by events that vary from period to period, such as changes in income tax laws and the resolution of prior years' income tax filings.

Applied's effective tax rate for fiscal 2022 was higher than fiscal 2021 primarily due to a reduction of deferred tax assets related to a new tax incentive in Singapore, partially offset by changes in uncertain tax positions. Applied's effective tax rate for fiscal 2021 was slightly lower than fiscal 2020 primarily due to higher proportion of pre-tax income in lower tax jurisdictions, partially offset by resolutions of prior years' income tax filings.

In the reconciliation between the statutory U.S. federal income tax rate and the effective income tax rate, the effect of foreign operations taxed at various rates represents the difference between an income tax provision at the U.S. federal statutory income tax rate and the recorded income tax provision, with the difference expressed as a percentage of worldwide income before income taxes. This effect is substantially related to the tax effect of pre-tax income in jurisdictions with lower statutory tax rates. The foreign operations with the most significant effective tax rate impact are in Singapore. The statutory tax rate for fiscal 2022 for Singapore is 17%. Applied has been granted conditional reduced tax rates that expire beginning in fiscal 2025, excluding potential renewal and subject to certain conditions with which Applied expects to comply. The tax benefits arising from these tax rates were $232 million or $0.26 per diluted share and $370 million or $0.40 per diluted share and $215 million or $0.23 per diluted share for fiscal 2022, 2021 and 2020, respectively.

Deferred tax assets and liabilities are recognized for the estimated future tax effects of temporary differences between the book and tax bases of assets and liabilities. Deferred tax assets are also recognized for net operating loss and tax credit carryovers. Deferred tax assets are offset by a valuation allowance to the extent it is more likely than not that they are not expected to be realized. The components of deferred income tax assets and liabilities were as follows:

	October 30, 2022	October 31, 2021
	(In millions)	
Deferred tax assets:		
Allowance for doubtful accounts	$ 5	$ 4
Inventory reserves and basis difference	131	112
Installation and warranty reserves	29	29
Intangible assets	984	1,281
Accrued liabilities	35	31
Deferred revenue	82	25
Tax credits	453	369
Deferred compensation	125	133
Share-based compensation	42	34
Lease liability	81	61
Other	67	89
Gross deferred tax assets	2,034	2,168
Valuation allowance	(460)	(361)
Total deferred tax assets	1,574	1,807
Deferred tax liabilities:		
Fixed assets	(111)	(93)
Right of use assets	(80)	(62)
Undistributed foreign earnings	(39)	(37)
Total deferred tax liabilities	(230)	(192)
Net deferred tax assets	$ 1,344	$ 1,615

A valuation allowance is recorded to reflect the estimated amount of net deferred tax assets that may not be realized. Changes in the valuation allowance in each fiscal year were as follows:

	2022	2021	2020
		(In millions)	
Beginning balance	$ 361	$ 314	$ 257
Increases	99	47	57
Ending balance	$ 460	$ 361	$ 314

At October 30, 2022, Applied has state research and development tax credit carryforwards of $453 million, including $427 million of credits that are carried over until exhausted and $23 million that are carried over for 15 years and begin to expire in fiscal 2031. It is more likely than not that all tax credit carryforwards, net of valuation allowance, will be utilized.

Applied maintains liabilities for uncertain tax positions. These liabilities involve considerable judgment and estimation and are continuously monitored based on the best information available. Gross unrecognized tax benefits are classified as non-current income taxes payable or as a reduction in deferred tax assets. A reconciliation of the beginning and ending balances of gross unrecognized tax benefits in each fiscal year is as follows:

	2022	2021	2020
		(In millions)	
Beginning balance of gross unrecognized tax benefits	$ 537	$ 496	$ 845
Settlements with tax authorities	(25)	—	(446)
Lapses of statutes of limitation	—	(4)	(3)
Increases in tax positions for current year	26	26	44
Increases in tax positions for prior years	28	23	91
Decreases in tax positions for prior years	(68)	(4)	(35)
Ending balance of gross unrecognized tax benefits	$ 498	$ 537	$ 496

In fiscal 2020, Applied settled tax audits in Singapore related to fiscal 2012 through fiscal 2019 for additional tax payments of $72 million and a reduction of future tax deductions of $374 million. The tax expense impact of these settlements was $26 million.

Tax expense for interest and penalties on unrecognized tax benefits for fiscal 2022, 2021 and 2020 was $14 million, $14 million and $24 million, respectively. The income tax liability for interest and penalties for fiscal 2022, 2021 and 2020 was $103 million, $88 million and $74 million, respectively, and was classified as non-current income taxes payable.

Included in the balance of unrecognized tax benefits for fiscal 2022, 2021 and 2020 are $388 million, $442 million, and $410 million, respectively, of tax benefits that, if recognized, would affect the effective tax rate.

Applied's tax returns remain subject to examination by taxing authorities. These include U.S. returns for fiscal 2015 and later years, and foreign tax returns for fiscal 2011 and later years.

The timing of the resolution of income tax examinations, as well as the amounts and timing of various tax payments that may be part of the settlement process, is highly uncertain. This could cause fluctuations in Applied's financial condition and results of operations. Applied continues to have ongoing negotiations with various taxing authorities throughout the year.

Note 16 Warranty, Guarantees, Commitments and Contingencies

Warranty

Changes in the warranty reserves during each fiscal year were as follows:

	2022	2021	2020
		(In millions)	
Beginning balance	$ 242	$ 201	$ 196
Provisions for warranty	254	223	165
Changes in reserves related to preexisting warranty	11	9	2
Consumption of reserves	(221)	(191)	(162)
Ending balance	$ 286	$ 242	$ 201

Applied products are generally sold with a warranty for a 12-month period following installation. The provision for the estimated cost of warranty is recorded when revenue is recognized. Parts and labor are covered under the terms of the warranty agreement. The warranty provision is based on historical experience by product, configuration and geographic region. Quarterly warranty consumption is generally associated with sales that occurred during the preceding four quarters, and quarterly warranty provisions are generally related to the current quarter's sales.

Guarantees

In the ordinary course of business, Applied provides standby letters of credit or other guarantee instruments to third parties as required for certain transactions initiated by either Applied or its subsidiaries. As of October 30, 2022, the maximum potential amount of future payments that Applied could be required to make under these guarantee agreements was approximately $618 million. Applied has not recorded any liability in connection with these guarantee agreements beyond that required to appropriately account for the underlying transaction being guaranteed. Applied does not believe, based on historical experience and information currently available, that it is probable that any amounts will be required to be paid under these guarantee agreements.

Applied also has agreements with various banks to facilitate subsidiary banking operations worldwide, including overdraft arrangements, issuance of bank guarantees, and letters of credit. As of October 30, 2022, Applied has provided parent guarantees to banks for approximately $294 million to cover these arrangements.

Legal Matters

From time to time, Applied receives notification from third parties, including customers and suppliers, seeking indemnification, litigation support, payment of money or other actions by Applied in connection with claims made against them. In addition, from time to time, Applied receives notification from third parties claiming that Applied may be or is infringing or misusing their intellectual property or other rights. Applied also is subject to various other legal proceedings, regulatory investigations or inquires, and claims, both asserted and unasserted, that arise in the ordinary course of business.

Although the outcome of the above-described matters, claims and proceedings cannot be predicted with certainty, Applied does not believe at this time that any will have a material effect on its consolidated financial condition or results of operations.

Note 17 Industry Segment Operations

Applied's three reportable segments are: Semiconductor Systems, Applied Global Services, and Display and Adjacent Markets. As defined under the accounting literature, Applied's chief operating decision-maker has been identified as the President and Chief Executive Officer, who reviews operating results to make decisions about allocating resources and assessing performance for the entire Company. Segment information is presented based upon Applied's management organization structure as of October 30, 2022 and the distinctive nature of each segment. Future changes to this internal financial structure may result in changes to Applied's reportable segments.

The Semiconductor Systems reportable segment includes semiconductor capital equipment for etch, rapid thermal processing, deposition, chemical mechanical planarization, metrology and inspection, wafer packaging, and ion implantation.

The Applied Global Services segment provides integrated solutions to optimize equipment and fab performance and productivity, including spares, upgrades, services, certain remanufactured earlier generation equipment and factory automation software for semiconductor, display and other products.

The Display and Adjacent Markets segment includes products for manufacturing liquid crystal displays (LCDs), organic light-emitting diodes (OLEDs), equipment upgrades and other display technologies for TVs, monitors, laptops, personal computers, smart phones, other consumer-oriented devices and solar energy cells.

Each operating segment is separately managed and has separate financial results that are reviewed by Applied's chief operating decision-maker. Each reportable segment contains closely related products that are unique to the particular segment. Segment operating income is determined based upon internal performance measures used by Applied's chief operating decision-maker. The chief operating decision-maker does not evaluate operating segments using total asset information.

Applied derives the segment results directly from its internal management reporting system. The accounting policies Applied uses to derive reportable segment results are substantially the same as those used for external reporting purposes. Management measures the performance of each reportable segment based upon several metrics including orders, net sales and operating income. Management uses these results to evaluate the performance of, and to assign resources to, each of the reportable segments.

The Corporate and Other category includes revenues from products, as well as costs of products sold, for fabricating solar photovoltaic cells and modules, and certain operating expenses that are not allocated to its reportable segments and are managed separately at the corporate level. These operating expenses include costs related to share-based compensation; certain management, finance, legal, human resources, and research, development and engineering functions provided at the corporate level; and unabsorbed information technology and occupancy. In addition, Applied does not allocate to its reportable segments restructuring, severance and asset impairment charges and any associated adjustments related to restructuring actions, unless these actions pertain to a specific reportable segment. Segment operating income also excludes interest income/expense and other financial charges and income taxes. Management does not consider the unallocated costs in measuring the performance of the reportable segments.

Information for each reportable segment for and as of the end of each fiscal year were as follows:

	Net Sales	Operating Income (Loss)	Depreciation/ Amortization	Capital Expenditures	Accounts Receivable	Inventories
			(In millions)			
2022:						
Semiconductor Systems	$ 18,797	$ 6,969	$ 203	$ 249	$ 4,924	$ 3,995
Applied Global Services	5,543	1,661	31	38	997	1,788
Display and Adjacent Markets	1,331	260	31	30	148	129
Corporate and Other	114	(1,102)	179	470	(1)	20
Total	$ 25,785	$ 7,788	$ 444	$ 787	$ 6,068	$ 5,932
2021:						
Semiconductor Systems	$ 16,286	$ 6,311	$ 194	$ 228	$ 3,886	$ 2,586
Applied Global Services	5,013	1,508	32	29	922	1,561
Display and Adjacent Markets	1,634	314	27	32	207	153
Corporate and Other	130	(1,244)	141	379	(62)	9
Total	$ 23,063	$ 6,889	$ 394	$ 668	$ 4,953	$ 4,309
2020:						
Semiconductor Systems	$ 11,367	$ 3,714	$ 219	$ 226	$ 2,061	$ 2,139
Applied Global Services	4,155	1,127	34	30	764	1,545
Display and Adjacent Markets	1,607	291	31	29	179	195
Corporate and Other	73	(767)	92	137	(41)	25
Total	$ 17,202	$ 4,365	$ 376	$ 422	$ 2,963	$ 3,904

Semiconductor Systems and Display and Adjacent Markets revenues are recognized at a point in time. Applied Global Services revenue is recognized at a point in time for tangible goods such as spare parts and equipment, and over time for service agreements. The majority of revenue recognized over time is recognized within 12 months of the contract inception.

Operating income (loss) for fiscal 2021 included severance and related charges as discussed in Note 12, Severance and Related Charges and a $154 million deal termination fee associated with the termination of a Share Purchase Agreement with Kokusai Electric Corporation and KKR HKE Investment L. P. during the second quarter of fiscal 2021.

Net sales for Semiconductor Systems by end use application for the periods indicated were as follows:

	2022	2021	2020
Foundry, logic and other	66 %	60 %	59 %
Dynamic random-access memory (DRAM)	19 %	19 %	20 %
Flash memory	15 %	21 %	21 %
	100 %	100 %	100 %

The reconciling items included in Corporate and Other were as follows:

	2022	2021	2020
		(In millions)	
Unallocated net sales	$ 114	$ 130	$ 73
Unallocated cost of products sold and expenses	(807)	(725)	(533)
Share-based compensation	(413)	(346)	(307)
Severance and related charges	4	(149)	—
Deal termination fee	—	(154)	—
Total	$ (1,102)	$ (1,244)	$ (767)

For geographical reporting, revenue by geographic location is determined by the location of customers' facilities to which products were shipped. Long-lived assets consist primarily of property, plant and equipment and right-of-use assets and are attributed to the geographic location in which they are located. Fiscal 2021 long-lived asset amount has been updated to include right-of-use assets to conform with the current year presentation. Net sales and long-lived assets by geographic region for and as of each fiscal year were as follows:

	2022	2021	2020
		(In millions)	
Net sales:			
United States	$ 3,104	$ 2,038	$ 1,619
China	7,254	7,535	5,456
Korea	4,395	5,012	3,031
Taiwan	6,262	4,742	3,953
Japan	2,012	1,962	1,996
Europe	1,674	1,097	736
Southeast Asia	1,084	677	411
Total outside United States	22,681	21,025	15,583
Consolidated total	$ 25,785	$ 23,063	$ 17,202

	October 30, 2022	October 31, 2021
	(In millions)	
Long-lived assets:		
United States	$ 2,725	$ 2,241
China	6	10
Korea	14	16
Taiwan	62	62
Japan	7	9
Europe	75	25
Southeast Asia	8	18
Total outside United States	172	140
Consolidated total	$ 2,897	$ 2,381

The following customers accounted for at least 10 percent of Applied's net sales in each fiscal year, which were for products and services in multiple reportable segments:

	2022	2021	2020
Samsung Electronics Co., Ltd.	12 %	20 %	18 %
Taiwan Semiconductor Manufacturing Company Limited	20 %	15 %	18 %
Intel Corporation	10 %	*	*

* Less than 10%

INDEX TO EXHIBITS

These Exhibits are numbered in accordance with the Exhibit Table of Item 601 of Regulation S-K:

