
UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549



FORM 10-K

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

For the Fiscal Year Ended December 31, 2019

Commission File Number 1-4949

CUMMINS INC.

Indiana

(State of Incorporation)

35-0257090

(IRS Employer Identification No.)

500 Jackson Street

Box 3005

Columbus, Indiana 47202-3005

(Address of principal executive offices)

Telephone (812) 377-5000

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

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common stock, \$2.50 par value	CMI	New York Stock Exchange

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

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

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

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

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

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

Large accelerated filer Accelerated filer Non-accelerated filer

Smaller reporting company Emerging growth company

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

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

The aggregate market value of the voting stock held by non-affiliates was approximately \$27.0 billion at June 28, 2019. This value includes all shares of the registrant's common stock, except for treasury shares.

As of January 31, 2020, there were 150,269,665 shares outstanding of \$2.50 par value common stock.

Documents Incorporated by Reference

Portions of the registrant's definitive Proxy Statement for its 2020 annual meeting of shareholders, which will be filed with the Securities and Exchange Commission on Schedule 14A within 120 days after the end of 2019, will be incorporated by reference in Part III of this Form 10-K to the extent indicated therein upon such filing.

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Cummins Inc. and its consolidated subsidiaries are hereinafter sometimes referred to as "Cummins," "we," "our," or "us."

CAUTIONARY STATEMENTS REGARDING FORWARD-LOOKING INFORMATION

Certain parts of this annual report contain forward-looking statements intended to qualify for the safe harbors from liability established by the Private Securities Litigation Reform Act of 1995. Forward-looking statements include those that are based on current expectations, estimates and projections about the industries in which we operate and management's beliefs and assumptions. Forward-looking statements are generally accompanied by words such as "anticipates," "expects," "forecasts," "intends," "plans," "believes," "seeks," "estimates," "could," "should" or words of similar meaning. These statements are not guarantees of future performance and involve certain risks, uncertainties and assumptions, which we refer to as "future factors," which are difficult to predict. Therefore, actual outcomes and results may differ materially from what is expressed or forecasted in such forward-looking statements. Some future factors that could cause our results to differ materially from the results discussed in such forward-looking statements are discussed below and shareholders, potential investors and other readers are urged to consider these future factors carefully in evaluating forward-looking statements. Readers are cautioned not to place undue reliance on forward-looking statements, which speak only as of the date hereof. Future factors that could affect the outcome of forward-looking statements include the following:

- any adverse results of our internal review into our emissions certification process and compliance with emission standards;
- increased scrutiny from regulatory agencies, as well as unpredictability in the adoption, implementation and enforcement of emission standards around the world;
- a sustained slowdown or significant downturn in our markets;
- an extended shutdown of our operations in China due to the coronavirus outbreak;
- product recalls;
- the development of new technologies that reduce demand for our current products and services;
- policy changes in international trade;
- a slowdown in infrastructure development and/or depressed commodity prices;
- the U.K.'s decision to end its membership in the European Union (EU);
- lower than expected acceptance of new or existing products or services;
- supply shortages and supplier financial risk, particularly from any of our single-sourced suppliers;
- changes in the engine outsourcing practices of significant customers;
- our plan to reposition our portfolio of product offerings through exploration of strategic acquisitions and divestitures and related uncertainties of entering such transactions;
- exposure to potential security breaches or other disruptions to our information technology systems and data security;
- aligning our capacity and production with our demand;
- challenges or unexpected costs in completing cost reduction actions and restructuring initiatives;
- a major customer experiencing financial distress;
- failure to realize expected results from our investment in Eaton Cummins Automated Transmission Technologies joint venture;
- political, economic and other risks from operations in numerous countries;
- competitor activity;
- increasing competition, including increased global competition among our customers in emerging markets;
- foreign currency exchange rate changes;
- variability in material and commodity costs;
- the actions of, and income from, joint ventures and other investees that we do not directly control;
- changes in taxation;
- global legal and ethical compliance costs and risks;

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- product liability claims;
- increasingly stringent environmental laws and regulations;
- future bans or limitations on the use of diesel-powered products;
- the price and availability of energy;
- the performance of our pension plan assets and volatility of discount rates;
- labor relations;
- our sales mix of products;
- protection and validity of our patent and other intellectual property rights;
- the outcome of pending and future litigation and governmental proceedings;
- continued availability of financing, financial instruments and financial resources in the amounts, at the times and on the terms required to support our future business; and
- other risk factors described in Item 1A. under the caption "Risk Factors."

Shareholders, potential investors and other readers are urged to consider these factors carefully in evaluating the forward-looking statements and are cautioned not to place undue reliance on such forward-looking statements. The forward-looking statements made herein are made only as of the date of this annual report and we undertake no obligation to publicly update any forward-looking statements, whether as a result of new information, future events or otherwise.

PART I

ITEM 1. Business

OVERVIEW

We were founded in 1919 as Cummins Engine Company, a corporation in Columbus, Indiana and one of the first diesel engine manufacturers. In 2001, we changed our name to Cummins Inc. We are a global power leader that designs, manufactures, distributes and services diesel, natural gas, electric and hybrid powertrains and powertrain-related components including filtration, aftertreatment, turbochargers, fuel systems, controls systems, air handling systems, automated transmissions, electric power generation systems, batteries, electrified power systems, hydrogen generation and fuel cell products. We sell our products to original equipment manufacturers (OEMs), distributors, dealers and other customers worldwide. We serve our customers through a network of approximately 600 wholly-owned, joint venture and independent distributor locations and over 7,600 Cummins certified dealer locations in more than 190 countries and territories.

OPERATING SEGMENTS

We have five complementary operating segments: Engine, Distribution, Components, Power Systems and New Power. These segments share technology, customers, strategic partners, brand recognition and our distribution network in order to compete more efficiently and effectively in their respective markets. In each of our operating segments, we compete worldwide with a number of other manufacturers and distributors that produce and sell similar products. Our products compete primarily on the basis of performance, fuel economy, speed of delivery, quality, customer support and price.

In November 2019, we renamed our Electrified Power segment as "New Power" in order to better represent the incorporation of fuel cell and hydrogen production technologies resulting from our acquisition of Hydrogenics Corporation. The New Power segment includes our electrified power, fuel cell and hydrogen production technologies.

We use segment earnings before interest expense, income taxes, noncontrolling interests, depreciation and amortization (EBITDA) as the primary basis for the Chief Operating Decision Maker to evaluate the performance of each of our reportable operating segments. We believe EBITDA is a useful measure of our operating performance as it assists investors and debt holders in comparing our performance on a consistent basis without regard to financing methods, capital structure, income taxes or depreciation and amortization methods, which can vary significantly depending upon many factors.

Engine Segment

Engine segment sales and EBITDA as a percentage of consolidated results were:

	Years ended December 31,		
	2019	2018	2017
Percent of consolidated net sales ⁽¹⁾	34%	35%	34%
Percent of consolidated EBITDA ⁽¹⁾	41%	41%	38%

⁽¹⁾ Measured before intersegment eliminations

Our Engine segment manufactures and markets a broad range of diesel and natural gas-powered engines under the Cummins brand name, as well as certain customer brand names, for the heavy and medium-duty truck, bus, recreational vehicle (RV), light-duty automotive, construction, mining, marine, rail, oil and gas, defense and agricultural markets. We manufacture a wide variety of engine products including:

- Engines with a displacement range of 2.8 to 15 liters and horsepower ranging from 48 to 715; and
- New parts and service, as well as remanufactured parts and engines, primarily through our extensive distribution network.

Our Engine segment is organized by engine displacement size and serves these end-user markets:

- **Heavy-duty truck** - We manufacture diesel and natural gas engines that range from 310 to 605 horsepower serving global heavy-duty truck customers worldwide, primarily in North America, China and Australia.
- **Medium-duty truck and bus** - We manufacture diesel and natural gas engines ranging from 130 to 450 horsepower serving medium-duty truck and bus customers worldwide, with key markets including North America, Latin America, China, Europe and India. Applications include pick-up, delivery and vocational trucks and school, transit and shuttle buses. We also provide diesel engines for Class A motor homes (RVs), primarily in North America.

- **Light-duty automotive (Pick-up and Light Commercial Vehicle (LCV))** - We manufacture 105 to 400 horsepower diesel engines, including engines for the pick-up truck market for Fiat Chrysler Automobiles (Chrysler) in North America and LCV markets in China, Europe and Latin America.
- **Off-highway** - We manufacture diesel engines that range from 48 to 715 horsepower serving key global markets including construction, mining, marine, rail, oil and gas, defense and agriculture and also the power generation business for standby, mobile and distributed power generation solutions throughout the world.

The principal customers of our heavy-duty truck engines include truck manufacturers such as PACCAR Inc. (PACCAR), Navistar International Corporation (Navistar) and Daimler Trucks North America (Daimler). The principal customers of our medium-duty truck engines include truck manufacturers such as Daimler, Navistar and PACCAR. We sell our industrial engines to manufacturers of construction, agricultural and marine equipment, including Hyundai Heavy Industries, Xuzhou Construction Machinery Group, Komatsu, John Deere, JLG Industries, Inc. and LiuGong. The principal customers of our light-duty on-highway engines are Volkswagen Caminhões e Ônibus, Gorkovsky Avtomobilny Zavod, Anhui Jianghuai Automobile Co., Ltd. and China National Heavy Duty Truck Group. The principal customer of our pick-up on-highway engines is Chrysler.

In the markets served by our Engine segment, we compete with independent engine manufacturers as well as OEMs who manufacture engines for their own products. Our primary competitors in North America are Daimler, Caterpillar Inc. (CAT), Volvo Powertrain, Ford Motor Company (Ford), Navistar, PACCAR and Hino Power. Our primary competitors in international markets vary from country to country, with local manufacturers generally predominant in each geographic market. Other engine manufacturers in international markets include Weichai Power Co. Ltd., Volvo AB (Volvo), Daimler AG, TRATON AG, Fiat Power Systems, Guangxi Yuchai Group, Rolls-Royce Power Systems AG, CAT, Yanmar Co., Ltd. and Deutz AG.

Distribution Segment

Distribution segment sales and EBITDA as a percentage of consolidated results were:

	Years ended December 31,		
	2019	2018	2017
Percent of consolidated net sales ⁽¹⁾	27%	26%	27%
Percent of consolidated EBITDA ⁽¹⁾	18%	16%	17%

⁽¹⁾ Measured before intersegment eliminations

Our Distribution segment is the company's primary sales, service, and support channel. The segment serves Cummins customers and certified dealers through a worldwide network of wholly owned, joint venture, and independent distribution locations. Wholly owned locations operate and serve markets in the eight geographic regions noted below. Joint venture locations serve markets in South America, Southeast Asia, India, Middle East and Africa; while independent distribution locations serve markets in these and other geographies.

Distribution's mission encompasses the sales and support of a wide range of products and services, including power generation systems, high-horsepower engines, heavy-duty and mid-range engines designed for on- and off-highway use, application engineering services, custom-designed assemblies, retail and wholesale aftermarket parts, and in-shop and field-based repair services. Our familiarity with our customers and our markets allows us to provide sales, service and support to meet our customers' needs.

Our Distribution segment is organized and managed as eight geographic regions, including North America, Asia Pacific, Europe, China, Africa and Middle East, India, Russia and Latin America. Across these regions, our locations compete with distributors or dealers that offer similar products. In many cases, these competing distributors or dealers are owned by, or affiliated with the companies that are listed as competitors of our Engine, Components or Power Systems segments. These competitors vary by geographical location and application market.

Components Segment

Components segment sales and EBITDA as a percentage of consolidated results were:

	Years ended December 31,		
	2019	2018	2017
Percent of consolidated net sales ⁽¹⁾	24%	24%	23%
Percent of consolidated EBITDA ⁽¹⁾	31%	29%	31%

⁽¹⁾ Measured before intersegment eliminations

Our Components segment supplies products which complement our Engine and Power Systems segments, including aftertreatment systems, turbochargers, transmissions, filtration products, electronics and fuel systems for commercial diesel and natural gas applications. We develop aftertreatment systems, turbochargers, fuel systems, transmissions and electronics to meet increasingly stringent emission and fuel economy standards. We manufacture filtration systems for on- and off-highway heavy-duty and medium-duty equipment, and we are a supplier of filtration products for industrial vehicle applications.

Our Components segment is organized around the following businesses:

- **Emission solutions** - We are a global leader in designing, manufacturing and integrating aftertreatment technology and solutions for the commercial on and off-highway light, medium, heavy-duty and high-horsepower engine markets. Aftertreatment is the mechanism used to convert engine emissions of criteria pollutants, such as particulate matter, nitrogen oxides (NOx), carbon monoxide and unburned hydrocarbons into harmless emissions. Our products include custom engineering systems and integrated controls, oxidation catalysts, particulate filters, selective catalytic reduction systems and engineered components, including dosers. Our emission solutions business primarily serves markets in North America, Europe, China, India, Brazil, Russia and Australia. We serve both OEM first fit and retrofit customers.
- **Turbo technologies** - We design, manufacture and market turbochargers for light-duty, mid-range, heavy-duty and high-horsepower diesel markets with worldwide sales and distribution. We provide critical air handling technologies for engines to meet challenging performance requirements and worldwide emission standards. We primarily serve markets in North America, Europe, China, India, Brazil, Russia and Australia.
- **Filtration** - We design, manufacture and sell filters, coolant and chemical products. Our filtration business offers over 8,300 products for first fit and aftermarket applications including air filters, fuel filters, fuel water separators, lube filters, hydraulic filters, coolants, fuel additives and other filtration systems to OEMs, dealers/distributors and end-users. We support a wide customer base in a diverse range of markets including on and off-highway segments such as oil and gas, agriculture, mining, construction, power generation and marine. We produce and sell globally recognized Fleetguard® branded products in over 130 countries including countries in North America, Europe, South America, Asia and Africa. Fleetguard products are available through thousands of distribution points worldwide.
- **Electronics and fuel systems** - We design and manufacture new, replacement and remanufactured fuel systems primarily for heavy-duty on-highway diesel engine applications, as well as develop and supply electronic control modules (ECMs), sensors and harnesses for the on-highway, off-highway and power generation applications. We primarily serve markets in North America, China, India and Europe.
- **Automated transmissions** - We develop and supply automated transmissions for the heavy-duty commercial vehicle market. Formed in 2017, the Eaton Cummins Automated Transmission Technologies joint venture is a consolidated 50/50 joint venture between Cummins Inc. and Eaton Corporation Plc. and primarily serves the North American market.

Customers of our Components segment generally include our Engine, Distribution and Power Systems segments, joint ventures including Beijing Foton Cummins Engine Co., Ltd., Dongfeng Cummins Emission Solutions Co., Ltd. and Tata Cummins Ltd., truck manufacturers and other OEMs, many of which are also customers of our Engine segment, such as PACCAR, Daimler, Navistar, Volvo, Komatsu, Scania, Chrysler and other manufacturers that use our components in their product platforms.

Our Components segment competes with other manufacturers of aftertreatment systems, filtration, turbochargers, fuel systems and transmissions. Our primary competitors in these markets include Robert Bosch GmbH, Donaldson Company, Inc., Parker Hannifin Corporation, Mann+Hummel Group, Garrett Motion, Inc., Borg-Warner Inc., Tenneco Inc., Eberspacher Holding GmbH & Co. KG, Denso Corporation, Allison Transmission and Aisin Seiki Co., Ltd.

Power Systems Segment

Power Systems segment sales and EBITDA as a percentage of consolidated results were:

	Years ended December 31,		
	2019	2018	2017
Percent of consolidated net sales ⁽¹⁾	15%	15%	16%
Percent of consolidated EBITDA ⁽¹⁾	14%	17%	14%

⁽¹⁾ Measured before intersegment eliminations

Our Power Systems segment is organized around the following product lines:

- **Power generation** - We design, manufacture, sell and support standby and prime power generators ranging from 2 kilowatts to 3.5 megawatts, as well as controls, paralleling systems and transfer switches, for applications such as consumer, commercial, industrial, data centers, health care, global rental business, telecommunications and waste water treatment plants. We also provide turnkey solutions for distributed generation and energy management applications using natural gas, diesel or biogas as a fuel.
- **Industrial** - We design, manufacture, sell and support diesel and natural gas high-speed, high-horsepower engines up to 5,500 horsepower for a wide variety of equipment in the mining, rail, defense, oil and gas, and commercial marine applications throughout the world.
- **Generator technologies** - We design, manufacture, sell and support A/C generator/alternator products for internal consumption and for external generator set assemblers. Our products are sold under the Stamford and AVK brands and range in output from 3 kilovolt-amperes (kVA) to 12,000 kVA.

Our customer base for Power Systems offerings is highly diversified, with customer groups varying based on their power needs. India, China, Europe, Latin America and the Middle East are our largest geographic markets outside of North America.

In the markets served by our Power Systems segment, we compete with a variety of independent engine manufacturers and generator set assemblers as well as OEMs who manufacture engines for their own products around the world. Our primary competitors are CAT, MTU (Rolls Royce Power Systems Group) and Kohler/SDMO (Kohler Group), but we also compete with INNIO, Generac, Mitsubishi (MHI) and numerous regional generator set assemblers. Our alternator business competes globally with Leroy Somer (NIDEC), Marathon Electric and Meccalte, among others.

New Power Segment

The New Power segment designs, manufactures, sells and supports electrified power systems ranging from fully electric to hybrid along with innovative components and subsystems, including battery, fuel cell and hydrogen production technologies.

In the third quarter of 2019, we formed a joint venture with L'Air Liquide, S.A. via the purchase of Hydrogenics Corporation, which was consolidated and included in our New Power segment. See Note 21 "ACQUISITIONS," to the *Consolidated Financial Statements* for additional information.

We anticipate our customer base for New Power offerings will be highly diversified, representing multiple end markets with a broad range of application requirements. We have established relationships with Gillig for the urban bus market in North America, Blue Bird for the school bus market in North America, Alstom Transport in Europe for PEM fuel cell powered regional commuter trains and L'Air Liquide S.A. for on-site hydrogen generation. We will continue to pursue additional relationships in markets as they adopt electric solutions, including, but not limited to, pick-up and delivery applications and industrial markets.

In the markets served by our New Power segment, we compete with electric start-ups, powertrain component manufacturers and vertically integrated OEMs. Our primary competitors include Proterra, Inc., Daimler, PACCAR, Volvo, Navistar, TRATON AG, BYD Company Limited, Dana Incorporated, Akasol AG and Ballard Power Systems, Inc.

JOINT VENTURES, ALLIANCES AND NON-WHOLLY-OWNED SUBSIDIARIES

We have entered into a number of joint venture agreements and alliances with business partners around the world. Our joint ventures are either distribution or manufacturing entities. We also own controlling interests in non-wholly-owned manufacturing and distribution subsidiaries.

In the event of a change of control of either party to certain of these joint ventures and other strategic alliances, certain consequences may result including automatic termination and liquidation of the venture, exercise of "put" or "call" rights of ownership by the non-acquired partner, termination or transfer of technology license rights to the non-acquired partner and increases in component transfer prices to the acquired partner. We will continue to evaluate joint venture and partnership opportunities in order to penetrate new markets, develop new products and generate manufacturing and operational efficiencies.

Financial information about our investments in joint ventures and alliances is incorporated by reference from Note 3, "INVESTMENTS IN EQUITY INVESTEEES," to the *Consolidated Financial Statements*.

Our equity income from these investees was as follows:

In millions	Years ended December 31,					
	2019		2018		2017	
Manufacturing entities						
Beijing Foton Cummins Engine Co., Ltd.	\$ 60	22%	\$ 72	21%	\$ 94	30%
Dongfeng Cummins Engine Company, Ltd.	52	19%	58	17%	73	24%
Chongqing Cummins Engine Company, Ltd.	41	15%	51	15%	41	13%
All other manufacturers	88	33%	129	39%	71 ⁽¹⁾	23%
Distribution entities						
Komatsu Cummins Chile, Ltda.	28	10%	26	8%	30	10%
All other distributors	2	1%	—	—%	(1)	—%
Cummins share of net income ⁽²⁾	<u>\$ 271</u>	<u>100%</u>	<u>\$ 336</u>	<u>100%</u>	<u>\$ 308</u>	<u>100%</u>

⁽¹⁾ Tax legislation passed in December 2017 decreased our equity earnings at certain equity investees by \$39 million due to withholding tax adjustments on foreign earnings and remeasurement of deferred taxes. See Note 5, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

⁽²⁾ This total represents our share of net income of our equity investees and is exclusive of royalties and interest income from our equity investees. To see how this amount reconciles to "Equity, royalty and interest income from investees" in the *Consolidated Statements of Net Income*, see Note 3, "INVESTMENTS IN EQUITY INVESTEEES," to our *Consolidated Financial Statements* for additional information.

Manufacturing Entities

Our manufacturing joint ventures have generally been formed with customers and are primarily intended to allow us to increase our market penetration in geographic regions, reduce capital spending, streamline our supply chain management and develop technologies. Our largest manufacturing joint ventures are based in China and are included in the list below. Our engine manufacturing joint ventures are supplied by our Components segment in the same manner as it supplies our wholly-owned Engine segment and Power Systems segment manufacturing facilities. Our Components segment joint ventures and wholly owned entities provide electronics, fuel systems, filtration, aftertreatment systems, turbocharger products and automated transmissions that are used with our engines as well as some competitors' products. The results and investments in our joint ventures in which we have 50 percent or less ownership interest (except for Eaton Cummins Automated Transmission Technologies joint venture which is consolidated due to our majority voting interest) discussed below are included in "Equity, royalty and interest income from investees" and "Investments and advances related to equity method investees" in our *Consolidated Statements of Net Income* and *Consolidated Balance Sheets*, respectively.

- Beijing Foton Cummins Engine Co., Ltd.** - Beijing Foton Cummins Engine Co., Ltd. is a joint venture in China with Beiqi Foton Motor Co., Ltd., a commercial vehicle manufacturer, which has two distinct lines of business - a light-duty business and a heavy-duty business. The light-duty business produces our families of ISF 2.8 liter to 4.5 liter high performance light-duty diesel engines in Beijing. These engines are used in light-duty and medium-duty commercial trucks, pick-up trucks, buses, multipurpose and sport utility vehicles with main markets in China, Brazil and Russia. Certain types of small construction equipment and industrial applications are also served by these engine families. The heavy-duty business produces the X11 and X12, ranging from 10.5 liter to 12.9 liter, high performance heavy-duty diesel engines in Beijing, and is nearing the launch of the X13 engine. Certain types of construction equipment and industrial applications are also served by these engine families.

- ***Dongfeng Cummins Engine Company, Ltd.*** - Dongfeng Cummins Engine Company, Ltd. (DCEC) is a joint venture in China with Dongfeng Automotive Co. Ltd., a subsidiary of Dongfeng Motor Corporation and one of the largest medium-duty and heavy-duty truck manufacturers in China. DCEC produces 3.9 liter to 14 liter diesel engines, with a power range from 80 to 680 horsepower, and natural gas engines. On-highway engines are used in multiple applications in light-duty and medium-duty trucks, special purpose vehicles, buses and heavy-duty trucks with a main market in China. Off-highway engines are used in a variety of construction, power generation, marine and agriculture markets in China.
- ***Chongqing Cummins Engine Company, Ltd.*** - Chongqing Cummins Engine Company, Ltd. is a joint venture in China with Chongqing Machinery and Electric Co. Ltd. This joint venture manufactures several models of our heavy-duty and high-horsepower diesel engines primarily serving the industrial and stationary power markets in China.

Distribution Entity

Komatsu Cummins Chile, Ltda. - Komatsu Cummins Chile, Ltda. is a joint venture with Komatsu America Corporation. The joint venture is a distributor that offers the full range of our products and services to customers and end-users in Chile and Peru. See further discussion of our distribution network under the Distribution segment section above.

Non-Wholly-Owned Subsidiaries

We have a controlling interest in Cummins India Ltd. (CIL), which is a publicly listed company on various stock exchanges in India. CIL produces mid-range, heavy-duty and high-horsepower diesel engines, generators for the Indian and export markets and natural gas spark-ignited engines for power generation, automotive and industrial applications. CIL also has distribution and power generation operations.

In the third quarter of 2017, we formed the Eaton Cummins Automated Transmission Technologies joint venture, which was consolidated and included in our Components segment as the automated transmissions business. See Note 21, "ACQUISITIONS", to the *Consolidated Financial Statements* for additional information.

In the third quarter of 2019, we formed a joint venture with L'Air Liquide S.A. via the purchase of Hydrogenics Corporation, which was consolidated and included in our New Power segment. See Note 21, "ACQUISITIONS", to the *Consolidated Financial Statements* for additional information.

SUPPLY

The performance of the end-to-end supply chain, extending through to our suppliers, is foundational to our ability to meet customers' expectations and support long-term growth. We are committed to having a robust strategy for how we select and manage our suppliers to enable a market focused supply chain. This requires us to continuously evaluate and upgrade our supply base, as necessary, to ensure we are meeting the needs of our customers.

We use a category strategy process (a process designed to create the most value for the company) that reviews our long-term needs and guides decisions on what we make internally and what we purchase externally. For the items we decide to purchase externally, the strategies also identify the suppliers we should partner with long-term to provide the best technology, the lowest total cost and highest supply chain performance. We design and/or manufacture our strategic components used in or with our engines and power generation units, including cylinder blocks and heads, turbochargers, connecting rods, camshafts, crankshafts, filters, alternators, electronic and emissions controls, automated transmissions and fuel systems. We source externally purchased material and manufactured components from leading global suppliers. Many key suppliers are managed through long-term supply agreements that assure capacity, delivery, quality and cost requirements are met over an extended period. Approximately 19 percent of the direct material in our product designs are single sourced to external suppliers. We have an established sourcing strategy and supplier management process to evaluate and mitigate risk. These processes are leading us to determine our need for dual sourcing and increase our use of dual and parallel sources to minimize risk and increase supply chain responsiveness. Our current target for dual and parallel sourcing is approximately 90 percent of our direct material spend. As of December 31, 2019, our analysis indicates that we have approximately 81 percent of direct material spend with dual or parallel sources.

Other important elements of our sourcing strategy include:

- working with suppliers to measure and improve their environmental footprint;
- selecting and managing suppliers to comply with our supplier code of conduct; and
- assuring our suppliers comply with Cummins' prohibited and restricted materials policy.

PATENTS AND TRADEMARKS

We own or control a significant number of patents and trademarks relating to the products we manufacture. These patents and trademarks were granted and registered over a period of years. Although these patents and trademarks are generally considered beneficial to our operations, we do not believe any patent, group of patents or trademark (other than our leading brand house trademarks) is significant to our business.

SEASONALITY

While individual product lines may experience modest seasonal variation in production, there is no material effect on the demand for the majority of our products on a quarterly basis with the exceptions that our Power Systems segment normally experiences seasonal declines in the first quarter due to general declines in construction spending during this period.

LARGEST CUSTOMERS

We have thousands of customers around the world and have developed long-standing business relationships with many of them. PACCAR is our largest customer, accounting for 17 percent of our consolidated net sales in 2019, 15 percent in 2018 and 14 percent in 2017. We have long-term supply agreements with PACCAR for our heavy-duty and mid-range engines. While a significant number of our sales to PACCAR are under long-term supply agreements, these agreements provide for particular engine requirements for specific vehicle models and not a specific volume of engines. PACCAR is our only customer accounting for more than 10 percent of our net sales in 2019. The loss of this customer or a significant decline in the production level of PACCAR vehicles that use our engines would have an adverse effect on our results of operations and financial condition. We have been an engine supplier to PACCAR for 75 years. A summary of principal customers for each operating segment is included in our segment discussion.

In addition to our agreement with PACCAR, we have long-term heavy-duty and medium-duty engine supply agreements with Navistar and Daimler. We also have an agreement with Chrysler to supply engines for its Ram trucks. Collectively, our net sales to these four customers, including PACCAR, were 37 percent of our consolidated net sales in 2019, 35 percent in 2018 and 33 percent in 2017. Excluding PACCAR, net sales to any single customer were less than 9 percent of our consolidated net sales in 2019, less than 9 percent in 2018 and less than 7 percent in 2017. These agreements contain standard purchase and sale agreement terms covering engine and engine parts pricing, quality and delivery commitments, as well as engineering product support obligations. The basic nature of our agreements with OEM customers is that they are long-term price and operations agreements that help assure the availability of our products to each customer through the duration of the respective agreements. Agreements with most OEMs contain bilateral termination provisions giving either party the right to terminate in the event of a material breach, change of control or insolvency or bankruptcy of the other party.

BACKLOG

We have supply agreements with some truck and off-highway equipment OEMs, however most of our business is transacted through open purchase orders. These open orders are historically subject to month-to-month releases and are subject to cancellation on reasonable notice without cancellation charges and therefore are not considered firm. At December 31, 2019, we did not have any significant backlogs.

RESEARCH AND DEVELOPMENT

In 2019, we continued to invest in future critical technologies and products. We will continue to make investments to develop new products and improve our current technologies to meet future emission requirements around the world and improve fuel economy performance of diesel and natural gas-powered engines and related components as well as development activities around fully electric, hybrid and hydrogen power solutions.

Our research and development program is focused on product improvements, product extensions, innovations and cost reductions for our customers. Research and development expenditures include salaries, contractor fees, building costs, utilities, testing, technical IT, administrative expenses and allocation of corporate costs and are expensed, net of contract reimbursements, when incurred. From time to time, we enter into agreements with customers and government agencies to fund a portion of the research and development costs of a particular project. When not associated with a sales contract, we generally account for these reimbursements as an offset to the related research and development expenditure. Research and development expenses, net of contract reimbursements, were \$998 million in 2019, \$894 million in 2018 and \$734 million in 2017. Contract reimbursements were \$90 million, \$120 million and \$137 million in 2019, 2018 and 2017, respectively.

ENVIRONMENTAL SUSTAINABILITY

We adopted our comprehensive environmental sustainability plan in 2014 after examining our entire environmental footprint, focusing on the key areas of water, waste, energy and greenhouse gases (GHG). As the concept and scope of environmental

sustainability has matured and broadened, leaders have moved from initially working on environmental impacts within our direct control in our operations to an expanded view of fuel and raw materials that reaches across the entire product life-cycle from design to manufacture to end of life. Our environmental sustainability plan is the way we carry out our priorities, goals and initiatives in our action areas, including reducing our carbon footprint, using fewer natural resources and partnering to solve complex problems.

The highest level of accountability for Cummins' climate-related risks and opportunities is with the Safety, Environment and Technology (SET) committee of the Board of Directors (the Board). The Action Committee for Environmental Sustainability meets monthly and reports to the Chairman and to the SET committee at least annually.

Our Sustainability Progress Report for 2018/2019 includes goal progress and other key environmental and climate metrics and targets. This and prior reports as well as a Data Book of more detailed environmental data in accordance with the Global Reporting Initiative's Standard core compliance designation are available on our website at www.cummins.com. Our annual submission to the Carbon Disclosure Project (CDP) for climate change and water are also available on the website. The climate submission provides information on our scenario planning exercise for climate and other risks as requested by CDP. These reports and data book are not incorporated into this Form 10-K by reference. We currently report on the following environmental sustainability goals and commitments from our 2014 plan:

- a product vision statement — "powering the future through product innovation that makes people's lives better and reduces our environmental footprint;"
- partnering with customers to improve the fuel efficiency of our products in use, targeting an annual run-rate reduction of 3.5 million metric tons of carbon dioxide;
- achieving a 32 percent energy intensity reduction from company facilities by the end of 2020 (using a baseline year of 2010) and increasing the portion of electricity we use derived from renewable sources;
- reducing direct water use by 50 percent adjusted for hours worked and achieving water neutrality at 15 sites by the end of 2020;
- increasing our recycling rate from 88 percent to 95 percent and achieving zero disposal at 30 sites by the end of 2020; and
- utilizing the most efficient methods and modes to move goods across our network to reduce carbon dioxide per kilogram of goods moved by 10 percent by the end of 2020.

We continue to articulate our positions on key public policy issues and on a wide range of environmental issues. We are actively engaged with regulatory, industry and other stakeholder groups around the world as GHG and fuel efficiency standards become more prevalent globally. We were named number 17 in Newsweek's 2019 Green Ranking of U.S. companies, number 14 among Barron's Top 100 Most Sustainable Companies as well as named to the Dow Jones North American Sustainability Index for the fourteenth consecutive year in 2019.

In late 2019, Cummins introduced PLANET 2050, a sustainability strategy focused on three priority areas: addressing climate change and air emissions, using natural resources in the most sustainable way and improving communities. It includes eight specific goals to achieve by 2030, as well as aspirational targets for 2050. Cummins is currently evaluating how the new goals will be integrated into business planning and will report on progress beginning in 2022.

ENVIRONMENTAL COMPLIANCE

Product Certification and Compliance

Our engines are subject to extensive statutory and regulatory requirements that directly or indirectly impose standards governing emission and noise. Over the past several years we have substantially increased our global environmental compliance presence and expertise to understand and meet emerging product environmental regulations around the world. Our ability to comply with these and future emission standards is an essential element in maintaining our leadership position in regulated markets. We have made, and will continue to make, significant capital and research expenditures to comply with these standards.

Following conversations with the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) regarding certification for the engines in the 2019 RAM 2500 and 3500 trucks, we made the decision to review our certification process and compliance with emission standards. This review is being conducted with external advisers to ensure the certification and all of our processes for our pick-up truck applications are consistent with our internal policies, engineering

standards and applicable laws. In addition, we voluntarily disclosed our formal internal review to our regulators and other agencies and have been working cooperatively with them to ensure a complete and thorough review.

We strive to be a leader in developing and implementing technologies that provide customers with the highest performing products that also have the least impact on the environment and have a long history of working with governments and regulators to achieve these goals. We remain committed to ensuring that our products meet all current and future emission standards and delivering value to our customers.

On October 17, 2019, the Board approved the creation of a new Product Compliance and Regulatory Affairs Organization to lead engine emission certification and compliance and regulatory affairs. This new organization is led by the Vice President - Product Compliance and Regulatory Affairs who reports directly to the Chief Executive Officer, and the new Vice President joins the Cummins Executive Team and Cummins Leadership Team. The focus of this new organization will be to strengthen our ability to design great products that help our customers win while ensuring compliance with increasingly challenging global emission regulations. The organization will also work to enhance our collaboration with the agencies that set the direction and regulations of emissions to best ensure we are meeting every expectation today while planning ahead for future changes.

EU and EPA Engine Certifications

The current on-highway NO_x and PM emission standards came into effect in the EU on January 1, 2013, (Euro VI) and on January 1, 2010, for the EPA. To meet these regulations we used an evolution of our proven selective catalytic reduction (SCR) and exhaust gas recirculation (EGR) technology solutions and refined them for the EU and EPA certified engines to maintain power and torque with substantial fuel economy improvement and maintenance intervals comparable with our previous compliant engines. We offer a complete lineup of on-highway engines to meet the near-zero emission standards. Mid-range and heavy-duty engines for EU and EPA require NO_x aftertreatment. NO_x reduction is achieved by an integrated technology solution comprised of the XPI High Pressure Common Rail fuel system, SCR technology, next-generation cooled EGR, advanced electronic controls, proven air handling and the Cummins Diesel Particulate Filter (DPF). The EU, EPA and CARB have certified that our engines meet the current emission requirements. Emission standards in international markets, including Japan, Mexico, Australia, Brazil, Russia, India and China are becoming more stringent. We believe that our experience in meeting the EU and EPA emission standards leaves us well positioned to take advantage of opportunities in these markets as the need for emission control capability grows.

In 2013, we certified to EPA's first ever GHG regulations for on-highway medium and heavy-duty engines. Additionally, the EPA 2013 regulations added the requirement of on-board diagnostics, which were introduced on the ISX 15 in 2010, across the full on-highway product line while maintaining the same near-zero emission levels of NO_x and particulate matter required in 2010. On-board diagnostics provide enhanced service capability with standardized diagnostic trouble codes, service tool interface, in-cab warning lamp and service information availability. The new GHG and fuel-efficiency regulations were required for all heavy-duty diesel and natural gas engines beginning in January 2014. Our GHG certification was the first engine certificate issued by the EPA and uses the same proven base engine with the XPI fuel system, variable geometry turbocharger (VGTTM) and Cummins aftertreatment system with DPF and SCR technology. Application of these engines and aftertreatment technologies continues in our products that comply with the 2017 GHG regulations.

The current EPA Tier 4 off-highway emission standards came into effect between the 2013 - 2015 time frame for all power categories. The current EU Stage V off-highway emission standards became effective in 2019 for certain power categories and are expected to be completely effective by January 2021 for all remaining categories. Engines designed for Tier 4 / Stage V standards were based on our extensive on-highway experience developing SCR, high pressure fuel systems, DPF and VGTTM. Our products offer low fuel consumption, high torque rise and power output, extended maintenance intervals, reliable and durable operation and a long life to overhaul period, all while meeting the most stringent emission standards in the industrial market. Our off-highway products power multiple applications including construction, mining, marine, agriculture, rail, defense and oil and gas and serve a global customer base.

Other Environmental Statutes and Regulations

Expenditures for environmental control activities and environmental remediation projects at our facilities in the U.S. have not been a substantial portion of our annual expenses and are not expected to be material in 2020. We believe we are in compliance in all material respects with laws and regulations applicable to our plants and operations.

In the U.S., pursuant to notices received from federal and state agencies and/or defendant parties in site environmental contribution actions, we have been identified as a potentially responsible party under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended or similar state laws, at fewer than 20 waste disposal sites.

Based upon our experiences at similar sites we believe that our aggregate future remediation costs will not be material. We have established accruals that we believe are adequate for our expected future liability with respect to these sites. In addition, we have several other sites where we are working with governmental authorities on remediation projects. The costs for these remediation projects are not expected to be material.

EMPLOYEES

At December 31, 2019, we employed approximately 61,615 persons worldwide. Approximately 19,048 of our employees worldwide are represented by various unions under collective bargaining agreements that expire between 2020 and 2024.