			Incorporated by Reference		
Exhibit No.	**Description**	**Form**	**File No.**	**Exhibit No.**	**Filing Date**
2.1	Amendment to Share Purchase Agreement, dated as of January 1, 2021, by and among Applied Materials, Inc., Kokusai Electric Corporation and KKR HKE Investment L.P.	8-K	000-06920	2.1	1/4/2021
3.1	Amended and Restated Certificate of Incorporation of Applied Materials, Inc., as amended and restated through March 16, 2020	8-K	000-06920	3.1	3/16/2020
3.2	Amended and Restated Bylaws of Applied Materials, Inc., as amended and restated through December 13, 2022	8-K	000-06920	3.02	12/16/2022
4.1	Indenture, dated June 8, 2011, by and between Applied Materials, Inc. and U.S. Bank National Association, as Trustee	8-K	000-06920	4.1	6/10/2011
4.2	First Supplemental Indenture, dated June 8, 2011, by and between Applied Materials, Inc. and U.S. Bank National Association, as Trustee	8-K	000-06920	4.2	6/10/2011
4.3	Second Supplemental Indenture, dated September 24, 2015, by and between Applied Materials, Inc. and U.S. Bank National Association, as Trustee	8-K	000-06920	4.1	9/24/2015
4.4	Third Supplemental Indenture, dated March 31, 2017, by and between Applied Materials, Inc. and U.S. Bank National Association, as Trustee	8-K	000-06920	4.1	3/31/2017
4.5	Fourth Supplemental Indenture dated May 29, 2020, by and between Applied Materials, Inc. and U.S. Bank National Association	8-K	000-06920	4.1	5/29/2020
4.6	Description of Registrant's Securities Registered Under Section 12 of the Securities Exchange Act of 1934	10-K	000-06920	4.6	12/11/2020
10.1	Form of Indemnification Agreement between Applied Materials, Inc. and Directors and certain officers†				
10.2	Applied Materials, Inc. Profit Sharing Scheme (Ireland)	S-8	333-45011	4.1	1/27/1998
10.3*	Applied Materials Inc. Employee Financial Assistance Plan, amended and restated as of December 18, 2008	10-Q	000-06920	10.58	3/3/2009
10.4	Deed of Amendment to Applied Materials Profit Sharing Scheme, dated February 7, 2006, to amend Clause 20 of the Trust Deed thereunder	10-K	000-06920	10.48	12/12/2008
10.5	Deed of Amendment to Applied Materials Profit Sharing Scheme, dated February 7, 2006, to amend the definition of Eligible Employee in the First Schedule to the Trust Deed thereunder.	10-K	000-06920	10.49	12/12/2008
10.6*	Form of Restricted Stock Unit Agreement for use under the amended and restated Applied Materials, Inc. Employee Stock Incentive Plan	10-Q	000-06920	10.3	5/27/2021
10.7*	Form of Restricted Stock Unit Agreement for Nonemployee Directors for use under the amended and restated Applied Materials, Inc. Employee Stock Incentive Plan	10-Q	000-06920	10.4	5/27/2021
10.8*	Form of Performance Shares Agreement for certain executive officers for use under the Applied Materials, Inc. Employee Stock Incentive Plan	10-Q	000-06920	10.3	2/25/2021
10.9*	Form of Restricted Stock Agreement for use under the amended and restated Applied Materials, Inc. Employee Stock Incentive Plan	10-Q	000-06920	10.3	8/23/2012
10.10*	Applied Materials, Inc. Omnibus Employees' Stock Purchase Plan, effective September 1, 2021	8-K	000-06920	10.2	3/16/2021
10.11*	Offer Letter, dated August 14, 2013, between Applied Materials, Inc. and Gary E. Dickerson	10-Q	000-06920	10.2	8/22/2013

Exhibit No.	Description	Incorporated by Reference Form	File No.	Exhibit No.	Filing Date
10.12*	Form of Non-Qualified Stock Option Agreement for Employees for use under the Applied Materials, Inc. Employee Stock Incentive Plan, as amended	10-Q	000-06920	10.4	8/22/2013
10.13*	Form of Performance Unit Agreement for use under the Applied Materials, Inc. Employee Stock Incentive Plan, as amended	10-Q	000-06920	10.2	2/20/2014
10.14*	Applied Materials, Inc. Applied Incentive Plan, amended and restated effective October 27, 2014	10-Q	000-06920	10.4	2/19/2015
10.15*	Applied Materials, Inc. 2016 Deferred Compensation Plan, as amended and restated on January 1, 2021†				
10.16*	Applied Materials, Inc. Employee Stock Incentive Plan, as amended and restated effective March 11, 2021	8-K	000-06920	10.1	3/16/2021
10.17*	Applied Materials, Inc. Senior Executive Bonus Plan, as amended and restated effective March 9, 2017	10-Q	000-06920	10.2	5/25/2017
10.18*	Form of Performance Share Unit Agreement for members of the Executive Staff for use under the amended and restated Applied Materials, Inc. Employee Stock Incentive Plan	10-Q	000-06920	10.5	5/27/2021
10.19*	Form of Restricted Stock Unit Agreement for members of the Executive Staff for use under the amended and restated Applied Materials, Inc. Employee Stock Incentive Plan	10-Q	000-06920	10.6	5/27/2021
10.20	Share Purchase Agreement, dated as of June 30, 2019, among Applied Materials, Inc., Kokusai Electric Corporation and KKR HKE Investment L.P.	8-K	000-06920	2.1	7/1/2019
10.21*	Offer Letter, dated February 26, 2022, between Applied Materials, Inc. and Brice Hill	10-Q	000-06920	10.1	5/26/2022
10.22	Credit Agreement, dated as of February 21, 2020, among Applied Materials, Inc., JPMorgan Chase Bank, N.A., as administrative agent, and other lenders named therein	8-K	000-06920	10.1	2/21/2020
10.23	Amendment No. 1, dated as of July 27, 2022, to the Credit Agreement, dated as of February 21, 2020, among Applied Materials, Inc., JPMorgan Chase Bank, N.A., as administrative agent, and other lenders named therein	10-Q	000-06920	10.1	8/25/2022
10.24*	Separation Agreement and Release, dated as of September 23, 2022, by and between Ali Salehpour and Applied Materials, Inc.	8-K	000-06920	10.1	9/29/2022
21	Subsidiaries of Applied Materials, Inc.†				
23	Consent of Independent Registered Public Accounting Firm, KPMG LLP†				
24	Power of Attorney (included on the signature page of this Annual Report on Form 10-K)†				
31.1	Certification of Chief Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002†				
31.2	Certification of Chief Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002†				
32.1	Certification Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002‡				
32.2	Certification Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002‡				
101.INS	XBRL Instance Document‡				
101.SCH	XBRL Taxonomy Extension Schema Document‡				
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document‡				
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document‡				
101.LAB	XBRL Taxonomy Extension Label Linkbase Document‡				

		Incorporated by Reference			
Exhibit No.	**Description**	**Form**	**File No.**	**Exhibit No.**	**Filing Date**
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document‡				
104	Cover Page Interactive Data File (formatted as inline XBRL)				

* Indicates a management contract or compensatory plan or arrangement, as required by Item 15(a)(3).
† Filed herewith.
‡ Furnished herewith.

SIGNATURES

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

APPLIED MATERIALS, INC.

By: /s/ GARY E. DICKERSON

Gary E. Dickerson

President, Chief Executive Officer

Dated: December 16, 2022

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Gary E. Dickerson, Brice Hill and Teri Little, jointly and severally, his or her attorneys-in-fact, each with the power of substitution, for him or her in any and all capacities, to sign any amendments to this Annual Report on Form 10-K, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his substitute or substitutes, may do or cause to be done by virtue hereof.

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

	Title	Date
/s/ GARY E. DICKERSON Gary E. Dickerson	President, Chief Executive Officer and Director (Principal Executive Officer)	December 16, 2022
/s/ BRICE HILL Brice Hill	Senior Vice President, Chief Financial Officer (Principal Financial Officer)	December 16, 2022
/s/ JEFF BODNER Jeff Bodner	Corporate Vice President, Corporate Controller and Chief Accounting Officer (Principal Accounting Officer)	December 16, 2022
/s/ THOMAS J. IANNOTTI Thomas J. Iannotti	Chairman of the Board	December 16, 2022
/s/ RANI BORKAR Rani Borkar	Director	December 16, 2022
/s/ JUDY BRUNER Judy Bruner	Director	December 16, 2022
/s/ XUN CHEN Xun Chen	Director	December 16, 2022
/s/ AART J. DE GEUS Aart J. de Geus	Director	December 16, 2022
/s/ ALEXANDER A. KARSNER Alexander A. Karsner	Director	December 16, 2022
/s/ ADRIANNA C. MA Adrianna C. Ma	Director	December 16, 2022
/s/ KEVIN P. MARCH Kevin P. March	Director	December 16, 2022
/s/ YVONNE MCGILL Yvonne McGill	Director	December 16, 2022
/s/ SCOTT A. MCGREGOR Scott A. McGregor	Director	December 16, 2022

Exhibit 10.1

INDEMNIFICATION AGREEMENT

INDEMNIFICATION AGREEMENT (this "Agreement"), made as of this _____________ day of _____________, _____________, by and between Applied Materials, Inc., a Delaware corporation (the "Company"), and _____________ (the "Indemnitee"), [an executive officer of the Company] / [a member of the Company's Board of Directors (the "Board")].

WHEREAS, the Indemnitee is currently serving as [an executive officer] / [a member of the Board] and in such capacity has rendered or will render valuable services to the Company;

WHEREAS, the Company has investigated the availability and sufficiency of directors' and officers' liability insurance and Delaware statutory indemnification provisions to provide its directors and officers with adequate protection against various legal risks and potential liabilities to which such individuals are subject due to their positions with the Company and the Company has concluded that such insurance and statutory provisions may provide inadequate and unacceptable protection to certain individuals requested to serve as its directors and officers; and

WHEREAS, in order to induce and encourage highly experienced and capable persons such as the Indemnitee to continue to serve as [executive officers] / [members of the Board], the Board of Directors of the Company has determined, after due consideration and investigation of the terms and provisions of this Agreement and the various other alternatives available to the Company and the Indemnitee in lieu hereof, that this Agreement is not only reasonable and prudent, but necessary to promote and ensure the best interests of the Company and its stockholders;

NOW, THEREFORE, in consideration of the premises and mutual agreements hereinafter set forth, and other good and valuable consideration, including, without limitation, the continued service of the Indemnitee, the receipt of which hereby is acknowledged, and in order to induce the Indemnitee to continue to serve as [an executive officer] / [a member of the Board], the Company and the Indemnitee hereby agree as follows:

1. *Definitions*. As used in this Agreement:

(a) "Change in Control" shall mean a change in control of the Company of a nature that would be required to be reported in response to Item 5(f) of Schedule 14A of Regulation 14A (or in response to any similar item on any similar or successor schedule or form) promulgated under the Securities Exchange Act of 1934, as amended, and the rules and regulations promulgated thereunder (collectively, the "Act"), whether or not the Company is then subject to such reporting requirement; *provided, however*, that, without limitation, such a Change in Control shall be deemed to have occurred (irrespective of the applicability of the initial clause of this definition) if (i) any "person" (as such term is used in Sections 13(d) and 14(d) of the Act, but excluding any trustee or other fiduciary holding securities pursuant to an employee benefit or welfare plan or employee stock plan of the Company or any subsidiary of the Company, or any entity organized, appointed, established or holding securities of the Company with voting power for or pursuant to the terms of any such plan) is or becomes the "beneficial owner" (as defined in Rule 13d-3 under the Act), directly or indirectly, of securities of the Company representing 20% or more of the combined voting power of the Company's then outstanding securities without the prior approval of at least two-thirds of the Continuing Directors (as defined below) in office immediately prior to such person's attaining such interest; (ii) the Company is a party to a merger, consolidation, sale of assets or other reorganization, or a proxy contest, as a consequence of which Continuing Directors in office immediately prior to such transaction or event constitute less than a majority of the Board of Directors of the Company (or any successor entity) thereafter; or (iii) during any period of two consecutive years, individuals who at the beginning of such period constituted the Board of Directors of the Company (including for this purpose any new director whose election or nomination for election by the Company's stockholders was approved by a vote of at least two-thirds of the directors then still in office who were directors at the beginning of such period) (such directors being referred to herein as "Continuing Directors") cease for any reason to constitute at least a majority of the Board of Directors of the Company.

(b) "Disinterested Director" with respect to any request by the Indemnitee for indemnification or advancement of expenses hereunder shall mean a director of the Company who neither is nor was a party to the Proceeding (as defined below) in respect of which indemnification or advancement is being sought by the Indemnitee.

(c) The term "Expenses" shall mean, without limitation, expenses of Proceedings, including attorneys' fees, disbursements and retainers, accounting and witness fees, expenses related to the preparation or service as a witness, travel and deposition costs, expenses of investigations, judicial or administrative proceedings and appeals, amounts paid in settlement of a Proceeding by or on behalf of the Indemnitee, costs of attachment or similar bonds, any expenses of attempting to establish or establishing a right to indemnification or advancement of expenses, under this Agreement, the Company's Certificate of Incorporation or Bylaws, applicable law or otherwise, and reasonable compensation for time spent by the Indemnitee in connection with the investigation, defense or appeal of a Proceeding or action for indemnification for which the Indemnitee is not otherwise compensated by the Company or any third party. The term "Expenses" shall not include the amount of judgments, fines, interest or penalties, or excise taxes assessed with respect to any employee benefit or welfare plan, which are actually levied against or sustained by the Indemnitee to the extent sustained after final adjudication.

(d) The term "Independent Legal Counsel" shall mean any firm of attorneys selected by lot from a list consisting of firms which meet minimum size criteria and other reasonable criteria established by the Board of Directors of the Company, so long as such firm has not represented the Company, the Indemnitee, any entity controlled by the Indemnitee, or any party adverse to the Company, within the preceding five years. Notwithstanding the foregoing, the term "Independent Legal Counsel" shall not include any person who, under applicable standards of professional conduct then prevailing, would have a conflict of interest in representing either the Company or the Indemnitee in an action to determine the Indemnitee's right to indemnification or advancement of expenses under this Agreement, the Company's Certificate of Incorporation or Bylaws, applicable law or otherwise.

(e) The term "Proceeding" shall mean any threatened, pending or completed action, suit, arbitration, alternate dispute resolution mechanism, or any other proceeding (including, without limitation, an appeal therefrom), formal or informal, whether brought in the name of the Company or otherwise, whether of a civil, criminal, administrative or investigative nature, and whether by, in or involving a court or an administrative, other governmental or private entity or body (including, without limitation, an investigation by the Company or its Board of Directors), by reason of (i) the fact that the Indemnitee is or was [an executive officer] / [a member of the Board], or is or was serving at the request of the Company as an agent of another enterprise, whether or not the Indemnitee is serving in such capacity at the time any liability or expense is incurred for which indemnification or reimbursement is to be provided under this Agreement, (ii) any actual or alleged act or omission or neglect or breach of duty, including, without limitation, any actual or alleged error or misstatement or misleading statement, which the Indemnitee commits or suffers while acting in any such capacity, or (iii) the Indemnitee attempting to establish or establishing a right to indemnification or advancement of expenses pursuant to this Agreement, the Company's Certificate of Incorporation or Bylaws, applicable law or otherwise.

(f) The phrase “serving at the request of the Company as an agent of another enterprise” or any similar terminology shall mean, unless the context otherwise requires, (i) serving at the request of the Company as a director, officer, employee or agent of another corporation, partnership, joint venture, limited liability company, trust, employee benefit or welfare plan or other enterprise, foreign or domestic, and (ii) serving as a director, officer, employee or agent of a corporation which was a predecessor corporation of the Company or of another enterprise at the request of such predecessor corporation. The phrase “serving at the request of the Company” shall include, without limitation, any service as a director or officer of the Company which imposes duties on, or involves services by, such director or officer with respect to the Company or any of the Company's subsidiaries, affiliates, employee benefit or welfare plans, such plan's participants or beneficiaries or any other enterprise, foreign or domestic. In the event that the Indemnitee shall be a director, officer, employee or agent of another corporation, partnership, joint venture, limited liability company, trust, employee benefit or welfare plan or other enterprise, foreign or domestic, 40% or more of the common stock, combined voting power or total equity interest of which is owned by the Company or any subsidiary or affiliate thereof, then it shall be presumed conclusively that the Indemnitee is so acting at the request of the Company.