AVAILABLE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information electronically with the Securities and Exchange Commission (SEC). The SEC maintains an internet site that contains annual, quarterly and current reports, proxy and information statements and other information that Cummins files electronically with the SEC. The SEC's internet site is www.sec.gov.

Our internet site is www.cummins.com. You can access our Investors and Media webpage through our internet site, by clicking on the heading "About" followed by the "Investor Overview" link. We make available, free of charge, on or through our Investors and Media webpage, our proxy statements, annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and any amendments to those reports filed or furnished pursuant to the Securities Exchange Act of 1934 or the Securities Act of 1933, as amended, as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC.

We also have a Corporate Governance webpage. You can access our Governance Documents webpage through our internet site, www.cummins.com, by clicking on the heading "About" followed by "Corporate Governance" and then the "Cummins Governance Documents" link. Code of Conduct, Committee Charters and other governance documents are included at this site. Our Code of Conduct applies to all employees, regardless of their position or the country in which they work. It also applies to the employees of any entity owned or controlled by us. We will post any amendments to the Code of Conduct and any waivers that are required to be disclosed by the rules of either the SEC or the New York Stock Exchange LLC (NYSE), on our internet site. The information on our internet site is not incorporated by reference into this report.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

Following are the names and ages of our executive officers, their positions with us at January 31, 2020 and summaries of their backgrounds and business experience:

Name and Age	Present Cummins Inc. position and year appointed to position	Principal position during the past five years other than Cummins Inc. position currently held
N. Thomas Linebarger (57)	Chairman of the Board of Directors and Chief Executive Officer (2012)	
Livingston L. Satterthwaite (59)	President and Chief Operating Officer (2019)	Vice President and President—Distribution Business (2015-2019) Vice President and President—Power Generation (2008-2015)
Sherry A. Aaholm (57)	Vice President—Chief Information Officer (2013)	
Peter W. Anderson (53)	Vice President—Global Supply Chain and Manufacturing (2017)	Principal/Partner—Ernst & Young LLP (2006-2017)
Sharon R. Barner (62)	Vice President—General Counsel (2012)	
Steven M. Chapman (65)	Group Vice President—China and Russia (2009)	
Christopher C. Clulow (48)	Vice President—Corporate Controller (2017)	Controller—Components Segment (2015-2017) Executive Director—Heavy, Medium and Light-Duty Finance (2011-2015)
Jill E. Cook (56)	Vice President—Chief Human Resources Officer (2003)	
Tracy A. Embree (46)	Vice President and President—Distribution Business (2019)	Vice President and President—Components Group (2015-2019)
Thaddeus B. Ewald (52)	Vice President—Corporate Strategy and Business Development (2010)	
Walter J. Fier (55)	Vice President—Chief Technical Officer (2019)	Vice President—Engineering, Engine Business (2015-2019)
Donald G. Jackson (50)	Vice President—Treasurer (2015)	Executive Director—Assistant Treasurer (2013-2015)
Melina M. Kennedy (50)	Vice President—Product Compliance and Regulatory Affairs (2019)	Executive Director—Pick-up Truck, Engine Business (2018-2019) Executive Director—Rail & Defense (2017-2018) General Manager—Rail & Defense (2014-2017)
Norbert Nusterer (51)	Vice President and President—Power Systems (2016)	Vice President—New and ReCon Parts (2011-2016)
Mark J. Osowick (52)	Vice President—Human Resources Operations (2014)	
Srikanth Padmanabhan (55)	Vice President and President—Engine Business (2016)	Vice President—Engine Business (2014-2016)
Marya M. Rose (57)	Vice President—Chief Administrative Officer (2011)	
Jennifer Rumsey (46)	Vice President and President—Components Group (2019)	Vice President—Chief Technical Officer (2015-2019) Vice President—Engineering, Engine Business (2014-2015)

Mark A. Smith (52)	Vice President—Chief Financial Officer (2019)	Vice President—Financial Operations (2016-2019) Vice President—Investor Relations and Business Planning and Analysis (2014-2016)
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Our Chairman and Chief Executive Officer (CEO) is elected annually by the Board and holds office until the meeting of the Board at which his election is next considered. Other officers are appointed by the Chairman and CEO, are ratified by the Board and hold office for such period as the Chairman and CEO or the Board may prescribe.

ITEM 1A. Risk Factors

Set forth below and elsewhere in this Annual Report on Form 10-K are some of the principal risks and uncertainties that could cause our actual business results to differ materially from any forward-looking statements contained in this Report and could individually, or in combination, have a material adverse effect on our results of operations, financial position and cash flows. These risk factors should be considered in addition to our cautionary comments concerning forward-looking statements in this Report, including statements related to markets for our products and trends in our business that involve a number of risks and uncertainties. Our separate section above, "CAUTIONARY STATEMENTS REGARDING FORWARD-LOOKING INFORMATION," should be considered in addition to the following statements.

We are conducting a formal internal review of our emission certification process and compliance with emission standards with respect to our pick-up truck applications and working with the EPA and CARB, as well as the Department of Justice (DOJ) and SEC, to address their questions about these applications. The results of this formal review and regulatory and government agency processes, or the discovery of any noncompliance issues, could have a material adverse impact on our results of operations and cash flows.

We previously announced that we are conducting a formal internal review of our emissions certification process and compliance with emission standards with respect to all of our pick-up truck applications, following conversations with the EPA and CARB regarding certification of our engines for model year 2019 RAM 2500 and 3500 trucks. During conversations with the EPA and CARB about the effectiveness of our pick-up truck applications, the regulators raised concerns that certain aspects of our emissions systems may reduce the effectiveness of our emissions control systems and thereby act as defeat devices. As a result, our internal review focuses, in part, on the regulators' concerns. We are working closely with the regulators to enhance our emissions systems to improve the effectiveness of all of our pick-up truck applications and to fully address the regulators' requirements. Based on discussions with the regulators, we have developed a new calibration for the engines in model year 2019 RAM 2500 and 3500 trucks that has been included in all engines shipped since September 2019. During our discussions, the regulators have asked us to look at other model years and other engines, though the primary focus of our review has been the model year 2019 RAM. We will continue to work together closely with the relevant regulators to develop and implement recommendations for improvement as part of our ongoing commitment to compliance. We are also fully cooperating with the DOJ's and the SEC's information requests and inquiries.

Due to the continuing nature of the formal review, our ongoing cooperation with the regulators and other government agencies, and the presence of many unknown facts and circumstances, we are not yet able to estimate the financial impact of these matters. It is possible that the consequences of any remediation plans resulting from our formal review and these regulatory and agency processes could have a material adverse impact on our results of operations and cash flows in the periods in which these emissions certification issues are addressed.

Our products are subject to extensive statutory and regulatory requirements that can significantly increase our costs and, along with increased scrutiny from regulatory agencies and unpredictability in the adoption, implementation and enforcement of increasingly stringent emission standards by multiple jurisdictions around the world, could have a material adverse impact on our results of operations, financial condition and cash flows.

Our engines are subject to extensive statutory and regulatory requirements governing emissions and noise, including standards imposed by the EPA, the EU, state regulatory agencies (such as the CARB) and other regulatory agencies around the world. Regulatory agencies are making certification and compliance with emissions and noise standards more stringent and subjecting diesel engine products to an increasing level of scrutiny. The discovery of noncompliance issues could have a material adverse impact on our results of operations, financial condition and cash flows.

Developing engines and components to meet more stringent and changing regulatory requirements, with different implementation timelines and emission requirements, makes developing engines efficiently for multiple markets complicated and could result in substantial additional costs that may be difficult to recover in certain markets. While we have met previous deadlines, our ability to comply with existing and future regulatory standards will be essential for us to maintain our competitive advantage in the engine markets we serve. The successful development and introduction of new and enhanced products in order to comply with new regulatory requirements are subject to other risks, such as delays in product development, cost over-runs and unanticipated technical and manufacturing difficulties.

In addition to these risks, the nature and timing of government implementation and enforcement of increasingly stringent emission standards in our worldwide markets are unpredictable and subject to change. Any delays in implementation or enforcement could result in a loss of our competitive advantage and could have a material adverse impact on our results of operations, financial condition and cash flows.

A sustained slowdown or significant downturn in our markets could materially and adversely affect our results of operations, financial condition and cash flows.

Many of our on- and off-highway markets are cyclical in nature and experience volatility in demand throughout these cycles. In the second half of 2019 we experienced slowing of demand growth in most of our North American on-highway and certain off-highway markets, while international sales declined in most markets, including China. If the North American or Chinese markets suffer a significant downturn or if a slower pace of economic growth and weaker demand in our other significant international markets were to occur, depending upon the length, duration and severity of the slowdown, it could have a material adverse impact on our results of operations, financial condition and cash flows.

Our manufacturing and supply chain abilities may be adversely impacted by an extended shutdown of our operations in China due to the recent coronavirus outbreak.

In December 2019, a novel strain of coronavirus began to impact the population of Wuhan, China, where several of our manufacturing and distribution facilities are located. In late January 2020, in an effort to contain the spread of the virus, maintain the wellbeing of our employees and in accordance with governmental requirements, we closed several production and distribution facilities in the Hubei Province of China. We rely upon these facilities to support our business in China, as well as to export components for use in products in other parts of the world. While the closures and limitations on movement in the region are expected to be temporary, the duration of the production and supply chain disruption, and related financial impact, cannot be estimated at this time. Should the production and distribution closures continue for an extended period of time, the impact on our supply chain in China and globally could have a material adverse effect on our results of operations and cash flows.

Our products are subject to recall for performance or safety-related issues.

Our products are subject to recall for performance or safety-related issues. Product recalls subject us to reputational risk, loss of current and future customers, reduced revenue and product recall costs. Product recall costs are incurred when we decide, either voluntarily or involuntarily, to recall a product through a formal campaign to solicit the return of specific products due to known or suspected performance or safety issues. Any significant product recalls could have material adverse effects on our results of operations, financial condition and cash flows. See Note 12, "PRODUCT WARRANTY LIABILITY" to the *Consolidated Financial Statements* for additional information.

The development of new technologies may materially reduce the demand for our current products and services.

We are investing in new products and technologies, including electrified powertrains, hydrogen generation and fuel cells, for planned introduction into certain existing and new markets. Given the early stages of development of some of these new products and technologies, there can be no guarantee of the future market acceptance and investment returns with respect to these planned products. The increased adoption of electrified powertrains in some market segments could result in lower demand for current diesel or natural gas engines and components and, over time, reduce the demand for related parts and service revenues from diesel or natural gas powertrains. Furthermore, it is possible that we may not be successful in developing segment-leading electrified powertrains and some of our existing customers could choose to develop their own electrified or alternate fuel powertrains, or source from other manufacturers, and any of these factors could have a material adverse impact on our results of operations, financial condition and cash flows.

We operate our business on a global basis and policy changes affecting international trade could adversely impact the demand for our products and our competitive position.

We manufacture, sell and service products globally and rely upon a global supply chain to deliver the raw materials, components, systems and parts that we need to manufacture and service our products. Changes in government policies on foreign trade and investment can affect the demand for our products and services, cause non-U.S. customers to shift preferences toward domestically manufactured or branded products and impact the competitive position of our products or prevent us from being able to sell products in certain countries. Our business benefits from free trade agreements, such as the new United States-Mexico-Canada Agreement and the U.S. trade relationship with China, Brazil and France and efforts to withdraw from, or substantially modify such agreements or arrangements, in addition to the implementation of more restrictive trade policies, such as more detailed inspections, higher tariffs (including, but not limited to, additional tariffs on the import of steel or aluminum) import or export licensing requirements, exchange controls or new barriers to entry, could adversely impact our

production costs, customer demand and our relationships with customers and suppliers. Any of these consequences could have a material adverse effect on our results of operations, financial condition and cash flows.

A slowdown in infrastructure development and/or depressed commodity prices could adversely affect our business.

Infrastructure development and strong commodity prices have been significant drivers of our historical growth, but as the pace of investment in infrastructure slowed in recent years (especially in China and Brazil), commodity prices were significantly lower and demand for our products in off-highway markets was weak. Weakness in commodity prices, such as oil, gas and coal, adversely impacted mining industry participants' demand for vehicles and equipment that contain our engines and other products over the past several years. Deterioration, or renewed weakness, in infrastructure and commodities markets could adversely affect our customers' demand for vehicles and equipment and, as a result, could adversely affect our business.

The U.K.'s exit from the European Union (EU) could materially and adversely impact our results of operations, financial condition and cash flows.

On January 31, 2020, the U.K. exited from the EU (BREXIT). Additionally, the results of the U.K.'s BREXIT has caused, and may continue to cause, volatility in global stock markets, currency exchange rate fluctuations and global economic uncertainty. Although it is unknown what the terms of the U.K.'s future relationship with the EU will be, it is possible that there will be higher tariffs or greater restrictions on imports and exports between the U. K. and the EU and increased regulatory complexities. The effects of BREXIT will depend on any agreements the U.K. makes to retain access to EU markets either during a transitional period or on a permanent basis. These measures could potentially disrupt our supply chain, including delays of imports and exports, limited access to human capital within some of the target markets and jurisdictions in which we operate and adverse changes to tax benefits or liabilities in these or other jurisdictions. In addition, BREXIT could lead to legal uncertainty and potentially divergent national laws and regulations, including with respect to emissions and similar certifications granted to us by the EU, as the U.K. determines which EU laws to replace or replicate. Any of these effects of BREXIT, among others, could have a material adverse impact on our results of operations, financial condition and cash flows.

Lower-than-anticipated market acceptance of our new or existing products or services, including reductions in demand for diesel engines, could have a material adverse impact on our results of operations, financial condition and cash flows.

Although we conduct market research before launching new or refreshed engines and introducing new services, many factors both within and outside our control affect the success of new or existing products and services in the marketplace. Offering engines and services that customers desire and value can mitigate the risks of increasing price competition and declining demand, but products and services that are perceived to be less than desirable (whether in terms of price, quality, overall value, fuel efficiency or other attributes) can exacerbate these risks. With increased consumer interconnectedness through the internet, social media and other media, mere allegations relating to poor quality, safety, fuel efficiency, corporate responsibility or other key attributes can negatively impact our reputation or market acceptance of our products or services, even if such allegations prove to be inaccurate or unfounded.

We are vulnerable to supply shortages from single-sourced suppliers.

During 2019, we single sourced approximately 19 percent of the total types of parts in our product designs, compared to approximately 20 percent in 2018. Any delay in our suppliers' deliveries may adversely affect our operations at multiple manufacturing locations, forcing us to seek alternative supply sources to avoid serious disruptions. Delays may be caused by factors affecting our suppliers (including capacity constraints, labor disputes, economic downturns, availability of credit, the impaired financial condition), suppliers' allocations to other purchasers, weather emergencies, natural disasters or acts of war or terrorism. Any extended delay in receiving critical supplies could impair our ability to deliver products to our customers and adversely affect our results of operations, financial condition and cash flows.

Our truck manufacturers and OEM customers may discontinue outsourcing their engine supply needs.

Several of our engine customers, including PACCAR, Volvo, Navistar, Chrysler, Daimler, Dongfeng and Tata, are truck manufacturers or OEMs that manufacture engines for some of their own vehicles. Despite their own engine manufacturing abilities, these customers have historically chosen to outsource certain types of engine production to us due to the quality of our engine products, our emission compliance capabilities, our systems integration, their customers' preferences, their desire for cost reductions, their desire for eliminating production risks and their desire to maintain company focus. However, there can be no assurance that these customers will continue to outsource, or outsource as much of, their engine production in the future. In addition, increased levels of OEM vertical integration could result from a number of factors, such as shifts in our customers' business strategies, acquisition by a customer of another engine manufacturer, the inability of third-party suppliers to meet product specifications and the emergence of low-cost production opportunities in foreign countries. Any significant reduction in

the level of engine production outsourcing from our truck manufacturer or OEM customers could have a material adverse effect on our results of operations, financial condition and cash flows.

Our plan to reposition our portfolio of product offerings through exploration of strategic acquisitions and divestitures may expose us to additional costs and risks.

Part of our strategic plan is to improve our revenue growth, gross margins and earnings by exploring the repositioning of our portfolio of product line offerings through the pursuit of potential strategic acquisitions and/or divestitures to provide future strategic, financial and operational benefits and improve shareholder value. There can be no assurance that we will be able to identify suitable candidates or consummate these transactions on favorable terms. The successful identification and completion of any strategic transaction depends on a number of factors that are not entirely within our control, including the availability of suitable candidates and our ability to negotiate terms acceptable to all parties involved, conclude satisfactory agreements and obtain all necessary regulatory approvals. Accordingly, we may not be able to successfully negotiate and complete specific transactions. The exploration, negotiation and consummation of strategic transactions may involve significant expenditures by us, which may adversely affect our results of operations at the time such expenses are incurred, and may divert management's attention from our existing business. Strategic transactions also may have adverse effects on our existing business relationships with suppliers and customers.

If required, the financing for strategic acquisitions could result in an increase in our indebtedness, dilute the interests of our shareholders or both. Any acquisition may not be accretive to us for a significant period of time following the completion of such acquisition. Also, our ability to effectively integrate any potential acquisition into our existing business and culture may not be successful, which could jeopardize future financial and operational performance for the combined businesses. In addition, if an acquisition results in any additional goodwill or increase in other intangible assets on our balance sheet and subsequently becomes impaired, we would be required to record a non-cash impairment charge, which could result in a material adverse effect on our financial condition, results of operations and cash flows.

Similarly, any strategic divestiture of a product line or business may reduce our revenue and earnings, reduce the diversity of our business, result in substantial costs and expenses and cause disruption to our employees, customers, vendors and communities in which we operate.

Our information technology systems and our products are exposed to potential security breaches or other disruptions which may adversely impact our competitive position, reputation, results of operations, financial condition and cash flows.

We rely on the capacity, reliability and security of our information technology systems and data security infrastructure in connection with various aspects of our business activities. We also rely on our ability to expand and continually update these systems and related infrastructure in response to the changing needs of our business. As we implement new systems, they may not perform as expected. We face the challenge of supporting our older systems and implementing necessary upgrades. In addition, some of these systems are managed by third party service providers and are not under our direct control. If we experience a problem with an important information technology system, including during system upgrades and/or new system implementations, the resulting disruptions could have an adverse effect on our business and reputation. As customers adopt and rely on cloud-based digital technologies and services we offer, any disruption of the confidentiality, integrity or availability of those services could have an adverse effect on our business and reputation.

The data handled by our information technology systems is vulnerable to security threats. Our operations routinely involve receiving, storing, processing and transmitting sensitive information pertaining to our business, customers, dealers, suppliers, employees and other sensitive matters. While we continually work to safeguard our systems and mitigate potential risks, there is no assurance that these actions will be sufficient to prevent information technology security threats, such as security breaches, computer malware, computer viruses and other "cyber attacks," which are increasing in both frequency and sophistication, along with power outages or hardware failures. These threats could result in unauthorized public disclosures of information, create financial liability, subject us to legal or regulatory sanctions, disrupt our ability to conduct our business, result in the loss of intellectual property or damage our reputation with customers, dealers, suppliers and other stakeholders. In addition, our products, including our engines, contain interconnected and increasingly complex systems that control various processes and these systems are potentially subject to "cyber attacks" and disruption. The impact of a significant information technology event on either of our information technology systems or our products could have a material adverse effect on our competitive position, reputation, results of operations, financial condition and cash flows.

We face the challenge of accurately aligning our capacity with our demand.

We can experience idle capacity as economies slow or demand for certain products decline, while we can also experience capacity constraints and longer lead times for certain products in times of growing demand. Accurately forecasting our expected volumes and appropriately adjusting our capacity have been, and will continue to be, important factors in determining

our results of operations and cash flows. We cannot guarantee that we will be able to decrease our manufacturing capacity during market troughs, which could result in under-utilized manufacturing assets and unnecessary overhead costs or that we will be able to increase our manufacturing capacity to a level that meets demand for our products during market peaks, which could prevent us from meeting increased customer demand and could harm our business. If we overestimate our demand and overbuild our capacity, we may have significantly underutilized assets and we may experience reduced margins. If we do not accurately align our manufacturing capabilities with demand it could have a material adverse effect on our results of operations, financial condition and cash flows.

We may experience difficulties and delays or unexpected costs in completing our cost reduction actions and announced restructuring initiatives, including achieving any anticipated savings and other benefits of these initiatives.

During the fourth quarter of 2019 and the first quarter of 2020 we are undertaking cost reduction actions and announced restructuring initiatives to respond to the slowdown in our global markets. As we implement these initiatives, we may not realize anticipated savings or other benefits from one or more of the initiatives in the amounts or within the time periods we expect. Other events or circumstances, such as implementation difficulties and delays or unexpected costs, may occur which could result in us not realizing our targeted cost reductions. We are also subject to the risks of negative publicity and business disruption in connection with our restructuring and other cost reduction initiatives. If we are unable to realize the expected savings or benefits from these initiatives, certain aspects of our business may be adversely affected. If we experience any of these circumstances or otherwise fail to realize the anticipated savings or benefits from our restructuring and cost reduction initiatives, our results of operations could be materially and adversely affected.

Financial distress or a change-in-control of one of our large truck OEM customers could have a material adverse impact on our results of operations, financial condition and cash flows.

We recognize significant sales of engines and components to a few large on-highway truck OEM customers in North America which have been an integral part of our positive business results for several years. If one of our large truck OEM customers experiences financial distress, bankruptcy or a change-in-control, such circumstance could likely lead to significant reductions in our sales volumes, commercial disputes, receivable collection issues, and other negative consequences that could have a material adverse impact on our results of operations, financial condition and cash flows.

We may fail to realize all of the expected enhanced revenue, earnings and cash flow from our investment in the Eaton Cummins Automated Transmission Technologies joint venture.

Our ability to realize all of the expected enhanced revenue, earnings, and cash flow from our 2017 investment in the Eaton Cummins Automated Transmission Technologies joint venture will depend, in substantial part, on our ability to successfully launch the automated transmission products in North America and China and achieve our projected market penetration in those regions. While we believe we will ultimately achieve these objectives, it is possible that we will be unable to achieve all of the goals within our anticipated time frame or in the anticipated amounts. If we are not able to successfully complete our automated transmission strategy, the anticipated enhanced revenue, earnings, and cash flows resulting from this joint venture may not be realized fully or may take longer to realize than expected.

As part of the purchase accounting associated with the formation of the joint venture, significant goodwill and intangible asset balances were recorded on the consolidated balance sheet. If cash flows from the joint venture fall short of our anticipated amounts, these assets could be subject to non-cash impairment charges, negatively impacting our earnings.

We are exposed to political, economic and other risks that arise from operating a multinational business.

Our business is subject to the political, economic and other risks that are inherent in operating in numerous countries. These risks include:

- the difficulty of enforcing agreements and collecting receivables through foreign legal systems;
- trade protection measures and import or export licensing requirements;
- the imposition of taxes on foreign income and tax rates in certain foreign countries that exceed those in the U.S.;
- the imposition of tariffs, exchange controls or other restrictions;
- difficulty in staffing and managing widespread operations and the application of foreign labor regulations;
- required compliance with a variety of foreign laws and regulations; and
- changes in general economic and political conditions in countries where we operate, particularly in emerging markets.

As we continue to operate our business globally, our success will depend, in part, on our ability to anticipate and effectively manage these and other related risks. There can be no assurance that the consequences of these and other factors relating to our multinational operations will not have a material adverse effect upon us.

We face significant competition in the markets we serve.

The markets in which we operate are highly competitive. We compete worldwide with a number of other manufacturers and distributors that produce and sell similar products. We primarily compete in the market with diesel engines and related diesel products; however, new technologies continue to be developed for gasoline, natural gas, electrification and other technologies and we will continue to face new competition from these expanding technologies. Our products primarily compete on the basis of price, performance, fuel economy, emissions compliance, speed of delivery, quality and customer support. We also face competitors in some emerging markets who have established local practices and long standing relationships with participants in these markets. There can be no assurance that our products will be able to compete successfully with the products of other companies and in other markets.

Increasing global competition among our customers may affect our existing customer relationships and restrict our ability to benefit from some of our customers' growth.

As our customers in emerging markets continue to grow in size and scope, they are increasingly seeking to export their products to other countries. This has meant greater demand for our advanced engine technologies to help these customers meet the more stringent emissions requirements of developed markets, as well as greater demand for access to our distribution systems for purposes of equipment servicing. As these emerging market customers enter into, and begin to compete in more developed markets, they may increasingly begin to compete with our existing customers in these markets. Our further aid to emerging market customers could adversely affect our relationships with developed market customers. In addition, to the extent the competition does not correspond to overall growth in demand, we may see little or no benefit from this type of expansion by our emerging market customers.

We are subject to foreign currency exchange rate and other related risks.

We conduct operations in many areas of the world involving transactions denominated in a variety of currencies. We are subject to foreign currency exchange rate risk to the extent that our costs are denominated in currencies other than those in which we earn revenues. In addition, since our financial statements are denominated in U.S. dollars, changes in foreign currency exchange rates between the U.S. dollar and other currencies have had, and will continue to have, an impact on our results of operations, financial condition and cash flows. The U.S. dollar strengthened in recent years resulting in material unfavorable impacts on our revenues in those years. If the U.S. dollar continues strengthening against other currencies, we will experience additional volatility in our financial statements.

While we customarily enter into financial transactions that attempt to address these risks and many of our supply agreements with customers include foreign currency exchange rate adjustment provisions, there can be no assurance that foreign currency exchange rate fluctuations will not adversely affect our future results of operations and cash flows. In addition, while the use of currency hedging instruments may provide us with some protection from adverse fluctuations in foreign currency exchange rates, by utilizing these instruments we potentially forego the benefits that might result from favorable fluctuations in foreign currency exchange rates.

We also face risks arising from the imposition of foreign exchange controls and currency devaluations. Foreign exchange controls may limit our ability to convert foreign currencies into U.S. dollars or to remit dividends and other payments by our foreign subsidiaries or businesses located in or conducted within a country imposing controls. Currency devaluations result in a diminished value of funds denominated in the currency of the country instituting the devaluation. See Management's Discussion and Analysis for additional information.

Our products are exposed to variability in material and commodity costs.

Our businesses establish prices with our customers in accordance with contractual time frames; however, the timing of material and commodity market price increases may prevent us from passing these additional costs on to our customers through timely pricing actions. Additionally, higher material and commodity costs around the world may offset our efforts to reduce our cost structure. While we customarily enter into financial transactions and contractual pricing adjustment provisions with our customers that attempt to address some of these risks (notably with respect to copper, platinum and palladium), there can be no assurance that commodity price fluctuations will not adversely affect our results of operations and cash flows. In addition, while the use of commodity price hedging instruments and contractual pricing adjustments may provide us with some protection from adverse fluctuations in commodity prices, by utilizing these instruments we potentially forego the benefits that

might result from favorable fluctuations in price. As a result, higher material and commodity costs, as well as hedging these commodity costs during periods of decreasing prices, could result in declining margins.

We derive significant earnings from investees that we do not directly control, with more than 50 percent of these earnings from our China-based investees.

For 2019, we recognized \$330 million of equity, royalty and interest income from investees, compared to \$394 million in 2018. Approximately half of our equity, royalty and interest income from investees is from four of our 50 percent owned joint ventures in China - Beijing Foton Cummins Engine Co., Ltd., Dongfeng Cummins Engine Company, Ltd., Chongqing Cummins Engine Company, Ltd. and Dongfeng Cummins Emission Solutions Co. Ltd. As a result, although a significant percentage of our net income is derived from these unconsolidated entities, we do not unilaterally control their management or their operations, which puts a substantial portion of our net income at risk from the actions or inactions of these entities. A significant reduction in the level of contribution by these entities to our net income would likely have a material adverse effect on our results of operations and cash flows.

Unanticipated changes in our effective tax rate, the adoption of new tax legislation or exposure to additional income tax liabilities could adversely affect our profitability.

We are subject to income taxes in the U.S. and numerous international jurisdictions. Our income tax provision and cash tax liability in the future could be adversely affected by changes in earnings in countries with differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, changes in tax laws and the discovery of new information in the course of our tax return preparation process. The carrying value of deferred tax assets, which are predominantly in the U.S., is dependent on our ability to generate future taxable income in the U.S. We are also subject to ongoing tax audits. These audits can involve complex issues, which may require an extended period of time to resolve and can be highly judgmental. Tax authorities may disagree with certain tax reporting positions taken by us and, as a result, assess additional taxes against us. We regularly assess the likely outcomes of these audits in order to determine the appropriateness of our tax provision. The amounts ultimately paid upon resolution of these or subsequent tax audits could be materially different from the amounts previously included in our income tax provision and, therefore, could have a material impact on our tax provision.

Our global operations are subject to laws and regulations that impose significant compliance costs and create reputational and legal risk.

Due to the international scope of our operations, we are subject to a complex system of commercial and trade regulations around the world. Recent years have seen an increase in the development and enforcement of laws regarding trade compliance and anti-corruption, such as the U.S. Foreign Corrupt Practices Act and similar laws from other countries, as well as new regulatory requirements regarding data privacy, such as the European Union General Data Protection Regulation. Our numerous foreign subsidiaries, affiliates and joint venture partners are governed by laws, rules and business practices that differ from those of the U.S. The activities of these entities may not comply with U.S. laws or business practices or our Code of Business Conduct. Violations of these laws may result in severe criminal or civil sanctions, could disrupt our business and result in an adverse effect on our reputation, business and results of operations, financial condition and cash flows. We cannot predict the nature, scope or effect of future regulatory requirements to which our operations might be subject or the manner in which existing laws might be administered or interpreted.

Our business is exposed to potential product liability claims.

We face an inherent business risk of exposure to product liability claims in the event that our products' failure to perform to specification results, or is alleged to result, in property damage, bodily injury and/or death. At any given time, we are subject to various and multiple product liability claims, any one of which, if decided adversely to us, may have a material adverse effect on our reported results of operation in the period in which our liability with respect to any such claim is recognized. While we maintain insurance coverage with respect to certain product liability claims, we may not be able to obtain such insurance on acceptable terms in the future, if at all, and any such insurance may not provide adequate coverage against product liability claims. In addition, product liability claims can be expensive to defend and can divert the attention of management and other personnel for significant periods of time, regardless of the ultimate outcome. Furthermore, even if we are successful in defending against a claim relating to our products, claims of this nature could cause our customers to lose confidence in our products and us.

Our operations are subject to increasingly stringent environmental laws and regulations.

Our plants and operations are subject to increasingly stringent environmental laws and regulations in all of the countries in which we operate, including laws and regulations governing air emission, discharges to water and the generation, handling, storage, transportation, treatment and disposal of waste materials. While we believe that we are in compliance in all material respects with these environmental laws and regulations, there can be no assurance that we will not be adversely impacted by

costs, liabilities or claims with respect to existing or subsequently acquired operations, under either present laws and regulations or those that may be adopted or imposed in the future. We are also subject to laws requiring the cleanup of contaminated property. If a release of hazardous substances occurs at or from any of our current or former properties or at a landfill or another location where we have disposed of hazardous materials, we may be held liable for the contamination and the amount of such liability could be material.

Future bans or limitations on the use of diesel-powered vehicles or other applications could have a material adverse impact on our business over the long term.

In an effort to limit greenhouse gas emissions and combat climate change, multiple countries and cities have announced that they plan to implement a ban on the use in their cities or countries of diesel-powered products in the near or distant future. These countries include China, India and Germany. In addition, California government officials have called for the state to phase out sales of diesel-powered vehicles by 2040. To the extent that these types of bans are actually implemented in the future on a broad basis, or in one or more of our key markets, our business over the long-term could experience material adverse impacts.

We are exposed to risks arising from the price and availability of energy.

The level of demand for our products and services is influenced in multiple ways by the price and availability of energy. High energy costs generally drive greater demand for better fuel economy in almost all countries in which we operate. Some of our engine products have been developed with a primary purpose of offering fuel economy improvements, and if energy costs decrease or increase less than expected, demand for these products may likewise decrease. The relative unavailability of electricity in some emerging market countries also influences demand for our electricity generating products, such as our diesel generators. If these countries add energy capacity by expanding their power grids at a rate equal to or faster than the growth in demand for energy, the demand for our generating products could also decrease or increase less than would otherwise be the case.

Significant declines in future financial and stock market conditions could diminish our pension plan asset performance and adversely impact our results of operations, financial condition and cash flow.

We sponsor both funded and unfunded domestic and foreign defined benefit pension and other retirement plans. Our pension cost and the required contributions to our pension plans are directly affected by the value of plan assets, the projected and actual rates of return on plan assets and the actuarial assumptions we use to measure our defined benefit pension plan obligations, including the discount rate at which future projected and accumulated pension obligations are discounted to a present value. We could experience increased pension cost due to a combination of factors, including the decreased investment performance of pension plan assets, decreases in the discount rate and changes in our assumptions relating to the expected return on plan assets.

Significant declines in future financial and stock market conditions could cause material losses in our pension plan assets, which could result in increased pension cost in future years and adversely impact our results of operations, financial condition and cash flow. Depending upon the severity of market declines and government regulatory changes, we may be legally obligated to make pension payments in the U.S. and perhaps other countries and these contributions could be material.

We may be adversely impacted by work stoppages and other labor matters.

At December 31, 2019, we employed approximately 61,615 persons worldwide. Approximately 19,048 of our employees worldwide are represented by various unions under collective bargaining agreements that expire between 2020 and 2024. While we have no reason to believe that we will be materially impacted by work stoppages or other labor matters, there can be no assurance that future issues with our labor unions will be resolved favorably or that we will not encounter future strikes, work stoppages, or other types of conflicts with labor unions or our employees. Any of these consequences may have an adverse effect on us or may limit our flexibility in dealing with our workforce. In addition, many of our customers and suppliers have unionized work forces. Work stoppages or slowdowns experienced by our customers or suppliers could result in slowdowns or closures that would have a material adverse effect on our results of operations, financial condition and cash flow.

ITEM 1B. Unresolved Staff Comments

None.

ITEM 2. Properties

Manufacturing Facilities

Our principal manufacturing facilities by segments are as follows:

Segment	U.S. Facilities	Facilities Outside the U.S.
Engine	Indiana: Columbus	Brazil: Sao Paulo
	New York: Lakewood	India: Phaltan
	North Carolina: Whitakers	U.K.: Darlington
Components	Indiana: Columbus	Australia: Kilsyth
	South Carolina: Charleston	Brazil: Sao Paulo
	Tennessee: Cookeville	China: Shanghai, Wuxi, Wuhan
	Wisconsin: Mineral Point, Neillsville	France: Quimper
		Germany: Marktheidenfeld
		India: Pune, Dewas, Pithampur, Phaltan, Rudrapur
		Mexico: Ciudad Juarez, San Luis Potosi
		South Africa: Johannesburg
		South Korea: Suwon
	U.K.: Darlington, Huddersfield	
Power Systems	Indiana: Elkhart, Seymour	Brazil: Sao Paulo
	Minnesota: Fridley	China: Wuxi, Wuhan
	New Mexico: Clovis	India: Pune, Ahmendnagar, Ranjangaon, Phaltan
		Mexico: San Luis Potosi
		Romania: Craiova
		U.K.: Daventry
	Nigeria: Lagos	
New Power	Indiana: Columbus	Canada: Mississauga
		Belgium: Oevel

In addition, engines and engine components are manufactured by joint ventures or independent licensees at manufacturing plants in the U.S., China, India, Japan, Sweden, Germany, U.K., Mexico and Canada.

Distribution Facilities

The principal distribution facilities that serve all of our segments are as follows:

U.S. Facilities	Facilities Outside the U.S.
California: Irvine	Australia: Scoresby
Colorado: Henderson	Belgium: Mechelen
Georgia: Atlanta	Canada: Montreal, Vancouver
Michigan: New Hudson	China: Beijing
Minnesota: White Bear Lake	Germany: Gross-Gerau
Tennessee: Memphis	Holland: Dordrecht
Texas: Dallas	India: Pune
	Japan: Tokyo
	Russia: Moscow
	South Africa: Johannesburg
	U.K.: Wellingborough

Supply Chain Facilities

The principal supply chain facilities that serve all of our segments are as follows:

U.S. Facilities	Facilities Outside the U.S.
Indiana: Columbus	Belgium: Rumst
Kentucky: Walton	China: Beijing, Shanghai, Wuhan
Tennessee: Memphis	India: Phaltan, Pithampur, Pune
Texas: Houston	Mexico: San Luis Potosi
	U.K.: Cumbernauld, Stockton

Headquarters and Other Offices

Our Corporate Headquarters is located in Columbus, Indiana. Additionally, we operate numerous ancillary marketing, operational headquarters and administrative facilities globally.

ITEM 3. Legal Proceedings

We are subject to numerous lawsuits and claims arising out of the ordinary course of our business, including actions related to product liability; personal injury; the use and performance of our products; warranty matters; product recalls; patent, trademark or other intellectual property infringement; contractual liability; the conduct of our business; tax reporting in foreign jurisdictions; distributor termination; workplace safety; and environmental matters. We also have been identified as a potentially responsible party at multiple waste disposal sites under U.S. federal and related state environmental statutes and regulations and may have joint and several liability for any investigation and remediation costs incurred with respect to such sites. We have denied liability with respect to many of these lawsuits, claims and proceedings and are vigorously defending such lawsuits, claims and proceedings. We carry various forms of commercial, property and casualty, product liability and other forms of insurance; however, such insurance may not be applicable or adequate to cover the costs associated with a judgment against us with respect to these lawsuits, claims and proceedings. We do not believe that these lawsuits are material individually or in the aggregate. While we believe we have also established adequate accruals pursuant to U.S. generally accepted accounting principles for our expected future liability with respect to pending lawsuits, claims and proceedings, where the nature and extent of any such liability can be reasonably estimated based upon then presently available information, there can be no assurance that the final resolution of any existing or future lawsuits, claims or proceedings will not have a material adverse effect on our business, results of operations, financial condition or cash flows.

The matters described under "Loss Contingency" in Note 12, "PRODUCT WARRANTY LIABILITY," to the *Consolidated Financial Statements* are incorporated herein by reference.