2. *Services by the Indemnitee*. The Indemnitee agrees to continue to serve as [an executive officer] / [a member of the Board] at the will of the Company [for so long as the Indemnitee is duly elected and qualified, appointed or until such time as the Indemnitee tenders a resignation in writing or is removed as a director]; *provided, however*, that the Indemnitee may at any time and for any reason resign from such position (subject to any other contractual obligation or other obligation imposed by operation of the law).

3. *Proceeding Other Than a Proceeding By or In the Right of the Company*. The Company shall indemnify the Indemnitee if the Indemnitee is a party to or threatened to be made a party to or is otherwise involved in any Proceeding (other than a Proceeding by or in the right of the Company to procure a judgment in its favor), by reason of the fact that the Indemnitee is or was [an executive officer] / [a member of the Board], or is or was serving at the request of the Company as an agent of another enterprise, against all Expenses, judgments, fines, interest or penalties, and excise taxes assessed with respect to any employee benefit or welfare plan, which are actually and reasonably incurred by the Indemnitee in connection with such a Proceeding, to the fullest extent permitted by applicable law; *provided, however*, that any settlement of a Proceeding must be approved in advance in writing by the Company.

4. *Proceedings By or In the Right of the Company*. The Company shall indemnify the Indemnitee if the Indemnitee is a party to or threatened to be made a party to or is otherwise involved in any Proceeding by or in the right of the Company to procure a judgment in its favor by reason of the fact that the Indemnitee is or was [an executive officer] / [a member of the Board], or is or was serving at the request of the Company as an agent of another enterprise, against all Expenses, judgments, fines, interest or penalties, and excise taxes assessed with respect to any employee benefit or welfare plan, which are actually and reasonably incurred by the Indemnitee in connection with the defense or settlement of such a Proceeding, to the fullest extent permitted by applicable law.

5. *Indemnification for Costs, Charges and Expenses of Witness or Successful Party*. Notwithstanding any other provision of this Agreement (except as set forth in subparagraph 9(a) hereof), and without a requirement for determination as required by Paragraph 8 hereof, to the extent that the Indemnitee (a) has prepared to serve or has served as a witness in any Proceeding in any way relating to the Company or any of the Company's subsidiaries, affiliates, employee benefit or welfare plans, such plan's participants or beneficiaries or any other enterprise, foreign or domestic, or anything done or not done by the Indemnitee as [an executive officer] / [a member of the Board], as a director, officer, employee or agent of another corporation, partnership, joint venture, limited liability company,

trust, employee benefit or welfare plan or other enterprise, foreign or domestic, or as a director, officer, employee or agent of a corporation which was a predecessor corporation of the Company or of another enterprise, at the request of such predecessor corporation, or (b) has been successful in defense of any Proceeding or in defense of any claim, issue or matter therein, on the merits or otherwise, including the dismissal of a Proceeding without prejudice or the settlement of a Proceeding without an admission of liability, the Indemnitee shall be indemnified against all Expenses actually and reasonably incurred by the Indemnitee in connection therewith to the fullest extent permitted by applicable law.

6. *Partial Indemnification*. If the Indemnitee is entitled under any provision of this Agreement to indemnification by the Company for a portion of the Expenses, judgments, fines, interest or penalties, or excise taxes assessed with respect to any employee benefit or welfare plan, which are actually and reasonably incurred by the Indemnitee in the investigation, defense, appeal or settlement of any Proceeding, but not, however, for the total amount of the Indemnitee's Expenses, judgments, fines, interest or penalties, or excise taxes assessed with respect to any employee benefit or welfare plan, then the Company shall nevertheless indemnify the Indemnitee for the portion of such Expenses, judgments, fines, interest penalties or excise taxes to which the Indemnitee is entitled.

7. *Advancement of Expenses*. The Expenses incurred by the Indemnitee in any Proceeding shall be paid promptly by the Company in advance of the final disposition of the Proceeding at the written request of the Indemnitee to the fullest extent permitted by applicable law; *provided, however*, that the Indemnitee shall set forth in such request reasonable evidence that such Expenses have been incurred by the Indemnitee in connection with such Proceeding, a statement that such Expenses do not relate to any matter described in subparagraph 9(a) of this Agreement, and an undertaking in writing to repay any advances if it is ultimately determined as provided in subparagraph 8(b) of this Agreement that the Indemnitee is not entitled to indemnification under this Agreement.

8. *Indemnification Procedure; Determination of Right to Indemnification*.

(a) Promptly after receipt by the Indemnitee of notice of the commencement of any Proceeding, the Indemnitee shall, if a claim for indemnification or advancement of Expenses in respect thereof is to be made against the Company under this Agreement, notify the Company of the commencement thereof in writing. The omission to so notify the Company will not relieve the Company from any liability which the Company may have to the Indemnitee under this Agreement unless the Company shall have lost significant substantive or procedural rights with respect to the defense of any Proceeding as a result of such omission to so notify.

(b) The Indemnitee shall be conclusively presumed to have met the relevant standards of conduct, if any, as defined by applicable law, for indemnification pursuant to this Agreement and shall be absolutely entitled to such indemnification, unless a determination by clear and convincing evidence is made that the Indemnitee has not met such standards by (i) the Board of Directors by a majority vote of a quorum thereof consisting of Disinterested Directors, (ii) the stockholders of the Company by majority vote of a quorum thereof consisting of stockholders who are not parties to the Proceeding due to which a claim for indemnification is made under this Agreement, (iii) Independent Legal Counsel as set forth in a written opinion (it being understood that such Independent Legal Counsel shall make such determination only if the quorum of Disinterested Directors referred to in clause (i) of this subparagraph 8(b) is not obtainable or if the Board of Directors of the Company by a majority vote of a quorum thereof consisting of Disinterested Directors so directs), or (iv) a court of competent jurisdiction; *provided, however*, that if a Change of Control shall have occurred and the Indemnitee so requests in writing, such determination shall be made only by a court of competent jurisdiction.

(c) If a claim for indemnification or advancement of Expenses under this Agreement is not paid by the Company within 30 days after receipt by the Company of written notice thereof, the rights provided by this Agreement shall be enforceable by the Indemnitee in any court of competent jurisdiction. Such judicial proceeding shall be made *de novo*. The burden of proving by clear and convincing evidence that indemnification or advances are not appropriate shall be on the Company. Neither the failure of the directors or stockholders of the Company or Independent Legal Counsel to have made a determination prior to the commencement of such action that indemnification or advancement of Expenses is proper in the circumstances because the Indemnitee has met the applicable standard of conduct, if any, nor an actual determination by the directors or stockholders of the Company or Independent Legal Counsel that the Indemnitee has not met the applicable standard of conduct shall be a defense to an action by the Indemnitee or create a presumption for the purpose of such an action that the Indemnitee has not met the applicable standard of conduct. The termination of any Proceeding by judgment, order, settlement or conviction, or upon a plea of nolo contendere or its equivalent, shall not, of itself (i) create a presumption that the Indemnitee did not act in good faith and in a manner which the Indemnitee reasonably believed to be in the best interests of the Company and/or its stockholders, and, with respect to any criminal Proceeding, that the Indemnitee had reasonable cause to believe that the Indemnitee's conduct was unlawful or (ii) otherwise adversely affect the rights of the Indemnitee to indemnification or advancement of Expenses under this Agreement, except as may be provided herein. The Company shall not oppose the Indemnitee's right or entitlement to indemnification or advancement of Expenses in any such judicial proceeding or appeal therefrom. The Company further agrees to stipulate in any such judicial proceeding that the Company is bound by all the provisions of this Agreement and is precluded from making any assertion to the contrary.

(d) If a court of competent jurisdiction shall determine that the Indemnitee is entitled to any indemnification or advancement of Expenses hereunder, the Company shall pay all Expenses actually and reasonably incurred by the Indemnitee in connection with such adjudication (including, but not limited to, any appellate proceedings). The Indemnitee's Expenses incurred in connection with any Proceeding concerning the Indemnitee's right to indemnification or advancement of Expenses in whole or in part pursuant to this Agreement shall also be indemnified by the Company, regardless of the outcome of such a Proceeding, to the fullest extent permitted by applicable law and the Company's Certificate of Incorporation, as amended.

(e) With respect to any Proceeding for which indemnification or advancement of Expenses is requested, the Company will be entitled to participate therein at its own expense and, except as otherwise provided below, to the extent that it may wish, the Company may assume the defense thereof, with counsel reasonably satisfactory to the Indemnitee. After notice from the Company to the Indemnitee of its election to assume the defense of a Proceeding, the Company will not be liable to the Indemnitee under this Agreement for any Expenses subsequently incurred by the Indemnitee in connection with the defense thereof, other than as provided below. The Company shall not settle any Proceeding in any manner which would impose any penalty or limitation on the Indemnitee without the Indemnitee's written consent. The Indemnitee shall have the right to employ the Indemnitee's own counsel in any Proceeding, but the fees and expenses of such counsel incurred after notice from the Company of its assumption of the defense of the Proceeding shall be at the expense of the Indemnitee, unless (i) the employment of counsel by the Indemnitee has been authorized by the Company, (ii) the Indemnitee shall have reasonably concluded that there may be a conflict of interest between the Company and the Indemnitee in the conduct of the defense of a Proceeding, or (iii) the Company shall not in fact have employed counsel to assume the defense of a proceeding, in each of which cases the fees and expenses of the Indemnitee's counsel shall be advanced by the Company. The Company shall not be entitled to assume the defense of any Proceeding brought by or on behalf of the Company or as to which the Indemnitee has concluded that there may be a conflict of interest between the Company and the Indemnitee.

9. *Limitations on Indemnification*. No payments pursuant to this Agreement shall be made by the Company:

(a) To indemnify or advance funds to the Indemnitee for Expenses with respect to (i) Proceedings initiated or brought voluntarily by the Indemnitee and not by way of defense, except with respect to Proceedings brought to establish or enforce a right to indemnification under this Agreement or any other statute or law or otherwise as required under applicable law or (ii) Expenses incurred by the Indemnitee in connection with preparing to serve or serving, prior to a Change in Control, as a witness in cooperation with any party or entity who or which has threatened or commenced any action or proceeding against the Company, or any director, officer, employee, trustee, agent, representative, subsidiary, parent corporation or affiliate of the Company, but such indemnification or advancement of Expenses in each such case may be provided by the Company if the Board of Directors finds it to be appropriate;

(b) To indemnify the Indemnitee for any Expenses, judgments, fines, interest or penalties, or excise taxes assessed with respect to any employee benefit or welfare plan, and sustained in any Proceeding for which payment is actually made to the Indemnitee under a valid and collectible insurance policy, except in respect of any excess beyond the amount of payment under such insurance;

(c) To indemnify the Indemnitee for any Expenses, judgments, fines, expenses or penalties sustained in any Proceeding for an accounting of profits made from the purchase or sale by the Indemnitee of securities of the Company pursuant to the provisions of Section 16(b) of the Act or similar provisions of any federal, state or local statute or regulation;

(d) To indemnify the Indemnitee for any Expenses, judgments, fines, interest or penalties, or excise taxes assessed with respect to any employee benefit or welfare plan, for which the Indemnitee is indemnified by the Company otherwise than pursuant to this Agreement;

(e) To indemnify the Indemnitee for any Expenses, judgments, fines, interest or penalties, or excise taxes assessed with respect to any employee benefit or welfare plan, on account of the Indemnitee's conduct if such conduct shall be finally adjudged to have been knowingly fraudulent, deliberately dishonest or willful misconduct, including, without limitation, breach of the duty of loyalty; or

(f) If a court of competent jurisdiction finally determines that any indemnification hereunder is unlawful.

10. *Continuation of Indemnification*. All agreements and obligations of the Company contained herein shall continue during the period that the Indemnitee is [an executive officer] / [a member of the Board] (or is or was serving at the request of the Company as an agent of another enterprise, foreign or domestic) and shall continue thereafter so long as the Indemnitee shall be subject to any possible Proceeding by reason of the fact that the Indemnitee was [an executive officer] / [a member of the Board] or serving in any other capacity referred to in this Paragraph 10.

11. *Indemnification Hereunder Not Exclusive*. The indemnification provided by this Agreement shall not be deemed to be exclusive of any other rights to which the Indemnitee may be entitled under the Company's Certificate of Incorporation, as amended, the Company's Bylaws, as amended, any agreement, vote of stockholders or vote of Disinterested Directors, provisions of applicable law, or otherwise, both as to action or omission in the Indemnitee's official capacity and as to action or omission in another capacity on behalf of the Company while holding such office.

12. *Extension of Indemnification Rights to Indemnitee's Associates*. If the Indemnitee is a party to or threatened to be made a party to or is otherwise involved in any Proceeding by reason of the fact that the Indemnitee is or was [an executive officer] / [a member of the Board], and if any Associate of the "Indemnitee" (as defined in Rule 12b-2 under the Act) is also involved in such Proceeding primarily as a result of actions taken or omitted by the Indemnitee as [an executive officer] / [a member of the Board] or while serving at the request of the Company as an agent of another enterprise, foreign or domestic, such Associate of the Indemnitee shall also be entitled to indemnification under this Agreement in the same manner as the Indemnitee, but only to the extent that the claims against such Associate are based upon or directly attributable to actions taken or omitted by the Indemnitee.

13. *Successors and Assigns*.

(a) This Agreement shall be binding upon, and shall inure to the benefit of, the Indemnitee and the Indemnitee's heirs, executors, administrators and assigns, whether or not the Indemnitee has ceased to be [an executive officer] / [a member of the Board], and the Company and its successors and assigns. Upon the sale of all or substantially all of the business, assets or capital stock of the Company to, or upon the merger of the Company into or with, any corporation, partnership, joint venture, trust or other person, this Agreement shall inure to the benefit of and be binding upon both the Indemnitee and such purchaser or successor person. Subject to the foregoing, this Agreement may not be assigned by either party without the prior written consent of the other party hereto.

(b) If the Indemnitee is deceased and is entitled to indemnification under any provision of this Agreement, the Company shall indemnify the Indemnitee's estate and the Indemnitee's spouse, heirs, executors, administrators and assigns against, and the Company shall, and does hereby agree to assume, any and all Expenses actually and reasonably incurred by or for the Indemnitee or the Indemnitee's estate, in connection with the investigation, defense, appeal or settlement of any Proceeding. Further, when requested in writing by the spouse of the Indemnitee, and/or the Indemnitee's heirs, executors, administrators and assigns, the Company shall provide appropriate evidence of the Company's agreement set out herein to indemnify the Indemnitee against and to itself assume such Expenses.

14. *Subrogation*. In the event of payment under this Agreement, the Company shall be subrogated to the extent of such payment to all of the rights of recovery of the Indemnitee, who shall execute all documents required and shall do all acts that may be necessary to secure such rights and to enable the Company effectively to bring suit to enforce such rights.

15. *Severability*. Each and every paragraph, sentence, term and provision of this Agreement is separate and distinct so that if any paragraph, sentence, term or provision thereof shall be held to be invalid, unlawful or unenforceable for any reason, such invalidity, unlawfulness or unenforceability shall not affect the validity, unlawfulness or enforceability of any other paragraph, sentence, term or provision hereof. To the extent required, any paragraph, sentence, term or provision of this Agreement may be modified by a court of competent jurisdiction to preserve its validity and to provide the Indemnitee with the broadest possible indemnification permitted under applicable law.

16. *Savings Clause*. If this Agreement or any paragraph, sentence, term or provision hereof is invalidated on any ground by any court of competent jurisdiction, the Company shall nevertheless indemnify the Indemnitee as to any Expenses, judgments, fines, interest or penalties, or excise taxes assessed with respect to any employee benefit or welfare plan, which are incurred with respect to any Proceeding to the fullest extent permitted by any (a) applicable paragraph, sentence, term or provision of this Agreement that has not been invalidated or (b) applicable provision of Delaware law.

17. *Interpretation; Governing Law*. This Agreement shall be construed as a whole and in accordance with its fair meaning. Headings are for convenience only and shall not be used in construing meaning. This Agreement shall be governed and interpreted in accordance with the laws of the State of Delaware without regard to the conflict of laws principles thereof.

18. *Amendments*. No amendment, waiver, modification, termination or cancellation of this Agreement shall be effective unless in writing signed by the party against whom enforcement is sought. The indemnification rights afforded to the Indemnitee hereby are contract rights and may not be diminished, eliminated or otherwise affected by amendments to the Certificate of Incorporation, Bylaws or by other agreements, including directors' and officers' liability insurance policies, of the Company.

19. *Counterparts*. This Agreement may be executed in one or more counterparts, all of which shall be considered one and the same agreement and shall become effective when one or more counterparts have been signed by each party and delivered to the other.

20. *Notices*. Any notice required to be given under this Agreement shall be directed to Applied Materials, Inc., 3225 Oakmead Village Drive, M/S 1241, P.O. Box 58039, Santa Clara, California 95054, Attention: Senior Vice President, Chief Legal Officer and Corporate Secretary, and to the Indemnitee at Applied Materials, Inc., 3050 Bowers Avenue M/S 1247, P.O. Box 58039, Santa Clara, California 95054 or to such other address as either shall designate to the other in writing.

IN WITNESS WHEREOF, the parties have executed this Indemnification Agreement as of the date first written above.

INDEMNITEE

____

Name:

APPLIED MATERIALS, INC.

By: ____

Name:

Title:

Exhibit 10.15

APPLIED MATERIALS, INC.
2016 DEFERRED COMPENSATION PLAN

(Amended and restated as of January 1, 2021)

APPLIED MATERIALS, INC.
2016 DEFERRED COMPENSATION PLAN
(Amended and restated as of January 1, 2021)

Applied Materials, Inc., a Delaware corporation (the "Company") on behalf of itself and its Participating Affiliates, having previously adopted the Applied Materials, Inc. 2005 Executive Deferred Compensation Plan, originally effective January 1, 2005, as amended, which was previously amended, restated and renamed as the Applied Materials, Inc. 2016 Deferred Compensation Plan (the "Plan"), originally effective October 12, 2015, now hereby amends and restates the Plan, effective January 1, 2021 ("Restatement Date"), for the purposes of attracting highly qualified managers and other employees and promoting increased efficiency and an interest in the successful operation of the Company. All account balances under the Plan as of the Restatement Date shall be retained in separate accounts ("Rollover Accounts"), which shall be payable at the same time or times specified under the prior terms of the Plan as required to comply with Internal Revenue Code Section 409A. The Plan is intended to, and shall be interpreted to, comply in all respects with Internal Revenue Code Section 409A and those provisions of the Employee Retirement Income Security Act of 1974, as amended, applicable to an unfunded plan maintained primarily to provide deferred compensation benefits for a select group of "management or highly compensated employees."

ARTICLE 1
Definitions

1.1 **"401(k) Plan"** shall mean a Section 401(k) plan qualified under Section 401(a) of the Code, which is sponsored by the Employer (or in which the Employer participates) in the relevant Plan Year.

1.2 **"Account(s)"** shall mean the Company Contribution Accounts, Scheduled Distribution Accounts, Termination Accounts, Future Date Accounts, and/or Rollover Accounts established for a particular Participant pursuant to Article 4 of the Plan. Notwithstanding the foregoing, no Scheduled Distribution Accounts shall be established after December 31, 2020.

1.3 **"Administrative Committee"** shall mean the person or persons appointed to administer the Plan pursuant to Article 7 of the Plan.

1.4 "**Affiliate**" means each corporation, trade or business that is, together with the Company, a member of a controlled group of corporations or under common control (as determined under Section 414(b) or (c) of the Code), but only for the period during which such other entity is so affiliated with the Company. Notwithstanding the foregoing, in applying Sections 1563(a)(1), (2) and (3) of the Code for purposes of determining a controlled group of corporations under Section 414(b) of the Code and in applying Treasury Regulation Section 1.414(c)-2 for purposes of determining trades or businesses that are under common control for purposes of Section 414(c) of the Code, the phrase "at least 50 percent" will be used instead of "at least 80 percent" at each place it appears in such sections.

1.5 **"Base Salary"** shall mean the Participant's base annual salary excluding incentive and discretionary bonuses, severance, commissions and other non-regular forms of compensation, before reductions for contributions to or deferrals under any pension, deferred compensation or benefit plans of the Employer, other than any cafeteria plan maintained pursuant to Section 125 of the Code ("Cafeteria Plan").

1.6 **"Beneficiary"** shall mean the person(s) or entity designated as such in accordance with Article 6 of the Plan.

1.7 **"Bonus"** shall mean any amount paid to the Participant by the Employer in the form of discretionary or incentive compensation (excluding Long-Term Incentive Compensation), or any other bonus paid to the Participant by the Employer, which is designated by the Administrative Committee as a Bonus eligible for deferral under the Plan, before reductions for contributions to or deferrals under any pension, deferred compensation or benefit plans of the Employer, other than any Cafeteria Plan.

1.8 **"Change in Control"** shall mean, with respect to the Company, any of the following events:

(a) A change in the ownership of the Company that occurs on the date that any one person, or more than one person acting as a group ("Person"), acquires ownership of the stock of the Company that, together with the stock held by such Person, constitutes more than fifty percent (50%) of the total voting power of the stock of the Company. For purposes of this subsection (a), the acquisition of additional stock by any one Person, who is considered to own more than fifty percent (50%) of the total voting power of the stock of the Company will not be considered an additional Change in Control. Further, if the stockholders of the Company immediately before the change in ownership continue to retain, immediately after the change in ownership, in substantially the same proportions as their ownership of shares of the Company's voting stock immediately prior to the change in ownership, the direct or indirect beneficial ownership of fifty percent (50%) or more of the total voting power of the stock of the Company or of the ultimate parent entity of the Company, such event will not be considered a Change in Control under this subsection (a). For this purpose, indirect beneficial ownership will include, without limitation, an interest resulting from ownership of the voting securities of one or more corporations or other business entities that own the Company, as the case may be, either directly or through one or more subsidiary corporations or other business entities; or

(b) A change in the effective control of the Company that occurs on the date that a majority of members of the Board of Directors of the Company is replaced during any twelve (12) month period by directors whose appointment or election is not endorsed by a majority of the members of the Board of Directors prior to the date of the appointment or election. For purposes of this subsection (b), once any Person is considered to be in effective control of the Company, the acquisition of additional control of the Company by the same Person will not be considered an additional Change in Control; or

(c) A change in the ownership of a "substantial portion of the Company's assets", as defined herein. For this purpose, a "substantial portion of the Company's assets" shall mean assets of the Company having a total gross fair market value equal to or more than fifty percent (50%) of the total gross fair market value of all of the assets of the Company immediately prior to such change in ownership. For purposes of this subsection (c), a change in ownership of a substantial portion of the Company's assets occurs on the date that any Person acquires (or has acquired during the twelve (12) month period ending on the date of the most recent acquisition by such person or persons) assets from the Company that constitute a "substantial portion of the Company's assets." Further, for purposes of this subsection (c), the following will not constitute a change in the ownership of a substantial portion of the Company's assets: (A) a transfer to an entity that is controlled by the Company's stockholders immediately after the transfer, or (B) a transfer of assets by the Company to: (1) a stockholder of the Company (immediately before the asset transfer) in exchange for or with respect to the Company's stock, (2) an entity, fifty percent (50%) or more of the total value or voting power of which is owned, directly or indirectly, by the Company, (3) a Person that owns, directly or indirectly, fifty percent (50%) or more of the total value or voting power of all the outstanding stock of the Company, or (4) an entity, at least fifty percent (50%) of the total value or voting power of which is owned, directly or indirectly, by a Person described in this subsection (c). For purposes of this subsection (c), gross fair market value means the value of the assets of the Company, or the value of the assets being disposed of, determined without regard to any liabilities associated with such assets.

For purposes of determining the occurrence of a Change in Control, Persons will be considered to be acting as a group if they are owners of a corporation that enters into a merger, consolidation, purchase or acquisition of stock, or similar business transaction with the Company.

Further and for the avoidance of doubt, a transaction will not constitute a Change in Control if its primary purpose is to: (1) change the state of the Company's incorporation, or (2) create a holding company that will be owned in substantially the same proportions by the persons who held the Company's securities immediately before such transaction.

Notwithstanding the foregoing, a transaction will not be deemed a Change in Control unless the transaction qualifies as a "change in control event" within the meaning of Code Section 409A.

1.9 **"Code"** shall mean the Internal Revenue Code of 1986, as subsequently amended, as interpreted by regulations, rulings, and applicable authorities.

1.10 **"Commissions"** shall mean commissions payable to the Participant for the applicable Plan Year (as determined by the Administrative Committee in compliance with Code Section 409A) before reductions for contributions to or deferrals under any pension, deferred compensation or benefit plans of the Employer, other than any Cafeteria Plan.

1.11 **"Company"** shall mean Applied Materials, Inc., a Delaware corporation.

1.12 **"Company Contribution"** shall mean the contribution by the Employer to the Participant's Company Contribution Account pursuant to Section 3.2 of the Plan.

1.13 **"Company Contribution Account"** shall mean an Account established for Company Contributions pursuant to Article 4 of the Plan.

1.14 "**Compensation**" shall mean all amounts eligible for deferral for a particular Plan Year (or other applicable performance period) under Section 3.1.1 of the Plan.

1.15 **"Disability"** shall be interpreted consistent with the requirements of Code Section 409A and shall mean that the Participant (i) is unable to engage in any substantial gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or can be expected to last for a continuous period of not less than twelve (12) months, or (ii) is, by reason of any medically determinable physical or mental impairment that can be expected to result in death or can be expected to last for a continuous period of not less than twelve (12) months, receiving income replacement benefits for a period of not less than three (3) months under an accident and health plan covering employees of the Participant's Employer. The Administrative Committee will determine whether or not a Participant has incurred a Disability based on such evidence as it deems necessary or appropriate. Notwithstanding the foregoing, a Participant will be deemed to qualify for Disability hereunder if he or she has been determined to be totally disabled by the Social Security Administration.

1.16 **"Distributable Amount**" shall mean the vested balance in the applicable Account.

1.17 **"Eligible Employee"** shall mean a management level or highly compensated employee of the Company or a Participating Affiliate selected by the Administrative Committee to be eligible to participate in the Plan.

1.18 **“Employer”** shall mean the Company or Participating Affiliate for which the relevant Participant performs services and from which such Participant is entitled to the payment of Compensation.

1.19 **“ERISA”** shall mean the Employee Retirement Income Security Act of 1974, as amended, as interpreted by regulations, rulings and applicable authorities.

1.20 **“Fiscal Year Bonus Compensation”** shall have the meaning given to such term in Section 3.1.3.

1.21 **“Future Date Account”** shall mean an Account established for Future Date Contributions pursuant to Article 4 of the Plan.

1.22 **“Future Date Distribution”** shall mean the distribution elected by the Participant pursuant to Section 5.4 of the Plan.

1.23 **“Hardship Distribution”** shall mean a distribution by reason of an Unforeseeable Emergency pursuant to Section 5.8 of the Plan.

1.24 **“HRCC”** shall mean the Human Resources and Compensation Committee of the Board of Directors of the Company.

1.25 **“Investment Subaccount”** shall have the meaning given to such term in Section 4.1 of the Plan.

1.26 “**Long-Term Incentive Compensation”** shall mean any amount payable to the Participant by the Employer in the form of long-term discretionary or incentive compensation designated by the Administrative Committee as eligible for deferral under the Plan, before reductions for contributions to or deferrals under any pension, deferred compensation or benefit plans of the Employer, other than any Cafeteria Plan.

1.27 **“Participant”** shall mean an Eligible Employee who has elected to participate and has made a Participant Election pursuant to Article 2 of the Plan, or has received a Company Contribution.

1.28 **“Participant Election”** shall mean an election regarding deferrals and/or distributions submitted by the Participant to the Administrative Committee on a timely basis pursuant to Article 3 of the Plan, which may include contributions, benefits, terms and conditions unique to such Participant. The Participant Election may take the form of an electronic communication according to specifications established by the Administrative Committee.

1.29 **“Participating Affiliate”** shall mean an Affiliate of the Company that has been designated and approved by the HRCC (or its authorized delegate) as a Participating Affiliate and has adopted the Plan. By adopting the Plan, an Participating Affiliate shall be deemed to agree to all of its terms, including (but not limited to) the provisions granting exclusive authority to the HRCC (or its authorized delegate) to amend the Plan and the provisions granting exclusive authority to the Administrative Committee to administer and interpret the Plan. A Participating Affiliate may independently terminate participation in the Plan under the same terms and conditions provided for termination by the Company at the direction of the HRCC (or its authorized delegate) under Section 9.1 of the Plan. The liabilities incurred under the Plan to the Participants employed by each Employer shall be solely the liabilities of that Employer, and no other Employer will be liable for any benefits accrued by a Participant during any period when he or she was not employed by such Employer.

1.30 **"Payment Date"** shall mean the date by which a lump sum payment under the Plan shall be made or the date by which installment payments under the Plan shall commence and shall, in all events, include only a qualifying distribution date, event or schedule under Code Section 409A. The Payment Date for payments commencing upon Separation from Service shall be within the ninety (90) day period following Separation from Service. Subsequent installments shall be made in the first ninety (90) days of each succeeding Plan Year commencing after the Plan Year in which the first installment payment is made. Notwithstanding the foregoing, for payments commencing upon Separation from Service from amounts deferred after December 31, 2020, subsequent installments shall be made on the anniversary date of the first payment thereof. In the case of death, the Administrative Committee shall be provided with documentation reasonably necessary to establish the fact of the Participant's death. The Payment Date of a Scheduled Distribution shall be the earlier of the first ninety (90) days of the Plan Year specified by the Participant for such distribution or the Participant's Separation from Service other than by reason of death or Disability. Notwithstanding the foregoing, the Payment Date shall not be before the earliest date on which benefits may be distributed under Code Section 409A without the imposition of additional Code Section 409A taxes, as determined by the Administrative Committee and the Administrative Committee shall have discretion regarding the timing of payments to the extent permitted under Code Section 409A. In the event that the Participant is a "key employee" (as defined in Code Section 416(i) without regard to paragraph (5) thereof) of the Company, to the extent required by Code Section 409A, the Payment Date for payments commencing on account of Separation from Service shall be no earlier than the earlier of (i) the first day of the seventh (7th) calendar month commencing after the Participant's Separation from Service, or (ii) the Participant's death. Any payments delayed by reason of the preceding sentence shall be caught up and paid in a single lump sum on the first day such payments are permissible consistent with the application of Code Section 409A.

1.31 **"Plan"** shall mean this Applied Materials, Inc. 2016 Deferred Compensation Plan which amends, restates and renames the Applied Materials, Inc. 2005 Executive Deferred Compensation Plan.