We conduct significant business operations in Brazil that are subject to the Brazilian federal, state and local labor, social security, tax and customs laws. While we believe we comply with such laws, they are complex, subject to varying interpretations and we are often engaged in litigation regarding the application of these laws to particular circumstances.

On April 29, 2019, we announced that we were conducting a formal internal review of our emissions certification process and compliance with emission standards for our pick-up truck applications, following conversations with the EPA and the CARB regarding certification of our engines in model year 2019 RAM 2500 and 3500 trucks. This review is being conducted with external advisors to ensure the certification and compliance processes for all of our pick-up truck applications are consistent with our internal policies, engineering standards and applicable laws. In addition, we voluntarily disclosed our formal internal review to our regulators and to other government agencies, the DOJ and the SEC, and have been working cooperatively with them to ensure a complete and thorough review. During conversations with the EPA and CARB about the effectiveness of our pick-up truck applications, the regulators raised concerns that certain aspects of our emissions systems may reduce the effectiveness of our emissions control systems and thereby act as defeat devices. As a result, our internal review focuses, in part, on the regulators' concerns. We are working closely with the regulators to enhance our emissions systems to improve the effectiveness of all of our pick-up truck applications and to fully address the regulators' requirements. Based on discussions with the regulators, we have developed a new calibration for the engines in model year 2019 RAM 2500 and 3500 trucks that has been included in all engines shipped since September 2019. During our discussions, the regulators have asked us to look at other model years and other engines, though the primary focus of our review has been the model year 2019 RAM. We are also fully cooperating with the DOJ's and the SEC's information requests and inquiries. Due to the continuing nature of our formal review, our ongoing cooperation with our regulators and other government agencies, and the presence of many unknown facts and circumstances, we cannot predict the final outcome of this review and these regulatory and agency processes, and we cannot provide assurance that the matter will not have a materially adverse impact on our results of operations and cash flows.

ITEM 4. Mine Safety Disclosures

Not Applicable.

PART II

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

- (a) Our common stock is listed on the NYSE under the symbol "CMI." For other matters related to our common stock and shareholders' equity, see Note 16, "CUMMINS INC. SHAREHOLDERS' EQUITY," to the *Consolidated Financial Statements*.
- (b) Use of proceeds—not applicable.
- (c) The following information is provided pursuant to Item 703 of Regulation S-K:

Period	Issuer Purchases of Equity Securities			
	(a) Total Number of Shares Purchased ⁽¹⁾	(b) Average Price Paid per Share	(c) Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	(d) Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs ⁽²⁾
September 30 - November 3	1,621,817	\$ 158.11	1,618,527	31,370
November 4 - December 1	254,661	181.51	247,913	25,208
December 2 - December 31	911,293	181.41	909,006	23,185
Total	<u>2,787,771</u>	167.87	<u>2,775,446</u>	

⁽¹⁾ Shares purchased represent shares under our Key Employee Stock Investment Plan established in 1969 (there is no maximum repurchase limitation in this plan) and the Board authorized share repurchase program.

⁽²⁾ These values reflect the sum of shares held in loan status under our Key Employee Stock Investment Plan. The repurchase program authorized by the Board does not limit the number of shares that may be purchased and was excluded from this column. The dollar value remaining available for future purchases under the 2018 program at December 31, 2019, was \$635 million.

In December 2019, the Board authorized the acquisition of up to \$2.0 billion of additional common stock upon completion of the 2018 repurchase plan. In October 2018, the Board authorized the acquisition of up to \$2.0 billion of additional common stock. During the three months ended December 31, 2019, we repurchased \$465 million of common stock under the 2018 authorization.

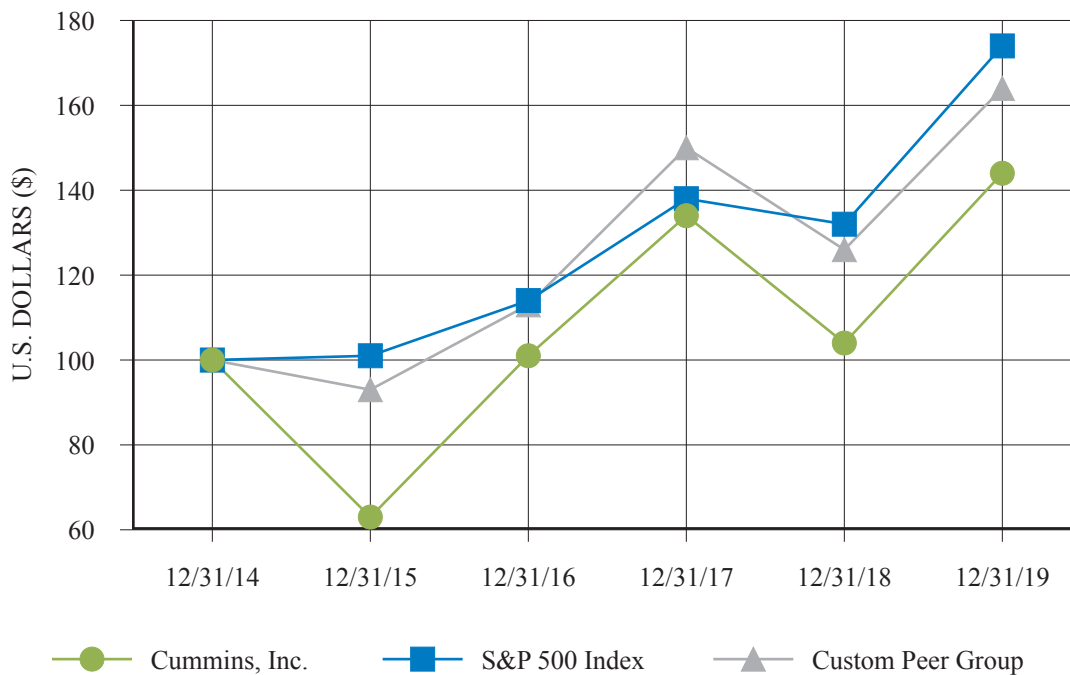
During the three months ended December 31, 2019, we repurchased 12,325 shares of common stock from employees in connection with the Key Employee Stock Investment Plan which allows certain employees, other than officers, to purchase shares of common stock on an installment basis up to an established credit limit. Loans are issued for five-year terms at a fixed interest rate established at the date of purchase and may be refinanced after their initial five-year period for an additional five-year period. Participants must hold shares for a minimum of six months from date of purchase. If the shares are sold before the loan is paid off, the employee must wait six months before another share purchase may be made. We hold participants' shares as security for the loans and would, in effect, repurchase shares if the participant defaulted in repayment of the loan. There is no maximum amount of shares that we may purchase under this plan.

Performance Graph (Unaudited)

The following Performance Graph and related information shall not be deemed "soliciting material" or to be "filed" with the SEC, nor shall such information be incorporated by reference into any of our future filings under the Securities Act of 1933 or Securities Exchange Act of 1934, each as amended, except to the extent that we specifically incorporate it by reference into such filing.

The following graph compares the cumulative total shareholder return on our common stock for the last five years with the cumulative total return on the S&P 500 Index and an index of peer companies selected by us. Our peer group includes BorgWarner Inc., Caterpillar, Inc., Daimler AG, Deere & Company, Donaldson Company Inc., Eaton Corporation, Emerson Electric Co., Fortive Corporation, W.W. Grainger Inc., Honeywell International, Illinois Tool Works Inc., Navistar, PACCAR, Parker-Hannifin Corporation, Textron Inc. and Volvo AB (Fortive Corporation is excluded from the peer index in the following graph as the company was founded after December 31, 2014). Each of the measures of cumulative total return assumes reinvestment of dividends. The comparisons in this table are required by the SEC and are not intended to forecast or be indicative of possible future performance of our stock.

**COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN
AMONG CUMMINS INC., S&P 500 INDEX AND CUSTOM PEER GROUP**



ASSUMES \$100 INVESTED ON DECEMBER 31, 2014
ASSUMES DIVIDENDS REINVESTED
FISCAL YEAR ENDING DECEMBER 31, 2019

ITEM 6. Selected Financial Data

The selected financial information presented below for each of the last five years ended December 31, beginning with 2019, was derived from our *Consolidated Financial Statements*. This information should be read in conjunction with our *Consolidated Financial Statements* and related notes and "Management's Discussion and Analysis of Financial Condition and Results of Operations."

In millions, except per share amounts	2019	2018	2017	2016	2015
For the years ended December 31,					
Net sales	\$ 23,571	\$ 23,771	\$ 20,428	\$ 17,509	\$ 19,110
Net income attributable to Cummins Inc. ⁽¹⁾	2,260	2,141	999	1,394	1,399
Earnings per common share attributable to Cummins Inc. ⁽²⁾					
Basic	\$ 14.54	\$ 13.20	\$ 5.99	\$ 8.25	\$ 7.86
Diluted	14.48	13.15	5.97	8.23	7.84
Cash dividends declared per share	4.90	4.44	4.21	4.00	3.51
At December 31,					
Total assets	19,737	19,062	18,075	15,011	15,134
Long-term debt	1,576	1,597	1,588	1,568	1,576

⁽¹⁾ For the year ended December 31, 2019, net income attributable to Cummins Inc. was reduced by \$119 million due to restructuring actions (\$90 million after-tax). For the year ended December 31, 2018, net income attributable to Cummins Inc. was reduced by \$39 million due to Tax Legislation. For the year ended December 31, 2017, net income attributable to Cummins Inc. was reduced by \$777 million due to Tax Legislation. For the year ended December 31, 2016, net income attributable to Cummins Inc. included a \$138 million charge for a loss contingency (\$74 million net of favorable variable compensation impact after-tax). For the year ended December 31, 2015, net income attributable to Cummins Inc. included \$211 million for an impairment of light-duty diesel assets (\$133 million after-tax), \$90 million of restructuring actions and other charges (\$61 million after-tax) and a \$60 million charge for a loss contingency (\$38 million after-tax).

⁽²⁾ For the year ended December 31, 2019, results for basic and diluted earnings per share were reduced by \$0.58 per share and \$0.57 per share, respectively, due to restructuring actions. For the year ended December 31, 2018, results for basic and diluted earnings per share were reduced by \$0.24 per share due to Tax Legislation. For the year ended December 31, 2017, results for basic and diluted earnings per share were reduced by \$4.66 per share and \$4.65 per share, respectively, due to Tax Legislation. For the year ended December 31, 2016, results for basic and diluted earnings per share were reduced by \$0.44 per share due to a loss contingency charge. For the year ended December 31, 2015, results for basic and diluted earnings per share were reduced by \$0.75 per share due to an impairment of light-duty diesel, \$0.34 per share due to restructuring actions and other charges and \$0.20 and \$0.21 per share, respectively, due to a loss contingency charge.

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

ORGANIZATION OF INFORMATION

The following Management's Discussion and Analysis of Financial Condition and Results of Operations (MD&A) was prepared to provide the reader with a view and perspective of our business through the eyes of management and should be read in conjunction with our *Consolidated Financial Statements* and the accompanying notes to those financial statements. Our MD&A is presented in the following sections:

- **EXECUTIVE SUMMARY AND FINANCIAL HIGHLIGHTS**
- **RESULTS OF OPERATIONS**
- **OPERATING SEGMENT RESULTS**
- **2020 OUTLOOK**
- **LIQUIDITY AND CAPITAL RESOURCES**
- **CONTRACTUAL OBLIGATIONS AND OTHER COMMERCIAL COMMITMENTS**
- **APPLICATION OF CRITICAL ACCOUNTING ESTIMATES**
- **RECENTLY ADOPTED AND RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS**

The following is the discussion and analysis of changes in the financial condition and results of operations for fiscal year 2019 compared to fiscal year 2018. The discussion and analysis of fiscal year 2017 and changes in the financial condition and results of operations for fiscal year 2018 compared to fiscal year 2017 that are not included in this Form 10-K may be found in Part II, ITEM 7 of our Annual Report on Form 10-K for the fiscal year ended December 31, 2018, filed with the Securities and Exchange Commission (SEC) on February 11, 2019.

EXECUTIVE SUMMARY AND FINANCIAL HIGHLIGHTS

We are a global power leader that designs, manufactures, distributes and services diesel, natural gas, electric and hybrid powertrains and powertrain-related components including filtration, aftertreatment, turbochargers, fuel systems, controls systems, air handling systems, automated transmissions, electric power generation systems, batteries, electrified power systems, hydrogen generation and fuel cell products. We sell our products to original equipment manufacturers (OEMs), distributors, dealers and other customers worldwide. We have long-standing relationships with many of the leading manufacturers in the markets we serve, including PACCAR Inc, Navistar International Corporation, Daimler Trucks North America and Fiat Chrysler Automobiles (Chrysler). We serve our customers through a network of approximately 600 wholly-owned, joint venture and independent distributor locations and over 7,600 Cummins certified dealer locations in more than 190 countries and territories.

In November 2019, we renamed our Electrified Power segment as "New Power" in order to better represent the incorporation of fuel cell and hydrogen production technologies resulting from our acquisition of Hydrogenics Corporation. The New Power segment includes our electrified power, fuel cell and hydrogen production technologies.

Our reportable operating segments consist of Engine, Distribution, Components, Power Systems and New Power. This reporting structure is organized according to the products and markets each segment serves. The Engine segment produces engines (15 liters and smaller) and associated parts for sale to customers in on-highway and various off-highway markets. Our engines are used in trucks of all sizes, buses and recreational vehicles, as well as in various industrial applications, including construction, agriculture, power generation systems and other off-highway applications. The Distribution segment includes wholly-owned and partially-owned distributorships engaged in wholesaling engines, generator sets and service parts, as well as performing service and repair activities on our products and maintaining relationships with various OEMs throughout the world. The Components segment sells filtration products, aftertreatment systems, turbochargers, electronics, fuel systems and automated transmissions. The Power Systems segment is an integrated power provider, which designs, manufactures and sells engines (16 liters and larger) for industrial applications (including mining, oil and gas, marine and rail), standby and prime power generator sets, alternators and other power components. The New Power segment designs, manufactures, sells and supports electrified power systems ranging from fully electric to hybrid along with innovative components and subsystems, including battery, fuel cell and hydrogen production technologies. We continue to serve all our markets as they adopt electrification and alternative power technologies, meeting the needs of our OEM partners and end customers.

Our financial performance depends, in large part, on varying conditions in the markets we serve, particularly the on-highway, construction and general industrial markets. Demand in these markets tends to fluctuate in response to overall economic conditions. Our sales may also be impacted by OEM inventory levels, production schedules and stoppages. Economic downturns in markets we serve generally result in reduced sales of our products and can result in price reductions in certain products and/or markets. As a worldwide business, our operations are also affected by currency, political, economic and regulatory matters, including adoption and enforcement of environmental and emission standards, in the countries we serve. As part of our growth strategy, we invest in businesses in certain countries that carry high levels of these risks such as China, Brazil, India, Mexico, Russia and countries in the Middle East and Africa. At the same time, our geographic diversity and broad product and service offerings have helped limit the impact from a drop in demand in any one industry or customer or the economy of any single country on our consolidated results.

Worldwide revenues decreased 1 percent in 2019 compared to 2018, as higher sales in the Distribution and New Power segments were more than offset by lower sales in all other operating segments. International demand (excludes the U.S. and Canada) declined by 6 percent compared to 2018, with lower sales in most regions (especially in Europe, India, Russia, Asia Pacific and Latin America). The decrease in international sales was driven by lower on-highway demand (mainly in the light-commercial vehicle (LCV) market in China and Russia, truck markets in Western Europe and India, which negatively impacted our emission solutions and turbo technologies businesses, the medium-duty truck market in Brazil and the bus market in Europe), unfavorable foreign currency impacts of 4 percent of international sales (primarily the Chinese renminbi, Euro, British pound, Australian dollar, Brazilian real and Indian rupee) and decreased demand in industrial markets (especially construction markets in China, Asia Pacific and India and most international mining markets). These decreases were partially offset by increased demand in China for both engines for oil and gas customers and power generation equipment for data center customers. Net sales in the U.S. and Canada improved by 3 percent primarily due to increased demand in the pick-up truck and medium-duty truck markets and increased demand in most of our distribution product lines (largely related to power generation equipment for data center customers), partially offset by lower demand in heavy-duty truck and bus markets and decreased industrial demand (especially in the oil and gas market).

The following table contains sales and EBITDA by operating segment for the years ended December 31, 2019 and 2018. See the section titled "OPERATING SEGMENT RESULTS" for a more detailed discussion of net sales and EBITDA by operating segment including the reconciliation of segment EBITDA to net income attributable to Cummins Inc.

In millions	Operating Segments							
	2019			2018			Percent change 2019 vs. 2018	
	Sales	Percent of Total	EBITDA	Sales	Percent of Total	EBITDA	Sales	EBITDA
Engine	\$ 10,056	43 %	\$ 1,454	\$ 10,566	44 %	\$ 1,446	(5)%	1 %
Distribution	8,071	34 %	656	7,828	33 %	563	3 %	17 %
Components	6,914	29 %	1,097	7,166	30 %	1,030	(4)%	7 %
Power Systems	4,460	19 %	512	4,626	20 %	614	(4)%	(17)%
New Power	38	— %	(149)	7	— %	(90)	NM	(66)%
Intersegment eliminations	(5,968)	(25)%	42	(6,422)	(27)%	(87)	(7)%	NM
Total	\$ 23,571	100 %	\$ 3,612	\$ 23,771	100 %	\$ 3,476	(1)%	4 %

"NM" - not meaningful information

Net income attributable to Cummins Inc. for 2019 was \$2.3 billion, or \$14.48 per diluted share, on sales of \$23.6 billion, compared to 2018 net income attributable to Cummins Inc. of \$2.1 billion, or \$13.15 per diluted share, on sales of \$23.8 billion. The increase in net income attributable to Cummins Inc. and earnings per diluted share was driven by increased gross margin, lower variable compensation expenses and gains on corporate owned life insurance, partially offset by restructuring actions, higher research, development and engineering expenses and lower equity, royalty and interest income from investees. The increase in gross margin and gross margin percentage was mainly due to lower warranty costs (due to the absence of the \$368 million engine system charge recorded in 2018), favorable pricing and lower material costs, partially offset by lower volumes, unfavorable impacts from tariffs and unfavorable foreign currency impacts (primarily Australian dollar, Euro, Canadian dollar and Brazilian real). See Note 12, "PRODUCT WARRANTY LIABILITY," to our *Consolidated Financial Statements* for additional information on the Engine System Campaign. Diluted earnings per common share for 2019 benefited \$0.25 per share from fewer weighted-average shares outstanding, primarily due to the stock repurchase program.

We generated \$3.2 billion of operating cash flows in 2019, compared to \$2.4 billion in 2018. See the section titled "Cash Flows" in the "LIQUIDITY AND CAPITAL RESOURCES" section for a discussion of items impacting cash flows.

Our debt to capital ratio (total capital defined as debt plus equity) at December 31, 2019, was 21.9 percent, compared to 23.1 percent at December 31, 2018. The decrease was primarily due to a decline in outstanding commercial paper. At December 31, 2019, we had \$1.5 billion in cash and marketable securities on hand and access to our \$3.5 billion credit facilities, if necessary, to meet currently anticipated investment and funding needs.

On April 29, 2019, we announced that we were conducting a formal internal review of our emissions certification process and compliance with emission standards for our pick-up truck applications, following conversations with the U.S. Environmental Protection Agency and the California Air Resources Board regarding certification of our engines in the model year 2019 RAM 2500 and 3500 trucks. We voluntarily disclosed our formal internal review to the regulators and to other government agencies, the Department of Justice and the SEC. We are also fully cooperating with the government agencies' information requests and inquiries. Due to the continuing nature of our formal review, our ongoing cooperation with the regulators and other government agencies, and the presence of many unknown facts and circumstances, we cannot predict the final outcome of this review and these regulatory and agency processes, and we cannot provide assurance that the matter will not have a materially adverse impact on our results of operations and cash flows. See Note 15, "COMMITMENTS AND CONTINGENCIES," to our *Consolidated Financial Statements* for additional information.

In July 2019, our Board of Directors (the Board) authorized an increase to our quarterly dividend of 15 percent from \$1.14 per share to \$1.311 per share.

On August 21, 2019, we entered into an amended and restated 364-day credit agreement that allows us to borrow up to \$1.5 billion of unsecured funds at any time through August 18, 2020. This credit agreement amends and restates the prior \$1.5 billion 364-day credit facility that matured on August 21, 2019. See Note 11, "DEBT," to the *Consolidated Financial Statements* for additional information.

On September 9, 2019, we acquired an 81 percent interest in Hydrogenics Corporation for total consideration of \$235 million. The Hydrogen Company, a wholly-owned subsidiary of L'Air Liquide, S.A., will maintain a 19 percent noncontrolling interest in Hydrogenics Corporation. See Note 21, "ACQUISITIONS," to our *Consolidated Financial Statements* for additional information.

In November 2019, we announced our intentions to reduce our global workforce in response to the continued deterioration in our global markets in the second half of 2019, as well as expected reductions in orders in most U.S. and international markets in 2020. In the fourth quarter of 2019, we began executing restructuring actions, primarily in the form of voluntary and involuntary employee separation programs. We incurred a charge of \$119 million (\$90 million after-tax) in the fourth quarter of 2019 for these actions which impacted approximately 2,300 employees. See Note 4, "RESTRUCTURING ACTIONS," to the *Consolidated Financial Statements*, for additional information.

In December 2019, the Board authorized the acquisition of up to \$2.0 billion of additional common stock upon completion of the 2018 repurchase plan. In 2019, we repurchased \$1,271 million or 8.1 million shares of common stock under the 2018 authorization. See Note 16, "CUMMINS INC. SHAREHOLDERS' EQUITY" to the *Consolidated Financial Statements* for additional information.

In 2019, the investment gain on our U.S. pension trust was 17.6 percent while our U.K. pension trust gain was 10.9 percent. Our global pension plans, including our unfunded and non-qualified plans, were 113 percent funded at December 31, 2019. Our U.S. defined benefit plan, which represents approximately 53 percent of the worldwide pension obligation, was 133 percent funded, and our U.K. defined benefit plan was 109 percent funded. We expect to contribute approximately \$100 million in cash to our global pension plans in 2020. In addition, we expect our 2020 net periodic pension cost to approximate \$100 million. See application of critical accounting estimates within MD&A and Note 13, "PENSIONS AND OTHER POSTRETIREMENT BENEFITS," to the *Consolidated Financial Statements*, for additional information concerning our pension and other postretirement benefit plans.

RESULTS OF OPERATIONS

In millions (except per share amounts)	Years ended December 31,			Favorable/(Unfavorable)			
	2019	2018	2017	2019 vs. 2018		2018 vs. 2017	
	Amount	Amount	Amount	Amount	Percent	Amount	Percent
NET SALES	\$ 23,571	\$ 23,771	\$ 20,428	\$ (200)	(1)%	\$ 3,343	16 %
Cost of sales	17,591	18,034	15,328	443	2 %	(2,706)	(18)%
GROSS MARGIN	5,980	5,737	5,100	243	4 %	637	12 %
OPERATING EXPENSES AND INCOME							
Selling, general and administrative expenses	2,454	2,437	2,429	(17)	(1)%	(8)	— %
Research, development and engineering expenses	1,001	902	754	(99)	(11)%	(148)	(20)%
Equity, royalty and interest income from investees	330	394	357	(64)	(16)%	37	10 %
Restructuring actions	119	—	—	(119)	NM	—	— %
Other operating (expense) income, net	(36)	(6)	60	(30)	NM	(66)	NM
OPERATING INCOME	2,700	2,786	2,334	(86)	(3)%	452	19 %
Interest income	46	35	18	11	31 %	17	94 %
Interest expense	109	114	81	5	4 %	(33)	(41)%
Other income, net	197	46	94	151	NM	(48)	(51)%
INCOME BEFORE INCOME TAXES	2,834	2,753	2,365	81	3 %	388	16 %
Income tax expense	566	566	1,371	—	— %	805	59 %
CONSOLIDATED NET INCOME	2,268	2,187	994	81	4 %	1,193	NM
Less: Net income (loss) attributable to noncontrolling interests	8	46	(5)	38	83 %	(51)	NM
NET INCOME ATTRIBUTABLE TO CUMMINS INC.	\$ 2,260	\$ 2,141	\$ 999	\$ 119	6 %	\$ 1,142	NM
Diluted earnings per common share attributable to Cummins Inc.	\$ 14.48	\$ 13.15	\$ 5.97	\$ 1.33	10 %	\$ 7.18	NM

"NM" - not meaningful information

Percent of sales	2019	2018	2017	Favorable/(Unfavorable) Percentage Points	
				2019 vs. 2018	2018 vs. 2017
Gross margin	25.4%	24.1%	25.0%	1.3	(0.9)
Selling, general and administrative expenses	10.4%	10.3%	11.9%	(0.1)	1.6
Research, development and engineering expenses	4.2%	3.8%	3.7%	(0.4)	(0.1)

2019 vs. 2018

Net Sales

Net sales decreased \$200 million, primarily driven by the following:

- Engine segment sales decreased 5 percent, primarily due to lower demand across most markets, especially in global construction markets, LCV and bus markets, as well as the Brazilian medium-duty truck market and the North American heavy-duty truck market.
- Unfavorable foreign currency impacts of 1 percent, mainly the Chinese renminbi, Euro, British pound, Australian dollar, Brazilian real and Indian rupee.
- Components segment sales decreased 4 percent, primarily due to lower demand in Western Europe and India.
- Power Systems segment sales decreased 4 percent, due to lower demand in all product lines, especially industrial, as demand declined in oil and gas markets in North America and the global mining market.

These decreases were partially offset by increased sales of 3 percent in the Distribution segment, primarily due to higher demand in most geographic regions, especially in North America, driven by increased demand in power generation equipment for data center customers and improved aftermarket demand in China.

Sales to international markets (excluding the U.S. and Canada), based on location of customers, were 38 percent of total net sales in 2019, compared with 41 percent of total net sales in 2018. A more detailed discussion of sales by segment is presented in the "OPERATING SEGMENT RESULTS" section.

Cost of Sales

The types of expenses included in cost of sales are the following: parts and material consumption, including direct and indirect materials; salaries, wages and benefits; depreciation on production equipment and facilities and amortization of technology intangibles; estimated costs of warranty programs and campaigns; production utilities; production-related purchasing; warehousing, including receiving and inspection; engineering support costs; repairs and maintenance; production and warehousing facility property insurance; rent for production facilities and other production overhead.

Gross Margin

Gross margin increased \$243 million and 1.3 points as a percentage of sales. The increase in gross margin was mainly due to lower warranty costs (due to the absence of the \$368 million engine system charge recorded in 2018), favorable pricing and lower material costs, partially offset by lower volumes, unfavorable impacts from tariffs and unfavorable foreign currency impacts (primarily Australian dollar, Euro, Canadian dollar and Brazilian real). See Note 12, "PRODUCT WARRANTY LIABILITY," to our *Consolidated Financial Statements* for additional information on the Engine System Campaign. The provision for warranties issued, excluding campaigns, as a percentage of sales, was 1.9 percent in 2019 and 1.9 percent in 2018. A more detailed discussion of margin by segment is presented in the "OPERATING SEGMENT RESULTS" section.

Selling, General and Administrative Expenses

Selling, general and administrative expenses increased \$17 million, primarily due to higher compensation and consulting expenses, partially offset by lower variable compensation expenses. Overall, selling, general and administrative expenses, as a percentage of sales, increased to 10.4 percent in 2019 from 10.3 percent in 2018.

Research, Development and Engineering Expenses

Research, development and engineering expenses increased \$99 million, primarily due to higher compensation expense driven by headcount growth, including increased staffing for the New Power segment, decreased expense recovery and higher consulting expenses, partially offset by lower variable compensation expenses. Overall, research, development and engineering expenses, as a percentage of sales, increased to 4.2 percent in 2019 from 3.8 percent in 2018. Research activities continue to focus on development of new products to meet future emission standards around the world, improvements in fuel economy performance of diesel and natural gas-powered engines and related components as well as development activities around fully electric, hybrid and hydrogen powertrain solutions.

Equity, Royalty and Interest Income From Investees

Equity, royalty and interest income from investees decreased \$64 million, mainly due to lower earnings in China and India, especially at Tata Cummins Ltd., Beijing Foton Cummins Engine Co., Ltd., Chongqing Cummins Engine Co., Ltd. and Dongfeng Cummins Emission Solutions Co., Ltd. and an impairment of a joint venture in our Power Systems segment.

Restructuring Actions

In November 2019, we announced our intentions to reduce our global workforce in response to the continued deterioration in our global markets in the second half of 2019, as well as expected reductions in orders in most U.S. and international markets in 2020. In the fourth quarter of 2019, we began executing restructuring actions, primarily in the form of voluntary and involuntary employee separation programs. We incurred a charge of \$119 million (\$90 million after-tax) in the fourth quarter of 2019 for these actions which impacted approximately 2,300 employees. The voluntary actions were completed by December 31, 2019 and the majority of the involuntary actions were executed prior to January 31, 2020, with expected completion by March 31, 2020. Due to the inherent uncertainty involved, actual amounts paid for such activities may differ from amounts initially recorded and we may need to revise previous estimates.

We expect to realize annualized savings from the restructuring and other actions of \$250 million to \$300 million. Approximately 55 percent of the savings from our restructuring actions will be realized in cost of sales, 30 percent in selling, general and administrative expenses and 15 percent in research, development and engineering expenses. We expect the severance to be paid in cash which will be funded from operations. See Note 4, "RESTRUCTURING ACTIONS," to the *Consolidated Financial Statements*, for additional information.

Other Operating (Expense) Income, Net

Other operating (expense) income, net was as follows:

In millions	Years ended December 31,	
	2019	2018
Loss on write off of assets ⁽¹⁾	\$ (22)	\$ (19)
Amortization of intangible assets	(20)	(20)
Gain (loss) on sale of assets, net	(2)	2
Royalty income, net	14	38
Other, net	(6)	(7)
Other operating (expense) income, net	<u>\$ (36)</u>	<u>\$ (6)</u>

⁽¹⁾ Includes \$19 million of the total \$33 million charge related to ending production of the 5 liter ISV engine for the U.S. pick-up truck market during 2019.

Interest Income

Interest income increased \$11 million, primarily due to higher average balances and rates of return on cash and marketable securities.

Interest Expense

Interest expense decreased \$5 million, primarily due to lower average short-term borrowings.

Other Income, Net

Other income, net was as follows:

In millions	Years ended December 31,	
	2019	2018
Non-service pension and other postretirement benefits credit	\$ 71	\$ 60
Gain (loss) on corporate owned life insurance	61	(20)
Foreign currency gain (loss), net ⁽¹⁾	28	(34)
Gain on marketable securities, net	11	—
Rental income	8	8
Bank charges	(11)	(11)
Other, net	29	43
Total other income, net	<u>\$ 197</u>	<u>\$ 46</u>

⁽¹⁾ Includes \$35 million in gains from unwinding derivative instruments not designated as hedges as a result of foreign dividends paid during the third quarter of 2019.

Income Tax Expense

Our effective tax rate for 2019 was 20.0 percent compared to 20.6 percent for 2018.

The year ended December 31, 2019, contained \$34 million of favorable net discrete tax items, primarily due to withholding taxes and provision to return adjustments.

The year ended December 31, 2018, contained \$14 million of favorable net discrete tax items, primarily due to \$26 million of other favorable discrete tax items, partially offset by \$12 million of unfavorable discrete tax items related to the 2017 Tax Legislation.

The change in the effective tax rate for the year ended December 31, 2019, versus 2018, was primarily due to increased favorable net discrete tax items.

The effective tax rate for 2020 is expected to be 22.0 percent, excluding any discrete items that may arise.

Noncontrolling Interests

Noncontrolling interests eliminate the income or loss attributable to non-Cummins ownership interests in our consolidated entities. Noncontrolling interests in income of consolidated subsidiaries decreased \$38 million, mostly due to lower earnings at

Eaton Cummins joint venture and Cummins India Limited, partially offset by the absence of a \$24 million unfavorable Tax Legislation withholding tax adjustment in 2018.

Net Income Attributable to Cummins Inc. and Diluted Earnings Per Common Share Attributable to Cummins Inc.

Net income and diluted earnings per share attributable to Cummins Inc. increased \$119 million and \$1.33 per share, respectively, primarily due to increased gross margin, lower variable compensation expenses and gains on corporate owned life insurance, partially offset by restructuring actions, higher research, development and engineering expenses and lower equity, royalty and interest income from investees. Diluted earnings per common share for 2019 benefited \$0.25 per share from fewer weighted-average shares outstanding, primarily due to the stock repurchase program.

2018 vs. 2017

For prior year results of operations comparisons to 2017 see the [Results of Operations section of our 2018 Form 10-K](#).

Comprehensive Income - Foreign Currency Translation Adjustment

The foreign currency translation adjustment was a net loss of \$152 million and \$356 million for the years ended December 31, 2019 and 2018, respectively. The details were as follows:

In millions	Years ended December 31,			
	2019		2018	
	Translation adjustment	Primary currency driver vs. U.S. dollar	Translation adjustment	Primary currency driver vs. U.S. dollar
Wholly-owned subsidiaries	\$ (126)	British pound, Chinese renminbi, Indian rupee, Brazilian real	\$ (266)	British pound, Chinese renminbi, Indian rupee, Brazilian real
Equity method investments	(21)	Chinese renminbi, British pound	(60)	Chinese renminbi, Indian rupee, British pound
Consolidated subsidiaries with a noncontrolling interest	(5)	Indian rupee	(30)	Indian rupee
Total	<u>\$ (152)</u>		<u>\$ (356)</u>	

2018 vs. 2017

For prior year foreign currency translation adjustment comparisons to 2017 see the [Results of Operations section of our 2018 Form 10-K](#).

OPERATING SEGMENT RESULTS

Our reportable operating segments consist of the Engine, Distribution, Components, Power Systems and New Power segments. This reporting structure is organized according to the products and markets each segment serves. We use segment EBITDA as the primary basis for the Chief Operating Decision Maker to evaluate the performance of each of our reportable operating segments. We believe EBITDA is a useful measure of our operating performance as it assists investors and debt holders in comparing our performance on a consistent basis without regard to financing methods, capital structure, income taxes or depreciation and amortization methods, which can vary significantly depending upon many factors. Segment amounts exclude certain expenses not specifically identifiable to segments. See Note 22, "OPERATING SEGMENTS," to the *Consolidated Financial Statements* for additional information.

In November 2019, we renamed our Electrified Power segment as "New Power" in order to better represent the incorporation of fuel cell and hydrogen production technologies resulting from our acquisition of Hydrogenics Corporation. The New Power segment includes our electrified power, fuel cell and hydrogen production technologies.

Following is a discussion of results for each of our operating segments.

For all prior year segment results comparisons to 2017 see the [Results of Operations section of our 2018 Form 10-K](#).

Engine Segment Results

Financial data for the Engine segment was as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
				2019 vs. 2018		2018 vs. 2017	
	2019	2018	2017	Amount	Percent	Amount	Percent
External sales	\$ 7,570	\$ 8,002	\$ 6,661	\$ (432)	(5)%	\$ 1,341	20 %
Intersegment sales	2,486	2,564	2,292	(78)	(3)%	272	12 %
Total sales	10,056	10,566	8,953	(510)	(5)%	1,613	18 %
Research, development and engineering expenses	337	311	280	(26)	(8)%	(31)	(11)%
Equity, royalty and interest income from investees	200	238	219	(38)	(16)%	19	9 %
Interest income	15	11	6	4	36 %	5	83 %
Segment EBITDA (excluding restructuring actions)	1,472	1,446	1,143	26	2 %	303	27 %
Restructuring actions	18	—	—	(18)	NM	—	— %
Segment EBITDA	1,454	1,446	1,143	8	1 %	303	27 %
				Percentage Points		Percentage Points	
Segment EBITDA as a percentage of total sales	14.5%	13.7%	12.8%		0.8		0.9

"NM" - not meaningful information

Sales for our Engine segment by market were as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
				2019 vs. 2018		2018 vs. 2017	
	2019	2018	2017	Amount	Percent	Amount	Percent
Heavy-duty truck	\$ 3,555	\$ 3,652	\$ 2,840	\$ (97)	(3)%	\$ 812	29%
Medium-duty truck and bus	2,707	2,855	2,513	(148)	(5)%	342	14%
Light-duty automotive	1,804	1,819	1,727	(15)	(1)%	92	5%
Total on-highway	8,066	8,326	7,080	(260)	(3)%	1,246	18%
Off-highway	1,990	2,240	1,873	(250)	(11)%	367	20%
Total sales	\$ 10,056	\$ 10,566	\$ 8,953	\$ (510)	(5)%	\$ 1,613	18%

Unit shipments by engine classification (including unit shipments to Power Systems and off-highway engine units included in their respective classification) were as follows:

	Years ended December 31,			Favorable/(Unfavorable)			
				2019 vs. 2018		2018 vs. 2017	
	2019	2018	2017	Amount	Percent	Amount	Percent
Heavy-duty	122,600	128,500	95,900	(5,900)	(5)%	32,600	34%
Medium-duty	283,400	311,100	268,100	(27,700)	(9)%	43,000	16%
Light-duty	245,900	273,400	257,500	(27,500)	(10)%	15,900	6%
Total unit shipments	651,900	713,000	621,500	(61,100)	(9)%	91,500	15%

2019 vs. 2018

Sales

Engine segment sales decreased \$510 million. The following were the primary drivers by market:

- Off-highway sales decreased \$250 million, primarily due to lower demand in construction markets, especially in China, Asia Pacific and India.
- Medium-duty truck and bus sales decreased \$148 million, principally due to decreased global bus sales and lower medium-duty truck demand in Brazil, partially offset by increased medium-duty truck sales in North America.
- Heavy-duty truck engine sales decreased \$97 million, mainly due to lower demand in the North American heavy-duty truck market with decreased shipments of 6 percent, partially offset by increased sales in China.
- Unfavorable foreign currency fluctuations, primarily in the Chinese renminbi, Brazilian real and Euro.
- Light-duty automotive sales decreased \$15 million as lower LCV sales, mainly in China, were mostly offset by higher pick-up truck sales in North America.