1.32 **"Plan Year"** shall mean the calendar year.

1.33 "**Performance-Based Compensation**" means Compensation where the amount of, or entitlement to, the Compensation is contingent upon the satisfaction of pre-established organizational or individual performance criteria relating to a performance period of at least twelve (12) consecutive months. Organizational or individual performance criteria are considered pre-established if established in writing within ninety (90) days after the commencement of the period of service to which the criteria relate, provided that the attainment of performance objectives is substantially uncertain at the time the criteria are established. The determination of whether Compensation qualifies as "Performance-Based Compensation" will be made in the complete and sole discretion of the Administrative Committee in accordance with Treasury Regulation Section 1.409A-1(e) and applicable authorities.

1.34 **"Restatement Date"** shall have the meaning given to such term in the introductory paragraph.

1.35 **"Restricted Stock Units"** shall mean restricted stock unit awards of a right to receive common stock of the Company at a specified date in the future made by an Employer to an Eligible Employee under an equity compensation plan sponsored by the Company, or such other similar amounts, as are specified as eligible for deferral under the Plan from time to time by the Administrative Committee, in its discretion and in compliance with all applicable laws.

1.36 "**Rollover Account**" shall have the meaning given to such term in the introductory paragraph of the Plan.

1.37 **"Scheduled Distribution"** shall mean the distribution elected by the Participant pursuant to Section 5.3 of the Plan.

1.38 **"Scheduled Distribution Account"** shall mean an Account established prior to January 1, 2021 for amounts payable in the form of a Scheduled Distribution pursuant to Article 4 of the Plan.

1.39 **"Separation from Service"** shall be interpreted consistently with the meaning of such term under Code Section 409A and shall mean, with respect to a given Participant, the date when, for any reason, including by reason of retirement, death or Disability, (but excluding approved leaves of absence of six (6) months or less, or a longer period if the right to return to employment after such period is protected by law or contract), the level of services provided by such Participant to the Employer (or any Affiliate under common ownership aggregated with the Company for purposes of Code Section 409A) in any capacity has permanently decreased to a level equal to no more than twenty percent (20%) of the average level of services performed by such Participant for the Employer during the immediately preceding thirty-six (36) month period (or the Participant's full period of services to the Employer, if a lesser period).

1.40 **"Stock Unit Account"** shall mean the Account established for Restricted Stock Unit deferrals as provided under Article 4 of the Plan.

1.41 "**Termination Account**" shall mean an Account established for distribution of Participant deferrals elected to commence upon the Payment Date following Separation from Service pursuant to Article 4 of the Plan.

1.42 **"Unforeseeable Emergency"** shall mean a severe financial hardship to the Participant resulting from an illness or accident involving the Participant or the Participant's spouse, Beneficiary or dependent (as defined in Code Section 152, but without regard to subsections (b)(1), (b)(2) and (d)(1)(B) thereof), the loss of the Participant's property due to casualty, or other similar extraordinary and unforeseeable circumstances arising as a result of events beyond the control of the Participant (but shall in all events correspond to the meaning of the term "unforeseeable emergency" in Code Section 409A and applicable authorities).

ARTICLE 2
Participation

2.1 Commencement of Participation. An Eligible Employee shall commence participation in the Plan as of the date specified in the enrollment materials provided by the Administrative Committee which designate him or her as an Eligible Employee if, and only if, the Eligible Employee has completed all applicable Participant Elections and other documentation the Administrative Committee may reasonably request, during the enrollment period established by the Administrative Committee for such purpose.

2.2 Duration of Participation. A Participant shall continue to be eligible to make deferrals and/or to receive Company Contributions under Article 3 until the earlier of the Participant's Separation from Service or such time as the Administrative Committee shall determine that the Participant is no longer an Eligible Employee. Notwithstanding the foregoing, the Participant's deferral elections shall continue in place with respect to any Compensation for services performed during the Plan Year (or other applicable performance period) in which Separation from Service or termination of eligibility shall occur and a terminated Participant's Accounts shall continue to be credited with notional earnings or losses as provided in Article 4 until such time as the total balance of all of the Participant's Accounts shall have been fully distributed.

ARTICLE 3
Deferrals, Contributions, and Elections

3.1 Elections to Defer Compensation.

3.1.1 Form of Elections. A Participant may only elect to defer Compensation attributable to services provided after the time an election is made. Participant Elections shall be subject to such specifications and limitations as may be prescribed by the Administrative Committee in the enrollment materials for a particular Plan Year (or applicable performance period) and shall take the form of a whole percentage not to exceed:

• 60% of Base Salary,

• 100% of specified Bonuses (separate deferral elections shall be made available for each type of Bonus and applicable limitations specified by the Administrative Committee for the applicable Plan Year (or other performance period) and Performance-Based Compensation with applicable limitations must be separately specified by the Administrative Committee, in its sole discretion, as eligible for deferral),

• 100% of Long-Term Incentive Compensation, or

• 100% of Commissions,

as permitted in the complete and sole discretion of the Administrative Committee.

A Participant may also elect to defer annual Compensation in an amount equal to specified refunded compensation from the 401(k) Plan and/or, Restricted Stock Units awarded to the Participant for services performed in the applicable Plan Year (or performance period), as determined in the complete and sole discretion of the Administrative Committee.

The Administrative Committee shall establish appropriate procedures for such deferral elections in compliance with Code Section 409A and, notwithstanding any contrary Plan provision, may further limit the classes of deferred Compensation and/or the minimum or maximum amount deferred by any Participant or group of Participants, or waive the foregoing limits for any Participant or group of Participants, for any reason, to the extent permitted under Code Section 409A. In particular, but not by way of limitation, the Administrative Committee may apply further limitations to the eligibility, amount and form of Compensation that may be deferred by certain Participants to avoid the application of Code Section 457A to the Plan. Any such limitations that will be applicable with respect to a Plan Year (or other applicable performance period) shall be established by the Administrative Committee before any deferral elections with respect to Compensation for services performed during such Plan Year (or other applicable performance period) otherwise become irrevocable under the terms of the Plan.

Deferrals shall be calculated with respect to the gross cash Compensation payable to the Participant prior to any deductions or withholdings (other than for Cafeteria Plan contributions), but shall be reduced by the Administrative Committee as necessary to not exceed 100% of the cash Compensation of the Participant remaining after deduction of applicable employment taxes and income taxes thereon and other deductions required by law. Changes to payroll withholdings that affect the amount of Compensation being deferred to the Plan shall be allowed only to the extent permissible under Code Section 409A.

3.1.2 Initial Deferral Election. An Eligible Employee shall make an initial election to defer Compensation during the enrollment period established by the Administrative Committee prior to the effective date of the Participant's commencement of participation in the Plan and such election shall apply only to Compensation for services performed after such date. The enrollment period shall generally occur prior to the beginning of the applicable Plan Year, but the Administrative Committee may establish a special enrollment period ending no later than thirty (30) days after an Eligible Employee first becomes eligible to participate in the Plan to allow deferrals by such Eligible Employee of eligible amounts earned during the balance of such Plan Year (as long as such Eligible Employee is not already a participant in another plan or arrangement which is aggregated with this Plan for purposes of Code Section 409A). Eligibility for mid-year enrollment of rehired or newly Eligible Employees who have previously participated in the Plan shall be permitted only in compliance with all requirements of Code Section 409A, and as determined in the complete and sole discretion of the Administrative Committee.

3.1.3 Deferral Elections for Subsequent Plan Years. A Participant may increase, decrease, terminate or recommence a deferral election with respect to Compensation for any subsequent Plan Year in which the Participant is eligible to participate in the Plan by making a Participant Election during the enrollment period established by the Administrative Committee prior to the beginning of the Plan Year in which the applicable services are performed, which election shall be effective on the first day of the following Plan Year. Notwithstanding the foregoing, the Administrative Committee may allow separate deferral elections with respect to any Bonuses which are determined on the basis of the Employer's fiscal year or years and payable after the end of the applicable fiscal year or years ("Fiscal Year Bonus Compensation"). The enrollment period established for deferral of Fiscal Year Bonus Compensation shall be made prior to the beginning of the fiscal year in which the applicable services are performed, in compliance with all requirements of Code Section 409A. The Administrative Committee may allow separate deferral elections with respect to Sales Incentive ("SIP") Bonuses, which deferral may be limited by the Administrative Committee to apply to SIP Bonuses payable for the 2nd, 3th, and 4th fiscal quarters following the effective date of the Participant's election, plus the 1st fiscal quarter in the immediately succeeding fiscal year ("SIP Bonus Compensation").

3.1.4 Performance-Based Compensation. Notwithstanding the foregoing, the Administrative Committee may allow deferral elections or changes in deferral elections to be made no later than six (6) months before the end of the applicable performance period solely with respect to the deferral of any Compensation which qualifies as Performance-Based Compensation, if such deferral or change is in compliance with Code Section 409A and applicable authorities. In order for an Eligible Employee to be eligible to defer Performance-Based Compensation in accordance with the deadline established in this Section, the Eligible Employee must have performed services continuously from the later of the beginning of the performance period for such Compensation or the date on which the performance criteria for such Compensation was established through the date on which such election is made; provided, however, that no such election may be made after such Compensation has become readily ascertainable, consistent with the requirements of Code Section 409A.

3.1.5 Irrevocability of Deferral Election. After the beginning of the Plan Year (or the effective date of a mid-year commencement of participation, Fiscal Year Bonus Compensation deferral election or Performance-Based Compensation deferral election), or such earlier time as may be specified by the Administrative Committee in its discretion, deferral elections with respect to Compensation for services performed during such Plan Year (or other applicable performance period) shall be irrevocable except that the Administrative Committee may cancel a Participant's deferral election(s) to the extent permitted under Code Section 409A: (i) in the event of an Unforeseeable Emergency, (ii) by reason of the Participant's Qualifying Disability (as defined below), or (iii) as necessary for the Participant to receive a hardship distribution under the 401(k) Plan that is made prior to January 1, 2019. For purposes of this Section, “Qualifying Disability” shall be interpreted consistent with the requirements of Code Section 409A and shall mean any medically determinable physical or mental impairment resulting in the Participant’s inability to perform the duties of his or her position or any substantially similar position, where such impairment can be expected to result in death or can be expected to last for a continuous period of not less than six (6) months. The Administrative Committee will determine whether or not a Participant has incurred a Qualifying Disability based on such evidence as it deems necessary or advisable. A Participant whose deferral election(s) have been cancelled pursuant to this Section may later resume making deferrals under the Plan only in accordance with the foregoing provisions of Section 3.1 and the requirements of Code Section 409A.

3.2 Company Contributions.

3.2.1 Discretionary Company Contributions. Except as provided in Section 3.2.2 below, the Employer shall have the discretion to make Company Contributions to the Plan at any time on behalf of any Participant. Such Company Contributions shall be made in the complete and sole discretion of the Employer and no Participant shall have the right to receive any Company Contribution, regardless of whether Company Contributions are made on behalf of other Participants.

3.2.2 Company Matching Contributions. The Employer may make a matching Company Contribution on behalf of each Participant for each Plan Year (or other applicable performance period) in which the Participant makes a deferral under this Plan based on such matching formula as may be specified by the Administrative Committee, in its discretion, in the election materials prior to commencement of the applicable Plan Year (or applicable performance period).

3.3 Distribution Elections.

3.3.1 Initial Election. At the time of making a deferral election under the Plan, the Participant shall designate the time and form of distribution of deferrals made pursuant to such election (together with notional earnings or losses credited thereon) from among the alternatives specified in Article 5, if eligible. Notwithstanding the foregoing, all amounts credited to a Rollover Account shall be distributed at the same time and in the same form as the Participant elected under the prior terms of the Plan as in effect prior to the Restatement Date, subject to modifications permissible under Section 3.3.2 and Code Section 409A.

3.3.2 Modification of Election. A distribution election with respect to previously deferred amounts may be changed under the terms and conditions specified in Code Section 409A and the Plan. Except as expressly provided in Article 5 (or otherwise permitted under Code Section 409A and applicable authorities), no acceleration of a distribution is permitted. A subsequent election that delays payment or changes the form of payment shall be permitted if, and only if, all of the following requirements are met:

- the new election does not take effect until at least twelve (12) months after the date on which the new election is made;

- in the case of a new election related to a payment not described in Treasury Regulation Sections 1.409A-3(a)(2), 1.409A-3(a)(3) or 1.409A-3(a)(6), the election delays such payment for at least five (5) years from the date that payment would otherwise have been made (or, in the case of installment payments, the first installment payment would otherwise have been made), absent the new election; and

- in the case of a new election related to a payment described in Treasury Regulation Section 1.409A-3(a)(4), the election is made not less than twelve (12) months before the date on which payment would otherwise have been made (or, in the case of installment payments, the first installment payment would otherwise have been made) absent the new election.

For purposes of applying the above change limitations, substantially level installment payments shall be treated as a single payment. Election changes made pursuant to this Section shall be made at the discretion of, and in accordance with rules established by, the Administrative Committee, and shall comply with all requirements of Code Section 409A and applicable authorities.

Notwithstanding the foregoing, with respect to modifications of the date or form of payment of Future Date Accounts established in the 2020 Plan Year, such modifications are permitted only in the case of changes up to a maximum age plus number of installments in the aggregate not to exceed the number 95 (i.e., not to exceed age 75 plus 20-year installments, or age 85 plus 10-year installments, etc.). With respect to modifications of the date or form of payment of Future Date Accounts established after the 2020 Plan Year, the maximum number of installments shall not exceed the number 20, regardless of a Participant's age.

ARTICLE 4
Accounts, Crediting and Vesting

4.1 Accounts. Solely for recordkeeping purposes, effective January 1, 2021, a maximum of two Accounts, consisting of Termination Accounts and/or Future Date Accounts, or such greater number of each as may be permitted from time to time by the Administrative Committee, attributable to a Plan Year shall be maintained for each Participant and credited with the Participant's deferrals as directed in the applicable Participant Election for such deferral. A Participant who elects to have two (2) Accounts in any given Plan Year must allocate his Base Salary and Eligible Bonus into separate Accounts. One or more separate Company Contribution Accounts shall be maintained for the Participant and shall be credited with any Company Contributions at the time specified by the Administrative Committee. One or more separate Stock Unit Accounts may be maintained for the Participant and shall be credited with any deferred Restricted Stock Units and shall be credited at the time specified by the Administrative Committee. One or more Rollover Accounts shall be established for Participants having vested or unvested Account balances as of the Restatement Date. Each Account may be further divided into separate subaccounts for notional investment purposes ("Investment Subaccounts") to accommodate the direction of investments as provided in Section 4.2.

4.2 Investment Direction and Crediting Rate. Amounts, other than Restricted Stock Units, credited to a Participant's Accounts shall be credited with notional earnings or losses in a manner determined in the discretion of the Administrative Committee. Until such time as the Administrative Committee determines otherwise:

4.2.1 Rollover Accounts. Rollover Accounts shall be credited with notional earnings at a fixed crediting rate established by the Administrative Committee. Notwithstanding the foregoing, the Administrative Committee may establish a procedure at a future date to allow Rollover Accounts to be credited with notional earnings or losses based on the Participant's investment direction according to the specifications of the following paragraph.

4.2.2 New Accounts. Accounts established after the Restatement Date, other than Stock Unit Accounts, shall be credited with notional earnings or losses based on the Participant's choice among the investment alternatives or "funds" made available from time to time by the Administrative Committee. The Administrative Committee may establish a procedure by which a Participant may choose among investment funds specified by the Administrative Committee and may change investment elections daily on each business day, subject to administrative feasibility. At the discretion of the Administrative Committee, the Participant's applicable Account balance shall reflect the notional earnings or losses on the investment funds selected by the Participant. If an investment fund selected by a Participant sustains a loss, the Participant's applicable Account shall be reduced to reflect such loss. If the Participant fails to elect an investment alternative for a particular Account or Investment Subaccount, the notional crediting rate with respect to that Account or Investment Subaccount shall be based on the default investment alternative selected for this purpose by the Administrative Committee. The Participant's choice among investment funds shall be solely for purposes of the calculation of a notional crediting rate on the Participant's applicable Accounts. Notwithstanding any contrary provision of the Plan, the Company (and other Employers) shall have no obligation to set aside or invest funds as directed by the Participant and, whether or not the Company (or Employer) elects to invest funds as directed by the Participant, the Participant shall have no right to payment under the Plan other than as an unsecured general creditor of the Company (or Employer).

4.2.3 Crediting During Payout Period. During payout, the Participant's Accounts, other than Stock Unit Accounts, shall continue to be credited at the notional crediting rate specified by the Administrative Committee or as selected by the Participant from among the investment alternatives or rates made available by the Administrative Committee. Installment payments shall be recalculated annually by dividing the applicable Account balance by the number of payments remaining without regard to anticipated notional earnings or losses, or in any other reasonable manner as may be determined from time to time by the Administrative Committee.

4.3 Crediting of Stock Unit Accounts. Stock Unit Accounts may be established under the Plan in the complete and sole discretion of the Administrative Committee and shall be subject to such additional terms and conditions as may be specified by the Administrative Committee from time to time. Amounts credited to a Stock Unit Account shall be distributed in the form of common stock of the Company or, in cash equal to the fair market value of the common stock of the Company as of the date of distribution, in the complete and sole discretion of the Administrative Committee, subject to the terms and limitations of the applicable Restricted Stock Unit plan and/or award agreement. Notwithstanding any other provisions of the Plan, no common stock shall be issued to a Participant in connection with a distribution under the Plan unless, and until, such Participant has executed such documentation as may be required by the Administrative Committee and agreed to comply with all applicable securities laws. The Administrative Committee shall administer any Stock Unit Account consistent with the terms of the applicable Restricted Stock Unit plan and agreement. The Administrative Committee shall have the discretion to make adjustments in the number of shares, or convert or allow a Participant to elect to convert shares, if any, payable with respect to Restricted Stock Units credited to a Stock Unit Account to an alternative form of security or cash as appropriate to accomplish the intent of the Plan to treat notional Restricted Stock Unit credits similarly to actual shares of Company common stock, all as may be directed by the Administrative Committee, in its complete and sole discretion, subject to the terms and limitations of the applicable Restricted Stock Unit plan and/or award agreement. Prior to any distribution of common stock, Participants shall have no rights as shareholders with respect to amounts or units credited to a Stock Unit Account except that Participants shall be entitled to receive additional credits to such Account in the amount of any cash or stock dividends payable on shares of Company common stock equal in number to the vested Restricted Stock Units credited to such Stock Unit Account. Any dividends payable on vested Restricted Stock Units credited to a Stock Unit Account shall be denominated in Restricted Stock Units and result in a credit of additional notional Restricted Stock Units to the applicable Stock Unit Account. Pursuant to Code Section 409A, such dividend equivalents shall be considered current earnings on the Stock Unit Account and shall be credited to the appropriate Account as of the date dividends are paid to shareholders of the Company and distributed at the same time and in the same form elected for the applicable Stock Unit Account.

4.4 Crediting of Accounts. A Participant's Accounts shall be credited as follows:

4.4.1 Participant Deferrals. On or before the third (3rd) business day after amounts would otherwise have been paid to the Participant, the Administrative Committee shall credit the Participant's applicable Account with an amount equal to Compensation deferred by the Participant and shall allocate such amount to Investment Subaccounts in accordance with the Participant's election under Section 4.2.2 or, in the case of a deferral of Restricted Stock Units, to the applicable Stock Unit Accounts.

4.4.2 Company Contributions. On the date specified by the Administrative Committee for the crediting of a Company Contribution to the Plan on behalf of a Participant, the Administrative Committee shall credit the Participant's Company Contribution Account with an amount equal to the Company Contribution and shall allocate such amount to Investment Subaccounts in accordance with the Participant's election under Section 4.2.2.

4.4.3 Distributions. Distributions shall be deducted by the Administrative Committee from the applicable Account as of the end of the day on which such distributions are made.

4.4.4 Notional Earnings or Losses. Each business day, a Participant's Accounts (other than Stock Unit Accounts) shall be credited with notional earnings or losses in an amount equal to that determined by multiplying the balance credited to such Accounts or applicable Investment Subaccounts as of the prior day, less any distributions valued as of the end of the prior day, by the notional crediting rate for the corresponding fund as determined by the Administrative Committee.

4.5 Vesting of Accounts. The Participant shall be vested at all times in amounts credited to the Participant's Accounts, other than the Participant's Company Contribution Accounts. Amounts credited to the Participant's Company Contribution Accounts shall vest in accordance with the schedule determined and provided to the Participant at the time of contribution by the Administrative Committee. Unless otherwise specified by the Administrative Committee, amounts credited to the Participant's Company Contribution Account for a particular Plan Year shall vest at the end of the second Plan Year commencing after the Plan Year in which the services are performed in connection with such Company Contribution, provided that the Participant has not incurred a Separation from Service as of the scheduled vesting date. Notwithstanding the foregoing, in the event of a Change in Control or termination of the Plan pursuant to Section 9.1, all Company Contribution Accounts shall be fully vested as of such date.

4.6 Statement of Accounts. The Administrative Committee shall make available to each Participant electronic statements at least annually setting forth the Participant's Account balances as of the end of each Plan Year.

ARTICLE 5
Distributions and Benefits

5.1 Distribution of Rollover Accounts. Rollover Accounts shall be distributed under the terms and conditions of the Plan as in effect prior to the Restatement Date, subject to modifications permissible under Section 3.3.2 and Code Section 409A.

5.2 Termination Distributions. Except as otherwise provided herein, in the event of a Participant's Separation from Service other than by reason of death or Disability, the Distributable Amount credited to the Participant's Termination Accounts, Company Contribution Accounts and Stock Unit Accounts shall be paid to the Participant in a single lump sum on the Payment Date following the Participant's Separation from Service unless, with respect to any individual Account where the Distributable Amount is at least fifty thousand dollars ($50,000) in value as of the commencement of distributions from such Account, the Participant has made an alternative benefit election on a timely basis pursuant to Section 3.3 to receive the benefits in substantially equal annual installments over up to twenty (20) years commencing on the Payment Date following the Participant's Separation from Service. Notwithstanding the foregoing, the Distributable Amount credited to a Termination Account established after the 2020 Plan Year shall be paid to the Participant in a single lump sum on the Payment Date following the Participant's Separation from Service unless the aggregate balance of all of the Participant's Accounts established after the 2020 Plan Year is at least fifty thousand dollars ($50,000) in value as of the commencement of distributions from the Participant's Termination Account, regardless of whether the Participant elected to receive such benefits in substantially equal annual installments. For Accounts established after 2020, the amount of any distributions of Accounts established after 2020 that are made in Plan Years prior to a Participant's Separation from Service will not be included when determining whether the aggregate balances in the Participant's Accounts exceeded $50,000 as of the commencement of distributions.

5.3 Scheduled Distributions. Each Participant shall be entitled to elect in accordance with Section 3.3 to allocate Participant deferrals (and, in the discretion of the Administrative Committee, Company Contributions) among up to three (3) Scheduled Distribution Accounts, or such greater number as may be permitted from time to time by the Administrative Committee. Distributions from a Scheduled Distribution Account shall commence on the earlier of the Payment Date in the Plan Year specified by the Participant for such Account (the "Specified Distribution Date"), or the Participant's Separation from Service other than by reason of death or Disability. Notwithstanding the foregoing, no deferrals shall be allocated to a Scheduled Distribution Account having a Specified Distribution Date which is earlier than the first day of the second Plan Year commencing after the Plan Year in which the deferrals would be credited to the Account. Payment from a Scheduled Distribution Account shall be paid in the form of a single lump sum unless the Participant has made a timely election under Section 3.3 that, if the Distributable Amount from a Scheduled Distribution Account is at least fifty thousand dollars ($50,000) as of commencement of distribution, such amount shall be paid in substantially equal annual installments over a period of up to five (5) years. In the event that amounts are mistakenly credited to a Scheduled Distribution Account having no Specified Distribution Date or a noncompliant commencement date, payments from such Account shall commence on Separation from Service and shall be distributed in the form of a single lump sum. A Participant may only delay and/or change the form of a Scheduled Distribution, provided such change complies with Section 3.3.2. Notwithstanding the foregoing, effective January 1, 2021, no further deferrals shall be allocated to a Scheduled Distribution Account.

5.4. Future Date Distributions. Each Participant shall be entitled to elect in accordance with Section 3.3 to allocate Participant deferrals (and, in the discretion of the Administrative Committee, Company Contributions) among up to two (2) Future Date Accounts attributable to a Plan Year, or such greater number as may be permitted from time to time by the Administrative Committee. A Participant may not allocate Participant deferrals or Company Contributions (if any) into an Account that is attributable to a different Plan Year than that in which the Participant makes an election pursuant to Section 3.3. Distributions from a Future Date Account shall commence on the Payment Date in the Plan Year specified by the Participant for such Account (the "Future Date Distribution Date"). Notwithstanding the foregoing, no deferrals shall be allocated to a Future Date Account having a Future Date Distribution Date which is earlier than the first day of the second Plan Year commencing after the Plan Year in which the deferrals would be credited to the Account. Payment from a Future Date Account shall be paid in the form of a single lump sum unless the Participant has made a timely election under Section 3.3 that, if the Distributable Amount from a Future Date Account is at least fifty thousand dollars ($50,000) as of commencement of distribution, such amount shall be paid in substantially equal annual installments over a period of up to twenty (20) years. Notwithstanding the foregoing, the Distributable Amount credited to a Future Date Account established after the 2020 Plan Year shall be paid to the Participant in a single lump sum on the Payment Date following the Participant's Separation from Service unless the aggregate balance of all of the Participant's Accounts established after the 2020 Plan Year is at least fifty thousand dollars ($50,000) in value as of the commencement of distributions from the Participant's Future Date Account, regardless of whether the Participant elected to receive such benefits in substantially equal annual installments. For Accounts established after 2020, the amount of any distributions of Accounts established after 2020 that are made in Plan Years prior to the date elected by the Participant for the commencement of payment from the Future Date Account will not be included when determining whether the aggregate balances in the Participant's Accounts exceeded $50,000 as of the commencement of distributions. Notwithstanding the foregoing, in the event that amounts are mistakenly credited to a Future Date Account having no Future Date or a noncompliant commencement date, payments from such Account shall commence on Separation from Service and shall be distributed in the form of a single lump sum. A Participant may only delay and/or change the form of a Future Date Distribution, provided such change complies with Section 3.3.2.

5.5 Death and Disability Benefits. In the event of the Participant's death or Disability prior to the commencement of, or the complete payment of, all benefits payable under the Plan, the Employer shall pay to the Participant or the Participant's Beneficiary, as applicable, a benefit equal to the Distributable Amount of all of the Participant's Accounts (other than a Rollover Account) in the form of a single lump sum payable at the end of the fifteenth (15th) month commencing after the month in which such event occurs, unless the Participant or Beneficiary, as applicable, makes a timely election during the first three (3) months following the event in compliance with Section 3.3.2 to receive the benefits over a period of up to fifteen (15) years in substantially equal annual installments.

5.6 Small Benefit Distribution. Notwithstanding the foregoing, in the event the sum of all benefits payable to the Participant from all of the Participant's Accounts at the time of the Participant's Separation from Service (and all other amounts payable to the Participant under other arrangements which are aggregated with this Plan under Section Code 409A) is less than the applicable dollar amount under Code Section 402(g)(1)(B) for the calendar year of payment, the Administrative Committee may, in its complete and sole discretion, pay all benefits to the Participant under the Plan in a single lump sum on the Payment Date following Separation from Service, subject to compliance with all requirements of Code Section 409A.

5.7 Distribution on Change in Control. If a Change in Control occurs before the applicable Account (other than a Rollover Account) has been fully distributed, the remaining balance of such Account shall be distributed in the form of a single lump sum payable at the end of the fifteenth (15th) month following the month in which such Change in Control occurs, unless the Participant makes a timely election during the first three (3) months following the Change in Control in compliance with Section 3.3.2 to delay commencement of benefits from such Account by a minimum of five (5) years and to receive the benefits in the form of a single lump sum or over a period of up to fifteen (15) years in substantially equal annual installments.

5.8 Hardship Distribution. Upon a finding that the Participant has suffered an Unforeseeable Emergency, subject to compliance with Code Section 409A, the Administrative Committee may, at the request of the Participant, approve a complete cessation of current deferrals under the Plan or accelerate distribution of benefits in the amount reasonably necessary to alleviate such financial hardship. The request to take a Hardship Distribution shall be made in the form and manner specified by the Administrative Committee. The amount distributed pursuant to this Section with respect to an Unforeseeable Emergency shall not exceed the amount necessary to satisfy such financial emergency plus amounts necessary to pay taxes reasonably anticipated as a result of the distribution, after taking into account the extent to which such hardship is or may be relieved through reimbursement or compensation by insurance or otherwise or by liquidation of the Participant's assets (to the extent the liquidation of such assets would not itself cause severe financial hardship), or by taking into account the additional compensation that is available to the Participant as the result of cancellation of deferrals to the Plan. The amount determined by the Administrative Committee as a Hardship Distribution shall be paid in a single cash lump sum as soon as practicable after the end of the calendar month in which the Hardship Distribution election is made and approved by the Administrative Committee.

5.9 Designated Payment Date. Notwithstanding any contrary Plan provision, in accordance with Treasury Regulation Section 1.409A-3(d), a payment will be treated as made upon the date specified under the Plan (the "Designated Payment Date") if the payment is made (a) at such date or a later date within the same taxable year of the applicable Participant or, if later, by the fifteenth (15th) day of the third calendar month following the Designated Payment Date, or no earlier than thirty (30) days before the Designated Payment Date, and (b) the Participant is not permitted, directly or indirectly, to designate the taxable year of any payment.

ARTICLE 6
Payee Designations and Limitations

6.1 Beneficiaries. Each Participant may, pursuant to such procedures as the Administrative Committee may specify, designate one or more Beneficiaries to whom payment under the Plan shall be made in the event of the Participant's death.