Total on-highway-related sales for 2019 were 80 percent of total engine segment sales, compared to 79 percent in 2018.

Segment EBITDA

Engine segment EBITDA increased \$8 million, primarily due to higher gross margin, partially offset by decreased equity, royalty and interest income from investees, a \$33 million charge related to ending production of the 5 liter ISV engine for the U.S. pick-up truck market, increased selling, general and administrative expenses, higher research, development and engineering expenses and restructuring actions. The increase in gross margin and gross margin as a percentage of sales was primarily due to favorable pricing and the absence of a \$184 million engine system campaign charge recorded in 2018, partially offset by lower volumes. See Note 12, "PRODUCT WARRANTY LIABILITY," to the *Consolidated Financial Statements* for additional information on the Engine System Campaign. The increase in selling, general and administrative expenses was mainly due to higher consulting expenses and increased compensation costs, partially offset by lower variable compensation expenses. The increase in research, development and engineering expenses was principally due to lower expense recovery and higher consulting expenses, partially offset by lower variable compensation expenses. The decrease in equity, royalty and interest income from investees was primarily due to lower earnings at Tata Cummins Ltd. and Beijing Foton Cummins Engine Co., Ltd.

Distribution Segment Results

Financial data for the Distribution segment was as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
				2019 vs. 2018		2018 vs. 2017	
	2019	2018	2017	Amount	Percent	Amount	Percent
External sales	\$ 8,040	\$ 7,807	\$ 7,029	\$ 233	3 %	\$ 778	11 %
Intersegment sales	31	21	29	10	48 %	(8)	(28)%
Total sales	8,071	7,828	7,058	243	3 %	770	11 %
Research, development and engineering expenses	28	20	19	(8)	(40)%	(1)	(5)%
Equity, royalty and interest income from investees	52	46	44	6	13 %	2	5 %
Interest income	15	13	6	2	15 %	7	NM
Segment EBITDA (excluding restructuring actions)	693	563	500	130	23 %	63	13 %
Restructuring actions	37	—	—	(37)	NM	—	— %
Segment EBITDA	656	563	500	93	17 %	63	13 %
				Percentage Points		Percentage Points	
Segment EBITDA as a percentage of total sales	8.1%	7.2%	7.1%	0.9		0.1	

"NM" - not meaningful information

Sales for our Distribution segment by region were as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
				2019 vs. 2018		2018 vs. 2017	
	2019	2018	2017	Amount	Percent	Amount	Percent
North America	\$ 5,533	\$ 5,341	\$ 4,733	\$ 192	4 %	\$ 608	13 %
Asia Pacific	878	856	767	22	3 %	89	12 %
Europe	531	538	440	(7)	(1)%	98	22 %
China	358	320	267	38	12 %	53	20 %
Africa and Middle East	235	241	327	(6)	(2)%	(86)	(26)%
India	201	194	190	7	4 %	4	2 %
Latin America	176	169	167	7	4 %	2	1 %
Russia	159	169	167	(10)	(6)%	2	1 %
Total sales	\$ 8,071	\$ 7,828	\$ 7,058	\$ 243	3 %	\$ 770	11 %

Sales for our Distribution segment by product line were as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
				2019 vs. 2018		2018 vs. 2017	
	2019	2018	2017	Amount	Percent	Amount	Percent
Parts	\$ 3,290	\$ 3,234	\$ 3,040	\$ 56	2 %	\$ 194	6%
Power generation	1,784	1,486	1,337	298	20 %	149	11%
Engines	1,518	1,634	1,369	(116)	(7)%	265	19%
Service	1,479	1,474	1,312	5	— %	162	12%
Total sales	\$ 8,071	\$ 7,828	\$ 7,058	\$ 243	3 %	\$ 770	11%

2019 vs. 2018

Sales

Distribution segment sales increased \$243 million. The following were the primary drivers by region:

- North American sales increased \$192 million, representing 79 percent of the total change in Distribution segment sales, largely due to increased demand across the power generation product line mostly for improved data center orders, partially offset by decreased engine sales in oil and gas markets.
- Chinese sales increased \$38 million, primarily due to higher on-highway engine volumes and improved aftermarket mining demand.

These increases were partially offset by unfavorable foreign currency fluctuations (mainly in the Australian dollar, Euro, Chinese renminbi, Canadian dollar and South African rand).

Segment EBITDA

Distribution segment EBITDA increased \$93 million, primarily due to higher gross margin and lower selling, general and administrative expenses, partially offset by unfavorable foreign currency fluctuations (primarily in the Australian dollar and South African rand) and restructuring actions. The increase in gross margin was principally due to higher volumes, improved pricing, lower variable compensation expenses and favorable mix, partially offset by increased compensation expenses and unfavorable foreign currency fluctuations (primarily in the Australian dollar, South African rand and Canadian dollar). The decrease in selling, general and administrative expenses was mainly due to lower variable compensation expenses, partially offset by increased compensation and consulting expenses.

Components Segment Results

Financial data for the Components segment was as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
				2019 vs. 2018		2018 vs. 2017	
	2019	2018	2017	Amount	Percent	Amount	Percent
External sales	\$ 5,253	\$ 5,331	\$ 4,363	\$ (78)	(1)%	\$ 968	22 %
Intersegment sales	1,661	1,835	1,526	(174)	(9)%	309	20 %
Total sales	6,914	7,166	5,889	(252)	(4)%	1,277	22 %
Research, development and engineering expenses	300	272	241	(28)	(10)%	(31)	(13)%
Equity, royalty and interest income from investees	40	54	40	(14)	(26)%	14	35 %
Interest income	8	5	3	3	60 %	2	67 %
Segment EBITDA (excluding restructuring actions)	1,117	1,030	917	87	8 %	113	12 %
Restructuring actions	20	—	—	(20)	NM	—	— %
Segment EBITDA	1,097	1,030	917	67	7 %	113	12 %
					Percentage Points		Percentage Points
Segment EBITDA as a percentage of total sales	15.9%	14.4%	15.6%		1.5		(1.2)

"NM" - not meaningful information

Sales for our Components segment by business were as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
				2019 vs. 2018		2018 vs. 2017	
	2019	2018	2017	Amount	Percent	Amount	Percent
Emission solutions	\$ 3,122	\$ 3,177	\$ 2,675	\$ (55)	(2)%	\$ 502	19%
Filtration	1,281	1,265	1,153	16	1 %	112	10%
Turbo technologies	1,218	1,343	1,179	(125)	(9)%	164	14%
Electronics and fuel systems	759	838	718	(79)	(9)%	120	17%
Automated transmissions	534	543	164	(9)	(2)%	379	NM
Total sales	\$ 6,914	\$ 7,166	\$ 5,889	\$ (252)	(4)%	\$ 1,277	22%

"NM" - not meaningful information

2019 vs. 2018

Sales

Components segment sales decreased \$252 million. The following were the primary drivers by business:

- Turbo technologies sales decreased \$125 million, principally due to lower demand in Western Europe and North America.
- Unfavorable currency fluctuations mainly in the Chinese renminbi, Euro and British pound.
- Electronics and fuel systems sales decreased \$79 million, primarily due to lower demand in North America and India.
- Emission solutions sales decreased \$55 million, largely due to weaker market demand in Asia Pacific, Western Europe, India and China, mostly offset by stronger demand in North America.

Segment EBITDA

Components segment EBITDA increased \$67 million, as higher gross margin was partially offset by increased research, development and engineering expenses, restructuring actions, unfavorable foreign currency fluctuations (primarily in the Chinese renminbi, Brazilian real and Mexican peso) and lower equity, royalty and interest income from investees. The increase in gross margin was primarily due to the absence of a \$184 million engine system campaign charge recorded in 2018 and lower material costs, partially offset by lower volumes, reduced pricing and unfavorable foreign currency fluctuations (primarily in the Chinese renminbi, Brazilian real, Australian dollar and Euro). See Note 12, "PRODUCT WARRANTY LIABILITY," to the *Consolidated Financial Statements* for additional information on the Engine System Campaign. The increase in research, development and engineering expenses was primarily due to lower expense recovery, higher compensation expenses and additional spending in the automated transmission business, partially offset by lower variable compensation expenses. The decrease in equity, royalty and interest income from investees was mainly due to lower earnings at Dongfeng Cummins Emission Solutions Co., Ltd. and Shanghai Fleetguard Filter Co.

Power Systems Segment Results

Financial data for the Power Systems segment was as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2019	2018	2017	2019 vs. 2018		2018 vs. 2017	
	Amount	Amount	Amount	Amount	Percent	Amount	Percent
External sales	\$ 2,670	\$ 2,625	\$ 2,375	\$ 45	2 %	\$ 250	11 %
Intersegment sales	1,790	2,001	1,683	(211)	(11)%	318	19 %
Total sales	4,460	4,626	4,058	(166)	(4)%	568	14 %
Research, development and engineering expenses	230	230	214	—	— %	(16)	(7)%
Equity, royalty and interest income from investees	38	56	54	(18)	(32)%	2	4 %
Interest income	8	6	3	2	33 %	3	100 %
Segment EBITDA (excluding restructuring actions)	524	614	411	(90)	(15)%	203	49 %
Restructuring actions	12	—	—	(12)	NM	—	— %
Segment EBITDA	512	614	411	(102)	(17)%	203	49 %
				Percentage Points		Percentage Points	
Segment EBITDA as a percentage of total sales	11.5%	13.3%	10.1%	(1.8)		3.2	

"NM" - not meaningful information

Sales for our Power Systems segment by product line were as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2019	2018	2017	2019 vs. 2018		2018 vs. 2017	
	Amount	Amount	Amount	Amount	Percent	Amount	Percent
Power generation	\$ 2,518	\$ 2,586	\$ 2,305	\$ (68)	(3)%	\$ 281	12%
Industrial	1,576	1,663	1,399	(87)	(5)%	264	19%
Generator technologies	366	377	354	(11)	(3)%	23	6%
Total sales	\$ 4,460	\$ 4,626	\$ 4,058	\$ (166)	(4)%	\$ 568	14%

2019 vs. 2018

Sales

Power Systems segment sales decreased \$166 million across all lines of business. The following were the primary drivers:

- Industrial sales decreased \$87 million, primarily due to lower demand in oil and gas markets in North America and weaker demand in global mining markets, especially in Europe and Russia, partially offset by stronger demand in oil and gas markets in China.

- Unfavorable foreign currency fluctuations mainly in the British pound, Indian rupee and Chinese renminbi.
- Power generation sales decreased \$68 million, principally due to lower demand in Western Europe, Middle East and Latin America, partially offset by higher demand in North America and China from data center customers.

Segment EBITDA

Power Systems segment EBITDA decreased \$102 million, principally due to lower gross margin, decreased equity, royalty and interest income from investees and restructuring actions, partially offset by favorable foreign currency fluctuations (primarily in the British pound, Indian rupee and Brazilian real), lower selling, general and administrative expenses and a gain on sale of assets. The decrease in gross margin was mainly due to decreased volumes and unfavorable mix, partially offset by improved pricing, decreased compensation expenses and favorable foreign currency fluctuations (primarily in the British pound). The decrease in selling, general and administrative expenses was primarily due to lower variable compensation expenses, partially offset by higher consulting expenses. The decrease in equity, royalty and interest income from investees was largely due to impairment of a joint venture and lower earnings at Chongqing Cummins Engine Co., Ltd.

New Power Segment Results

The New Power segment designs, manufactures, sells and supports electrified power systems ranging from fully electric to hybrid along with innovative components and subsystems, including battery, fuel cell and hydrogen production technologies. The New Power segment is currently in the development phase with a primary focus on research and development activities for all of our power systems, components and subsystems. Financial data for the New Power segment was as follows:

In millions	Years ended December 31,		Favorable/(Unfavorable)	
	2019	2018	2019 vs. 2018	
			Amount	Percent
Total external sales	\$ 38	\$ 7	\$ 31	NM
Research, development and engineering expenses	106	69	(37)	(54)%
Segment EBITDA (excluding restructuring actions)	(148)	(90)	(58)	(64)%
Restructuring actions	1	—	(1)	NM
Segment EBITDA	(149)	(90)	(59)	(66)%

"NM" - not meaningful information

Reconciliation of Segment EBITDA to Net Income Attributable to Cummins Inc.

The table below reconciles the segment information to the corresponding amounts in the *Consolidated Statements of Net Income*.

In millions	Years ended December 31,		
	2019	2018	2017
TOTAL SEGMENT EBITDA	\$ 3,570	\$ 3,563	\$ 2,971
Intersegment elimination ⁽¹⁾	42	(87)	55
TOTAL EBITDA	3,612	3,476	3,026
Less:			
Interest expense	109	114	81
Depreciation and amortization ⁽²⁾	669	609	580
INCOME BEFORE INCOME TAXES	2,834	2,753	2,365
Less: Income tax expense	566	566	1,371
CONSOLIDATED NET INCOME	2,268	2,187	994
Less: Net income (loss) attributable to noncontrolling interests	8	46	(5)
NET INCOME ATTRIBUTABLE TO CUMMINS INC.	\$ 2,260	\$ 2,141	\$ 999

⁽¹⁾ Includes intersegment sales, intersegment profit in inventory eliminations and unallocated corporate expenses. The year ended December 31, 2019, includes a \$31 million restructuring charge related to corporate functions. There were no significant unallocated corporate expenses for the years ended December 31, 2018 and 2017.

⁽²⁾ Depreciation and amortization, as shown on a segment basis, excludes the amortization of debt discount and deferred costs included in the *Consolidated Statements of Net Income* as "Interest expense." The amortization of debt discount and deferred costs was \$3 million, \$2 million and \$3 million for the years ended December 31, 2019, 2018 and 2017, respectively.

2020 OUTLOOK

Our outlook reflects the following positive trends and challenges to our business that could impact our revenue and earnings potential in 2020.

Positive Trends

- We expect to realize annualized savings from restructuring and other actions of approximately \$250 million to \$300 million.

Challenges

- We may close or restructure additional manufacturing and distribution facilities as we evaluate the appropriate size and structure of our manufacturing and distribution capacity, which could result in additional charges.
- Industry production of heavy-duty and medium-duty trucks in North America is expected to decline.
- North American pick-up truck demand should decline.
- Power generation markets are expected to decline.
- Demand in North American, Chinese and European construction markets is expected to weaken.
- Weak economic conditions in India may continue to negatively impact demand across our businesses.
- Demand in Chinese truck markets is expected to decline.
- Lower commodity prices and capital expenditures by mining companies could reduce demand for mining engines.
- Demand in oil and gas markets in North America should remain weak.
- Uncertainty in the U.K. surrounding its ability to negotiate trade agreements as a sovereign country could have material negative impacts on our European operations in the long-term.

LIQUIDITY AND CAPITAL RESOURCES

Key Working Capital and Balance Sheet Data

We fund our working capital with cash from operations and short-term borrowings, including commercial paper, when necessary. Various assets and liabilities, including short-term debt, can fluctuate significantly from month to month depending on short-term liquidity needs. As a result, working capital is a prime focus of management attention. Working capital and balance sheet measures are provided in the following table:

Dollars in millions	December 31, 2019	December 31, 2018
Working capital ⁽¹⁾	\$ 3,127	\$ 3,434
Current ratio	1.50	1.54
Accounts and notes receivable, net	\$ 3,670	\$ 3,866
Days' sales in receivables	58	57
Inventories	\$ 3,486	\$ 3,759
Inventory turnover	4.7	4.9
Accounts payable (principally trade)	\$ 2,534	\$ 2,822
Days' payable outstanding	58	56
Total debt	\$ 2,367	\$ 2,476
Total debt as a percent of total capital	21.9%	23.1%

⁽¹⁾ Working capital includes cash and cash equivalents.

Cash Flows

Cash and cash equivalents were impacted as follows:

In millions	Years ended December 31,			Change	
	2019	2018	2017	2019 vs. 2018	2018 vs. 2017
Net cash provided by operating activities	\$ 3,181	\$ 2,378	\$ 2,277	\$ 803	\$ 101
Net cash used in investing activities	(1,150)	(974)	(1,052)	(176)	78
Net cash used in financing activities	(2,095)	(1,400)	(1,074)	(695)	(326)
Effect of exchange rate changes on cash and cash equivalents	(110)	(70)	98	(40)	(168)
Net (decrease) increase in cash and cash equivalents	\$ (174)	\$ (66)	\$ 249	\$ (108)	\$ (315)

2019 vs. 2018

Net cash provided by operating activities increased \$803 million, primarily due to lower working capital requirements of \$516 million, increased other liabilities of \$165 million, higher deferred tax expense of \$93 million and higher consolidated net income of \$81 million, partially offset by non-cash gains on corporate owned life insurance of \$87 million and higher pension contributions of \$83 million. During 2019, lower working capital requirements resulted in a cash outflow of \$31 million compared to a cash outflow of \$547 million in 2018, mainly due to lower inventory and lower accounts receivable levels, partially offset by lower accounts payable levels in 2019 as we adjusted for slowing market demand.

Net cash used in investing activities increased \$176 million, primarily due to higher acquisitions of \$167 million and higher net investments in marketable securities of \$69 million, partially offset by higher cash flows from derivatives not designated as hedges of \$58 million.

Net cash used in financing activities increased \$695 million, principally due to the reduction of commercial paper borrowings of \$602 million and higher common stock repurchases of \$131 million, partially offset by increased borrowings under short-term credit agreements of \$52 million.

The effect of exchange rate changes on cash and cash equivalents increased \$40 million, primarily due to unfavorable fluctuations in the British pound of \$55 million, partially offset by favorable fluctuations in the Chinese renminbi and Indian rupee.

2018 vs. 2017

For prior year liquidity comparisons see the [Liquidity and Capital Resources](#) section of our 2018 Form 10-K.

Sources of Liquidity

We generate significant ongoing cash flow. Cash provided by operations is our principal source of liquidity with \$3.2 billion provided in 2019. At December 31, 2019, our sources of liquidity included:

In millions	December 31, 2019			Primary location of international balances
	Total	U.S.	International	
Cash and cash equivalents	\$ 1,129	\$ 182	\$ 947	China, Singapore, Netherlands, Mexico, Belgium, Australia
Marketable securities ⁽¹⁾	341	74	267	India
Total	\$ 1,470	\$ 256	\$ 1,214	
Available credit capacity				
Revolving credit facilities ⁽²⁾	\$ 2,840			
International and other uncommitted domestic credit facilities	\$ 204			

⁽¹⁾ The majority of marketable securities could be liquidated into cash within a few days.

⁽²⁾ The five-year credit facility for \$2.0 billion and the 364-day credit facility for \$1.5 billion, maturing August 2023 and August 2020, respectively, are maintained primarily to provide backup liquidity for our commercial paper borrowings and general corporate purposes. At December 31, 2019, we had \$660 million of commercial paper outstanding, which effectively reduced the available capacity under our revolving credit facilities to \$2.8 billion.

Cash, Cash Equivalents and Marketable Securities

A significant portion of our cash flows is generated outside the U.S. We manage our worldwide cash requirements considering available funds among the many subsidiaries through which we conduct our business and the cost effectiveness with which those funds can be accessed. As a result, we do not anticipate any local liquidity restrictions to preclude us from funding our operating needs with local resources.

Debt Facilities and Other Sources of Liquidity

On August 21, 2019, we entered into an amended and restated 364-day credit agreement that allows us to borrow up to \$1.5 billion of unsecured funds at any time through August 18, 2020. This credit agreement amends and restates the prior \$1.5 billion 364-day credit facility that matured on August 21, 2019.

We have access to committed credit facilities that total \$3.5 billion, including the new \$1.5 billion 364-day facility that expires August 19, 2020 and a \$2.0 billion five-year facility that expires on August 22, 2023. We intend to maintain credit facilities of a similar aggregate amount by renewing or replacing these facilities before expiration. These revolving credit facilities are maintained primarily to provide backup liquidity for our commercial paper borrowings and for general corporate purposes. Both credit agreements include a financial covenant requiring that the leverage ratio of net debt of the company and its subsidiaries to the consolidated total capital of the company and its subsidiaries may not exceed 0.65 to 1.0. At December 31, 2019, our leverage ratio was 0.12 to 1.0.

We can issue up to \$3.5 billion of unsecured, short-term promissory notes (commercial paper) pursuant to the Board authorized commercial paper programs. The programs facilitate the private placement of unsecured short-term debt through third-party brokers. We intend to use the net proceeds from the commercial paper borrowings for general corporate purposes. The total combined borrowing capacity under the revolving credit facilities and commercial paper programs should not exceed \$3.5 billion. See Note 11, "DEBT," to our *Consolidated Financial Statements* for additional information.

As a well-known seasoned issuer, we filed an automatic shelf registration for an undetermined amount of debt and equity securities with the SEC on February 13, 2019. Under this shelf registration we may offer, from time to time, debt securities, common stock, preferred and preference stock, depositary shares, warrants, stock purchase contracts and stock purchase units.

In July 2017, the U.K.'s Financial Conduct Authority, which regulates the London Interbank Offered Rate (LIBOR), announced that it intends to phase out LIBOR by the end of 2021. Various central bank committees and working groups continue to discuss replacement of benchmark rates, the process for amending existing LIBOR-based contracts, and the potential economic impacts of different alternatives. The Alternative Reference Rates Committee has identified the Secured Overnight Financing Rate (SOFR) as its preferred alternative rate for USD LIBOR. SOFR is a measure of the cost of borrowing cash overnight, collateralized by U.S. Treasury securities, and is based on directly observable U.S. Treasury-backed repurchase transactions.

We are evaluating the potential impact of the replacement of the LIBOR benchmark interest rate including risk management, internal operational readiness and monitoring the Financial Accounting Standards Board standard-setting process to address financial reporting issues that might arise in connection with transition from LIBOR to a new benchmark rate.

Supply Chain Financing

We currently have supply chain financing programs with financial intermediaries, which provide certain vendors the option to be paid by financial intermediaries earlier than the due date on the applicable invoice. When a vendor utilizes the program and receives an early payment from a financial intermediary, they take a discount on the invoice. We then pay the financial intermediary the face amount of the invoice on the regularly scheduled due date. We do not reimburse vendors for any costs they incur for participation in the program and their participation is completely voluntary. As a result, all amounts owed to the financial intermediaries are presented as "Accounts payable" in our *Consolidated Balance Sheets*.

Uses of Cash

Stock Repurchases

In December 2019, the Board authorized the acquisition of up to \$2.0 billion of additional common stock upon completion of the 2018 repurchase plan. In October 2018, the Board authorized the acquisition of up to \$2.0 billion of additional common stock. For the year ended December 31, 2019, we made the following purchases under the 2018 stock repurchase program:

In millions, except per share amounts	Shares Purchased	Average Cost Per Share	Total Cost of Repurchases	Remaining Authorized Capacity ⁽¹⁾
March 31	0.7	\$ 137.80	\$ 100	\$ 1,806
June 30	—	—	—	1,806
September 29	4.6	152.57	706	1,100
December 31	2.8	167.82	465	635
Total	8.1	156.46	\$ 1,271	

⁽¹⁾ The remaining authorized capacity under these plans was calculated based on the cost to purchase the shares but excludes commission expenses in accordance with the authorized plan.

We intend to repurchase outstanding shares from time to time during 2020 to enhance shareholder value and to offset the dilutive impact of employee stock-based compensation plans.

Dividends

Total dividends paid to common shareholders in 2019, 2018 and 2017 were \$761 million, \$718 million and \$701 million, respectively. Declaration and payment of dividends in the future depends upon our income and liquidity position, among other factors, and is subject to declaration by the Board, who meet quarterly to consider our dividend payment. We expect to fund dividend payments with cash from operations.

- In July 2019, the Board authorized an increase to our quarterly dividend of 15 percent from \$1.14 per share to \$1.311 per share.
- In July 2018, the Board authorized an increase to our quarterly dividend of 5.6 percent from \$1.08 per share to \$1.14 per share.
- In July 2017, the Board authorized an increase to our quarterly dividend of 5.4 percent from \$1.025 per share to \$1.08 per share.

Cash dividends per share paid to common shareholders for the last three years were as follows:

	Quarterly Dividends		
	2019	2018	2017
First quarter	\$ 1.14	\$ 1.08	\$ 1.025
Second quarter	1.14	1.08	1.025
Third quarter	1.311	1.14	1.08
Fourth quarter	1.311	1.14	1.08
Total	\$ 4.90	\$ 4.44	\$ 4.21

Acquisition

On September 9, 2019, we acquired an 81 percent interest in Hydrogenics Corporation for total consideration of \$235 million. The Hydrogen Company, a wholly-owned subsidiary of L'Air Liquide, S.A., will maintain a 19 percent noncontrolling interest in Hydrogenics Corporation. See Note 21, "ACQUISITIONS," to the *Consolidated Financial Statements* for additional information.

Restructuring Actions

In November 2019, we announced our intentions to reduce our global workforce in response to the continued deterioration in our global markets in the second half of 2019, as well as expected reductions in orders in most U.S. and international markets in 2020. In the fourth quarter of 2019, we began executing restructuring actions, primarily in the form of voluntary and involuntary employee separation programs. We incurred a charge of \$119 million (\$90 million after-tax) in the fourth quarter of 2019 for these actions which impacted approximately 2,300 employees. We expect to incur \$116 million in cash payments in 2020. See Note 4, "RESTRUCTURING ACTIONS," to the *Consolidated Financial Statements*, for additional information.

Capital Expenditures

Capital expenditures, including spending on internal use software, were \$775 million, \$784 million and \$587 million in 2019, 2018 and 2017, respectively. We continue to invest in new product lines and targeted capacity expansions. We plan to spend an estimated \$675 million to \$700 million in 2020 on capital expenditures as we continue with product launches and facility improvements. Approximately 50 percent of our capital expenditures are expected to be invested outside of the U.S. in 2020. In addition, we plan to spend an estimated \$70 million to \$80 million on internal use software in 2020.

Pensions

The funded status of our pension plans is dependent upon a variety of variables and assumptions including return on invested assets, market interest rates and levels of voluntary contributions to the plans. In 2019, the investment gain on our U.S. pension trust was 17.6 percent while our U.K. pension trust gain was 10.9 percent. Approximately 73 percent of our pension plan assets are held in highly liquid investments such as fixed income and equity securities. The remaining 27 percent of our plan assets are held in less liquid, but market valued investments, including real estate, private equity, venture capital, opportunistic credit and insurance contracts.

We sponsor funded and unfunded domestic and foreign defined benefit pension plans. Contributions to the U.S. and U.K. plans were as follows:

In millions	Years ended December 31,		
	2019	2018	2017
Defined benefit pension contributions	\$ 121	\$ 37	\$ 243
Defined contribution pension plans	102	104	84

We anticipate making total contributions of approximately \$100 million to our defined benefit pension plans in 2020. Expected contributions to our defined benefit pension plans in 2020 will meet or exceed the current funding requirements.

Current Maturities of Short and Long-Term Debt

We had \$660 million of commercial paper outstanding at December 31, 2019, that matures in less than one year. The maturity schedule of our existing long-term debt does not require significant cash outflows until 2023 when our 3.65% senior notes are due. Required annual long-term debt principal payments range from \$5 million to \$506 million over the next five years. See Note 11, "DEBT," to the *Consolidated Financial Statements* for additional information.

Credit Ratings

Our ratings and outlook from each of the credit rating agencies as of the date of filing are shown in the table below.

Credit Rating Agency ⁽¹⁾	Long-Term Senior Debt Rating	Short-Term Debt Rating	Outlook
Standard & Poor's Rating Services	A+	A1	Stable
Moody's Investors Service, Inc.	A2	P1	Stable

⁽¹⁾ Credit ratings are not recommendations to buy, are subject to change, and each rating should be evaluated independently of any other rating. In addition, we undertake no obligation to update disclosures concerning our credit ratings, whether as a result of new information, future events or otherwise.

Management's Assessment of Liquidity

Our financial condition and liquidity remain strong. Our solid balance sheet and credit ratings enable us to have ready access to credit and the capital markets. We assess our liquidity in terms of our ability to generate adequate cash to fund our operating, investing and financing activities. We believe our operating cash flow and liquidity provide us with the financial flexibility needed to fund working capital, common stock repurchases, acquisitions, capital expenditures, dividend payments, projected pension obligations, debt service obligations and restructuring actions. We continue to generate significant cash from operations and maintain access to our revolving credit facilities and commercial paper programs as noted above.

CONTRACTUAL OBLIGATIONS AND OTHER COMMERCIAL COMMITMENTS

A summary of our contractual obligations and other commercial commitments at December 31, 2019, are as follows:

Contractual Cash Obligations In millions	Payments Due by Period				Total
	2020	2021-2022	2023-2024	After 2024	
Long-term debt and finance lease obligations ⁽¹⁾	\$ 124	\$ 227	\$ 657	\$ 2,206	\$ 3,214
Operating leases	143	207	107	95	552
Capital expenditures	255	—	—	—	255
Purchase commitments for inventory	688	1	—	—	689
Other purchase commitments	276	19	3	12	310
Transitional tax liability	—	38	149	106	293
Other postretirement benefits	22	42	38	77	179
International and other domestic letters of credit	134	21	3	3	161
Performance and excise bonds	22	61	12	1	96
Guarantees, indemnifications and other commitments	30	4	10	9	53
Total	\$ 1,694	\$ 620	\$ 979	\$ 2,509	\$ 5,802

⁽¹⁾ Includes principal payments and expected interest payments based on the terms of the obligations.

The contractual obligations reported above exclude our unrecognized tax benefits of \$77 million as of December 31, 2019. We are not able to reasonably estimate the period in which cash outflows relating to uncertain tax contingencies could occur. See Note 5, "INCOME TAXES," to the *Consolidated Financial Statements* for additional information.

APPLICATION OF CRITICAL ACCOUNTING ESTIMATES

A summary of our significant accounting policies is included in Note 1, "SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES," of our *Consolidated Financial Statements* which discusses accounting policies that we have selected from acceptable alternatives.

Our *Consolidated Financial Statements* are prepared in accordance with generally accepted accounting principles in the U.S. (GAAP) which often requires management to make judgments, estimates and assumptions regarding uncertainties that affect the reported amounts presented and disclosed in the financial statements. Management reviews these estimates and assumptions based on historical experience, changes in business conditions and other relevant factors they believe to be reasonable under the circumstances. In any given reporting period, our actual results may differ from the estimates and assumptions used in preparing our *Consolidated Financial Statements*.

Critical accounting estimates are defined as follows: the estimate requires management to make assumptions about matters that were highly uncertain at the time the estimate was made; different estimates reasonably could have been used; or if changes in the estimate are reasonably likely to occur from period to period and the change would have a material impact on our financial condition or results of operations. Our senior management has discussed the development and selection of our accounting policies, related accounting estimates and the disclosures set forth below with the Audit Committee of the Board. We believe our critical accounting estimates include estimating liabilities for warranty programs, accounting for income taxes and pension benefits and assessing goodwill impairments.

Warranty Programs

We estimate and record a liability for base warranty programs at the time our products are sold. Our estimates are based on historical experience and reflect management's best estimates of expected costs at the time products are sold and subsequent adjustment to those expected costs when actual costs differ. As a result of the uncertainty surrounding the nature and frequency of product recall programs, the liability for such programs is recorded when we commit to a recall action or when a recall becomes probable and estimable, which generally occurs when it is announced. Our warranty liability is generally affected by component failure rates, repair costs and the point of failure within the product life cycle. Future events and circumstances related to these factors could materially change our estimates and require adjustments to our liability. New product launches require a greater use of judgment in developing estimates until historical experience becomes available. Product specific experience is typically available four or five quarters after product launch, with a clear experience trend evident eight quarters after launch. We generally record warranty expense for new products upon shipment using a preceding product's warranty history and a multiplicative factor based upon preceding similar product experience and new product assessment until sufficient new product data is available for warranty estimation. We then use a blend of actual new product experience and preceding product historical experience for several subsequent quarters, and new product specific experience thereafter. Note 12, "PRODUCT WARRANTY LIABILITY," to our *Consolidated Financial Statements* contains a summary of the activity in our warranty liability account for 2019, 2018 and 2017 including adjustments to pre-existing warranties.

Accounting for Income Taxes

We determine our income tax expense using the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the future tax effects of temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis. Future tax benefits of net operating loss and credit carryforwards are also recognized as deferred tax assets. We evaluate the recoverability of our deferred tax assets each quarter by assessing the likelihood of future profitability and available tax planning strategies that could be implemented to realize our net deferred tax assets. At December 31, 2019, we recorded net deferred tax assets of \$135 million. The assets included \$364 million for the value of net operating loss and credit carryforwards. A valuation allowance of \$317 million was recorded to reduce the tax assets to the net value management believed was more likely than not to be realized. In the event our operating performance deteriorates, future assessments could conclude that a larger valuation allowance will be needed to further reduce the deferred tax assets.

In addition, we operate within multiple taxing jurisdictions and are subject to tax audits in these jurisdictions. These audits can involve complex issues, which may require an extended period of time to resolve. We accrue for the estimated additional tax and interest that may result from tax authorities disputing uncertain tax positions. We have taken and we believe we have made adequate provisions for income taxes for all years that are subject to audit based upon the latest information available. A more complete description of our income taxes and the future benefits of our net operating loss and credit carryforwards is disclosed in Note 5, "INCOME TAXES," to our *Consolidated Financial Statements*.

Pension Benefits

We sponsor a number of pension plans globally, with the majority of assets in the U.S. and the U.K. In the U.S. and the U.K., we have several major defined benefit plans that are separately funded. We account for our pension programs in accordance with employers' accounting for defined benefit pension plans under GAAP. GAAP requires that amounts recognized in financial statements be determined using an actuarial basis. As a result, our pension benefit programs are based on a number of statistical and judgmental assumptions that attempt to anticipate future events and are used in calculating the expense and liability related to our plans each year at December 31. These assumptions include discount rates used to value liabilities, assumed rates of return on plan assets, future compensation increases, employee turnover rates, actuarial assumptions relating to retirement age, mortality rates and participant withdrawals. The actuarial assumptions we use may differ significantly from actual results due to changing economic conditions, participant life span and withdrawal rates. These differences may result in a material impact to the amount of net periodic pension cost to be recorded in our *Consolidated Financial Statements* in the future.

The expected long-term return on plan assets is used in calculating the net periodic pension cost. We considered several factors in developing our expected rate of return on plan assets. The long-term rate of return considers historical returns and expected returns on current and projected asset allocations. Projected returns are based primarily on broad, publicly traded passive fixed income and equity indices and forward-looking estimates of the value added by active investment management. At December 31, 2019, based upon our target asset allocations, it is anticipated that our U.S. investment policy will generate an average annual return over the 30-year projection period equal to or in excess of 6.25 percent, including the additional positive returns expected from active investment management.

The one-year return for our U.S. plans was 17.6 percent for 2019. Our U.S. plan assets have averaged annualized returns of 9.77 percent over the prior ten years and resulted in approximately \$490 million of actuarial gains in accumulated other comprehensive income (AOCI) in the same period. Based on the historical returns and forward-looking return expectations as plan assets continue to be de-risked, consistent with our investment policy, we believe an investment return assumption of 6.25 percent per year in 2020 for U.S. pension assets is reasonable.

The methodology used to determine the rate of return on pension plan assets in the U.K. was based on establishing an equity-risk premium over current long-term bond yields adjusted based on target asset allocations. At December 31, 2019, based upon our target asset allocations, it is anticipated that our U.K. investment policy will generate an average annual return over the 20-year projection period equal to or in excess of 4 percent. The one-year return for our U.K. plans was 10.9 percent for 2019. We have generated average annualized returns of 9.13 percent over ten years, resulting in approximately \$580 million of actuarial gains in AOCI. Our strategy with respect to our investments in pension plan assets is to be invested with a long-term outlook. Based on the historical returns and forward-looking return expectations as the plan assets continue to be de-risked, we believe an investment return assumption of 4.0 percent in 2020 for U.K. pension assets is reasonable. Our pension plan asset allocations at December 31, 2019 and 2018 and target allocation for 2020 are as follows:

Investment description	U.S. Plans			U.K. Plans		
	Target Allocation	Percentage of Plan Assets at December 31,		Target Allocation	Percentage of Plan Assets at December 31,	
	2020	2019	2018	2020	2019	2018
Liability matching	72.0%	69.2%	68.0%	56.5%	53.4%	56.5%
Risk seeking	28.0%	30.8%	32.0%	43.5%	46.6%	43.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The differences between the actual return on plan assets and expected long-term return on plan assets are recognized in the asset value used to calculate net periodic cost over five years. The table below sets forth the expected return assumptions used to develop our pension cost for the period 2017-2019 and our expected rate of return for 2020.

	Long-term Expected Return Assumptions			
	2020	2019	2018	2017
U.S. plans	6.25%	6.25%	6.50%	7.25%
U.K. plans	4.00%	4.00%	4.00%	4.50%

GAAP for pensions offers various acceptable alternatives to account for the differences that eventually arise between the estimates used in the actuarial valuations and the actual results. It is acceptable to delay or immediately recognize these differences. Under the delayed recognition alternative, changes in pension obligations (including those resulting from plan amendments) and changes in the value of assets set aside to meet those obligations are not recognized in net periodic pension cost as they occur but are recognized initially in accumulated other comprehensive loss (AOCL) and subsequently amortized as components of net periodic pension cost systematically and gradually over future periods. In addition to this approach, GAAP also allows immediate recognition of actuarial gains or losses. Immediate recognition introduces volatility in financial results. We have chosen to delay recognition and amortize actuarial differences over future periods. If we adopted the immediate recognition approach, we would record a loss of \$963 million (\$762 million after-tax) from cumulative actuarial net losses for our U.S. and U.K. pension plans.