6.1.1 Spousal Consent. If a Participant designates a person or entity other than or in addition to his or her legal spouse as a primary Beneficiary, the designation will be ineffective unless the Participant's spouse consents to the designation. Any spousal consent required under this Section 6.1.1 will be ineffective unless it (a) is set forth in the form and manner specified in the discretion of the Administrative Committee, (b) acknowledges the effect of the Participant's designation of another person or entity as his or her primary Beneficiary under the Plan, and (c) is signed by the spouse and witnessed by an authorized agent of the Administrative Committee or a notary public. Notwithstanding this consent requirement, if the Participant establishes to the satisfaction of the Administrative Committee that spousal consent may not be obtained because the spouse cannot be located, his or her designation will be effective without spousal consent. Any spousal consent required under this Section 6.1.1 will be valid only with respect to the spouse who signs the consent. A Participant may revoke his or her Beneficiary designation at any time, provided such revocation is made pursuant to such procedures as the Administrative Committee may specify, and regardless of his or her spouse's previous consent to the Beneficiary designation being revoked, any such revoked designation shall be ineffective.

6.1.2 Changes and Failed Designations. A Participant may designate different Beneficiaries (or may revoke a prior Beneficiary designation) at any time by delivering a new designation (or revocation of a prior designation) in accordance with Section 6.1.1. Any designation will be effective only upon its receipt by the Administrative Committee or its designee in good form but shall cease to be effective when a revocation of that designation is received by the Administrative Committee or its designee. The last effective designation received by the Administrative Committee will supersede all prior designations. However, if a Participant fails to designate a Beneficiary as provided above, or if every person designated as Beneficiary predeceases the Participant or dies prior to complete distribution of the Participant's benefits, then the Administrative Committee shall direct the distribution of such benefits to the Participant's surviving legal spouse, or, if the Participant is not survived by a legal spouse, to the Participant's estate.

6.2 Payments to Minors. In the event any amount is payable under the Plan to a minor, payment shall not be made to the minor, but instead shall be paid (i) to that person's living parent(s) to act as custodian, (ii) if that person's parents are then divorced, and one parent is the sole custodial parent, to such custodial parent, to act as custodian, or (iii) if no parent of that person is then living and the Administrative Committee so determines, to a custodian selected by the Administrative Committee to hold the funds for the minor under the Uniform Transfers or Gifts to Minors Act in effect in the jurisdiction in which the minor resides. If no parent is living and the Administrative Committee decides not to select a custodian to hold the funds for the minor, then payment shall be made to the duly appointed and currently acting guardian of the estate for the minor or, if no guardian of the estate for the minor is duly appointed and currently acting within sixty (60) days after the date the amount becomes payable, payment shall be deposited with the court having jurisdiction over the estate of the minor.

6.3 Payments on Behalf of Persons Under Incapacity. In the event that any amount becomes payable under the Plan to a person who, in the sole judgment of the Administrative Committee, is considered by reason of physical or mental condition to be unable to give a valid receipt therefore, the Administrative Committee may direct that such payment be made to any person found by the Administrative Committee, in its sole judgment, to have assumed the care and guardianship of such person. Any payment made pursuant to such determination shall constitute a full release and discharge of any and all liability of the Administrative Committee and the Company and each Participating Affiliate under the Plan.

6.4 Inability to Locate Payee. In the event that the Administrative Committee is unable to locate a Participant or Beneficiary within two (2) years following the scheduled Payment Date, the amount allocated to the Participant's Account shall be forfeited. If, after such forfeiture, the Participant or Beneficiary later claims such benefit, such benefit shall be reinstated without interest or earnings.

ARTICLE 7
Administration/Claims Procedures

7.1 Administration. The Plan shall be administered by the Administrative Committee consisting of (a) the Corporate Vice President, Global Rewards, of the Company (the "CVP Global Rewards"); (b) the Corporate Controller of the Company (or an employee of the Company or an Affiliate appointed by the Corporate Controller; and (c) the Corporate Treasurer of the Company (or an employee of the Company or an Affiliate appointed by the Corporate Treasurer). The CVP Global Rewards also may appoint to Administrative Committee membership up to two additional employees of the Company or an Affiliate. The CVP Global Rewards shall chair the Administrative Committee. Any appointed member of the Committee may be removed by the applicable appointing authority at any time. The Administrative Committee shall have the exclusive right and full discretion (i) to appoint agents or other delegates to act on its behalf and to appoint the Global Rewards Department of the Company to act on its behalf in the day to day administration of the Plan, (ii) to interpret the Plan, (iii) to decide any and all matters arising hereunder (including the right to remedy possible ambiguities, inconsistencies, or omissions), (iv) to make, amend and rescind such rules as it deems necessary for the proper administration of the Plan and (v) to make all other determinations and resolve all questions of fact necessary or advisable for the administration of the Plan, including determinations regarding eligibility for benefits payable under the Plan. All interpretations by the Administrative Committee and its agents or other delegates with respect to any matter hereunder shall be final, conclusive and binding on all persons affected thereby and shall be given the maximum possible deference permitted by law. No member of the Administrative Committee or agent or other delegate thereof shall be liable for any determination, decision, or action made in good faith with respect to the Plan. Each of the Employers shall indemnify and hold harmless the members of the Administrative Committee from and against any and all liabilities, costs, and expenses incurred by such persons as a result of any act or omission, in connection with the performance of such persons' duties, responsibilities, and obligations under the Plan, other than such liabilities, costs, and expenses as may result from the bad faith, willful misconduct, or criminal acts of such persons. Each decision of a majority of the members of the Administrative Committee then in office shall constitute the final and binding act of the Administrative

Committee. The Administrative Committee may act with or without a meeting being called or held and shall keep minutes of all meetings held and a record of all actions taken. Except as otherwise specifically or generally directed by the Administrative Committee, any action of the Administrative Committee may be evidenced by a writing signed by any member thereof.

7.2 Claims Procedure. Any Participant, former Participant or Beneficiary who has a claim of any kind relating to the Plan must file such claim in writing with the Administrative Committee setting forth the nature of the benefit claimed, the amount thereof, and the basis for claiming entitlement to such benefit. The Administrative Committee shall determine the validity of the claim and communicate a decision to the claimant promptly and, in any event, not later than ninety (90) days after receipt of the claim. If additional information is necessary to make a determination on a claim, the claimant shall be advised of the need for such additional information within forty-five (45) days after receipt of the claim. The claimant shall have up to one hundred and eighty (180) days to supplement the claim information, and the claimant shall be advised of the decision on the claim within forty-five (45) days after the earlier of the date the supplemental information is supplied or the end of the one hundred and eighty (180) day period. Notwithstanding the foregoing, if the claim relates to a disability determination ("Disability Claim"), the decision shall be rendered within forty-five (45) days after receipt of the claim, which may be extended twice by an additional thirty (30) days per extension for matters beyond the control of the Administrative Committee. The claimant will be notified in writing of any such extension(s) before the end of the applicable decision period, as well as the circumstances requiring the extension, the date by which a decision on the claim is expected to be rendered and such other information required by ERISA. Every claim for benefits which is denied shall be denied by written notice setting forth in a manner calculated to be understood by the claimant (i) the specific reason or reasons for the denial, (ii) specific reference to any provisions of the Plan (including any internal rules, guidelines, protocols, criteria, etc.) on which the denial is based, (iii) description of any additional material or information that is necessary to process the claim and an explanation of why such material or information is necessary, (iv) an explanation of the procedure for further reviewing the denial of the claim and shall include an explanation of the claimant's right to submit the claim for binding arbitration in the event of an adverse determination on review (or legal action in the case of a Disability Claim), and (v) such other information required by ERISA (including, in the case of a denial of a Disability Claim based on a lack of medical necessity or because of an experimental, investigational, or unproven treatment or similar exclusion, an explanation of the scientific or clinical judgment for the claim determination, applying the terms of the Plan to the claimant's circumstances (or a statement that an explanation shall be provided free of charge upon request). For Disability Claims filed after April 1, 2018 ("New Disability Claims"), such notice shall also include: (a) a statement that, upon request and free of charge, the claimant shall be provided reasonable access to, and copies of, all documents, records, and other information relevant to the claimant's claim; (b) either the specific internal rules, guidelines, protocols, standards, or other similar criteria relied upon in making the claim determination, or a statement that such rules, guidelines, protocols, standards, or similar criteria do not exist; and (c) if applicable, a discussion of the decision, including the basis for disagreeing with or not following (1) the views of health care professionals treating the claimant and vocational professionals who evaluated the claimant that were provided by the claimant, (2) the views of medical or vocational experts whose advice was obtained on behalf of the Plan in connection with the claim denial, without regard to whether the advice was relied upon in making the denial, and (3) a disability determination regarding the claimant made by the Social Security Administration if provided by the claimant.

7.3 Review Procedures. A claimant or his/her authorized representative may appeal a denied claim under the Plan by filing a written request for review of such denial with the Administrative Committee within sixty (60) days after the receipt of the denial (one hundred and eighty (180) days in the case of a Disability Claim). Such review shall be undertaken by the Administrative Committee and shall be a full and fair review. The claimant or his/her authorized representative shall have the right to review all pertinent documents and to submit written comments, documents and other information relating to the claim. In addition, for Disability Claims, the following rules shall apply: (i) the claim review shall be made by a person different from the person who made the initial determination, and such person will not be the original decision-maker's subordinate or afford deference to the initial claim denial; (ii) in the case of a claim denied on the grounds of a medical judgment, the Administrative Committee will consult with a health care professional with appropriate training and experience; (iii) the health care professional who is consulted on appeal shall not be the individual who was consulted during the initial determination or a subordinate of such person; and (iv) if the advice of a medical or vocational expert was obtained by the Plan in connection with the denial of a claim, the Administrative Committee shall provide the claimant with the names of each such expert, regardless of whether the advice was relied upon. Effective for New Disability Claims, before the Administrative Committee may issue a denial on appeal, the Administrative Committee will provide the claimant, free of charge, with any new or additional evidence that was considered, relied upon, or generated in connection with the claim. In addition, before the Administrative Committee may issue a denial on appeal based on new or additional rationale, the Administrative Committee will provide the claimant, free of charge, with such rationale. The Administrative Committee will provide such evidence or rationale, as applicable, as soon as possible and sufficiently in advance of the date by which a response to the claimant's appeal must be provided (as described above) in order to provide the claimant with a reasonable opportunity to respond prior to that date. The Administrative Committee shall issue a decision not later than sixty (60) days after receipt of such request for review (forty-five (45) days in the case of a Disability Claim), unless special circumstances, such as the need to hold a hearing, require a longer period of time, in which case a decision shall be rendered as soon as possible but not later than one hundred and twenty (120) days after receipt of the claimant's request for review (ninety (90) days in the case of a Disability Claim). The claimant or his/her authorized representative will be notified in writing of any such extension before the end of the original 60-day review period (or 45-day review period in the case of a Disability Claim), as well as the circumstances requiring the extension, the date by which a decision is expected to be rendered and such other information required by ERISA. The decision on review shall be in writing and shall include specific reasons for the decision written in a manner calculated to be understood by the claimant with specific reference to the provisions of the Plan on which the decision is based and other information required by ERISA (including, in the case of a denial of a Disability Claim based on a lack of medical necessity or because of an experimental, investigational, or unproven treatment or similar exclusion, an explanation of the scientific or clinical judgment for the claim determination, applying the terms of the Plan to the claimant's circumstances (or a statement that an explanation shall be provided free of charge upon request)), as well as an explanation of the claimant's right to submit the claim for binding arbitration in the event of an adverse determination on review (or legal action in the case of a Disability claim) including, for New Disability Claims, the applicable time limits for doing so and the calendar date on which the time limit expires). For New Disability Claims, such written decision on review shall also include: (a) either the specific internal rules, guidelines, protocols, standards, or other similar criteria relied upon in making the adverse determination, or a statement that such rules, guidelines, protocols, standards, or similar criteria do not exist; and (b) if applicable, a discussion of the decision, including the basis for disagreeing with or not following (1) the views of health care professionals treating the claimant and vocational professionals who evaluated the claimant that were provided by the claimant, (2) the views of medical or vocational experts whose advice was obtained on behalf of the Plan in connection with the denial, without regard to whether the advice was relied upon in making the denial, and (3) a disability determination regarding the Participant made by the Social Security Administration if provided by the Claimant.

7.4 Exhaustion of Plan's Claims and Review Procedures Required; Limitations on Any Legal Actions. The Plan's claims and appeal procedures described above must be exhausted with respect to any claim of any kind relating to the Plan (unless a court determines, pursuant to Department of Labor Regulation Section 2560.503-1(l)(2), that the Plan's claims and appeal procedures were not followed with respect to New Disability Claims and should be deemed exhausted). If any legal action is permitted to be filed with respect to a Disability Claim under the Plan, such action must be brought by the claimant no later than one (1) year after the Administrative Committee's denial of the claim on review, regardless of any state or federal statutes establishing provisions relating to limitations on actions.

ARTICLE 8
Conditions Related to Benefits

8.1 Nonassignability. The benefits provided under the Plan may not be alienated, assigned, transferred, pledged or hypothecated by any person, at any time, or to any person whatsoever. Those benefits shall be exempt from the claims of creditors or other claimants of the Participant or Beneficiary and from all orders, decrees, levies, garnishments or executions to the fullest extent allowed by law. Notwithstanding the foregoing, the Administrative Committee may establish procedures whereby some or all of one or more of a Participant's Account balances may be accelerated and/or paid to an alternative payee pursuant to a domestic relations order which complies with the requirements of Treasury Regulation Section 1.409A-3(j)(4)(ii).

8.2 No Right to Company or Employer Assets. The benefits paid under the Plan shall be paid from the general funds of the Employer or the Company, and the Participant and any Beneficiary shall be no more than unsecured general creditors of the Employer or the Company with no special or prior right to any assets of the Employer or the Company for payment of any obligations hereunder.

8.3 Protective Provisions. The Participant shall cooperate with the Administrative Committee by furnishing any and all information requested by the Administrative Committee, in order to facilitate the payment of benefits hereunder, taking such physical examinations as the Administrative Committee may deem necessary, consenting to insurance coverage and taking such other actions as may be requested by the Administrative Committee. If the Participant refuses to so cooperate, the Employer and the Company shall have no further obligation to the Participant under the Plan.

8.4 Compliance with Securities Laws. All payments scheduled to be made under the Plan shall comply with all applicable securities laws and may be delayed if the Administrative Committee reasonably believes that making the payment will violate any federal or state securities laws, subject to compliance with all applicable laws. Any such delayed payment will be made at the earliest date at which the Administrative Committee reasonably anticipates that the making of the payment will not cause such violation. For this purpose, the making of a payment under the Plan that would cause inclusion in gross income or the application of any penalty provision or other provision of the Code will not be treated as a violation of applicable law.

8.5 Withholding. The Participant shall make appropriate arrangements with the Administrative Committee for satisfaction of any federal, state or local income tax withholding requirements, Social Security and other employee tax or other requirements applicable to the deferral, crediting, vesting or payment of benefits under the Plan. The Company intends to deduct from each payment made under the Plan or any other compensation (including Company Contributions) payable to the Participant (or Beneficiary) all applicable taxes required to be withheld in respect of such payment or this Plan. The Employer shall have the right to reduce any payment (or other compensation) by the amount of cash sufficient to provide the amount of said taxes.

8.6 Receipt or Release. Any payment made in good faith to a Participant or the Participant's Beneficiary shall, to the extent thereof, be in full satisfaction of all claims against the HRCC, the Administrative Committee, their members and the Company and each Participating Affiliate. The

Administrative Committee may require such Participant or Beneficiary, as a condition precedent to such payment, to execute a receipt and release to such effect.