The difference between the expected return and the actual return on plan assets is deferred from recognition in our results of operations and under certain circumstances, such as when the difference exceeds 10 percent of the greater of the market value of plan assets or the projected benefit obligation, the difference is amortized over future years of service. This is also true of changes to actuarial assumptions. Under GAAP, the actuarial gains and losses are recognized and recorded in AOCL. At December 31, 2019, we had net pension actuarial losses of \$611 million and \$323 million for the U.S. and U.K. pension plans, respectively. As these amounts exceed 10 percent of their respective plan assets, the excess is amortized over the average remaining service lives of participating employees. Net actuarial losses decreased our shareholders' equity by \$85 million after-tax in 2019. The loss is primarily due to lower discount rates in the U.S. and U.K., partially offset by strong asset returns in the U.S. and U.K.

The table below sets forth the net periodic pension cost for the years ended December 31 and our expected cost for 2020.

In millions	2020	2019	2018	2017
Net periodic pension cost	\$ 100	\$ 65	\$ 86	\$ 82

We expect 2020 net periodic pension cost to increase compared to 2019, primarily due to lower discount rates in the U.S. and U.K. The decrease in net periodic pension cost in 2019 compared to 2018 was primarily due to higher discount rates and favorable actuarial experience in the U.S. and U.K., partially offset by a lower expected rate of return in the U.S. The increase in net periodic pension cost in 2018 compared to 2017 was due to a lower expected rate of return in the U.S. and U.K. as we de-risked plan trust assets, partially offset by reduced loss amortization in the U.S. and U.K.

The weighted-average discount rates used to develop our net periodic pension cost are set forth in the table below.

	Discount Rates			
	2020	2019	2018	2017
U.S. plans	3.36%	4.36%	3.66%	4.12%
U.K. plans	2.00%	2.80%	2.55%	2.70%

The discount rate enables us to state expected future cash payments for benefits as a present value on the measurement date. The guidelines for setting this rate are discussed in GAAP which suggests the use of a high-quality corporate bond rate. We used bond information provided by Moody's Investor Services, Inc. and Standard & Poor's Rating Services. All bonds used to develop our hypothetical portfolio in the U.S. and U.K. were deemed high-quality, non-callable bonds (Aa or better) at December 31, 2019, by at least one of the bond rating agencies.

Our model called for projected payments until near extinction for the U.S. and the U.K. For both countries, our model matches the present value of the plan's projected benefit payments to the market value of the theoretical settlement bond portfolio. A single equivalent discount rate is determined to align the present value of the required cash flow with the value of the bond portfolio. The resulting discount rate is reflective of both the current interest rate environment and the plan's distinct liability characteristics.

The table below sets forth the estimated impact on our 2020 net periodic pension cost relative to a change in the discount rate and a change in the expected rate of return on plan assets.

In millions	Impact on Pension Cost Increase/(Decrease)
Discount rate used to value liabilities	
0.25 percent increase	\$ (18)
0.25 percent decrease	19
Expected rate of return on assets	
1 percent increase	(50)
1 percent decrease	50

The above sensitivities reflect the impact of changing one assumption at a time. A higher discount rate decreases the plan obligations and decreases our net periodic pension cost. A lower discount rate increases the plan obligations and increases our net periodic pension cost. It should be noted that economic factors and conditions often affect multiple assumptions simultaneously and the effects of changes in key assumptions are not necessarily linear. Note 13, "PENSIONS AND OTHER POSTRETIREMENT BENEFITS," to our *Consolidated Financial Statements* provides a summary of our pension benefit plan activity, the funded status of our plans and the amounts recognized in our *Consolidated Financial Statements*.

Goodwill Impairment

We are required to make certain subjective and complex judgments in assessing whether a goodwill impairment event has occurred, including assumptions and estimates used to determine the fair value of our reporting units. We test for goodwill impairment at the reporting unit level and our reporting units are the operating segments or the components of operating segments that constitute businesses for which discrete financial information is available and is regularly reviewed by management.

Under GAAP for goodwill, we have the option to first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value as a basis for determining whether it is necessary to perform an annual quantitative goodwill impairment test. We have elected this option on certain reporting units. The following events and circumstances are considered when evaluating whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount:

- Macroeconomic conditions, such as a deterioration in general economic conditions, fluctuations in foreign exchange rates and/or other developments in equity and credit markets;
- Industry and market considerations, such as a deterioration in the environment in which an entity operates, material loss in market share and significant declines in product pricing;
- Cost factors, such as an increase in raw materials, labor or other costs;
- Overall financial performance, such as negative or declining cash flows or a decline in actual or forecasted revenue;
- Other relevant entity-specific events, such as material changes in management or key personnel and
- Events affecting a reporting unit, such as a change in the composition or carrying amount of its net assets including acquisitions and dispositions.

The examples noted above are not all-inclusive, and we consider other relevant events and circumstances that affect the fair value of a reporting unit in determining whether to perform the quantitative goodwill impairment test.

Our goodwill recoverability assessment is based on our annual strategic planning process. This process includes an extensive review of expectations for the long-term growth of our businesses and forecasted future cash flows. Our valuation method is an income approach using a discounted cash flow model in which cash flows anticipated over several periods, plus a terminal value at the end of that time horizon, are discounted to their present value using an appropriate rate of return. Our estimates are based upon our historical experience, our current knowledge from our commercial relationships and available external information about future trends.

The discounted cash flow model requires us to make projections of revenue, gross margin, operating expenses, working capital investment and fixed asset additions for the reporting units over a multi-year period. Additionally, management must estimate a weighted-average cost of capital, which reflects a market rate, for each reporting unit for use as a discount rate. The discounted cash flows are compared to the carrying value of the reporting unit and, if less than the carrying value, the difference is recorded as a goodwill impairment loss. In addition, we also perform a sensitivity analysis to determine how much our forecasts can fluctuate before the fair value of a reporting unit would be lower than its carrying amount. We perform the required procedures as of the end of our fiscal third quarter. While none of our reporting units recorded a goodwill impairment in 2019, we determined the automated transmission business is our only reporting unit with material goodwill where the estimated fair value does not substantially exceed the carrying value. The estimated fair value of the reporting unit exceeds its carrying amount of \$1.2 billion by approximately 34 percent. Total goodwill in this reporting unit is \$544 million. This reporting unit is made up of only one business, our joint venture with Eaton (Eaton Cummins Automated Transmission Technologies), which was acquired and recorded at fair value in the third quarter of 2017. As a result, we did not expect the estimated fair value would exceed the carrying value by a significant amount. We valued this reporting unit primarily using an income approach based on its expected future cash flows. The critical assumptions that factored into the valuation are the projected future revenues and EBITDA margins of the business as well as the discount rate used to present value these future cash flows. A 100 basis point increase in the discount rate would result in a 17 percent decline in the fair value of the reporting unit.

RECENTLY ADOPTED AND RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS

See Note 1, "SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES", to our *Consolidated Financial Statements* for additional information.

ITEM 7A. Quantitative and Qualitative Disclosures About Market Risk

We are exposed to financial risk resulting from volatility in foreign exchange rates, interest rates and commodity prices. This risk is closely monitored and managed through the use of financial derivative instruments including foreign currency forward contracts, interest rate swaps, commodity swap contracts and zero-cost collars and physical forward contracts. These instruments, as further described below, are accounted for as cash flow or fair value hedges or as economic hedges not designated as hedges for accounting purposes. Financial derivatives are used expressly for hedging purposes and under no circumstances are they used for speculative purposes. When material, we adjust the estimated fair value of our derivative contracts for counterparty or our credit risk. None of our derivative instruments are subject to collateral requirements. Substantially all of our derivative contracts are subject to master netting arrangements, which provide us with the option to settle certain contracts on a net basis when they settle on the same day with the same currency. In addition, these arrangements provide for a net settlement of all contracts with a given counterparty in the event that the arrangement is terminated due to the occurrence of default or a termination event.

We also enter into physical forward contracts with certain suppliers to purchase minimum volumes of commodities at contractually stated prices for various periods. These arrangements, as further described below, enable us to fix the prices of portions of our normal purchases of these commodities, which otherwise are subject to market volatility.

The following describes our risk exposures and provides the results of a sensitivity analysis performed at December 31, 2019. The sensitivity analysis assumes instantaneous, parallel shifts in foreign currency exchange rates and commodity prices.

Foreign Exchange Rate Risk

As a result of our international business presence, we are exposed to foreign currency exchange rate risks. We transact business in foreign currencies and, as a result, our income experiences some volatility related to movements in foreign currency exchange rates. To help manage our exposure to exchange rate volatility, we use foreign currency forward contracts on a regular basis to hedge forecasted intercompany and third-party sales and purchases denominated in non-functional currencies. Our foreign currency cash flow hedges generally mature within two years. These foreign currency forward contracts are designated and qualify as foreign currency cash flow hedges under GAAP. For the years ended December 31, 2019 and 2018, there were no circumstances that resulted in the discontinuance of a foreign currency cash flow hedge.

To minimize the income volatility resulting from the remeasurement of net monetary assets and payables denominated in a currency other than the functional currency, we enter into foreign currency forward contracts, which are considered economic hedges. The objective is to offset the gain or loss from remeasurement with the gain or loss from the fair market valuation of the forward contract. These derivative instruments are not designated as hedges under GAAP.

At December 31, 2019, the potential gain or loss in the fair value of our outstanding foreign currency contracts, assuming a hypothetical 10 percent fluctuation in the currencies of such contracts, would be approximately \$4 million. The sensitivity analysis of the effects of changes in foreign currency exchange rates assumes the notional value to remain constant for the next 12 months. The analysis ignores the impact of foreign exchange movements on our competitive position and potential changes in sales levels. Any change in the value of the contracts, real or hypothetical, would be significantly offset by an inverse change in the value of the underlying hedged items.

Interest Rate Risk

We are exposed to market risk from fluctuations in interest rates. We manage our exposure to interest rate fluctuations through the use of interest rate swaps. The objective of the swaps is to more effectively balance our borrowing costs and interest rate risk. See Note 11, "DEBT," "Interest Rate Risk" section for additional information.

Commodity Price Risk

We are exposed to fluctuations in commodity prices due to contractual agreements with component suppliers. In order to protect ourselves against future price volatility and, consequently, fluctuations in gross margins, we periodically enter into commodity swap, forward and zero-cost collar contracts with designated banks and other counterparties to fix the cost of certain raw material purchases with the objective of minimizing changes in inventory cost due to market price fluctuations. Commencing in 2019, these commodity swaps are designated and qualify as cash flow hedges under GAAP. At December 31, 2019, realized and unrealized gains and losses related to these hedges were not material to our financial statements. The physical forward contracts qualify for the normal purchases scope exceptions and are treated as purchase commitments. The commodity zero-cost collar contracts that represent an economic hedge, but are not designated for hedge accounting, are marked to market through earnings.

At December 31, 2019, the potential gain or loss related to the outstanding commodity zero-cost collar contracts, assuming a hypothetical 10 percent fluctuation in the price of such commodities, would be approximately \$1 million. The sensitivity analysis of the effects of changes in commodity prices assumes the notional value to remain constant for the next 12 months. The analysis ignores the impact of commodity price movements on our competitive position and potential changes in sales levels. Any change in the value of the zero-cost collar contracts, real or hypothetical, would be significantly offset by an inverse change in the value of the underlying hedged items.

We also limit our exposure to commodity price risk by entering into purchasing arrangements to fix the price of certain volumes of platinum and palladium expected to be used in our products. We enter into physical forward contracts with suppliers of platinum and palladium to purchase some volumes of the commodities at contractually stated prices for various periods, generally less than two years. These arrangements enable us to fix the prices of a portion of our purchases of these commodities, which otherwise are subject to market volatility.

ITEM 8. Financial Statements and Supplementary Data

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- **Report of Independent Registered Public Accounting Firm**
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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Cummins Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Cummins Inc. and its subsidiaries (the “Company”) as of December 31, 2019 and 2018, and the related consolidated statements of net income, comprehensive income, changes in equity, and cash flows for each of the three years in the period ended December 31, 2019, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

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

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

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

Definition and Limitations of Internal Control over Financial Reporting

A company’s internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company’s internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters 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 matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Goodwill Impairment Assessment - Automated Transmission Reporting Unit

As described in Notes 1 and 10 to the consolidated financial statements, the Company's consolidated goodwill balance was \$1,286 million, and the goodwill associated with the Automated Transmission reporting unit was \$544 million as of December 31, 2019. Management performs an impairment test as of the end of the fiscal third quarter each year, or more frequently if events or circumstances indicate the fair value of a reporting unit is less than its carrying amount. Management performs the annual or interim goodwill impairment test by comparing the fair value of a reporting unit with its carrying value. Management's valuation method is an income approach using a discounted cash flow model. The discounted cash flow model requires projections of revenue, gross margin, operating expenses, working capital investment and fixed asset additions for the Automated Transmission reporting unit over a multi-year period, and a discount rate based upon a weighted-average cost of capital.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment for the Automated Transmission reporting unit is a critical audit matter are there was significant judgment by management when developing the fair value measurement of the reporting unit. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures and in evaluating audit evidence relating to management's cash flow projections and significant assumptions, including projected revenue, projected gross margin, and the discount rate. In addition, the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's goodwill impairment assessment, including controls over the valuation of the Automated Transmission reporting unit. These procedures also included, among others, testing management's process for developing the fair value estimate. This included evaluating the appropriateness of the discounted cash flow model, testing the completeness, accuracy, and relevance of underlying data used in the model, and evaluating the reasonableness of significant assumptions used by management, including projected revenue, projected gross margin, and the discount rate. Evaluating management assumptions related to projected revenue and gross margin involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the Automated Transmission reporting unit, (ii) the consistency with external market and industry data, and (iii) whether the assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the appropriateness of the Company's discounted cash flow model and reasonableness of certain significant assumptions, including the discount rate.

Base Product Warranty

As described in Notes 1 and 12 to the consolidated financial statements, management estimates and records a liability for base product warranty programs at the time products are sold. As of December 31, 2019, the accrued liability for base product warranty programs was \$1,448 million. As disclosed by management, the estimate for one of the base product warranty programs is based on historical experience and reflects management's best estimates of expected costs at the time products are sold and subsequent adjustment to those expected costs when actual costs differ. Management's estimate of base product

warranty liability is generally affected by component failure rates, repair costs, and the point of failure within the product life cycle.

The principal considerations for our determination that performing procedures relating to the base product warranty liability is a critical audit matter are there was significant judgment by management when determining the estimate for the base product warranty liability. This in turn led to a high degree of auditor judgment, subjectivity, and effort in performing procedures to evaluate management's estimate and significant assumptions, including component failure rates, repair costs, and the point of failure within the product life cycle.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's estimate for the base product warranty liability, including the determination of component failure rates, repair costs, and the point of failure within the product life cycle. These procedures also included, among others, testing management's process for determining the base product warranty liability. Procedures related to management's estimate included evaluating the appropriateness of the method used by management, the completeness, accuracy, and relevance of underlying data used in the warranty estimate, and the reasonableness of significant assumptions used by management in estimating the base product warranty liability, including the component failure rates, repair costs, and the point of failure within the product life cycle. Evaluating management's assumptions relating to the component failure rates, repair costs, and the point of failure within the product life cycle involved evaluating whether the assumptions were reasonable considering historical product experience of the Company.

/s/PricewaterhouseCoopers LLP
Indianapolis, Indiana
February 11, 2020

We have served as the Company's auditor since 2002.

CUMMINS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF NET INCOME

In millions, except per share amounts	Years ended December 31,		
	2019	2018	2017
NET SALES ^(a) (Note 2)	\$ 23,571	\$ 23,771	\$ 20,428
Cost of sales	17,591	18,034	15,328
GROSS MARGIN	5,980	5,737	5,100
OPERATING EXPENSES AND INCOME			
Selling, general and administrative expenses	2,454	2,437	2,429
Research, development and engineering expenses	1,001	902	754
Equity, royalty and interest income from investees (Note 3)	330	394	357
Restructuring actions (Note 4)	119	—	—
Other operating (expense) income, net	(36)	(6)	60
OPERATING INCOME	2,700	2,786	2,334
Interest income	46	35	18
Interest expense (Note 11)	109	114	81
Other income, net	197	46	94
INCOME BEFORE INCOME TAXES	2,834	2,753	2,365
Income tax expense (Note 5)	566	566	1,371
CONSOLIDATED NET INCOME	2,268	2,187	994
Less: Net income (loss) attributable to noncontrolling interests	8	46	(5)
NET INCOME ATTRIBUTABLE TO CUMMINS INC.	\$ 2,260	\$ 2,141	\$ 999
EARNINGS PER COMMON SHARE ATTRIBUTABLE TO CUMMINS INC. (Note 20)			
Basic	\$ 14.54	\$ 13.20	\$ 5.99
Diluted	\$ 14.48	\$ 13.15	\$ 5.97

^(a) Includes sales to nonconsolidated equity investees of \$1,191 million, \$1,267 million and \$1,174 million for the years ended December 31, 2019, 2018 and 2017, respectively.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

In millions	Years ended December 31,		
	2019	2018	2017
CONSOLIDATED NET INCOME	\$ 2,268	\$ 2,187	\$ 994
Other comprehensive income (loss), net of tax (Note 17)			
Change in pension and other postretirement defined benefit plans	(63)	18	(4)
Foreign currency translation adjustments	(152)	(356)	335
Unrealized gain on debt securities	—	—	2
Unrealized (loss) gain on derivatives	(11)	5	5
Total other comprehensive (loss) income, net of tax	(226)	(333)	338
COMPREHENSIVE INCOME	2,042	1,854	1,332
Less: Comprehensive income attributable to noncontrolling interests	3	17	15
COMPREHENSIVE INCOME ATTRIBUTABLE TO CUMMINS INC.	\$ 2,039	\$ 1,837	\$ 1,317

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

CUMMINS INC. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS

In millions, except par value	December 31,	
	2019	2018
ASSETS		
Current assets		
Cash and cash equivalents	\$ 1,129	\$ 1,303
Marketable securities (Note 6)	341	222
Total cash, cash equivalents and marketable securities	1,470	1,525
Accounts and notes receivable, net		
Trade and other	3,387	3,635
Nonconsolidated equity investees	283	231
Inventories (Note 7)	3,486	3,759
Prepaid expenses and other current assets	761	668
Total current assets	9,387	9,818
Long-term assets		
Property, plant and equipment, net (Note 8)	4,245	4,096
Investments and advances related to equity method investees (Note 3)	1,237	1,222
Goodwill (Note 10)	1,286	1,126
Other intangible assets, net (Note 10)	1,003	909
Pension assets (Note 13)	1,001	929
Other assets	1,578	962
Total assets	<u>\$ 19,737</u>	<u>\$ 19,062</u>
LIABILITIES		
Current liabilities		
Accounts payable (principally trade)	\$ 2,534	\$ 2,822
Loans payable (Note 11)	100	54
Commercial paper (Note 11)	660	780
Accrued compensation, benefits and retirement costs	560	679
Current portion of accrued product warranty (Note 12)	803	654
Current portion of deferred revenue (Note 2)	533	498
Other accrued expenses (Note 14)	1,039	852
Current maturities of long-term debt (Note 11)	31	45
Total current liabilities	6,260	6,384
Long-term liabilities		
Long-term debt (Note 11)	1,576	1,597
Pensions and other postretirement benefits (Note 13)	591	532
Accrued product warranty (Note 12)	645	740
Deferred revenue (Note 2)	821	658
Other liabilities (Note 14)	1,379	892
Total liabilities	<u>\$ 11,272</u>	<u>\$ 10,803</u>
Commitments and contingencies (Note 15)		
EQUITY		
Cummins Inc. shareholders' equity (Note 16)		
Common stock, \$2.50 par value, 500 shares authorized, 222.4 and 222.4 shares issued	\$ 2,346	\$ 2,271
Retained earnings	14,416	12,917
Treasury stock, at cost, 71.7 and 64.4 shares	(7,225)	(6,028)
Common stock held by employee benefits trust, at cost, 0.2 and 0.4 shares	(2)	(5)
Accumulated other comprehensive loss (Note 17)	(2,028)	(1,807)
Total Cummins Inc. shareholders' equity	7,507	7,348
Noncontrolling interests (Note 18)	958	911
Total equity	<u>\$ 8,465</u>	<u>\$ 8,259</u>
Total liabilities and equity	<u>\$ 19,737</u>	<u>\$ 19,062</u>

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

CUMMINS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS

In millions	Years ended December 31,		
	2019	2018	2017
CASH FLOWS FROM OPERATING ACTIVITIES			
Consolidated net income	\$ 2,268	\$ 2,187	\$ 994
Adjustments to reconcile consolidated net income to net cash provided by operating activities			
Impact of tax legislation, net (Note 5)	—	15	820
Depreciation and amortization	672	611	583
Deferred income taxes (Note 5)	(4)	(97)	(54)
Equity in income of investees, net of dividends	(14)	(93)	(123)
Pension and OPEB expense (Note 13)	75	97	102
Pension contributions and OPEB payments (Note 13)	(150)	(67)	(268)
Stock-based compensation expense (Note 19)	49	53	41
Restructuring actions, net of cash payments (Note 4)	115	—	—
(Gain) loss on corporate owned life insurance	(61)	26	(52)
Foreign currency remeasurement and transaction exposure	(105)	(46)	71
Changes in current assets and liabilities, net of acquisitions			
Accounts and notes receivable	195	(363)	(508)
Inventories	291	(695)	(407)
Other current assets	(95)	(162)	(12)
Accounts payable	(310)	302	639
Accrued expenses	(112)	371	383
Changes in other liabilities	240	75	241
Other, net	127	164	(173)
Net cash provided by operating activities	3,181	2,378	2,277
CASH FLOWS FROM INVESTING ACTIVITIES			
Capital expenditures	(700)	(709)	(506)
Investments in internal use software	(75)	(75)	(81)
Proceeds from disposals of property, plant and equipment	23	20	110
Investments in and advances to equity investees	(20)	(37)	(66)
Acquisitions of businesses, net of cash acquired (Note 21)	(237)	(70)	(662)
Investments in marketable securities—acquisitions	(495)	(368)	(194)
Investments in marketable securities—liquidations (Note 6)	389	331	266
Cash flows from derivatives not designated as hedges	(44)	(102)	76
Other, net	9	36	5
Net cash used in investing activities	(1,150)	(974)	(1,052)
CASH FLOWS FROM FINANCING ACTIVITIES			
Net (payments) borrowings of commercial paper (Note 11)	(120)	482	86
Payments on borrowings and finance lease obligations	(96)	(62)	(60)
Net borrowings under short-term credit agreements	53	1	12
Distributions to noncontrolling interests	(33)	(30)	(29)
Dividend payments on common stock (Note 16)	(761)	(718)	(701)
Repurchases of common stock (Note 16)	(1,271)	(1,140)	(451)
Other, net	133	67	69
Net cash used in financing activities	(2,095)	(1,400)	(1,074)
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS	(110)	(70)	98
Net (decrease) increase in cash and cash equivalents	(174)	(66)	249
Cash and cash equivalents at beginning of year	1,303	1,369	1,120
CASH AND CASH EQUIVALENTS AT END OF PERIOD	\$ 1,129	\$ 1,303	\$ 1,369

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

CUMMINS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN EQUITY

In millions	Common Stock	Additional Paid-in Capital	Retained Earnings	Treasury Stock	Common Stock Held in Trust	Accumulated Other Comprehensive Loss	Total Cummins Inc. Shareholders' Equity	Noncontrolling Interests	Total Equity
BALANCE AT DECEMBER 31, 2016	\$ 556	\$ 1,597	\$ 11,040	\$ (4,489)	\$ (8)	\$ (1,821)	\$ 6,875	\$ 299	\$ 7,174
Impact of tax legislation (Note 5)			126				126	—	126
Net income			999				999	(5)	994
Other comprehensive income, net of tax (Note 17)						318	318	20	338
Issuance of common stock		6					6	—	6
Employee benefits trust activity (Note 16)		17			1		18	—	18
Repurchases of common stock (Note 16)				(451)			(451)	—	(451)
Cash dividends on common stock (Note 16)			(701)				(701)	—	(701)
Distributions to noncontrolling interests							—	(29)	(29)
Stock-based awards		3		35			38	—	38
Acquisition of business (Note 21)							—	600	600
Other shareholder transactions		31					31	20	51
BALANCE AT DECEMBER 31, 2017	\$ 556	\$ 1,654	\$ 11,464	\$ (4,905)	\$ (7)	\$ (1,503)	\$ 7,259	\$ 905	\$ 8,164
Adoption of new accounting standards			30				30	—	30
Net income			2,141				2,141	46	2,187
Other comprehensive income, net of tax (Note 17)						(304)	(304)	(29)	(333)
Issuance of common stock		12					12	—	12
Employee benefits trust activity (Note 16)		15			2		17	—	17
Repurchases of common stock (Note 16)				(1,140)			(1,140)	—	(1,140)
Cash dividends on common stock (Note 16)			(718)				(718)	—	(718)
Distributions to noncontrolling interests							—	(30)	(30)
Stock-based awards		(4)		17			13	—	13
Other shareholder transactions		38					38	19	57
BALANCE AT DECEMBER 31, 2018	\$ 556	\$ 1,715	\$ 12,917	\$ (6,028)	\$ (5)	\$ (1,807)	\$ 7,348	\$ 911	\$ 8,259
Net income			2,260				2,260	8	2,268
Other comprehensive income, net of tax (Note 17)						(221)	(221)	(5)	(226)
Issuance of common stock		3					3	—	3
Employee benefits trust activity (Note 16)		34			3		37	—	37
Repurchases of common stock (Note 16)				(1,271)			(1,271)	—	(1,271)
Cash dividends on common stock (Note 16)			(761)				(761)	—	(761)
Distributions to noncontrolling interests							—	(33)	(33)
Stock-based awards		2		74			76	—	76
Other shareholder transactions		36					36	77	113
BALANCE AT DECEMBER 31, 2019	\$ 556	\$ 1,790	\$ 14,416	\$ (7,225)	\$ (2)	\$ (2,028)	\$ 7,507	\$ 958	\$ 8,465

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

CUMMINS INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Nature of Operations

We were founded in 1919 as Cummins Engine Company, a corporation in Columbus, Indiana and one of the first diesel engine manufacturers. In 2001, we changed our name to Cummins Inc. We are a global power leader that designs, manufactures, distributes and services diesel, natural gas, electric and hybrid powertrains and powertrain-related components including filtration, aftertreatment, turbochargers, fuel systems, controls systems, air handling systems, automated transmissions, electric power generation systems, batteries, electrified power systems, hydrogen generation and fuel cell products. We sell our products to original equipment manufacturers (OEMs), distributors, dealers and other customers worldwide. We serve our customers through a network of approximately 600 wholly-owned, joint venture and independent distributor locations and over 7,600 Cummins certified dealer locations in more than 190 countries and territories.

Principles of Consolidation

Our *Consolidated Financial Statements* include the accounts of all wholly-owned and majority-owned domestic and foreign subsidiaries where our ownership is more than 50 percent of outstanding equity interests except for majority-owned subsidiaries that are considered variable interest entities (VIEs) where we are not deemed to have a controlling financial interest. In addition, we also consolidate, regardless of our ownership percentage, VIEs or joint ventures for which we are deemed to have a controlling financial interest. Intercompany balances and transactions are eliminated in consolidation. Where our ownership interest is less than 100 percent, the noncontrolling ownership interests are reported in our *Consolidated Balance Sheets*. The noncontrolling ownership interest in our income, net of tax, is classified as "Net income (loss) attributable to noncontrolling interests" in our *Consolidated Statements of Net Income*.

We have variable interests in several businesses accounted for under the equity method of accounting that are deemed to be VIEs and are subject to generally accepted accounting principles in the United States of America (GAAP) for variable interest entities. Most of these VIEs are unconsolidated.

Reclassifications

Certain amounts for 2018 and 2017 have been reclassified to conform to the current year presentation.

Investments in Equity Investees

We use the equity method to account for our investments in joint ventures, affiliated companies and alliances in which we have the ability to exercise significant influence, generally represented by equity ownership or partnership equity of at least 20 percent but not more than 50 percent. Generally, under the equity method, original investments in these entities are recorded at cost and subsequently adjusted by our share of equity in income or losses after the date of acquisition. Investment amounts in excess of our share of an investee's net assets are amortized over the life of the related asset creating the excess. If the excess is goodwill, then it is not amortized. Equity in income or losses of each investee is recorded according to our level of ownership; if losses accumulate, we record our share of losses until our investment has been fully depleted. If our investment has been fully depleted, we recognize additional losses only when we are the primary funding source. We eliminate (to the extent of our ownership percentage) in our *Consolidated Financial Statements* the profit in inventory held by our equity method investees that has not yet been sold to a third-party. Dividends received from equity method investees reduce the amount of our investment when received and do not impact our earnings. Our investments are classified as "Investments and advances related to equity method investees" in our *Consolidated Balance Sheets*. Our share of the results from joint ventures, affiliated companies and alliances is reported in our *Consolidated Statements of Net Income* as "Equity, royalty and interest income from investees," and is reported net of all applicable income taxes.

Our foreign equity investees are presented net of applicable foreign income taxes in our *Consolidated Statements of Net Income*. Our remaining U.S. equity investees are partnerships (non-taxable), thus there is no difference between gross or net of tax presentation as the investees are not taxed. See Note 3, "INVESTMENTS IN EQUITY INVESTEES," for additional information.

Use of Estimates in the Preparation of the Financial Statements

Preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect reported amounts presented and disclosed in our *Consolidated Financial Statements*. Significant estimates and assumptions in these *Consolidated Financial Statements* require the exercise of judgement and are used for, but not limited to,

estimates of future cash flows and other assumptions associated with goodwill and long-lived asset impairment tests, useful lives for depreciation and amortization, warranty programs, determination of discount rate and other assumptions for pensions and other postretirement benefit costs, restructuring costs, income taxes and deferred tax valuation allowances and contingencies. Due to the inherent uncertainty involved in making estimates, actual results reported in future periods may be different from these estimates.

Revenue Recognition

On January 1, 2018, we adopted the new revenue recognition standard in accordance with GAAP on a modified retrospective basis.

Revenue Recognition Sales of Products

We sell to customers either through long-term arrangements or standalone purchase orders. Our long-term arrangements generally do not include committed volumes until underlying purchase orders are issued. Our performance obligations vary by contract, but may include diesel and natural gas engines and engine-related component products, including filtration, aftertreatment, turbochargers, fuel systems, controls systems, air handling systems, transmissions, power generation systems and construction related projects, batteries, electrified power systems, hydrogen systems, fuel cells, parts, maintenance services and extended warranty coverage.

Typically, we recognize revenue on the products we sell at a point in time, generally in accordance with shipping terms, which reflects the transfer of control to the customer. Since control of construction projects transfer to the customer as the work is performed, revenue on these projects is recognized based on the percentage of inputs incurred to date compared to the total expected cost of inputs, which is reflective of the value transferred to the customer. Revenue is recognized under long-term maintenance and other service agreements over the term of the agreement as underlying services are performed based on the percentage of the cost of services provided to date compared to the total expected cost of services to be provided under the contract. Sales of extended coverage are recognized based on the pattern of expected costs over the extended coverage period or, if such a pattern is unknown, on a straight-line basis over the coverage period as the customer is considered to benefit from our stand ready obligation over the coverage period. In all cases, we believe cost incurred is the most representative depiction of the extent of service performed to date on a particular contract.

Our arrangements may include the act of shipping products to our customers after the performance obligation related to that product has been satisfied. We have elected to account for shipping and handling as activities to fulfill the promise to transfer goods and have not allocated revenue to the shipping activity. All related shipping and handling costs are accrued at the time the related performance obligation has been satisfied.

Our sales arrangements may include the collection of sales and other similar taxes that are then remitted to the related taxing authority. We have elected to present the amounts collected for these taxes net of the related tax expense rather than presenting them as additional revenue.

We grant credit limits and terms to customers based upon traditional practices and competitive conditions. Typical terms vary by market, but payments are generally due in 90 days or less from invoicing for most of our product and service sales, while payments on construction and other similar arrangements may be due on an installment basis.

For contracts where the time between cash collection and performance is less than one year, we have elected to use the practical expedient that allows us to ignore the possible existence of a significant financing component within the contract. For contracts where this time period exceeds one year, generally the timing difference is the result of business concerns other than financing. We do have a limited amount of customer financing for which we charge or impute interest, but such amounts are immaterial to our *Consolidated Statements of Net Income*.

Sales Incentives

We provide various sales incentives to both our distribution network and OEM customers. These programs are designed to promote the sale of our products in the channel or encourage the usage of our products by OEM customers. When there is uncertainty surrounding these sales incentives, we may limit the amount of revenue we recognize under a contract until the uncertainty has been resolved. Sales incentives primarily fall into three categories:

- Volume rebates;
- Market share rebates; and
- Aftermarket rebates.

For volume rebates, we provide certain customers with rebate opportunities for attaining specified volumes during a particular quarter or year. We consider the expected amount of these rebates at the time of the original sale as we determine the overall transaction price. We update our assessment of the amount of rebates that will be earned quarterly based on our best estimate of the volume levels the customer will reach during the measurement period. For market share rebates, we provide certain customers with rebate opportunities based on the percentage of their production that utilizes our product. These rebates are typically measured either quarterly or annually and we assess them at least quarterly to determine our current estimates of amounts expected to be earned. These estimates are considered in the determination of transaction price at the time of the original sale based on the current market shares, with adjustments made as the level changes. For aftermarket rebates, we provide incentives to promote sales to certain dealers and end-markets. These rebates are typically paid on a quarterly, or more frequent basis. At the time of the sales, we consider the expected amount of these rebates when determining the overall transaction price. Estimates are adjusted at the end of each quarter based on the amounts yet to be paid. These estimates are based on historical experience with the particular program.

Sales Returns

The initial determination of the transaction price may also be impacted by expected product returns. Rights of return do not exist for the majority of our sales other than for quality issues. We do offer certain return rights in our aftermarket business, where some aftermarket customers are permitted to return small amounts of parts and filters each year, and in our power generation business, which sells portable generators to retail customers. An estimate of future returns is accounted for at the time of sale as a reduction in the overall contract transaction price based on historical return rates.

Multiple Performance Obligations

Our sales arrangements may include multiple performance obligations. We identify each of the material performance obligations in these arrangements and allocate the total transaction price to each performance obligation based on its relative selling price. In most cases, the individual performance obligations are also sold separately and we use that price as the basis for allocating revenue to the included performance obligations. When an arrangement includes multiple performance obligations and invoicing to the customer does not match the allocated portion of the transaction price, unbilled revenue or deferred revenue is recorded reflecting that difference. Unbilled and deferred revenue are discussed in more detail below.

Long-term Contracts

Our long-term maintenance agreements often include a variable component of the transaction price. We are generally compensated under such arrangements on a cost per hour of usage basis. We typically can estimate the expected usage over the life of the contract, but reassess the transaction price each quarter and adjust our recognized revenue accordingly. Certain maintenance agreements apply to generators used to provide standby power, which have limited expectations of usage. These agreements may include monthly minimum payments, providing some certainty to the total transaction price. For these particular contracts that relate to standby power, we limit revenue recognized to date to an amount representing the total minimums earned to date under the contract plus any cumulative billings earned in excess of the minimums. We reassess the estimates of progress and transaction price on a quarterly basis. For prime power arrangements, revenue is not subject to such a constraint and is generally equal to the current estimate on a percentage of completion basis times the total expected revenue under the contract.

Deferred Revenue

The timing of our billing does not always match the timing of our revenue recognition. We record deferred revenue when we are entitled to bill a customer in advance of when we are permitted to recognize revenue. Deferred revenue may arise in construction contracts, where billings may occur in advance of performance or in accordance with specific milestones. Deferred revenue may also occur in long-term maintenance contracts, where billings are often based on usage of the underlying equipment, which generally follows a predictable pattern that often will result in the accumulation of collections in advance of our performance of the related maintenance services. Finally, deferred revenue exists in our extended coverage contracts, where the cash is collected prior to the commencement of the coverage period. Deferred revenue is included in our *Consolidated Balance Sheets* as a component of current liabilities for the amount expected to be recognized in revenue in a period of less than one year and long-term liabilities for the amount expected to be recognized as revenue in a period beyond one year. Deferred revenue is recognized as revenue when control of the underlying product, project or service passes to the customer under the related contract.

Unbilled Revenue

We recognize unbilled revenue when the revenue has been earned, but not yet billed. Unbilled revenue is included in our *Consolidated Balance Sheets* as a component of current assets for those expected to be collected in a period of less than one year and long-term assets for those expected to be collected in a period beyond one year. Unbilled revenue relates to our right

to consideration for our completed performance under a contract. Unbilled revenue generally arises from contractual provisions that delay a portion of the billings on genset deliveries until commissioning occurs. Unbilled revenue may also occur when billings trail the provision of service in construction and long-term maintenance contracts. We periodically assess our unbilled revenue for impairment. We did not record any impairment losses on our unbilled revenues during 2019.

Contract Costs

We are required to record an asset for the incremental costs of obtaining a contract with a customer and other costs to fulfill a contract not otherwise required to be immediately expensed when we expect to recover those costs. The only material incremental cost we incur is commission expense, which is generally incurred in the same period as the underlying revenue. Costs to fulfill a contract are generally limited to customer-specific engineering expenses that do not meet the definition of research and development expenses. As a practical expedient, we have elected to recognize these costs of obtaining a contract as an expense when the related contract period is less than one year. When the period exceeds one year, this asset is amortized over the life of the contract. We did not have any material capitalized balances at December 31, 2019.

Extended Warranty

We sell extended warranty coverage on most of our engines and on certain components. We consider a warranty to be extended coverage in any of the following situations:

- When a warranty is sold separately or is optional (extended coverage contracts, for example) or
- When a warranty provides additional services.

The consideration collected is initially deferred and is recognized as revenue in proportion to the costs expected to be incurred in performing services over the contract period. We compare the remaining deferred revenue balance quarterly to the estimated amount of future claims under extended warranty programs and provide an additional accrual when the deferred revenue balance is less than expected future costs.

Foreign Currency Transactions and Translation

We translate assets and liabilities of foreign entities to U.S. dollars, where the local currency is the functional currency, at month-end exchange rates. We translate income and expenses to U.S. dollars using weighted-average exchange rates. We record adjustments resulting from translation in a separate component of accumulated other comprehensive loss (AOCL) and include the adjustments in net income only upon sale, loss of controlling financial interest or liquidation of the underlying foreign investment.

Foreign currency transaction gains and losses are included in current net income. For foreign entities where the U.S. dollar is the functional currency, including those operating in highly inflationary economies when applicable, we remeasure non-monetary balances and the related income statement amounts using historical exchange rates. We include in income the resulting gains and losses, including the effect of derivatives in our *Consolidated Statements of Net Income*, which combined with transaction gains and losses amounted to a net gain of \$28 million and a net loss of \$34 million and \$6 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Fair Value Measurements

A three-level valuation hierarchy, based upon the observable and unobservable inputs, is used for fair value measurements. Observable inputs reflect market data obtained from independent sources, while unobservable inputs reflect market assumptions based on the best evidence available. These two types of inputs create the following fair value hierarchy:

- Level 1 - Quoted prices for *identical* instruments in active markets;
- Level 2 - Quoted prices for *similar* instruments in active markets, quoted prices for identical or similar instruments in markets that are not active and model-derived valuations whose significant inputs are observable; and
- Level 3 - Instruments whose significant inputs are *unobservable*.

Derivative Instruments

We make use of derivative instruments in foreign exchange, commodity price and interest rate hedging programs. Derivatives currently in use are foreign currency forward contracts, commodity swap and physical forward contracts, commodity zero-cost collars and interest rate swaps. These contracts are used strictly for hedging and not for speculative purposes.

We are exposed to market risk from fluctuations in interest rates. We manage our exposure to interest rate fluctuations through the use of interest rate swaps. The objective of the swaps is to more effectively balance our borrowing costs and interest rate risk. The gain or loss on these derivative instruments as well as the offsetting gain or loss on the hedged item are recognized in current income as "Interest expense." For more detail on our interest rate swaps, see Note 11, "DEBT."

Due to our international business presence, we are exposed to foreign currency exchange risk. We transact in foreign currencies and have assets and liabilities denominated in foreign currencies. Consequently, our income experiences some volatility related to movements in foreign currency exchange rates. In order to benefit from global diversification and after considering naturally offsetting currency positions, we enter into foreign currency forward contracts to minimize our existing exposures (recognized assets and liabilities) and hedge forecasted transactions. Foreign currency forward contracts are designated and qualify as foreign currency cash flow hedges under GAAP. The unrealized gain or loss on the forward contract is deferred and reported as a component of AOCL. When the hedged forecasted transaction (sale or purchase) occurs, the unrealized gain or loss is reclassified into income in the same line item associated with the hedged transaction in the same period or periods during which the hedged transaction affects income. At December 31, 2019 and 2018, realized and unrealized gains and losses related to these hedges were not material to our financial statements.

To minimize the income volatility resulting from the remeasurement of net monetary assets and payables denominated in a currency other than the functional currency, we enter into foreign currency forward contracts, which are considered economic hedges. The objective is to offset the gain or loss from remeasurement with the gain or loss from the fair market valuation of the forward contract. These derivative instruments are not designated as hedges under GAAP.

We are exposed to fluctuations in commodity prices due to contractual agreements with component suppliers. In order to protect ourselves against future price volatility and, consequently, fluctuations in gross margins, we periodically enter into commodity swap, forward and zero-cost collar contracts with designated banks and other counterparties to fix the cost of certain raw material purchases with the objective of minimizing changes in inventory cost due to market price fluctuations. Commencing in 2019, these commodity swaps are designated and qualify as cash flow hedges under GAAP. At December 31, 2019, realized and unrealized gains and losses related to these hedges were not material to our financial statements. The physical forward contracts qualify for the normal purchases scope exceptions and are treated as purchase commitments. Additional information on the physical forwards is included in Note 15, "COMMITMENTS AND CONTINGENCIES." The commodity zero-cost collar contracts that represent an economic hedge, but are not designated for hedge accounting, are marked to market through earnings.

We record all derivatives at fair value in our financial statements. Cash flows related to derivatives that are designated as hedges are included in the Cash Flows From Operating Activities, while cash flows related to derivatives, that are not designated as hedges, are included in Cash Flows From Investing Activities in our *Consolidated Statements of Cash Flows*.

Substantially all of our derivative contracts are subject to master netting arrangements, which provide us with the option to settle certain contracts on a net basis when they settle on the same day with the same currency. In addition, these arrangements provide for a net settlement of all contracts with a given counterparty in the event that the arrangement is terminated due to the occurrence of default or a termination event. When material, we adjust the value of our derivative contracts for counter-party or our credit risk. None of our derivative instruments are subject to collateral requirements.

Income Tax Accounting

We determine our income tax expense using the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the future tax effects of temporary differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis. Future tax benefits of net operating loss and credit carryforwards are also recognized as deferred tax assets. We evaluate the recoverability of our deferred tax assets each quarter by assessing the likelihood of future profitability and available tax planning strategies that could be implemented to realize our net deferred tax assets. A valuation allowance is recorded to reduce the tax assets to the net value management believes is more likely than not to be realized. In the event our operating performance deteriorates, future assessments could conclude that a larger valuation allowance will be needed to further reduce the deferred tax assets. In addition, we operate within multiple taxing jurisdictions and are subject to tax audits in these jurisdictions. These audits can involve complex issues, which may require an extended period of time to resolve. We accrue for the estimated additional tax and interest that may result from tax authorities disputing uncertain tax positions. We have taken and we believe we have made adequate provisions for income taxes for all years that are subject to audit based upon the latest information available. A more complete description of our income taxes and the future benefits of our net operating loss and credit carryforwards is disclosed in Note 5, "INCOME TAXES."

Cash and Cash Equivalents

Cash equivalents are defined as short-term, highly liquid investments with an original maturity of 90 days or less at the time of purchase. The carrying amounts reflected in our *Consolidated Balance Sheets* for cash and cash equivalents approximate fair value due to the short-term maturity of these investments.

In millions	Years ended December 31,		
	2019	2018	2017
Cash payments for income taxes, net of refunds	\$ 691	\$ 699	\$ 622
Cash payments for interest, net of capitalized interest	109	114	82

Marketable Securities

We account for marketable securities in accordance with GAAP for investments in debt and equity securities. Debt securities are classified as "held-to-maturity," "available-for-sale" or "trading". We determine the appropriate classification of debt securities at the time of purchase and re-evaluate such classifications at each balance sheet date. At December 31, 2019 and 2018, all of our debt securities were classified as available-for-sale. Debt and equity securities are carried at fair value with the unrealized gain or loss, net of tax, reported in other comprehensive income and other income, respectively. For debt securities, unrealized losses considered to be "other-than-temporary" are recognized currently in other income. The cost of securities sold is based on the specific identification method. The fair value of most investment securities is determined by currently available market prices. Where quoted market prices are not available, we use the market price of similar types of securities that are traded in the market to estimate fair value. See Note 6, "MARKETABLE SECURITIES," for a detailed description of our investments in marketable securities.

Accounts Receivable and Allowance for Doubtful Accounts

Trade accounts receivable represent amounts billed to customers and not yet collected or amounts that have been earned, but may not be billed until the passage of time, and are recorded when the right to consideration becomes unconditional. Trade accounts receivable are recorded at the invoiced amount, which approximates net realizable value, and generally do not bear interest. The allowance for doubtful accounts is our best estimate of the amount of probable credit losses in our existing accounts receivable. We determine the allowance based on our historical collection experience and by performing an analysis of our accounts receivable in light of the current economic environment. We review our allowance for doubtful accounts on a regular basis. In addition, when necessary, we provide an allowance for the full amount of specific accounts deemed to be uncollectible. Account balances are charged off against the allowance in the period in which we determine that it is probable the receivable will not be recovered. The allowance for doubtful accounts balances were \$19 million and \$15 million at December 31, 2019, and 2018, respectively, and bad debt write-offs were not material.

Inventories

Our inventories are stated at the lower of cost or market. For the years ended December 31, 2019 and 2018, approximately 14 percent and 13 percent, respectively, of our consolidated inventories (primarily heavy-duty and high-horsepower engines and parts) were valued using the last-in, first-out (LIFO) cost method. The cost of other inventories is generally valued using the first-in, first-out (FIFO) cost method. Our inventories at interim and year-end reporting dates include estimates for adjustments related to annual physical inventory results and for inventory cost changes under the LIFO cost method. Due to significant movements of partially-manufactured components and parts between manufacturing plants, we do not internally measure, nor do our accounting systems provide, a meaningful segregation between raw materials and work-in-process. See Note 7, "INVENTORIES," for additional information.

Property, Plant and Equipment

We record property, plant and equipment at cost, inclusive of assets under capital leases in 2018 and finance lease assets starting in 2019, with the adoption of the new lease standard. We depreciate the cost of the majority of our property, plant and equipment using the straight-line method with depreciable lives ranging from 20 to 40 years for buildings and 3 to 15 years for machinery, equipment and fixtures. Capital lease amortization in 2018 and finance lease asset amortization starting in 2019 are recorded in depreciation expense. We expense normal maintenance and repair costs as incurred. Depreciation expense totaled \$494 million, \$455 million and \$467 million for the years ended December 31, 2019, 2018 and 2017, respectively. See RECENTLY ADOPTED AND RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS sections below and Note 9, "LEASES," for additional information.

Impairment of Long-Lived Assets

We review our long-lived assets for possible impairment whenever events or circumstances indicate that the carrying value of an asset or asset group may not be recoverable. We assess the recoverability of the carrying value of the long-lived assets at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. An impairment of a long-lived asset or asset group exists when the expected future pre-tax cash flows (undiscounted and without interest charges) estimated to be generated by the asset or asset group is less than its carrying value. If these cash flows are less than the carrying value of such asset or asset group, an impairment loss is measured based on the difference between the estimated fair value and carrying value of the asset or asset group. Assumptions and estimates used to estimate cash flows in the evaluation of impairment and the fair values used to determine the impairment are subject to a degree of judgment and complexity. Any changes to the assumptions and estimates resulting from changes in actual results or market conditions from those anticipated may affect the carrying value of long-lived assets and could result in a future impairment charge.

Lease Policies

We determine if an arrangement contains a lease in whole or in part at the inception of the contract. Right-of-use (ROU) assets represent our right to use an underlying asset for the lease term while lease liabilities represent our obligation to make lease payments arising from the lease. All leases greater than 12 months result in the recognition of a ROU asset and a liability at the lease commencement date based on the present value of the lease payments over the lease term. As most of our leases do not provide the information required to determine the implicit rate, we use our incremental borrowing rate based on the information available at commencement date in determining the present value of lease payments. This rate is determined considering factors such as the lease term, our credit standing and the economic environment of the location of the lease. We use the implicit rate when readily determinable.

Our lease terms include all non-cancelable periods and may include options to extend (or to not terminate) the lease when it is reasonably certain that we will exercise that option. Leases that have a term of 12 months or less at the commencement date are expensed on a straight-line basis over the lease term and do not result in the recognition of an asset or a liability.

Lease expense for operating leases is recognized on a straight-line basis over the lease term. Lease expense for finance leases are generally front-loaded as the finance lease ROU asset is depreciated on a straight-line basis, but interest expense on the liability is recognized utilizing the interest method that results in more expense during the early years of the lease. We have lease agreements with lease and non-lease components, primarily related to real estate, vehicle and information technology (IT) assets. For vehicle and real estate leases, we account for the lease and non-lease components as a single lease component. For IT leases, we allocate the payment between the lease and non-lease components based on the relative value of each component. See Note 9, "LEASES," for additional information.

Goodwill

Under GAAP for goodwill, we have the option to first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value as a basis for determining whether it is necessary to perform an annual quantitative goodwill impairment test. We have elected this option on certain reporting units. The quantitative impairment test is only required if an entity determines through this qualitative analysis that it is more likely than not that the fair value of the reporting unit is less than its carrying value. In addition, the carrying value of goodwill must be tested for impairment on an interim basis in certain circumstances where impairment may be indicated. We perform our annual or interim goodwill impairment test by comparing the fair value of a reporting unit with its carrying amount. An impairment charge should be recognized for the amount by which the carrying amount exceeds the reporting unit's fair value.

When we are required or opt to perform the quantitative impairment test, the fair value of each reporting unit is estimated by discounting the after-tax future cash flows less requirements for working capital and fixed asset additions. Our reporting units are generally defined as one level below an operating segment. However, there are three situations where we have aggregated two or more reporting units which share similar economic characteristics and thus are aggregated into a single reporting unit for testing purposes. These three situations are described further below:

- Within our Components segment, our emission solutions and filtration businesses have been aggregated into a single reporting unit,
- Within our New Power segment, our electrified power and fuel cell businesses have been aggregated into a single reporting unit and
- Our Distribution segment is considered a single reporting unit as it is managed geographically and all regions share similar economic characteristics and provide similar products and services.

The discounted cash flow model requires us to make projections of revenue, gross margin, operating expenses, working capital investment and fixed asset additions for the reporting units over a multi-year period. Additionally, management must estimate a weighted-average cost of capital, which reflects a market rate, for each reporting unit for use as a discount rate. The discounted cash flows are compared to the carrying value of the reporting unit and, if less than the carrying value, the difference is recorded as a goodwill impairment loss. In addition, we also perform a sensitivity analysis to determine how much our forecasts can fluctuate before the fair value of a reporting unit would be lower than its carrying amount. We perform the required procedures as of the end of our fiscal third quarter. While none of our reporting units recorded a goodwill impairment in 2019, we determined the automated transmission business is our only reporting unit with material goodwill where the estimated fair value does not substantially exceed the carrying value. The estimated fair value of the reporting unit exceeds its carrying amount of \$1.2 billion by approximately 34 percent. Total goodwill in this reporting unit is \$544 million. This reporting unit is made up of only one business, our joint venture with Eaton (Eaton Cummins Automated Transmission Technologies), which was acquired and recorded at fair value in the third quarter of 2017. As a result, we did not expect the estimated fair value would exceed the carrying value by a significant amount.

At December 31, 2019, our recorded goodwill was \$1,286 million, approximately 42 percent of which resided in the automated transmissions reporting unit, 30 percent in the aggregated emission solutions and filtration reporting unit, 20 percent in the new power reporting unit and 6 percent in the distribution reporting unit. Changes in our projections or estimates, a deterioration of our operating results and the related cash flow effect or a significant increase in the discount rate could decrease the estimated fair value of our reporting units and result in a future impairment of goodwill. See Note 10, "GOODWILL AND OTHER INTANGIBLE ASSETS," for additional information.

Other Intangible Assets

We capitalize other intangible assets, such as trademarks, patents and customer relationships, that have been acquired either individually or with a group of other assets. These intangible assets are amortized on a straight-line basis over their estimated useful lives generally ranging from 3 to 25 years. Intangible assets are reviewed for impairment when events or circumstances indicate that the carrying value may not be recoverable over the remaining lives of the assets. See Note 10, "GOODWILL AND OTHER INTANGIBLE ASSETS," for additional information.

Software

We capitalize software that is developed or obtained for internal use. Software costs are amortized on a straight-line basis over their estimated useful lives generally ranging from 3 to 12 years. Software assets are reviewed for impairment when events or circumstances indicate that the carrying value may not be recoverable over the remaining lives of the assets. Upgrades and enhancements are capitalized if they result in significant modifications that enable the software to perform tasks it was previously incapable of performing. Software maintenance, training, data conversion and business process reengineering costs are expensed in the period in which they are incurred. See Note 10, "GOODWILL AND OTHER INTANGIBLE ASSETS," for additional information.

Warranty

We estimate and record a liability for base warranty programs at the time our products are sold. Our estimates are based on historical experience and reflect management's best estimates of expected costs at the time products are sold and subsequent adjustment to those expected costs when actual costs differ. Factors considered in developing these estimates included component failure rates, repair costs and the point of failure within the product life cycle. As a result of the uncertainty surrounding the nature and frequency of product campaigns, the liability for such campaigns is recorded when we commit to a recall action or when a recall becomes probable and estimable, which generally occurs when it is announced. The liability for these campaigns is reflected in the provision for warranties issued. We review and assess the liability for these programs on a quarterly basis. We also assess our ability to recover certain costs from our suppliers and record a receivable when we believe a recovery is probable. In addition to costs incurred on warranty and product campaigns, from time to time we also incur costs related to customer satisfaction programs for items not covered by warranty. We accrue for these costs when agreement is reached with a specific customer. These costs are not included in the provision for warranties, but are included in cost of sales. In addition, we sell extended warranty coverage on most of our engines. See *Extended Warranty* policy discussion above and Note 12, "PRODUCT WARRANTY LIABILITY," for additional information.

Research and Development

Our research and development program is focused on product improvements, product extensions, innovations and cost reductions for our customers. Research and development expenditures include salaries, contractor fees, building costs, utilities, testing, technical IT, administrative expenses and allocation of corporate costs and are expensed, net of contract reimbursements, when incurred. From time to time, we enter into agreements with customers and government agencies to fund a portion of the research and development costs of a particular project. When not associated with a sales contract, we generally account for these reimbursements as an offset to the related research and development expenditure. Research and development expenses, net of contract reimbursements, were \$998 million, \$894 million and \$734 million for the years ended December 31, 2019, 2018 and 2017, respectively. Contract reimbursements were \$90 million, \$120 million and \$137 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Related Party Transactions

In accordance with the provisions of various joint venture agreements, we may purchase products and components from our joint ventures, sell products and components to our joint ventures and our joint ventures may sell products and components to unrelated parties. Joint venture transfer prices may differ from normal selling prices. Certain joint venture agreements transfer product at cost, some transfer product on a cost-plus basis, and others transfer product at market value. Our related party sales are presented on the face of our *Consolidated Statements of Net Income*. Our related party purchases were not material to our financial position or results of operations.

RECENTLY ADOPTED AND RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS

Accounting Pronouncements Recently Adopted

In February 2016, the Financial Accounting Standards Board (FASB) amended its standards related to the accounting for leases. Under the new standard, lessees are now required to recognize substantially all leases on the balance sheet as both a ROU asset and a liability. The standard continues to have two types of leases for income statement recognition purposes: operating leases and finance leases. Operating leases result in the recognition of a single lease expense on a straight-line basis over the lease term, similar to the treatment for operating leases under the old standard. Finance leases result in an accelerated expense similar to the accounting for capital leases under the old standard. The determination of a lease classification as operating or finance will occur in a manner similar to the old standard. The new standard also contains amended guidance regarding the identification of embedded leases in service contracts and the identification of lease and non-lease components of an arrangement.

We adopted the new standard on January 1, 2019, using a modified retrospective approach and as a result did not adjust prior periods. Adoption of the standard resulted in the recording of \$450 million of operating lease ROU assets and operating lease liabilities, but did not have a material impact on our net income or cash flows. The cumulative effect adjustment of adopting the new standard was not material. We elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allowed us to carry forward the historical lease classification and to not re-evaluate existing contracts as to whether or not they contained a lease.

On January 1, 2019, we adopted the new FASB standard related to accounting for derivatives and hedging. The new standard allows the initial hedge effectiveness assessment to be performed by the end of the first quarter in which the hedge is designated rather than concurrently with entering into the hedge transaction. The changes also expand the use of a periodic qualitative hedge effectiveness assessment in lieu of an ongoing quantitative assessment performed throughout the life of the hedge. The revision removes the requirement to record ineffectiveness on cash flow hedges through the income statement when a hedge is considered highly effective, instead deferring all related hedge gains and losses in other comprehensive income until the hedged item impacts earnings. The modifications permit hedging the contractually-specified price of a component of a commodity purchase and revises certain disclosure requirements. We adopted the new standard on a modified retrospective basis for existing cash flow hedges and prospectively for disclosures. The amendments did not have a material effect on our *Consolidated Financial Statements* and no transition adjustment was required upon adoption.

Accounting Pronouncements Issued But Not Yet Effective

In August 2018, the FASB issued a new standard that aligns the accounting for implementation costs incurred in a cloud computing arrangement accounted for as a service contract with the model currently used for internal use software costs. Under the new standard, costs that meet certain criteria will be required to be capitalized on the balance sheet and subsequently amortized over the term of the hosting arrangement. The standard is effective for us beginning on January 1, 2020. We will adopt this standard on a prospective basis as allowed by the standard and as a result the adoption will not have an impact on our *Consolidated Financial Statements*.

In June 2016, the FASB amended its standards related to accounting for credit losses on financial instruments. This amendment introduces new guidance for accounting for credit losses on instruments including trade receivables and held-to-maturity debt securities. The new rules are effective for annual and interim periods beginning after December 15, 2019. We will adopt this standard for 2020 and we do not expect adoption of this standard to have a material impact on our *Consolidated Financial Statements*.

NOTE 2. REVENUE RECOGNITION

Long-term Contracts

Most of our contracts are for a period of less than one year. We have certain long-term maintenance agreements, construction contracts and extended warranty coverage arrangements that span a period in excess of one year. The aggregate amount of the transaction price for long-term maintenance agreements and construction contracts allocated to performance obligations that have not been satisfied as of December 31, 2019, was \$890 million. We expect to recognize the related revenue of \$241 million over the next 12 months and \$649 million over periods up to 10 years. See Note 12, "PRODUCT WARRANTY LIABILITY," for additional disclosures on extended warranty coverage arrangements. Our other contracts generally are for a duration of less than one year, include payment terms that correspond to the timing of costs incurred when providing goods and services to our customers or represent sales-based royalties.

Deferred and Unbilled Revenue

The following is a summary of our unbilled and deferred revenue and related activity:

In millions	Years ended December 31,	
	2019	2018
Unbilled revenue	\$ 68	\$ 64
Deferred revenue, primarily extended warranty	1,354	1,156

We recognized revenue of \$365 million and \$361 million in 2019 and 2018, respectively, that was included in the deferred revenue balance at the beginning of each year. We did not record any impairment losses on our unbilled revenues during 2019 or 2018.

Disaggregation of Revenue

Consolidated Revenue

The table below presents our consolidated sales by geographic area. Net sales attributed to geographic areas were based on the location of the customer.

In millions	Years ended December 31,		
	2019	2018	2017
United States	\$ 13,519	\$ 13,218	\$ 11,010
China	2,331	2,324	2,137
India	848	965	805
Other international	6,873	7,264	6,476
Total net sales	\$ 23,571	\$ 23,771	\$ 20,428

Segment Revenue

Engine segment external sales by market were as follows:

In millions	Years ended December 31,	
	2019	2018
Heavy-duty truck	\$ 2,626	\$ 2,885
Medium-duty truck and bus	2,244	2,536
Light-duty automotive	1,656	1,501
Total on-highway	6,526	6,922
Off-highway	1,044	1,080
Total sales	\$ 7,570	\$ 8,002

Distribution segment external sales by region were as follows:

In millions	Years ended December 31,	
	2019	2018
North America	\$ 5,513	\$ 5,331
Asia Pacific	875	851
Europe	528	536
China	356	317
Africa and Middle East	235	242
India	200	192
Latin America	176	169
Russia	157	169
Total sales	\$ 8,040	\$ 7,807

Distribution segment external sales by product line were as follows:

In millions	Years ended December 31,	
	2019	2018
Parts	\$ 3,278	\$ 3,222
Power generation	1,777	1,482
Engines	1,511	1,632
Service	1,474	1,471
Total sales	\$ 8,040	\$ 7,807

Components segment external sales by business were as follows:

In millions	Years ended December 31,	
	2019	2018
Emission solutions	\$ 2,763	\$ 2,780
Filtration	1,024	1,010
Turbo technologies	696	761
Automated transmissions	534	543
Electronics and fuel systems	236	237
Total sales	\$ 5,253	\$ 5,331

Power Systems segment external sales by product line were as follows:

In millions	Years ended December 31,	
	2019	2018
Power generation	\$ 1,414	\$ 1,467
Industrial	908	801
Generator technologies	348	357
Total sales	\$ 2,670	\$ 2,625

NOTE 3. INVESTMENTS IN EQUITY INVESTEEES

Investments and advances related to equity method investees and our ownership percentages were as follows:

Dollars in millions	Ownership %	December 31,	
		2019	2018
Komatsu alliances	20-50%	\$ 267	\$ 238
Beijing Foton Cummins Engine Co., Ltd.	50%	193	203
Dongfeng Cummins Engine Company, Ltd.	50%	149	160
Chongqing Cummins Engine Company, Ltd.	50%	110	102
Cummins-Scania XPI Manufacturing, LLC	50%	96	101
Tata Cummins, Ltd.	50%	60	58
Other	Various	362	360
Investments and advances related to equity method investees		\$ 1,237	\$ 1,222

We have approximately \$758 million in our investment account at December 31, 2019, that represents cumulative undistributed income in our equity investees. Dividends received from our unconsolidated equity investees were \$260 million, \$242 million and \$219 million in 2019, 2018 and 2017, respectively.

Equity, royalty and interest income from investees, net of applicable taxes, was as follows:

In millions	Years ended December 31,		
	2019	2018	2017
Manufacturing entities			
Beijing Foton Cummins Engine Co., Ltd.	\$ 60	\$ 72	\$ 94
Dongfeng Cummins Engine Company, Ltd.	52	58	73
Chongqing Cummins Engine Company, Ltd.	41	51	41
All other manufacturers	88	129	71 ⁽¹⁾
Distribution entities			
Komatsu Cummins Chile, Ltda.	28	26	30
All other distributors	2	—	(1)
Cummins share of net income	271	336	308
Royalty and interest income	59	58	49
Equity, royalty and interest income from investees	\$ 330	\$ 394	\$ 357

⁽¹⁾ Tax legislation passed in December 2017 decreased our equity earnings at certain equity investees by \$39 million due to withholding tax adjustments on foreign earnings and remeasurement of deferred taxes. See Note 5, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

Manufacturing Entities

Our manufacturing joint ventures have generally been formed with customers and are primarily intended to allow us to increase our market penetration in geographic regions, reduce capital spending, streamline our supply chain management and develop technologies. Our largest manufacturing joint ventures are based in China and are included in the list below. Our engine manufacturing joint ventures are supplied by our Components segment in the same manner as it supplies our wholly-owned Engine segment and Power Systems segment manufacturing facilities. Our Components segment joint ventures and wholly owned entities provide electronics, fuel systems, filtration, aftertreatment systems, turbocharger products and automated transmissions that are used with our engines as well as some competitors' products. The results and investments in our joint ventures in which we have 50 percent or less ownership interest (except for Eaton Cummins Automated Transmission Technologies joint venture which is consolidated due to our majority voting interest) are included in "Equity, royalty and interest income from investees" and "Investments and advances related to equity method investees" in our *Consolidated Statements of Net Income* and *Consolidated Balance Sheets*, respectively.

- **Beijing Foton Cummins Engine Co., Ltd.** - Beijing Foton Cummins Engine Co., Ltd. is a joint venture in China with Beiqi Foton Motor Co., Ltd., a commercial vehicle manufacturer, which has two distinct lines of business - a light-duty business and a heavy-duty business. The light-duty business produces our families of ISF 2.8 liter to 4.5 liter high performance light-duty diesel engines in Beijing. These engines are used in light-duty and medium-duty commercial trucks, pick-up trucks, buses, multipurpose and sport utility vehicles with main markets in China, Brazil and Russia. Certain types of small construction equipment and industrial applications are also served by these engine families. The heavy-duty business produces the X11 and X12, ranging from 10.5 liter to 12.9 liter, high performance heavy-duty diesel engines in Beijing, and is nearing the launch of the X13 engine. Certain types of construction equipment and industrial applications are also served by these engine families.
- **Dongfeng Cummins Engine Company, Ltd.** - Dongfeng Cummins Engine Company, Ltd. (DCEC) is a joint venture in China with Dongfeng Automotive Co. Ltd., a subsidiary of Dongfeng Motor Corporation and one of the largest medium-duty and heavy-duty truck manufacturers in China. DCEC produces 3.9 liter to 14 liter diesel engines, with a power range from 80 to 680 horsepower, and natural gas engines. On-highway engines are used in multiple applications in light-duty and medium-duty trucks, special purpose vehicles, buses and heavy-duty trucks with a main market in China. Off-highway engines are used in a variety of construction, power generation, marine and agriculture markets in China.
- **Chongqing Cummins Engine Company, Ltd.** - Chongqing Cummins Engine Company, Ltd. is a joint venture in China with Chongqing Machinery and Electric Co. Ltd. This joint venture manufactures several models of our heavy-duty and high-horsepower diesel engines primarily serving the industrial and stationary power markets in China.

Distribution Entities

We have an extensive worldwide distributor and dealer network through which we sell and distribute our products and services. Generally, our distributors are divided by geographic region with some of our distributors being wholly-owned by Cummins, some partially-owned and some independently owned. We consolidate all wholly-owned distributors and partially-owned distributors where we are the primary beneficiary and account for other partially-owned distributors using the equity method of accounting.

Komatsu Cummins Chile, Ltda. - Komatsu Cummins Chile, Ltda. is a joint venture with Komatsu America Corporation. The joint venture is a distributor that offers the full range of our products and services to customers and end-users in Chile and Peru.

In certain cases where we own a partial interest in a distributor, we may be obligated to purchase the other equity holders' interests if certain events occur (such as the death or resignation of the distributor principal or a change in control of Cummins Inc.). The purchase consideration of the equity interests may be determined based on the fair value of the distributor's assets. Repurchase obligations and practices vary by geographic region.

All distributors that are partially-owned are considered to be related parties in our *Consolidated Financial Statements*.

Equity Investee Financial Summary

Summary financial information for our equity investees was as follows:

In millions	For the years ended and at December 31,		
	2019	2018	2017
Net sales	\$ 7,068	\$ 7,352	\$ 7,050
Gross margin	1,274	1,373	1,422
Net income	566	647	680
Cummins share of net income	\$ 271	\$ 336	\$ 308
Royalty and interest income	59	58	49
Total equity, royalty and interest from investees	<u>\$ 330</u>	<u>\$ 394</u>	<u>\$ 357</u>
Current assets	\$ 3,282	\$ 3,401	
Non-current assets	1,622	1,449	
Current liabilities	(2,654)	(2,669)	
Non-current liabilities	(326)	(218)	
Net assets	<u>\$ 1,924</u>	<u>\$ 1,963</u>	
Cummins share of net assets	<u>\$ 1,159</u>	<u>\$ 1,144</u>	

NOTE 4. RESTRUCTURING ACTIONS

In November 2019, we announced our intentions to reduce our global workforce in response to the continued deterioration in our global markets in the second half of 2019, as well as expected reductions in orders in most U.S. and international markets in 2020. In the fourth quarter of 2019, we began executing restructuring actions, primarily in the form of voluntary and involuntary employee separation programs. To the extent these programs involve voluntary separations, a liability is generally recorded at the time offers to employees are accepted. To the extent these programs provide separation benefits in accordance with pre-existing agreements or policies, a liability is recorded once the amount is probable and reasonably estimable. We incurred a charge of \$119 million (\$90 million after-tax) in the fourth quarter of 2019 for these actions which impacted approximately 2,300 employees. The voluntary actions were completed by December 31, 2019 and the majority of the involuntary actions were executed prior to January 31, 2020, with expected completion by March 31, 2020. Due to the inherent uncertainty involved, actual amounts paid for such activities may differ from amounts initially recorded and we may need to revise previous estimates.

Restructuring actions were included in our segment and non-segment operating results as follows:

In millions	Years ended December 31, 2019
Engine	\$ 18
Distribution	37
Components	20
Power Systems	12
New Power	1
Non-segment	31
Restructuring actions	<u>\$ 119</u>

The table below summarizes the activity and balance of accrued restructuring, which is included in "Other accrued expenses" in our *Consolidated Balance Sheets*:

In millions	Restructuring Accrual
Workforce reductions	\$ 119
Cash payments	(4)
Foreign currency loss	1
Balance at December 31, 2019	<u>\$ 116</u>

NOTE 5. INCOME TAXES

The following table summarizes income before income taxes:

In millions	Years ended December 31,		
	2019	2018	2017
U.S. income	\$ 1,677	\$ 1,239	\$ 1,237
Foreign income	1,157	1,514	1,128
Income before income taxes	<u>\$ 2,834</u>	<u>\$ 2,753</u>	<u>\$ 2,365</u>

Income tax expense (benefit) consists of the following:

In millions	Years ended December 31,		
	2019	2018	2017
Current			
U.S. federal and state	\$ 288	\$ 303	\$ 355
Foreign	282	348	289
Impact of tax legislation	—	153	349
Total current income tax expense	<u>570</u>	<u>804</u>	<u>993</u>
Deferred			
U.S. federal and state	(32)	(71)	(42)
Foreign	28	(26)	(12)
Impact of tax legislation	—	(141)	432
Total deferred income tax (benefit) expense	<u>(4)</u>	<u>(238)</u>	<u>378</u>
Income tax expense	<u>\$ 566</u>	<u>\$ 566</u>	<u>\$ 1,371</u>

A reconciliation of the statutory U.S. federal income tax rate to the effective tax rate was as follows:

	Years ended December 31,		
	2019	2018	2017
Statutory U.S. federal income tax rate	21.0%	21.0%	35.0%
State income tax, net of federal effect	1.1	0.9	0.6
Differences in rates and taxability of foreign subsidiaries and joint ventures	1.5	(0.2)	(6.4)
Research tax credits	(1.5)	(1.2)	(1.4)
Foreign derived intangible income	(1.3)	(1.3)	—
Impact of tax legislation	—	0.5	33.1
Other, net	(0.8)	0.9	(2.9)
Effective tax rate	<u>20.0%</u>	<u>20.6%</u>	<u>58.0%</u>

Our effective tax rate for 2019 was 20.0 percent compared to 20.6 percent for 2018 and 58.0 percent for 2017. The year ended December 31, 2019, contained \$34 million of favorable net discrete tax items, primarily due to withholding taxes and provision to return adjustments.

The year ended December 31, 2018, contained \$14 million of favorable net discrete tax items, primarily due to \$26 million of other favorable discrete tax items, partially offset by \$12 million of unfavorable discrete tax items related to the tax legislation.

On December 22, 2017, the U.S. enacted the Tax Cuts and Jobs Act (Tax Legislation) which changed the U.S. statutory rate to 21 percent effective January 1, 2018 and required companies to pay a one-time transition tax on certain previously undistributed earnings on certain foreign subsidiaries and foreign joint ventures that were tax deferred. The impacts of the Tax Legislation resulted in additional tax expense of \$12 million in 2018 and \$781 million in 2017. See Tax Legislation Summary below for additional information.

Carryforward tax benefits and the tax effect of temporary differences between financial and tax reporting that give rise to net deferred tax (liabilities) assets were as follows:

In millions	December 31,	
	2019	2018
Deferred tax assets		
U.S. state carryforward benefits	\$ 207	\$ 191
Foreign carryforward benefits	157	149
Employee benefit plans	279	245
Warranty expenses	427	401
Lease liabilities	122	—
Accrued expenses	76	94
Other	44	65
Gross deferred tax assets	<u>1,312</u>	<u>1,145</u>
Valuation allowance	<u>(317)</u>	<u>(327)</u>
Total deferred tax assets	<u>995</u>	<u>818</u>
Deferred tax liabilities		
Property, plant and equipment	(260)	(255)
Unremitted income of foreign subsidiaries and joint ventures	(181)	(184)
Employee benefit plans	(222)	(202)
Lease assets	(120)	—
Other	(77)	(30)
Total deferred tax liabilities	<u>(860)</u>	<u>(671)</u>
Net deferred tax assets	<u>\$ 135</u>	<u>\$ 147</u>

Our 2019 U.S. carryforward benefits include \$207 million of state credit and net operating loss carryforward benefits that begin to expire in 2020. Our foreign carryforward benefits include \$157 million of net operating loss carryforwards that begin to expire in 2020. A valuation allowance is recorded to reduce the gross deferred tax assets to an amount we believe is more likely than not to be realized. The valuation allowance is \$317 million and decreased in 2019 by a net \$10 million. The valuation allowance is primarily attributable to the uncertainty regarding the realization of a portion of the U.S. state and foreign net operating loss and tax credit carryforward benefits.

Our *Consolidated Balance Sheets* contain the following tax related items:

In millions	December 31,	
	2019	2018
Prepaid expenses and other current assets		
Refundable income taxes	\$ 191	\$ 117
Other assets		
Deferred income tax assets	441	410
Long-term refundable income taxes	23	6
Other accrued expenses		
Income tax payable	52	97
Other liabilities		
One-time transition tax	293	293
Deferred income tax liabilities	306	263

A reconciliation of unrecognized tax benefits for the years ended December 31, 2019, 2018 and 2017 was as follows:

In millions	December 31,		
	2019	2018	2017
Balance at beginning of year	\$ 71	\$ 41	\$ 59
Additions to current year tax positions	23	10	11
Additions to prior years' tax positions	5	27	9
Reductions to prior years' tax positions	(11)	(2)	(3)
Reductions for tax positions due to settlements with taxing authorities	(11)	(5)	(35)
Balance at end of year	<u>\$ 77</u>	<u>\$ 71</u>	<u>\$ 41</u>

Included in the December 31, 2019, 2018 and 2017, balances are \$69 million, \$62 million and \$32 million, respectively, related to tax positions that, if released, would favorably impact the effective tax rate in future periods. We have also accrued interest expense related to the unrecognized tax benefits of \$5 million, \$4 million and \$4 million as of December 31, 2019, 2018 and 2017, respectively. We recognize potential accrued interest and penalties related to unrecognized tax benefits in income tax expense.

Audit outcomes and the timing of audit settlements are subject to significant uncertainty. Although we believe that adequate provision has been made for such issues, there is the possibility that the ultimate resolution of such issues could have an adverse effect on our earnings. Conversely, if these issues are resolved favorably in the future, the related provision would be reduced, thus having a positive impact on earnings.