8.7 Trust. The Company ultimately shall be responsible for the payment of all benefits under the Plan. At its discretion, the Company may establish one or more grantor trusts for the purpose of providing for the payment of benefits under the Plan. Such trust or trusts may be irrevocable, but the assets thereof shall be subject to the claims of the creditors of the Company (or Employer). Neither such trust or trusts, nor the assets thereof, however, shall be located outside of the United States. Benefits paid to the Participant (or his or her Beneficiary) from any such trust or trusts shall be considered paid by the Company (or Employer) for purposes of meeting the obligations of the Company (or Employer) under the Plan.

8.8 No Guarantee of Tax Consequences. Notwithstanding any contrary Plan provision, Participants (or their Beneficiaries) solely shall be responsible for all taxes and any other costs owed by them with respect to any deferrals or payments made under the Plan. The HRCC, the Administrative Committee, the Company and the other Employers make no guarantees regarding the tax treatment to any person of any deferrals or payments made under the Plan. Moreover, in no event will any Employer reimburse or pay any Participant or Beneficiary for any taxes or other costs incurred as a result of participation in the Plan.

ARTICLE 9
Miscellaneous

9.1 Amendment or Termination of Plan. The HRCC (or its authorized delegate) may, at any time amend or terminate the Plan, except that no such amendment or termination may reduce a Participant’s Account balances, reduce or delay the vesting of a Participant’s Accounts or change the timing of payments except to the extent specifically permitted under Code Section 409A. If the Plan is terminated, no further amounts shall be deferred hereunder, and amounts previously deferred or contributed to the Plan shall be fully vested and shall be paid in accordance with the provisions of the Plan as scheduled prior to the Plan termination. Notwithstanding the foregoing, the HRCC may, in its complete and sole discretion, accelerate distributions under the Plan, whether upon termination of the Plan or otherwise, under any circumstances specifically authorized under Code Section 409A and applicable authorities not resulting in the imposition of additional Code Section 409A taxes or penalties.

9.2 Errors in Account Statements, Deferrals or Distributions. In the event an error is made in an Account statement, such error shall be corrected on the next statement following the date such error is discovered. In the event of an error in deferral amount, the error shall be corrected as soon as administratively practicable after discovery; (i) in the case of an excess deferral, by distribution of the excess amount to the Participant, or, (ii) in the case of an under deferral, by reduction of other compensation payable to the Participant in compliance with all requirements of Code Section 409A. In the event of an error in a distribution, the over or under payment shall be corrected by payment to or collection from the Participant consistent with the requirements of, or correction procedures established under, Code Section 409A, as soon as administratively practicable after the discovery of such error. In the event of an overpayment, the Administrative Committee may, at its discretion, offset other amounts payable to the Participant from the Employer (including but not limited to salary, bonuses, expense reimbursements, severance benefits or other employee compensation benefit arrangements, as allowed by law and subject to compliance with Code Section 409A) to recoup the amount of such overpayment(s).

9.3 Employment Not Guaranteed. Nothing contained in the Plan nor any action taken hereunder shall be construed as a contract of employment or for services, or as giving any Participant any right to continue the provision of services in any capacity whatsoever to the Company or any Participating Affiliate.

9.4 Successors of the Employer. The rights and obligations of each Employer under the Plan shall inure to the benefit of, and shall be binding upon, the successors and assigns of the applicable Employer.

9.5 Notice. Any notice or filing required or permitted to be given to the Company or the Participant under the Plan shall be sufficient if in writing and hand-delivered, or sent by registered or certified mail to, in the case of the Company, the principal office of the Company, directed to the attention of the Administrative Committee, and in the case of the Participant, to the last known address of the Participant indicated on the employment records of the Company. Such notice shall be deemed given as of the date of delivery or, if delivery is made by mail, as of the date shown on the postmark on the receipt for registration or certification. Notices to the Company may be permitted by electronic communication according to specifications established by the Administrative Committee.

9.6 Headings. Headings and subheadings in this Plan are inserted for convenience of reference only and are not to be considered in the construction of the provisions hereof.

9.7 Gender, Singular and Plural. All pronouns and any variations thereof shall be deemed to refer to the masculine, feminine, or neuter, as the identity of the person or persons may require. As the context may require, the singular may be read as the plural and the plural as the singular.

9.8 Validity. In the event any provision of the Plan is held invalid, void or unenforceable, the same shall not affect, in any respect whatsoever, the validity of any other provisions of the Plan.

9.9 Waiver of Breach. The waiver by the Company or Employer of any breach of any provision of the Plan shall not operate or be construed as a waiver of any subsequent breach by that Participant or any other Participant.

9.10 Governing Law. The Plan is intended to be an unfunded plan maintained primarily to provide deferred compensation benefits for a select group of “management or highly compensated employees” within the meaning of Sections 201, 301 and 401 of ERISA and therefore to be exempt from Parts 2, 3 and 4 of Title I of ERISA. In the event any provision of, or legal issue relating to, this Plan is not fully preempted by federal law, such issue or provision shall be governed by the laws of the State of California (other than its conflict of laws provisions).

9.11 Binding Arbitration. Any claim, dispute or other matter in question of any kind relating to this Plan (other than a Disability Claim to the extent binding arbitration is prohibited by ERISA) that is not resolved by the claims and review procedures under this Plan shall be settled by arbitration in accordance with the applicable employment dispute resolution rules of the American Arbitration Association. Notice of demand for arbitration shall be made in writing to the opposing party and to the American Arbitration Association within a reasonable time after the claim, dispute or other matter in question has arisen. In no event shall a demand for arbitration be made after the date when the applicable statute of limitations would bar the institution of a legal or equitable proceeding based on such claim, dispute or other matter in question. The decision of the arbitrators shall be final and may be enforced in any court of competent jurisdiction. The arbitrators may award reasonable fees and expenses to the prevailing party in any dispute hereunder and shall award reasonable fees and expenses in the event that the arbitrators find that the losing party acted in bad faith or with intent to harass, hinder or delay the prevailing party in the exercise of its rights in connection with the matter under dispute.

9.12 Code Section 457A. Notwithstanding any contrary Plan provision, if the Administrative Committee determines that any deferred amount under the Plan is includible in a Participant's income under Code Section 457A and applicable guidance thereunder, such amount shall be paid to the Participant in a lump sum in the Participant's taxable year of such inclusion to the extent permitted under Code Section 409A and applicable guidance thereunder, including, but not limited to, Q&A 26 of IRS Notice 2009-8.

APPLIED MATERIALS, INC

Date: December 18, 2020

/s/ Brit Wittman

Name: Brit Wittman

Title: Corporate Vice President, Global Rewards

Exhibit 21

SUBSIDIARIES OF APPLIED MATERIALS, INC.

As of October 30, 2022

LEGAL ENTITY NAME		PLACE OF INCORPORATION
Applied Materials (Holdings)	(1)	California
Applied Materials Asia-Pacific, LLC	(2) (3)	Delaware
Applied Materials Canada, Inc.		Canada
Applied Materials Holdings S.à r.l.	(4)	Luxembourg
Applied Materials India Private Limited		India
Applied Materials Israel Ltd.	(5)	Israel
Applied Materials Netherlands B.V.	(3) (6)	The Netherlands
Applied Ventures, LLC	(7) (8) (9)	Delaware
Semitool, Inc.		Montana
Tango Systems LLC	(10)	Delaware
Varian Semiconductor Equipment Associates, Inc.	(11)	Delaware
Veranome Biosystems LLC		Delaware
(1) Applied Materials (Holdings) owns the following subsidiary:		
Applied Materials UK Limited		California
(2) Applied Materials Asia-Pacific, LLC owns the following subsidiaries:		
Applied Materials (China) Holdings, Ltd.	(a)	P.R. China
Applied Materials China, Limited	(b)	Hong Kong
(3) Applied Materials Asia-Pacific, LLC and Applied Materials Netherlands B.V. each partially owns the following subsidiary:		
Applied Materials Taiwan, Ltd.		Taiwan
(4) Applied Materials Holdings S.à r.l. owns the following subsidiaries:		
Applied Materials Luxembourg 2 S.à r.l.		Luxembourg
Applied Materials U.S. Holdings LLC		Delaware
(5) Applied Materials Israel Ltd. owns the following subsidiary:		
ICT Integrated Circuit Testing GmbH		Germany

LEGAL ENTITY NAME		PLACE OF INCORPORATION
(6) Applied Materials Netherlands B.V. owns the following subsidiaries:		
Applied Materials Belgium N.V.		Belgium
Applied Materials Deutschland Holding GmbH	(c)	Germany
Applied Materials France		France
Applied Materials GmbH	(d)	Germany
Applied Materials Ireland Limited		Ireland
Applied Materials Italia S.r.l.		Italy
Applied Materials Japan, Inc.	(e)	Japan
Applied Materials Korea Ltd.		Korea
Picosun Oy	(f)	Finland
Think Silicon Single Member P.C.		Greece
(7) Applied Ventures, LLC owns the following subsidiaries:		
Applied Ventures Investment Management GP I, LLC	(g)	Delaware
Applied Ventures Investment Management GP II, LLC	(h)	Delaware
(8) Applied Ventures, LLC owns 50% of the following subsidiary:		
Applied Ventures ITIC Innovation Fund GP, LLC	(i)	Delaware
(9) Applied Ventures, LLC and Applied Materials South East Asia Pte. Ltd. own the following subsidiary:		
Applied Ventures Innovation Fund II, L.P.		Delaware
(10) Tango Systems LLC owns the following subsidiary:		
Kunshan Tango Semiconductor Equipment Co., Ltd.		P.R. China
(11) Varian Semiconductor Equipment Associates, Inc. owns the following subsidiaries:		
Applied Materials Global Venture Partner Pte. Ltd.		Singapore
Applied Materials South East Asia Pte. Ltd.	(g) (j)	Singapore
(a) Applied Materials (China) Holdings, Ltd. owns the following subsidiary:		
Applied Materials (Xi'an), Ltd.		P.R. China
(b) Applied Materials China, Limited owns the following subsidiaries:		
Applied Materials (China), Inc.		P.R. China
Applied Materials Display Equipment (Shanghai) Co., Ltd.		P.R. China
Lin-gang Special Area Applied Materials (Shanghai) Co., Ltd.		P.R. China
(c) Applied Materials Deutschland Holding GmbH owns the following subsidiaries:		
Applied Materials GmbH & Co. KG	(k)	Germany
Applied Materials Verwaltung GmbH		Germany
Mecatronix GmbH		Germany

LEGAL ENTITY NAME		PLACE OF INCORPORATION
(d) Applied Materials GmbH owns the following subsidiary:		
Picosun Europe GmbH		Germany
(e) Applied Materials Japan, Inc. owns the following subsidiaries:		
Picosun Japan Co., Ltd.		Japan
Sigmameltec Ltd.		Japan
(f) Picosun Oy owns the following subsidiaries:		
Picosun (Suzhou) Nanotechnology Co., Ltd.		P.R. China
Picosun Asia Pte. Ltd.		Singapore
Picosun Korea Limited		Korea
Picosun USA LLC		Michigan
Picosun Taiwan Co. Ltd.		Taiwan
(g) Applied Ventures Investment Management GP I, LLC and Applied Materials South East Asia Pte. Ltd., collectively own 60% of the following subsidiary:		
Applied Ventures Innovation Fund I, L.P.		Delaware
(h) Applied Ventures Investment Management GP II, LLC owns the following subsidiary:		
Applied Ventures Innovation Fund II, L.P.		Delaware
(i) Applied Ventures ITIC Innovation Fund GP, LLC and Applied Materials, Inc. collectively own 31% of the following subsidiary:		
Applied Ventures ITIC Innovation Fund, L.P.		Delaware
(j) Applied Materials South East Asia Pte. Ltd. owns the following subsidiaries:		
Applied Materials Europe B.V.		The Netherlands
Applied Materials Hong Kong Limited	(l)	Hong Kong
Applied Materials Korea Innovation and Technology, LLC		Korea
Applied Materials Philippines LLC		Nevada
Applied Materials Singapore Technology Pte. Ltd.		Singapore
MDLSoft LLC	(m)	Delaware
Perceptive Engineering Limited	(n)	United Kingdom
Sage Design Automation, Ltd.	(o)	Israel
(k) Applied Materials GmbH & Co. KG owns the following subsidiary:		
Applied Materials WEB Coating GmbH		Germany
(l) Applied Materials Hong Kong Limited owns the following subsidiary:		
Baccini Pte. Ltd.		Singapore
(m) MDLSoft LLC owns the following subsidiary:		
MDLab S.r.l. in liquidation		Italy
(n) Perceptive Engineering Limited owns the following subsidiaries:		
Perceptive Engineering Limited		Ireland
Perceptive Engineering Pte. Ltd.		Singapore
(o) Sage Design Automation, Ltd. owns the following subsidiaries:		
Sage Design Automation LLC		California
NP Komplete Technologies, B.V.		The Netherlands

Exhibit 23

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Applied Materials, Inc.:

We consent to the incorporation by reference in the registration statements (Nos. 333-35396; 333-116393; 333-143377; 333-157661; 333-181666; 333-211965; 333-225578; 333-256559; and 333-256561) on Form S-8 and the registration statement (No. 333-257078) on Form S-3ASR of our report dated December 16, 2022, with respect to the consolidated financial statements of Applied Materials Inc. and the effectiveness of internal control over financial reporting.

/s/ KPMG LLP
KPMG LLP

Santa Clara, California
December 16, 2022

EXHIBIT 31.1

CERTIFICATION

I, Gary E. Dickerson, certify that:

1. I have reviewed this Annual Report on Form 10-K of Applied Materials, Inc.;

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(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: December 16, 2022

/s/ GARY E. DICKERSON

Gary E. Dickerson
President, Chief Executive Officer

EXHIBIT 31.2

CERTIFICATION

I, Brice Hill, certify that:

1. I have reviewed this Annual Report on Form 10-K of Applied Materials, Inc.;

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(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

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

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

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

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

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

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

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

Date: December 16, 2022

/s/ BRICE HILL

Brice Hill
Senior Vice President, Chief Financial Officer

EXHIBIT 32.1

SARBANES-OXLEY ACT SECTION 906 CERTIFICATION

In connection with this Annual Report on Form 10-K of Applied Materials, Inc. for the fiscal year ended October 30, 2022, I, Gary E. Dickerson, President, Chief Executive Officer of Applied Materials, Inc., hereby certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. this Form 10-K for the fiscal year ended October 30, 2022 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

2. the information contained in this Form 10-K for the fiscal year ended October 30, 2022 fairly presents, in all material respects, the financial condition and results of operations of Applied Materials, Inc. for the periods presented therein.

Date: December 16, 2022

/s/ GARY E. DICKERSON

Gary E. Dickerson
President, Chief Executive Officer

EXHIBIT 32.2

SARBANES-OXLEY ACT SECTION 906 CERTIFICATION

In connection with this Annual Report on Form 10-K of Applied Materials, Inc. for the fiscal year ended October 30, 2022, I, Brice Hill, Senior Vice President, Chief Financial Officer of Applied Materials, Inc., hereby certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. this Form 10-K for the fiscal year ended October 30, 2022 fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

2. the information contained in this Form 10-K for the fiscal year ended October 30, 2022 fairly presents, in all material respects, the financial condition and results of operations of Applied Materials, Inc. for the periods presented therein.

Date: December 16, 2022

/s/ BRICE HILL

Brice Hill
Senior Vice President, Chief Financial Officer