As a result of our global operations, we file income tax returns in various jurisdictions including U.S. federal, state and foreign jurisdictions. We are routinely subject to examination by taxing authorities throughout the world, including Australia, Belgium, Brazil, Canada, China, France, India, Mexico, the U.K. and the U.S. With few exceptions, our U.S. federal, major state and foreign jurisdictions are no longer subject to income tax assessments for years before 2015.

TAX LEGISLATION SUMMARY

The Securities and Exchange Commission (SEC) issued guidance which addressed the uncertainty in the application of GAAP to the Tax Legislation where certain income tax effects could not be finalized at December 31, 2017. This guidance allowed entities to record provisional amounts based on current estimates that were updated on a quarterly basis in 2018. The SEC required final calculations to be completed within the one year measurement period ending December 22, 2018 and reflect any additional guidance issued throughout the year. We made provisional estimates of the effects of the Tax Legislation in three primary areas: (1) our existing deferred tax balances; (2) the one-time transition tax and (3) the withholding tax accrued on those earnings no longer considered permanently reinvested at December 31, 2017. Each of these items is described in more detail below.

2017 Impact of Tax Legislation

Deferred tax assets and liabilities

We remeasured certain deferred tax assets and liabilities based on the rates at which they were expected to reverse in the future, which was generally 21 percent. The provisional amount related to the remeasurement of our deferred tax balance was an incremental tax expense of \$152 million in 2017. See Note 3, "INVESTMENTS IN EQUITY INVESTEES," for the impact to our equity investees.

One-time transition tax

The one-time transition tax was based on our total post-1986 unrepatriated earnings and profits not previously subject to U.S. income tax. The recorded provisional amount for our one-time transition tax was a tax expense of \$298 million with a cash impact of \$338 million.

Withholding tax

Withholding tax is an additional cost associated with the distribution of earnings from some jurisdictions. As a result of the Tax Legislation, we reconsidered previous assertions regarding earnings that were considered permanently reinvested, which required us to record withholding taxes on earnings likely to be distributed in the foreseeable future. The assertion as to which earnings are permanently reinvested for purposes of calculating withholding tax was provisional as we refined the underlying calculations of the amount of earnings subject to the tax and the rate at which it will be taxed. The recorded provisional amount for the withholding tax resulted in an incremental tax expense of \$331 million. See Note 3, "INVESTMENTS IN EQUITY INVESTEES," and Note 18, "NONCONTROLLING INTERESTS," for the impact of withholding taxes to our equity investees and noncontrolling interests.

2018 Adjustments to Tax Legislation

We completed accounting for the tax effects of the enactment of the Tax Legislation as of December 31, 2018 and included \$12 million of unfavorable discrete tax items in our 2018 tax provision.

The adjustments for income tax expense (benefit) during the one-year Tax Legislation measurement period for each group and other Tax Legislation adjustments consisted of the following:

In millions	Years Ended December 31,		Total Impact
	2018	2017	
One-year measurement adjustments to 2017 estimates			
Withholding tax accrued	\$ (148)	\$ 331	\$ 183
Deferred tax balances	7	152	159
One-time transition tax	111	298	409
Net impact of measurement period changes	(30)	781	751
Other 2018 adjustments			
Deferred tax charges ⁽¹⁾	35	—	35
Foreign currency adjustment related to Tax Legislation	7	—	7
Net impact of 2018 adjustments	42	—	42
Total Tax Legislation impact	\$ 12	\$ 781	\$ 793

⁽¹⁾ Charges relate to one-time recognition of deferred tax charges at historical tax rates on intercompany profit in inventory.

NOTE 6. MARKETABLE SECURITIES

A summary of marketable securities, all of which are classified as current, was as follows:

In millions	December 31,					
	2019			2018		
	Cost	Gross unrealized gains/(losses) ⁽¹⁾	Estimated fair value	Cost	Gross unrealized gains/(losses) ⁽¹⁾	Estimated fair value
Equity securities						
Debt mutual funds	\$ 180	\$ 3	\$ 183	\$ 103	\$ 1	\$ 104
Certificates of deposit	133	—	133	101	—	101
Equity mutual funds	19	4	23	16	—	16
Bank debentures	1	—	1	—	—	—
Debt securities	1	—	1	1	—	1
Total marketable securities	\$ 334	\$ 7	\$ 341	\$ 221	\$ 1	\$ 222

⁽¹⁾ Unrealized gains and losses for debt securities are recorded in other comprehensive income while unrealized gains and losses for equity securities are recorded in "Other income, net" in our *Consolidated Statements of Net Income*.

All debt securities are classified as available-for-sale. All marketable securities presented use a Level 2 fair value measure. The fair value of Level 2 securities is estimated using actively quoted prices for similar instruments from brokers and observable inputs where available, including market transactions and third-party pricing services, or net asset values provided to investors. We do not currently have any Level 3 securities and there were no transfers between Level 2 or 3 during 2019 or 2018.

A description of the valuation techniques and inputs used for our Level 2 fair value measures is as follows:

- *Debt mutual funds*— The fair value measure for the vast majority of these investments is the daily net asset value published on a regulated governmental website. Daily quoted prices are available from the issuing brokerage and are used on a test basis to corroborate this Level 2 input.
- *Certificates of deposit and bank debentures*— These investments provide us with a contractual rate of return and generally range in maturity from three months to five years. The counterparties to these investments are reputable financial institutions with investment grade credit ratings. Since these instruments are not tradable and must be settled directly by us with the respective financial institution, our fair value measure is the financial institution's month-end statement.
- *Equity mutual funds*— The fair value measure for these investments is the net asset value published by the issuing brokerage. Daily quoted prices are available from reputable third-party pricing services and are used on a test basis to corroborate this Level 2 input measure.
- *Debt securities*— The fair value measure for these securities is broker quotes received from reputable firms. These securities are infrequently traded on a national stock exchange and these values are used on a test basis to corroborate our Level 2 input measure.

The proceeds from sales and maturities of marketable securities were as follows:

In millions	Years ended December 31,		
	2019	2018	2017
Proceeds from sales of marketable securities	\$ 258	\$ 253	\$ 145
Proceeds from maturities of marketable securities	131	78	121
Investments in marketable securities - liquidations	\$ 389	\$ 331	\$ 266

NOTE 7. INVENTORIES

Inventories are stated at the lower of cost or market. Inventories included the following:

In millions	December 31,	
	2019	2018
Finished products	\$ 2,214	\$ 2,405
Work-in-process and raw materials	1,395	1,487
Inventories at FIFO cost	3,609	3,892
Excess of FIFO over LIFO	(123)	(133)
Total inventories	<u>\$ 3,486</u>	<u>\$ 3,759</u>

NOTE 8. PROPERTY, PLANT AND EQUIPMENT

Details of our property, plant and equipment balance were as follows:

In millions	December 31,	
	2019	2018
Land and buildings	\$ 2,487	\$ 2,398
Machinery, equipment and fixtures	5,618	5,391
Construction in process	594	530
Property, plant and equipment, gross	8,699	8,319
Less: Accumulated depreciation	(4,454)	(4,223)
Property, plant and equipment, net	<u>\$ 4,245</u>	<u>\$ 4,096</u>

NOTE 9. LEASES

Our lease portfolio consists primarily of real estate and equipment leases. Our real estate leases primarily consist of land, office, distribution, warehousing and manufacturing facilities. These leases typically range in term from 2 to 50 years and may contain renewal options for periods up to 2 years at our discretion. Our equipment lease portfolio consists primarily of vehicles (including service vehicles), forklifts and IT equipment. These leases typically range in term from two years to three years and may contain renewal options. Our leases generally do not contain variable lease payments other than (1) certain foreign real estate leases which have payments indexed to inflation and (2) certain real estate executory costs (such as taxes, insurance and maintenance), which are paid based on actual expenses incurred by the lessor during the year. Our leases generally do not include residual value guarantees other than our service vehicle fleet, which has a residual guarantee based on a percentage of the original cost declining over the lease term.

The components of our lease cost were as follows:

In millions	Year Ended December 31, 2019
Operating lease cost	\$ 208
Finance lease cost	
Amortization of right-of-use asset	18
Interest expense	9
Short-term lease cost	5
Variable lease cost	7
Total lease cost	<u>\$ 247</u>

Supplemental balance sheet information related to leases:

In millions	December 31, 2019	Balance Sheet Location
Assets		
Operating lease assets	\$ 496	Other assets
Finance lease assets ⁽¹⁾	90	Property, plant and equipment, net
Total lease assets	<u>\$ 586</u>	
Liabilities		
Current		
Operating	\$ 131	Other accrued expenses
Finance	12	Current maturities of long-term debt
Long-term		
Operating	370	Other liabilities
Finance	78	Long-term debt
Total lease liabilities	<u>\$ 591</u>	

⁽¹⁾ Finance lease assets were recorded net of accumulated amortization of \$62 million at December 31, 2019.

Supplemental cash flow and other information related to leases:

In millions	Year Ended December 31, 2019
Cash paid for amounts included in the measurement of lease liabilities	
Operating cash flows from operating leases	\$ 163
Operating cash flows from finance leases	47
Financing cash flows from finance leases	9
Right-of-use assets obtained in exchange for lease obligations	
Operating leases	\$ 214
Finance leases	5

Additional information related to leases:

	December 31, 2019
Weighted-average remaining lease term (in years)	
Operating leases	5.3
Finance leases	12.1
Weighted-average discount rate	
Operating leases	3.3%
Finance leases	4.4%

Following is a summary of the future minimum lease payments due to finance and operating leases with terms of more than one year at December 31, 2019, together with the net present value of the minimum payments:

In millions	Finance Leases	Operating Leases
2020	\$ 15	\$ 143
2021	11	117
2022	10	90
2023	9	60
2024	7	47
After 2024	65	95
Total minimum lease payments	117	552
Interest	(27)	(51)
Present value of net minimum lease payments	\$ 90	\$ 501

Following is a summary of the future minimum lease payments due under capital and operating leases with terms of more than one year at December 31, 2018, together with the net present value of the minimum payments due under capital leases:

In millions	Capital Leases	Operating Leases
2019	\$ 30	\$ 138
2020	21	109
2021	16	81
2022	14	60
2023	13	39
After 2023	144	81
Total minimum lease payments	\$ 238	\$ 508
Interest	(106)	
Present value of net minimum lease payments	\$ 132	

NOTE 10. GOODWILL AND OTHER INTANGIBLE ASSETS

The following table summarizes the changes in the carrying amount of goodwill for the years ended December 31, 2019 and 2018:

In millions	Components	New Power	Distribution	Power Systems	Engine	Segment Total	Unallocated	Total
Balance at December 31, 2017	\$ 940	\$ —	\$ 79	\$ 10	\$ 6	\$ 1,035	\$ 47 ⁽²⁾	\$1,082
Acquisitions	—	49 ⁽¹⁾	—	—	—	49	—	49
Translation and other	(5)	—	—	—	—	(5)	—	(5)
Allocation to segment	—	47 ⁽²⁾	—	—	—	47	(47) ⁽²⁾	—
Balance at December 31, 2018	935	96	79	10	6	1,126	—	1,126
Acquisitions	—	161 ⁽¹⁾	—	—	—	161	—	161
Translation and other	(1)	—	—	—	—	(1)	—	(1)
Balance at December 31, 2019	\$ 934	\$ 257	\$ 79	\$ 10	\$ 6	\$ 1,286	\$ —	\$1,286

⁽¹⁾ See Note 21, "ACQUISITIONS," for additional information on acquisition goodwill.

⁽²⁾ Goodwill associated with the Brammo Inc. acquisition was presented as an unallocated item as it had not yet been assigned to a reportable segment at December 31, 2017. Effective January 1, 2018, Brammo Inc. was assigned to our New Power segment. See Note 21, "ACQUISITIONS," for additional information.

Intangible assets that have finite useful lives are amortized over their estimated useful lives. The following table summarizes our other intangible assets with finite useful lives that are subject to amortization:

In millions	December 31,	
	2019	2018
Software	\$ 708	\$ 662
Less: Accumulated amortization	(425)	(372)
Software, net	283	290
Trademarks, patents, customer relationships and other	956	803
Less: Accumulated amortization	(236)	(184)
Trademarks, patents, customer relationships and other, net	720	619
Total other intangible assets, net	\$ 1,003	\$ 909

Amortization expense for software and other intangibles totaled \$175 million, \$153 million and \$112 million for the years ended December 31, 2019, 2018 and 2017, respectively. The projected amortization expense of our intangible assets, assuming no further acquisitions or dispositions, is as follows:

In millions	2020	2021	2022	2023	2024
Projected amortization expense	\$ 136	\$ 118	\$ 101	\$ 84	\$ 66

NOTE 11. DEBT

Loans Payable and Commercial Paper

Loans payable at December 31, 2019 and 2018 were \$100 million and \$54 million, respectively, and consisted primarily of notes payable to financial institutions. The weighted-average interest rate for notes payable, bank overdrafts and current maturities of long-term debt at December 31 was as follows:

	2019	2018	2017
Weighted-average interest rate	3.20%	4.66%	3.01%

We can issue up to \$3.5 billion of unsecured, short-term promissory notes (commercial paper) pursuant to the Board of Directors (the Board) authorized commercial paper programs. The programs facilitate the private placement of unsecured short-term debt through third-party brokers. We intend to use the net proceeds from the commercial paper borrowings for general corporate purposes. We had \$660 million and \$780 million in outstanding borrowings under our commercial paper programs at December 31, 2019 and 2018, respectively. The weighted-average interest rate for commercial paper at December 31 was as follows:

	2019	2018	2017
Weighted-average interest rate	1.82%	2.59%	1.56%

Revolving Credit Facilities

On August 22, 2018, we entered into a new 5-year revolving credit agreement with a syndicate of lenders and we amended the agreement on August 21, 2019. The amended credit agreement provides us with a \$2 billion senior unsecured revolving credit facility until August 22, 2023. Amounts payable under our revolving credit facility will rank pro rata with all of our unsecured, unsubordinated indebtedness. Advances under the facility bear interest at (i) an alternate base rate or (ii) a rate equal to the adjusted LIBOR plus an applicable margin based on the credit ratings of our outstanding senior unsecured long-term debt. Based on our current long-term debt ratings, the applicable margin on adjusted LIBOR rate loans was 0.75 percent per annum as of December 31, 2019. Advances under the facility may be prepaid without premium or penalty, subject to customary breakage costs.

On August 21, 2019, we entered into an amended and restated 364-day credit agreement that allows us to borrow up to \$1.5 billion of unsecured funds at any time through August 18, 2020. This credit agreement amends and restates the prior \$1.5 billion 364-day credit facility that matured on August 21, 2019.

Both credit agreements include various covenants, including, among others, maintaining a net debt to total capital leverage ratio of no more than 0.65 to 1.0. At December 31, 2019, we were in compliance with the covenants. These revolving credit facilities are maintained primarily to provide backup liquidity for our commercial paper borrowings and for general corporate purposes. There were no outstanding borrowings under these facilities at December 31, 2019. We intend to maintain credit facilities of a similar aggregate amount by renewing or replacing these facilities before expiration.

At December 31, 2019, our \$660 million of commercial paper outstanding effectively reduced the \$3.5 billion available capacity under our revolving credit facilities to \$2.84 billion.

At December 31, 2019, we also had \$204 million available for borrowings under our international and other domestic credit facilities.

Long-term Debt

In millions	Interest Rate	December 31,	
		2019	2018
Long-term debt			
Senior notes, due 2023	3.65%	\$ 500	\$ 500
Debentures, due 2027	6.75%	58	58
Debentures, due 2028	7.125%	250	250
Senior notes, due 2043	4.875%	500	500
Debentures, due 2098 ⁽¹⁾	5.65%	165	165
Other debt		59	64
Unamortized discount		(50)	(52)
Fair value adjustments due to hedge on indebtedness		35	25
Finance leases		90	132
Total long-term debt		1,607	1,642
Less: Current maturities of long-term debt		31	45
Long-term debt		\$ 1,576	\$ 1,597

⁽¹⁾The effective interest rate on this debt is 7.48%.

Principal payments required on long-term debt during the next five years are as follows:

In millions	2020	2021	2022	2023	2024
Principal payments	\$ 31	\$ 46	\$ 9	\$ 506	\$ 5

The \$250 million 7.125% debentures and \$165 million 5.65% debentures are unsecured and are not subject to any sinking fund requirements. We can redeem these debentures at any time prior to maturity at the greater of par plus accrued interest or an amount designed to ensure that the debenture holders are not penalized by the early redemption.

Our debt agreements contain several restrictive covenants. The most restrictive of these covenants applies to our revolving credit facility which will upon default, among other things, limit our ability to incur additional debt or issue preferred stock, enter into sale-leaseback transactions, sell or create liens on our assets, make investments and merge or consolidate with any other entity. At December 31, 2019, we were in compliance with all of the covenants under our borrowing agreements.

Shelf Registration

As a well-known seasoned issuer, we filed an automatic shelf registration for an undetermined amount of debt and equity securities with the SEC on February 13, 2019. Under this shelf registration we may offer, from time to time, debt securities, common stock, preferred and preference stock, depositary shares, warrants, stock purchase contracts and stock purchase units. Our current shelf is scheduled to expire in February 2022.

Interest Expense

For the years ended December 31, 2019, 2018 and 2017, total interest incurred was \$112 million, \$116 million and \$85 million, respectively, and interest capitalized was \$3 million, \$2 million and \$4 million, respectively.

Interest Rate Risk

In the second half of 2019, we entered into a series of interest rate lock agreements to reduce the variability of the cash flows of the interest payments on \$350 million of fixed rate debt forecast to be issued in 2023 to replace our senior notes at maturity. The terms of the rate locks mirror the time period of the expected fixed rate debt issuance and the expected timing of interest payments on that debt. The gains and losses on these derivative instruments will be initially recorded in "Other comprehensive income" and will be released to earnings in "Interest expense" in future periods to reflect the difference in (1) the fixed rates economically locked in at the inception of the hedge and (2) the actual fixed rates established in the debt instrument at issuance. The loss included in "Other comprehensive (loss) income" for the year ended December 31, 2019, was \$10 million.

We have a series of interest rate swaps to effectively convert our September 2013, \$500 million debt issue, due in 2023, from a fixed rate of 3.65 percent to a floating rate equal to the one-month LIBOR plus a spread. The debt is included in the *Consolidated Balance Sheets* as "Long-term debt." The terms of the swaps mirror those of the debt, with interest paid semi-annually. The swaps were designated, and will be accounted for, as fair value hedges under GAAP. The gain or loss on these derivative instruments, as well as the offsetting gain or loss on the hedged item attributable to the hedged risk, are recognized in current income as "Interest expense." The net swap settlements that accrue each period are also reported in the *Consolidated Financial Statements* as "Interest expense." A basis adjustment related to credit risk, excluded from the assessment of effectiveness, is being amortized over the life of the hedge using a straight-line method and is considered de minimis.

The carrying amount of the hedged debt was \$500 million. The cumulative amount of the fair value hedging adjustments to hedged liabilities included in the carrying amount of the hedged liabilities recognized on the balance sheets was a \$4 million net loss.

The following table summarizes the gains and losses:

In millions	Years ended December 31,					
	2019		2018		2017	
	Gain (Loss) on Swaps	Gain (Loss) on Borrowings	Gain (Loss) on Swaps	Gain (Loss) on Borrowings	Gain (Loss) on Swaps	Gain (Loss) on Borrowings
Interest rate swaps ⁽¹⁾	\$ 16	\$ (14)	\$ (8)	\$ 7	\$ (7)	\$ 8

⁽¹⁾ The difference between the gain/(loss) on swaps and borrowings represents hedge ineffectiveness.

The following table summarizes the interest rate lock activity in AOCL for 2019:

In millions	Year ended December 31,	
	2019	
	Gain (Loss) Recognized in AOCL	Gain (Loss) Reclassified from AOCL into Interest Expense
Interest rate locks	\$ (10)	\$ —

Fair Value of Debt

Based on borrowing rates currently available to us for bank loans with similar terms and average maturities, considering our risk premium, the fair values and carrying values of total debt, including current maturities, were as follows:

In millions	December 31,	
	2019	2018
Fair values of total debt ⁽¹⁾	\$ 2,706	\$ 2,679
Carrying values of total debt	2,367	2,476

⁽¹⁾ The fair value of debt is derived from Level 2 inputs.

NOTE 12. PRODUCT WARRANTY LIABILITY

A tabular reconciliation of the product warranty liability, including the deferred revenue related to our extended warranty coverage and accrued product campaigns was as follows:

In millions	December 31,		
	2019	2018	2017
Balance, beginning of year	\$ 2,208	\$ 1,687	\$ 1,414
Provision for base warranties issued	458	437	376
Deferred revenue on extended warranty contracts sold	356	293	240
Provision for product campaigns issued	210	481	181
Payments made during period	(590)	(443)	(398)
Amortization of deferred revenue on extended warranty contracts	(230)	(244)	(219)
Changes in estimates for pre-existing product warranties	(24)	3	85
Foreign currency translation and other	1	(6)	8
Balance, end of year	\$ 2,389	\$ 2,208	\$ 1,687

We recognized supplier recoveries of \$67 million, \$26 million and \$16 million for the for the years ended December 31, 2019, 2018 and 2017, respectively.

Warranty related deferred revenues and warranty liabilities on our *Consolidated Balance Sheets* were as follows:

In millions	December 31,		Balance Sheet Location
	2019	2018	
Deferred revenue related to extended coverage programs			
Current portion	\$ 227	\$ 227	Current portion of deferred revenue
Long-term portion	714	587	Deferred revenue
Total	\$ 941	\$ 814	
Product warranty			
Current portion	\$ 803	\$ 654	Current portion of accrued product warranty
Long-term portion	645	740	Accrued product warranty
Total	\$ 1,448	\$ 1,394	
Total warranty accrual	\$ 2,389	\$ 2,208	

Engine System Campaign Accrual

During 2017, the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA) selected certain of our pre-2013 model year engine systems for additional emissions testing. Some of these engine systems failed CARB and EPA tests as a result of degradation of an aftertreatment component. We recorded charges of \$36 million to "Cost of sales" in our *Consolidated Statements of Net Income* during 2017 for the then expected cost of field campaigns to repair some of these engine systems.

In the first quarter of 2018, we concluded based upon additional emission testing performed, and further discussions with the EPA and CARB that the field campaigns should be expanded to include a larger population of our engine systems that are subject to the aftertreatment component degradation, including our model years 2010 through 2015. As a result, we recorded an additional charge of \$187 million, or \$0.87 per share, to "Cost of sales" in our *Consolidated Statements of Net Income* (\$94 million recorded in the Components segment and \$93 million in the Engine segment).

In the second quarter of 2018, we reached agreement with the CARB and EPA regarding our plans to address the affected populations. In finalizing our plans, we increased the number of systems to be addressed through hardware replacement compared to our assumptions resulting in an additional charge of \$181 million, or \$0.85 per share, to "Cost of sales" in our *Consolidated Statements of Net Income* (\$91 million recorded in the Engine segment and \$90 million in the Components segment).

The campaigns launched in the third quarter of 2018 and are being completed in phases across the affected population with a projection to be substantially complete by December 31, 2020. The total engine system campaign charge, excluding supplier recoveries, was \$410 million. At December 31, 2019, the remaining accrual balance was \$247 million.

NOTE 13. PENSIONS AND OTHER POSTRETIREMENT BENEFITS

Pension Plans

We sponsor several pension plans covering substantially all employees. Generally, pension benefits for salaried employees are determined as a function of employee's compensation. Pension benefits for most hourly employees are determined similarly and as a function of employee's compensation, with the exception of a small group of hourly employees whose pension benefits were grandfathered in accordance with agreements with their union representation and are based on their years of service and compensation during active employment. The level of benefits and terms of vesting may vary among plans and are offered in accordance with applicable laws. Pension plans assets are administered by trustees and are principally invested in fixed income securities and equity securities. It is our policy to make contributions to our various qualified plans in accordance with statutory and contractual funding requirements, and any additional contributions we determine are appropriate.

Obligations, Assets and Funded Status

Benefit obligation balances presented below reflect the projected benefit obligation (PBO) for our pension plans. The changes in the benefit obligations, the various plan assets, the funded status of the plans and the amounts recognized in our *Consolidated Balance Sheets* for our significant pension plans at December 31 were as follows:

In millions	Qualified and Non-Qualified Pension Plans			
	U.S. Plans		U.K. Plans	
	2019	2018	2019	2018
Change in benefit obligation				
Benefit obligation at the beginning of the year	\$ 2,562	\$ 2,765	\$ 1,550	\$ 1,662
Service cost	116	120	26	29
Interest cost	108	98	43	41
Actuarial loss (gain)	296	(212)	232	(46)
Benefits paid from fund	(150)	(193)	(62)	(62)
Benefits paid directly by employer	(16)	(16)	—	—
Plan amendment	—	—	—	15 ⁽¹⁾
Exchange rate changes	—	—	62	(89)
Benefit obligation at end of year	<u>\$ 2,916</u>	<u>\$ 2,562</u>	<u>\$ 1,851</u>	<u>\$ 1,550</u>
Change in plan assets				
Fair value of plan assets at beginning of year	\$ 2,937	\$ 3,166	\$ 1,782	\$ 1,960
Actual return on plan assets	493	(36)	193	(33)
Employer contributions	77	—	28	21
Benefits paid from fund	(150)	(193)	(62)	(62)
Exchange rate changes	—	—	69	(104)
Fair value of plan assets at end of year	<u>\$ 3,357</u>	<u>\$ 2,937</u>	<u>\$ 2,010</u>	<u>\$ 1,782</u>
Funded status (including unfunded plans) at end of year	<u>\$ 441</u>	<u>\$ 375</u>	<u>\$ 159</u>	<u>\$ 232</u>
Amounts recognized in consolidated balance sheets				
Pension assets	\$ 842	\$ 697	\$ 159	\$ 232
Accrued compensation, benefits and retirement costs	(16)	(14)	—	—
Pension and other postretirement benefits	(385)	(308)	—	—
Net amount recognized	<u>\$ 441</u>	<u>\$ 375</u>	<u>\$ 159</u>	<u>\$ 232</u>
Amounts recognized in accumulated other comprehensive loss				
Net actuarial loss	\$ 611	\$ 635	\$ 323	\$ 230
Prior service cost	7	8	22	16
Net amount recognized	<u>\$ 618</u>	<u>\$ 643</u>	<u>\$ 345</u>	<u>\$ 246</u>

⁽¹⁾ Guaranteed minimum pension benefits to equalize certain pension benefits between men and women per the U.K. court decision.

In addition to the pension plans in the above table, we also maintain less significant defined benefit pension plans in 14 other countries outside of the U.S. and the U.K. that comprise approximately 3 percent and 5 percent of our pension plan assets and obligations, respectively, at December 31, 2019. These plans are reflected in "Other liabilities" on our *Consolidated Balance Sheets*. In 2019 and 2018, we made \$15 million and \$11 million of contributions to these plans, respectively.

The following table presents information regarding the total accumulated benefit obligation (ABO), the ABO and fair value of plan assets for defined benefit pension plans with ABO in excess of plan assets and the PBO and fair value of plan assets for defined benefit pension plans with PBO in excess of plan assets:

In millions	Qualified and Non-Qualified Pension Plans			
	U.S. Plans		U.K. Plans	
	2019	2018	2019	2018
Total ABO	\$ 2,894	\$ 2,544	\$ 1,756	\$ 1,473
Plans with ABO in excess of plan assets				
ABO	379	304	—	—
Plans with PBO in excess of plan assets				
PBO	401	322	—	—

Components of Net Periodic Pension Cost

The following table presents the net periodic pension cost under our plans for the years ended December 31:

In millions	Qualified and Non-Qualified Pension Plans					
	U.S. Plans			U.K. Plans		
	2019	2018	2017	2019	2018	2017
Service cost	\$ 116	\$ 120	\$ 107	\$ 26	\$ 29	\$ 26
Interest cost	108	98	106	43	41	40
Expected return on plan assets	(189)	(196)	(204)	(70)	(69)	(70)
Amortization of prior service cost	1	1	—	2	—	—
Recognized net actuarial loss	17	33	37	11	29	40
Net periodic pension cost	<u>\$ 53</u>	<u>\$ 56</u>	<u>\$ 46</u>	<u>\$ 12</u>	<u>\$ 30</u>	<u>\$ 36</u>

Other changes in benefit obligations and plan assets recognized in other comprehensive loss (income) for the years ended December 31 were as follows:

In millions	2019	2018	2017
Amortization of prior service cost	\$ (3)	\$ —	\$ —
Recognized net actuarial loss	(28)	(62)	(77)
Incurred actuarial loss (gain)	101	91	(40)
Foreign exchange translation adjustments	4	(5)	30
Total recognized in other comprehensive loss (income)	<u>\$ 74</u>	<u>\$ 24</u>	<u>\$ (87)</u>
Total recognized in net periodic pension cost and other comprehensive loss (income)	<u>\$ 139</u>	<u>\$ 110</u>	<u>\$ (5)</u>

Assumptions

The table below presents various assumptions used in determining the PBO for each year and reflects weighted-average percentages for the various plans as follows:

	Qualified and Non-Qualified Pension Plans			
	U.S. Plans		U.K. Plans	
	2019	2018	2019	2018
Discount rate	3.36%	4.36%	2.00%	2.80%
Cash balance crediting rate	4.11%	4.03%	—	—
Compensation increase rate	2.73%	3.00%	3.75%	3.75%

The table below presents various assumptions used in determining the net periodic pension cost and reflects weighted-average percentages for the various plans as follows:

	Qualified and Non-Qualified Pension Plans					
	U.S. Plans			U.K. Plans		
	2019	2018	2017	2019	2018	2017
Discount rate	4.36%	3.66%	4.12%	2.80%	2.55%	2.70%
Expected return on plan assets	6.25%	6.50%	7.25%	4.00%	4.00%	4.50%
Compensation increase rate	2.73%	3.00%	4.87%	3.75%	3.75%	3.75%

Plan Assets

Our investment policies in the U.S. and U.K. provide for the rebalancing of assets to maintain our long-term strategic asset allocation. We are committed to this long-term strategy and do not attempt to time the market given empirical evidence that asset allocation is more critical than individual asset or investment manager selection. Rebalancing of the assets has and continues to occur. The rebalancing is critical to having the proper weighting of assets to achieve the expected total portfolio returns. We believe that our portfolio is highly diversified and does not have any significant exposure to concentration risk. The plan assets for our defined benefit pension plans do not include any of our common stock.

U.S. Plan Assets

For the U.S. qualified pension plans, our assumption for the expected return on assets was 6.25 percent in 2019. Projected returns are based primarily on broad, publicly traded equity and fixed income indices and forward-looking estimates of active portfolio and investment management. We expect additional positive returns from this active investment management. Based on the historical returns and forward-looking return expectations, we have elected to maintain our assumption of 6.25 percent in 2020.

The primary investment objective is to exceed, on a net-of-fee basis, the rate of return of a policy portfolio comprised of the following:

Asset Class	Target	Range
U.S. equities	5.0%	+5.0/ -5.0%
Non-U.S. equities	1.0%	+3.0/ -1.0%
Global equities	6.0%	+3.0/ -3.0%
Total equities	12.0%	
Real assets	6.0%	+4.0/ -6.0%
Private equity/venture capital	6.0%	+4.0/ -6.0%
Opportunistic credit	4.0%	+6.0/ -4.0%
Fixed income	72.0%	+5.0/ -5.0%
Total	<u>100.0%</u>	

The fixed income component is structured to represent a custom bond benchmark that will closely hedge the change in the value of our liabilities. This component is structured in such a way that its benchmark covers approximately 100 percent of the plan's exposure to changes in its discount rate (AA corporate bond yields). In order to achieve a hedge on more than the targeted 72 percent of plan assets invested in fixed income securities, our Benefits Policy Committee (BPC) permits the fixed income managers, other managers or the custodian/trustee to utilize derivative securities, as part of a liability driven investment strategy to further reduce the plan's risk of declining interest rates. However, all managers hired to manage assets for the trust are prohibited from using leverage unless approved by the BPC.

U.K. Plan Assets

For the U.K. qualified pension plans, our assumption for the expected return on assets was 4.0 percent in 2019. The methodology used to determine the rate of return on pension plan assets in the U.K. was based on establishing an equity-risk premium over current long-term bond yields adjusted based on target asset allocations. Our strategy with respect to our investments in these assets is to be invested in a suitable mixture of return-seeking assets such as equities, real estate and liability matching assets such as group annuity insurance contracts and duration matched bonds. Therefore, the risk and return balance of our U.K. asset portfolio should reflect a long-term horizon. To achieve these objectives we have established the following targets:

Asset Class	Target
Equities	10.0%
Private markets/secure income assets	18.0%
Credit	7.5%
Diversifying strategies	8.0%
Fixed income/insurance annuity	55.5%
Cash	1.0%
Total	100.0%

As part of our strategy in the U.K. we have not prohibited the use of any financial instrument, including derivatives. As in the U.S. plan, derivatives may be used to better match liability duration and are not used in a speculative way. The 55.5 percent fixed income component is structured in a way that covers approximately 80 percent of the plan's exposure to changes in its discount rate. Based on the above discussion, we have elected an assumption of 4.0 percent in 2020.

Fair Value of U.S. Plan Assets

The fair values of U.S. pension plan assets by asset category were as follows:

In millions	Fair Value Measurements at December 31, 2019				Total
	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)		
Equities					
U.S.	\$ 96	\$ —	\$ —	\$ 96	
Non-U.S.	47	—	—	47	
Fixed income					
Government debt	—	72	—	72	
Corporate debt					
U.S.	—	357	—	357	
Non-U.S.	—	11	—	11	
Asset/mortgaged backed securities	—	1	—	1	
Net cash equivalents ⁽¹⁾	338	33	—	371	
Private markets and real assets ⁽²⁾	—	—	371	371	
Net plan assets subject to leveling	\$ 481	\$ 474	\$ 371	\$ 1,326	
Accruals ⁽³⁾				5	
Investments measured at net asset value				2,026	
Net plan assets				\$ 3,357	

In millions	Fair Value Measurements at December 31, 2018			
	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Total
Equities				
U.S.	\$ 77	\$ —	\$ —	\$ 77
Non-U.S.	42	—	—	42
Fixed income				
Government debt	—	38	—	38
Corporate debt				
U.S.	—	323	—	323
Non-U.S.	—	15	—	15
Asset/mortgaged backed securities	—	5	—	5
Net cash equivalents ⁽¹⁾	175	17	—	192
Private markets and real assets ⁽²⁾	—	—	316	316
Net plan assets subject to leveling	\$ 294	\$ 398	\$ 316	\$ 1,008
Pending trade/purchases/sales				9
Accruals ⁽³⁾				5
Investments measured at net asset value				1,915
Net plan assets				\$ 2,937

⁽¹⁾ Cash equivalents include commercial paper, short-term government/agency, mortgage and credit instruments.

⁽²⁾ The instruments in private markets and real assets, for which quoted market prices are not available, are valued at their estimated fair value as determined by applicable investment managers or by audited financial statements of the funds. Private markets include equity, venture capital and private credit instruments and funds. Real assets include real estate and infrastructure.

⁽³⁾ Accruals include interest or dividends that were not settled at December 31.

Certain of our assets are valued based on their respective net asset value (NAV) (or its equivalent), as an alternative to estimated fair value due to the absence of readily available market prices. The fair value of each such investment category was as follows:

- *U.S. and Non-U.S. Corporate Debt* (\$939 million and \$821 million at December 31, 2019 and 2018, respectively) - These commingled funds have observable NAVs provided to investors and provide for liquidity either immediately or within a couple of days.
- *Government Debt* (\$503 million and \$602 million at December 31, 2019 and 2018, respectively) - These commingled funds have observable NAVs provided to investors and provide for liquidity either immediately or within a couple of days.
- *U.S. and Non-U.S. Equities* (\$367 million and \$343 million at December 31, 2019 and 2018, respectively) - These commingled funds have observable NAVs provided to investors and provide for liquidity either immediately or within a couple of days.
- *Real Estate* (\$140 million and \$147 million at December 31, 2019 and 2018, respectively) - This asset type represents different types of real estate including development property, industrial property, individual mortgages, office property, property investment companies and retail property. These funds are valued using NAVs and allow quarterly or more frequent redemptions.
- *Asset/Mortgage Backed Securities* (\$77 million and \$2 million at December 31, 2019 and 2018, respectively) - This asset type represents investments in fixed- and floating-rate loans. These funds are valued using NAVs and allow quarterly or more frequent redemptions.

The reconciliation of Level 3 assets was as follows:

In millions	Fair Value Measurements Using Significant Unobservable Inputs (Level 3)		
	Private Markets	Real Assets	Total
Balance at December 31, 2017	\$ 180	\$ 66	\$ 246
Actual return on plan assets			
Unrealized gains on assets still held at the reporting date	33	6	39
Purchases, sales and settlements, net	34	(3)	31
Balance at December 31, 2018	247	69	316
Actual return on plan assets			
Unrealized gains on assets still held at the reporting date	24	5	29
Purchases, sales and settlements, net	28	(2)	26
Balance at December 31, 2019	<u>\$ 299</u>	<u>\$ 72</u>	<u>\$ 371</u>

Fair Value of U.K. Plan Assets

The fair values of U.K. pension plan assets by asset category were as follows:

In millions	Fair Value Measurements at December 31, 2019			
	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Total
Equities				
U.S.	\$ —	\$ 45	\$ —	\$ 45
Non-U.S.	—	58	—	58
Fixed income				
Net cash equivalents ⁽¹⁾	35	—	—	35
Insurance annuity ⁽²⁾	—	—	476	476
Private markets and real assets ⁽³⁾	—	—	259	259
Net plan assets subject to leveling	<u>\$ 35</u>	<u>\$ 103</u>	<u>\$ 735</u>	<u>\$ 873</u>
Investments measured at net asset value				1,137
Net plan assets				<u>\$ 2,010</u>

In millions	Fair Value Measurements at December 31, 2018			
	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Total
Equities				
U.S.	\$ —	\$ 47	\$ —	\$ 47
Non-U.S.	—	61	—	61
Fixed income				
Net cash equivalents ⁽¹⁾	12	—	—	12
Insurance annuity ⁽²⁾	—	—	442	442
Private markets and real assets ⁽³⁾	—	—	244	244
Net plan assets subject to leveling	<u>\$ 12</u>	<u>\$ 108</u>	<u>\$ 686</u>	<u>\$ 806</u>
Investments measured at net asset value				976
Net plan assets				<u>\$ 1,782</u>

⁽¹⁾ Cash equivalents include commercial paper, short-term government/agency, mortgage and credit instruments.

⁽²⁾ In July 2012, the U.K. pension plan purchased an insurance contract that will guarantee payment of specified pension liabilities. The contract defers payment for 10 years.

⁽³⁾ The instruments in private markets and real assets, for which quoted market prices are not available, are valued at their estimated fair value as determined by applicable investment managers or by audited financial statements of the funds. Private markets include equity, venture capital and private credit instruments and funds. Real assets include real estate and infrastructure.

Certain of our assets are valued based on their respective NAV (or its equivalent), as an alternative to estimated fair value due to the absence of readily available market prices. The fair value of each such investment category was as follows:

- *U.S. and Non-U.S. Corporate Debt* (\$791 million and \$753 million at December 31, 2019 and 2018, respectively) - These commingled funds have observable NAVs provided to investors and provide for liquidity either immediately or within a couple of days.
- *U.S. and Non-U.S. Equities* (\$160 million and \$100 million at December 31, 2019 and 2018, respectively) - These commingled funds have observable NAVs provided to investors and provide for liquidity either immediately or within a couple of days.
- *Asset/Mortgage Backed Securities* (\$96 million and \$0 million at December 31, 2019 and 2018, respectively) - This asset type represents investments in fixed- and floating-rate loans. These funds are valued using NAVs and allow quarterly or more frequent redemptions.
- *Diversified Strategies* (\$60 million and \$46 million at December 31, 2019 and 2018, respectively) - These commingled funds invest in commodities, fixed income and equity securities. They have observable NAVs provided to investors and provide for liquidity either immediately or within a couple of days.
- *Re-insurance* (\$30 million and \$77 million at December 31, 2019 and 2018, respectively) - This commingled fund has a NAV that is determined on a monthly basis and the investment may be sold at that value.

The reconciliation of Level 3 assets was as follows:

In millions	Fair Value Measurements Using Significant Unobservable Inputs (Level 3)			
	Insurance Annuity	Real Assets	Private Markets	Total
Balance at December 31, 2017	\$ 477	\$ 59	\$ 135	\$ 671
Actual return on plan assets				
Unrealized (losses) gains on assets still held at the reporting date	(35)	(2)	21	(16)
Purchases, sales and settlements, net	—	—	31	31
Balance at December 31, 2018	442	57	187	686
Actual return on plan assets				
Unrealized gains on assets still held at the reporting date	34	5	14	53
Purchases, sales and settlements, net	—	(27)	23	(4)
Balance at December 31, 2019	<u>\$ 476</u>	<u>\$ 35</u>	<u>\$ 224</u>	<u>\$ 735</u>

Level 3 Assets

The investments in an insurance annuity contract, venture capital, private equity and real estate, for which quoted market prices are not available, are valued at their estimated fair value as determined by applicable investment managers or by quarterly financial statements of the funds. These financial statements are audited at least annually. In conjunction with our investment consultant, we monitor the fair value of the insurance contract as periodically reported by our insurer and their counterparty risk. The fair value of all real estate properties, held in the partnerships, are valued at least once per year by an independent professional real estate valuation firm. Fair value generally represents the fund's proportionate share of the net assets of the investment partnerships as reported by the general partners of the underlying partnerships. Some securities with no readily available market are initially valued at cost, utilizing independent professional valuation firms as well as market comparisons with subsequent adjustments to values which reflect either the basis of meaningful third-party transactions in the private market or the fair value deemed appropriate by the general partners of the underlying investment partnerships. In such instances, consideration is also given to the financial condition and operating results of the issuer, the amount that the investment partnerships can reasonably expect to realize upon the sale of the securities and any other factors deemed relevant. The estimated fair values are subject to uncertainty and therefore may differ from the values that would have been used had a ready market for such investments existed and such differences could be material.

Estimated Future Contributions and Benefit Payments

We plan to contribute approximately \$100 million to our defined benefit pension plans in 2020. The table below presents expected future benefit payments under our pension plans:

In millions	Qualified and Non-Qualified Pension Plans					
	2020	2021	2022	2023	2024	2025 - 2029
Expected benefit payments	\$ 258	\$ 256	\$ 263	\$ 265	\$ 271	\$ 1,388

Other Pension Plans

We also sponsor defined contribution plans for certain hourly and salaried employees. Our contributions to these plans were \$102 million, \$104 million and \$84 million for the years ended December 31, 2019, 2018 and 2017.

Other Postretirement Benefits

Our other postretirement benefit (OPEB) plans provide various health care and life insurance benefits to eligible employees, who retire and satisfy certain age and service requirements, and their dependents. The plans are contributory and contain cost-sharing features such as caps, deductibles, coinsurance and spousal contributions. Employer contributions are limited by formulas in each plan. Retiree contributions for health care benefits are adjusted annually, and we reserve the right to change benefits covered under these plans. There were no plan assets for OPEB plans as our policy is to fund benefits and expenses for these plans as claims and premiums are incurred.

Obligations and Funded Status

Benefit obligation balances presented below reflect the accumulated postretirement benefit obligations (APBO) for our OPEB plans. The changes in the benefit obligations, the funded status of the plans and the amounts recognized in our *Consolidated Balance Sheets* for our significant OPEB plans were as follows:

In millions	December 31,	
	2019	2018
Change in benefit obligation		
Benefit obligation at the beginning of the year	\$ 246	\$ 318
Interest cost	10	11
Plan participants' contributions	14	21
Actuarial gain	—	(51)
Benefits paid directly by employer	(43)	(53)
Benefit obligation at end of year	<u>\$ 227</u>	<u>\$ 246</u>
Funded status at end of year	<u>\$ (227)</u>	<u>\$ (246)</u>
Amounts recognized in consolidated balance sheets		
Accrued compensation, benefits and retirement costs	\$ (21)	\$ (22)
Pension and other postretirement benefits	(206)	(224)
Net amount recognized	<u>\$ (227)</u>	<u>\$ (246)</u>
Amounts recognized in accumulated other comprehensive loss:		
Net actuarial gain	\$ (25)	\$ (24)
Prior service credit	(4)	(4)
Net amount recognized	<u>\$ (29)</u>	<u>\$ (28)</u>

In addition to the OPEB plans in the above table, we also maintain less significant OPEB plans in four other countries outside the U.S. that comprise approximately 11 percent and 9 percent of our OPEB obligations at December 31, 2019 and 2018, respectively. These plans are reflected in "Other liabilities" in our *Consolidated Balance Sheets*.

Components of Net Periodic OPEB Cost

The following table presents the net periodic OPEB cost under our plans:

In millions	Years ended December 31,		
	2019	2018	2017
Interest cost	\$ 10	\$ 11	\$ 14
Recognized net actuarial loss	—	—	6
Net periodic OPEB cost	\$ 10	\$ 11	\$ 20

Other changes in benefit obligations recognized in other comprehensive (income) loss for the years ended December 31 were as follows:

In millions	Years ended December 31,		
	2019	2018	2017
Recognized net actuarial loss	\$ —	\$ —	\$ (6)
Incurred actuarial gain	(1)	(51)	(35)
Total recognized in other comprehensive (income) loss	\$ (1)	\$ (51)	\$ (41)
Total recognized in net periodic OPEB cost and other comprehensive loss (income)	\$ 9	\$ (40)	\$ (21)

Assumptions

The table below presents assumptions used in determining the OPEB obligation for each year and reflects weighted-average percentages for our other OPEB plans as follows:

	2019	2018
Discount rate	3.15%	4.25%

The table below presents assumptions used in determining the net periodic OPEB cost and reflects weighted-average percentages for the various plans as follows:

	2019	2018	2017
Discount rate	4.25%	3.55%	4.00%

Our consolidated OPEB obligation is determined by application of the terms of health care and life insurance plans, together with relevant actuarial assumptions and health care cost trend rates. For measurement purposes, a 7.25 percent annual rate of increase in the per capita cost of covered health care benefits was assumed in 2019. The rate is assumed to decrease on a linear basis to 5.0 percent through 2026 and remain at that level thereafter.

Estimated Benefit Payments

The table below presents expected benefit payments under our OPEB plans:

In millions	2020	2021	2022	2023	2024	2025 - 2029
Expected benefit payments	\$ 22	\$ 21	\$ 21	\$ 19	\$ 19	\$ 77

NOTE 14. SUPPLEMENTAL BALANCE SHEET DATA

Other accrued expenses included the following:

In millions	December 31,	
	2019	2018
Other taxes payable	\$ 228	\$ 196
Marketing accruals	176	199
Current portion of operating lease liabilities	131	—
Income taxes payable	52	97
Other	452	360
Other accrued expenses	\$ 1,039	\$ 852

Other liabilities included the following:

In millions	December 31,	
	2019	2018
Operating lease liabilities	\$ 370	\$ —
Deferred income taxes	306	263
One-time transition tax	293	293
Accrued compensation	206	173
Other long-term liabilities	204	163
Other liabilities	\$ 1,379	\$ 892

NOTE 15. COMMITMENTS AND CONTINGENCIES

We are subject to numerous lawsuits and claims arising out of the ordinary course of our business, including actions related to product liability; personal injury; the use and performance of our products; warranty matters; product recalls; patent, trademark or other intellectual property infringement; contractual liability; the conduct of our business; tax reporting in foreign jurisdictions; distributor termination; workplace safety; and environmental matters. We also have been identified as a potentially responsible party at multiple waste disposal sites under U.S. federal and related state environmental statutes and regulations and may have joint and several liability for any investigation and remediation costs incurred with respect to such sites. We have denied liability with respect to many of these lawsuits, claims and proceedings and are vigorously defending such lawsuits, claims and proceedings. We carry various forms of commercial, property and casualty, product liability and other forms of insurance; however, such insurance may not be applicable or adequate to cover the costs associated with a judgment against us with respect to these lawsuits, claims and proceedings. We do not believe that these lawsuits are material individually or in the aggregate. While we believe we have also established adequate accruals pursuant to GAAP for our expected future liability with respect to pending lawsuits, claims and proceedings, where the nature and extent of any such liability can be reasonably estimated based upon then presently available information, there can be no assurance that the final resolution of any existing or future lawsuits, claims or proceedings will not have a material adverse effect on our business, results of operations, financial condition or cash flows.

We conduct significant business operations in Brazil that are subject to the Brazilian federal, state and local labor, social security, tax and customs laws. While we believe we comply with such laws, they are complex, subject to varying interpretations and we are often engaged in litigation regarding the application of these laws to particular circumstances.

On April 29, 2019, we announced that we were conducting a formal internal review of our emissions certification process and compliance with emission standards for our pick-up truck applications, following conversations with the EPA and CARB regarding certification of our engines in model year 2019 RAM 2500 and 3500 trucks. This review is being conducted with external advisors to ensure the certification and compliance processes for all of our pick-up truck applications are consistent with our internal policies, engineering standards and applicable laws. In addition, we voluntarily disclosed our formal internal review to our regulators and to other government agencies, the Department of Justice (DOJ) and the SEC, and have been working cooperatively with them to ensure a complete and thorough review. During conversations with the EPA and CARB about the effectiveness of our pick-up truck applications, the regulators raised concerns that certain aspects of our emissions systems may reduce the effectiveness of our emissions control systems and thereby act as defeat devices. As a result, our internal review focuses, in part, on the regulators' concerns. We are working closely with the regulators to enhance our emissions systems to improve the effectiveness of all of our pick-up truck applications and to fully address the regulators'

requirements. Based on discussions with the regulators, we have developed a new calibration for the engines in model year 2019 RAM 2500 and 3500 trucks that has been included in all engines shipped since September 2019. During our discussions, the regulators have asked us to look at other model years and other engines, though the primary focus of our review has been the model year 2019 RAM. We are also fully cooperating with the DOJ's and the SEC's information requests and inquiries. Due to the continuing nature of our formal review, our ongoing cooperation with our regulators and other government agencies, and the presence of many unknown facts and circumstances, we cannot predict the final outcome of this review and these regulatory and agency processes, and we cannot provide assurance that the matter will not have a materially adverse impact on our results of operations and cash flows.

Guarantees and Commitments

Periodically, we enter into guarantee arrangements, including guarantees of non-U.S. distributor financings, residual value guarantees on equipment under operating leases and other miscellaneous guarantees of joint ventures or third-party obligations. At December 31, 2019, the maximum potential loss related to these guarantees was \$53 million.

We have arrangements with certain suppliers that require us to purchase minimum volumes or be subject to monetary penalties. At December 31, 2019, if we were to stop purchasing from each of these suppliers, the aggregate amount of the penalty would be approximately \$48 million. Most of these arrangements enable us to secure supplies of critical components. We do not currently anticipate paying any penalties under these contracts.

We enter into physical forward contracts with suppliers of platinum and palladium to purchase certain volumes of the commodities at contractually stated prices for various periods, which generally fall within two years. At December 31, 2019, the total commitments under these contracts were \$58 million. These arrangements enable us to fix the prices of these commodities, which otherwise are subject to market volatility.

We have guarantees with certain customers that require us to satisfactorily honor contractual or regulatory obligations, or compensate for monetary losses related to nonperformance. These performance bonds and other performance-related guarantees were \$96 million at December 31, 2019.

Indemnifications

Periodically, we enter into various contractual arrangements where we agree to indemnify a third-party against certain types of losses. Common types of indemnities include:

- product liability and license, patent or trademark indemnifications;
- asset sale agreements where we agree to indemnify the purchaser against future environmental exposures related to the asset sold; and
- any contractual agreement where we agree to indemnify the counterparty for losses suffered as a result of a misrepresentation in the contract.

We regularly evaluate the probability of having to incur costs associated with these indemnities and accrue for expected losses that are probable. Because the indemnifications are not related to specified known liabilities and due to their uncertain nature, we are unable to estimate the maximum amount of the potential loss associated with these indemnifications.

NOTE 16. CUMMINS INC. SHAREHOLDERS' EQUITY

Preferred and Preference Stock

We are authorized to issue one million shares of zero par value preferred and one million shares of preference stock with preferred shares being senior to preference shares. We can determine the number of shares of each series, and the rights, preferences and limitations of each series. At December 31, 2019, there was no preferred or preference stock outstanding.

Common Stock

Changes in shares of common stock, treasury stock and common stock held in trust for employee benefit plans were as follows:

In millions	Common Stock	Treasury Stock	Common Stock Held in Trust
Balance at December 31, 2016	222.4	54.2	0.7
Shares acquired	—	2.9	—
Shares issued	—	(0.4)	(0.2)
Balance at December 31, 2017	222.4	56.7	0.5
Shares acquired	—	7.9	—
Shares issued	—	(0.2)	(0.1)
Balance at December 31, 2018	222.4	64.4	0.4
Shares acquired	—	8.1	—
Shares issued	—	(0.8)	(0.2)
Balance at December 31, 2019	<u>222.4</u>	<u>71.7</u>	<u>0.2</u>

Treasury Stock

Shares of common stock repurchased by us are recorded at cost as treasury stock and result in a reduction of shareholders' equity in our *Consolidated Balance Sheets*. Treasury shares may be reissued as part of our stock-based compensation programs. When shares are reissued, we use the weighted-average cost method for determining cost. The gains between the cost of the shares and the issuance price are added to additional paid-in-capital. The losses are deducted from additional paid-in capital to the extent of the gains. Thereafter, the losses are deducted from retained earnings. Treasury stock activity for the three-year period ended December 31, 2019, consisting of shares issued and repurchased is presented in our *Consolidated Statements of Changes in Equity*.

In December 2019, the Board authorized the acquisition of up to \$2.0 billion of additional common stock upon completion of the 2018 repurchase plan. In October 2018, the Board authorized the acquisition of up to \$2.0 billion of additional common stock upon completion of the 2016 repurchase plan. For the year ended December 31, 2019, we made the following purchases under the 2018 stock repurchase program:

In millions (except per share amounts) For each quarter ended	2019 Shares Purchased	Average Cost Per Share	Total Cost of Repurchases	Remaining Authorized Capacity ⁽¹⁾
March 31	0.7	\$ 137.80	\$ 100	\$ 1,806
June 30	—	—	—	1,806
September 29	4.6	152.57	706	1,100
December 31	2.8	167.82	465	635
Total	<u>8.1</u>	<u>156.46</u>	<u>\$ 1,271</u>	

⁽¹⁾ The remaining authorized capacity under these plans was calculated based on the cost to purchase the shares but excludes commission expenses in accordance with the authorized plan.

In 2018, we entered into an accelerated share repurchase agreement with Goldman, Sachs & Co. LLC to repurchase \$500 million of our common stock under our previously announced share repurchase plans and received 3.5 million shares at an average price of \$144.02 per share.

We repurchased \$1,271 million, \$1,140 million and \$451 million of our common stock in the years ended December 31, 2019, 2018 and 2017, respectively.

Dividends

Total dividends paid to common shareholders in 2019, 2018 and 2017 were \$761 million, \$718 million and \$701 million, respectively. Declaration and payment of dividends in the future depends upon our income and liquidity position, among other factors, and is subject to declaration by the Board, who meet quarterly to consider our dividend payment. We expect to fund dividend payments with cash from operations.

In July 2019, the Board authorized an increase to our quarterly dividend of 15.0 percent from \$1.14 per share to \$1.311 per share. In July 2018, the Board authorized a 5.6 percent increase to our quarterly cash dividend on our common stock from \$1.08 per share to \$1.14 per share. In July 2017, the Board approved a 5.4 percent increase to our quarterly dividend on our common stock from \$1.025 per share to \$1.08 per share. Cash dividends per share paid to common shareholders for the last three years were as follows:

	Quarterly Dividends		
	2019	2018	2017
First quarter	\$ 1.14	\$ 1.08	\$ 1.025
Second quarter	1.14	1.08	1.025
Third quarter	1.311	1.14	1.08
Fourth quarter	1.311	1.14	1.08
Total	\$ 4.90	\$ 4.44	\$ 4.21

Employee Benefits Trust

In 1997, we established the Employee Benefits Trust (EBT) funded with common stock for use in meeting our future obligations under employee benefit and compensation plans. The primary sources of cash for the EBT are dividends received on unallocated shares of our common stock held by the EBT. Shares of Cummins stock and cash in the EBT may be used to fund the accounts of participants in the Cummins Retirement and Savings Plan who have elected to receive company matching funds in Cummins stock. In addition, we may direct the trustee to sell shares in the EBT on the open market and sweep cash from the EBT to fund other employee benefit plans. Matching contributions charged to income for the years ended December 31, 2019, 2018 and 2017 were \$10 million, \$12 million and \$17 million, respectively.

NOTE 17. ACCUMULATED OTHER COMPREHENSIVE LOSS

Following are the changes in accumulated other comprehensive income (loss) by component:

In millions	Change in pensions and other postretirement defined benefit plans	Foreign currency translation adjustment	Unrealized gain (loss) on debt securities ⁽¹⁾	Unrealized gain (loss) on derivatives	Total attributable to Cummins Inc.	Noncontrolling interests	Total
Balance at December 31, 2016	\$ (685)	\$ (1,127)	\$ (1)	\$ (8)	\$ (1,821)		
Other comprehensive income before reclassifications							
Before-tax amount	73	335	2	(12)	398	\$ 20	\$ 418
Tax benefit (expense)	(36)	(20)	—	5	(51)	—	(51)
After-tax amount	37	315	2	(7)	347	20	367
Amounts reclassified from accumulated other comprehensive income ⁽²⁾	62	—	—	12	74	—	74
Impact of tax legislation (Note 5)	(103) ⁽³⁾	—	—	—	(103)	\$ —	\$ (103)
Net current period other comprehensive income (loss)	(4)	315	2	5	318	\$ 20	\$ 338
Balance at December 31, 2017	\$ (689)	\$ (812)	\$ 1	\$ (3)	\$ (1,503)		
Other comprehensive income before reclassifications							
Before-tax amount	(42)	(333)	2	21	(352)	\$ (30)	\$ (382)
Tax benefit (expense)	7	7	—	(7)	7	—	7
After-tax amount	(35)	(326)	2	14	(345)	(30)	(375)
Amounts reclassified from accumulated other comprehensive income ⁽²⁾	53	—	(3)	(9)	41	1	42
Net current period other comprehensive income (loss)	18	(326)	(1)	5	(304)	\$ (29)	\$ (333)
Balance at December 31, 2018	\$ (671)	\$ (1,138)	\$ —	\$ 2	\$ (1,807)		
Other comprehensive income before reclassifications							
Before-tax amount	(106)	(153)	—	(12)	(271)	\$ (5)	\$ (276)
Tax benefit (expense)	16	6	—	5	27	—	27
After-tax amount	(90)	(147)	—	(7)	(244)	(5)	(249)
Amounts reclassified from accumulated other comprehensive income ⁽²⁾	27	—	—	(4)	23	—	23
Net current period other comprehensive income (loss)	(63)	(147)	—	(11)	(221)	\$ (5)	\$ (226)
Balance at December 31, 2019	\$ (734)	\$ (1,285)	\$ —	\$ (9)	\$ (2,028)		

⁽¹⁾ Effective January 1, 2018 and forward, unrealized gains and losses, net of tax for equity securities are reported in "Other income, net" on the *Consolidated Statements of Net Income* instead of comprehensive income.

⁽²⁾ Amounts are net of tax. Reclassifications out of accumulated other comprehensive income (loss) and the related tax effects are immaterial for separate disclosure.

⁽³⁾ Impact of tax legislation includes a \$126 million loss related to Tax Legislation offset by a \$23 million favorable impact related to 2017 activity. See Note 5, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

NOTE 18. NONCONTROLLING INTERESTS

Noncontrolling interests in the equity of consolidated subsidiaries were as follows:

In millions	December 31,	
	2019	2018
Eaton Cummins Automated Transmission Technologies	\$ 581	\$ 602
Cummins India Ltd.	302	293
Hydrogenics Corporation ⁽¹⁾	58	—
Other	17	16
Total	\$ 958	\$ 911

⁽¹⁾ See Note 21, "ACQUISITIONS," for additional information.

NOTE 19. STOCK INCENTIVE AND STOCK OPTION PLANS

Our stock incentive plan (the Plan) allows for granting of up to 8.5 million total shares of equity awards to executives, employees and non-employee directors. Awards available for grant under the Plan include, but are not limited to, stock options, stock appreciation rights, performance shares and other stock awards. Shares issued under the Plan may be newly issued shares or reissued treasury shares.

Stock options are generally granted with a strike price equal to the fair market value of the stock on the date of grant and a life of 10 years. Stock options granted have a three-year vesting period. The strike price may be higher than the fair value of the stock on the date of the grant, but cannot be lower. Compensation expense is recorded on a straight-line basis over the vesting period beginning on the grant date. The compensation expense is based on the fair value of each option grant using the Black-Scholes option pricing model. Options granted to employees eligible for retirement under our retirement plan are fully expensed at the grant date.

Stock options are also awarded through the Key Employee Stock Investment Plan (KESIP) which allows certain employees, other than officers, to purchase shares of common stock on an installment basis up to an established credit limit. For every block of 100 KESIP shares purchased by the employee 50 stock options are granted. The options granted through the KESIP program are considered awards under the Plan and are vested immediately. Compensation expense for stock options granted through the KESIP program is recorded based on the fair value of each option grant using the Black-Scholes option pricing model.

Performance shares are granted as target awards and are earned based on certain measures of our operating performance. A payout factor has been established ranging from 0 to 200 percent of the target award based on our actual performance during the three-year performance period. The fair value of the award is equal to the average market price, adjusted for the present value of dividends over the vesting period, of our stock on the grant date. Compensation expense is recorded ratably over the period beginning on the grant date until the shares become unrestricted and is based on the amount of the award that is expected to be earned under the plan formula, adjusted each reporting period based on current information.

Restricted common stock is awarded from time to time at no cost to certain employees. Participants are entitled to cash dividends and voting rights. Restrictions limit the sale or transfer of the shares during a defined period. Generally, one-third of the shares become vested and free from restrictions after two years and one-third of the shares issued become vested and free from restrictions each year thereafter on the anniversary of the grant date, provided the participant remains an employee. The fair value of the award is equal to the average market price of our stock on the grant date. Compensation expense is determined at the grant date and is recognized over the restriction period on a straight-line basis.

Employee compensation expense (net of estimated forfeitures) related to our share-based plans for the years ended December 31, 2019, 2018 and 2017, was approximately \$48 million, \$52 million and \$39 million, respectively. In addition, non-employee director share-based compensation expense for the years ended December 31, 2019, 2018 and 2017, was approximately \$1 million, \$1 million and \$2 million, respectively. Shares granted to non-employee directors vest immediately and have no restrictions or performance conditions. The excess tax benefit associated with our employee share-based plans for the years ended December 31, 2019, 2018 and 2017, was \$4 million, \$2 million and \$2 million, respectively. The total unrecognized compensation expense (net of estimated forfeitures) related to nonvested awards for our employee share-based plans was approximately \$40 million at December 31, 2019 and is expected to be recognized over a weighted-average period of less than two years.

The tables below summarize the employee share-based activity in the Plan:

	Options	Weighted-average Exercise Price	Weighted-average Remaining Contractual Life (in years)	Aggregate Intrinsic Value (in millions)
Balance at December 31, 2016	2,734,764	\$ 115.02		
Granted	648,900	149.98		
Exercised	(355,479)	105.91		
Forfeited	(126,816)	125.65		
Balance at December 31, 2017	2,901,369	123.49		
Granted	515,320	159.06		
Exercised	(140,133)	88.74		
Forfeited	(32,894)	133.00		
Balance at December 31, 2018	3,243,662	130.55		
Granted	710,120	163.42		
Exercised	(652,980)	116.76		
Forfeited	(63,232)	139.86		
Balance at December 31, 2019	3,237,570	\$ 140.36	6.6	\$ 125
Exercisable, December 31, 2017	1,063,889	\$ 115.26	4.7	\$ 66
Exercisable, December 31, 2018	1,366,722	\$ 124.97	4.7	\$ 18
Exercisable, December 31, 2019	1,665,710	\$ 123.55	4.8	\$ 92

The weighted-average grant date fair value of options granted during the years ended December 31, 2019, 2018 and 2017, was \$31.04, \$34.21 and \$36.86, respectively. The total intrinsic value of options exercised during the years ended December 31, 2019, 2018 and 2017, was approximately \$35 million, \$9 million and \$19 million, respectively.

The weighted-average grant date fair value of performance and restricted shares was as follows:

Nonvested	Performance Shares		Restricted Shares	
	Shares	Weighted-average Fair Value	Shares	Weighted-average Fair Value
Balance at December 31, 2016	404,494	\$ 120.41	9,841	\$ 115.76
Granted	150,225	138.23	—	—
Vested	(85,020)	141.50	(1,752)	106.89
Forfeited	(58,460)	132.52	—	—
Balance at December 31, 2017	411,239	120.84	8,089	117.68
Granted	124,700	146.50	—	—
Vested	(80,996)	128.47	(2,696)	117.68
Forfeited	(44,593)	127.90	—	—
Balance at December 31, 2018	410,350	126.36	5,393	117.68
Granted	185,377	141.01	—	—
Vested	(176,613)	98.28	(2,696)	117.68
Forfeited	(23,183)	145.26	—	—
Balance at December 31, 2019	395,931	\$ 144.64	2,697	\$ 117.68

The total vesting date fair value of performance shares vested during the years ended December 31, 2019, 2018 and 2017 was \$27 million, \$13 million and \$13 million, respectively. The total fair value of restricted shares vested was less than \$1 million, \$1 million and \$1 million for the years ended December 31, 2019, 2018 and 2017, respectively.

The fair value of each option grant was estimated on the grant date using the Black-Scholes option pricing model with the following assumptions:

	2019	2018	2017
Expected life (years)	6	6	6
Risk-free interest rate	2.41%	2.72%	2.08%
Expected volatility	23.79%	25.40%	29.97%
Dividend yield	2.68%	2.48%	2.28%

Expected life—The expected life of employee stock options represents the weighted-average period the stock options are expected to remain outstanding based upon our historical data.

Risk-free interest rate—The risk-free interest rate assumption is based upon the observed U.S. treasury security rate appropriate for the expected life of our employee stock options.

Expected volatility—The expected volatility assumption is based upon the weighted-average historical daily price changes of our common stock over the most recent period equal to the expected option life of the grant, adjusted for activity which is not expected to occur in the future.

Dividend yield—The dividend yield assumption is based on our history and expectation of dividend payouts.

NOTE 20. EARNINGS PER COMMON SHARE ATTRIBUTABLE TO CUMMINS INC.

We calculate basic earnings per share (EPS) of common stock by dividing net income attributable to Cummins Inc. by the weighted-average number of common shares outstanding for the period. The calculation of diluted EPS assumes the issuance of common stock for all potentially dilutive share equivalents outstanding. We exclude shares of common stock held in the Employee Benefits Trust (EBT) (see Note 16, "CUMMINS INC. SHAREHOLDERS' EQUITY") from the calculation of the weighted-average common shares outstanding until those shares are distributed from the EBT to the Retirement Savings Plan. Following are the computations for basic and diluted earnings per share:

In millions, except per share amounts	Years ended December 31,		
	2019	2018	2017
Net income attributable to Cummins Inc.	\$ 2,260	\$ 2,141	\$ 999
Weighted-average common shares outstanding			
Basic	155.4	162.2	166.7
Dilutive effect of stock compensation awards	0.7	0.6	0.6
Diluted	156.1	162.8	167.3
Earnings per common share attributable to Cummins Inc.			
Basic	\$ 14.54	\$ 13.20	\$ 5.99
Diluted	14.48	13.15	5.97

The weighted-average diluted common shares outstanding excludes the anti-dilutive effect of certain stock options since such options had an exercise price in excess of the monthly average market value of our common stock. The options excluded from diluted earnings per share were as follows:

	Years ended December 31,		
	2019	2018	2017
Options excluded	473,845	969,385	31,991

NOTE 21. ACQUISITIONS

Acquisitions for the years ended December 31, 2019, 2018 and 2017 were as follows:

Entity Acquired (Dollars in millions)	Date of Acquisition	Percent Interest Acquired	Payments to Former Owners	Acquisition Related Debt Retirements	Total Purchase Consideration ⁽¹⁾	Goodwill Recognized	Intangibles Recognized ⁽²⁾	Net Sales Previous Fiscal Year Ended
2019								
Hydrogenics Corporation	09/09/19	81%	\$ 235	\$ —	\$ 235	\$ 161	\$ 161	\$ 34
2018								
Efficient Drivetrains, Inc.	08/15/18	100%	\$ 51	\$ 2	\$ 64 ⁽³⁾	\$ 49	\$ 15	\$ 3
2017								
Brammo Inc.	11/01/17	100%	\$ 60	\$ —	\$ 68 ⁽³⁾	\$ 47	\$ 23	\$ 4
Eaton Cummins Automated Transmission Technologies	07/31/17	50%	600 ⁽⁴⁾	—	600	544	596	—

⁽¹⁾ All results from acquired entities (excluding Brammo Inc. in 2017) were included in segment results subsequent to the acquisition date. Newly consolidated entities were accounted for as business combinations and (excluding Brammo Inc. and Eaton Cummins Automated Transmission Technologies) were included in the New Power Segment on the date of acquisition. The Brammo Inc. acquisition was allocated to the New Power Segment on January 1, 2018. Eaton Cummins Automated Transmission Technologies was included in the Components Segment on the date of acquisition.

⁽²⁾ Intangible assets acquired in business combinations were mostly customer and technology related, the majority of which will be amortized over a period of up to 25 years from the date of the acquisition.

⁽³⁾ The "Total Purchase Consideration" represents the total amount that will or is estimated to be paid to complete the acquisition. A portion of the acquisition payment has not yet been made and will be paid in future periods in accordance with the purchase contract. The Brammo Inc. acquisition contains an earnout based on future results of the acquired business and could result in a maximum contingent consideration payment of \$100 million (fair value of \$5 million) to the former owners.

⁽⁴⁾ This transaction created a newly formed joint venture that we consolidated as we have a majority voting interest in the venture by virtue of a tie-breaking vote on the joint venture's board of directors.

Hydrogenics Corporation

On September 9, 2019, we acquired an 81 percent interest in Hydrogenics Corporation for total consideration of \$235 million. The Hydrogen Company, a wholly-owned subsidiary of L'Air Liquide, S.A., will maintain a 19 percent noncontrolling interest in Hydrogenics Corporation of \$56 million, based on the publicly traded share price of Hydrogenics at the acquisition date, which was representative of its fair value. We accounted for the transaction as a business combination and included it in the New Power segment in the third quarter of 2019. We assigned this business to our New Power reporting unit, which included both our electrified power and fuel cell businesses, for goodwill impairment purposes. The purchase price allocation was as follows:

In millions	
Inventory	\$ 21
Other current assets	25
Intangible assets	
Technology assets	96
Customer relationships	29
In-process research and development	35
Other intangible assets	1
Goodwill	161
Other assets	18
Current liabilities	(53)
Other liabilities	(42)
Total business valuation	291
Less: Noncontrolling interest	56
Total purchase consideration	\$ 235

As of December 31, 2019, our purchase accounting was complete. The intangible assets will be amortized over periods ranging from 3 to 20 years. As a result of our review and validation of the significant assumptions used to value the intangible assets and our validation of calculations related to deferred tax assets and liabilities, our final valuation resulted in increases from our original estimates of \$2 million to technology assets and \$1 million to customer relationships and decreases of \$5 million to other liabilities and \$5 million to goodwill.

Technology assets represent the value of both the existing fuel cells and generation equipment. These assets were valued using the relief-from-royalty method, which is a combination of the income approach and market approach that values a subject asset based on an estimate of the relief from the royalty expense that would be incurred if the subject asset were licensed from a third-party. Key assumptions are expected revenue, the royalty rate, the estimated remaining useful life and the discount rate. This value is considered a level 3 measurement under the GAAP fair value hierarchy.

Customer relationship assets represent the value of the long-term strategic relationship the business has with its significant customers. The assets were valued using an income approach, specifically the multiperiod excess earnings method, which identifies an estimated stream of revenues and expenses for a particular group of assets from which deductions of portions of the projected economic benefits, attributable to assets other than the subject asset (contributory assets), are deducted in order to isolate the prospective earnings of the subject asset. Key assumptions are expected revenue, related expenses, the estimated remaining useful life and the discount rate. These assets are each being amortized over 15 to 20 years. Annual amortization of the intangible assets for the next five years is expected to approximate \$8 million.

In-process research and development assets represent acquired research and development assets that have been initiated, achieved material progress, but have not yet resulted in a technologically feasible or commercially viable project. These assets were valued using the relief-from-royalty method, as described above. These assets will not be amortized until they have been completed, but will be tested annually for impairment until that time.

Goodwill was determined based on the residual difference between the fair value of consideration transferred and the value assigned to tangible and intangible assets and liabilities. The goodwill amount will not be deductible for tax purposes. Among the factors contributing to a purchase price resulting in the recognition of goodwill are the acquisition of engineering talent in the fuel cell space, the ability to be one of the forerunners in the development of clean fuel cell energy and the continued opportunity to expand our position as a global power leader.

This business was included in our results starting in September 2019. Pro forma financial information was not provided as the historical financial statement activity of Hydrogenics Corporation is not material to our consolidated results.

NOTE 22. OPERATING SEGMENTS

Operating segments under GAAP are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the Chief Operating Decision Maker (CODM), or decision-making group, in deciding how to allocate resources and in assessing performance. Our CODM is the President and Chief Operating Officer.

In November 2019, we renamed our Electrified Power segment as "New Power" in order to better represent the incorporation of fuel cell and hydrogen production technologies resulting from our acquisition of Hydrogenics Corporation. The New Power segment includes our electrified power, fuel cell and hydrogen production technologies.

Our reportable operating segments consist of Engine, Distribution, Components, Power Systems and New Power. This reporting structure is organized according to the products and markets each segment serves. The Engine segment produces engines (15 liters and smaller) and associated parts for sale to customers in on-highway and various off-highway markets. Our engines are used in trucks of all sizes, buses and recreational vehicles, as well as in various industrial applications, including construction, agriculture, power generation systems and other off-highway applications. The Distribution segment includes wholly-owned and partially-owned distributorships engaged in wholesaling engines, generator sets and service parts, as well as performing service and repair activities on our products and maintaining relationships with various OEMs throughout the world. The Components segment sells filtration products, aftertreatment systems, turbochargers, electronics, fuel systems and automated transmissions. The Power Systems segment is an integrated power provider, which designs, manufactures and sells engines (16 liters and larger) for industrial applications (including mining, oil and gas, marine and rail), standby and prime power generator sets, alternators and other power components. The New Power segment designs, manufactures, sells and supports electrified power systems ranging from fully electric to hybrid along with innovative components and subsystems, including battery, fuel cell and hydrogen production technologies. We continue to serve all our markets as they adopt electrification and alternative power technologies, meeting the needs of our OEM partners and end customers.

We use EBITDA (defined as earnings before interest expense, income taxes, noncontrolling interests, depreciation and amortization) as the primary basis for the CODM to evaluate the performance of each of our reportable operating segments. We believe EBITDA is a useful measure of our operating performance as it assists investors and debt holders in comparing our performance on a consistent basis without regard to financing methods, capital structure, income taxes or depreciation and amortization methods, which can vary significantly depending upon many factors. Segment amounts exclude certain expenses not specifically identifiable to segments.

The accounting policies of our operating segments are the same as those applied in our *Consolidated Financial Statements*. We prepared the financial results of our operating segments on a basis that is consistent with the manner in which we internally disaggregate financial information to assist in making internal operating decisions. We allocate certain common costs and expenses, primarily corporate functions, among segments differently than we would for stand-alone financial information prepared in accordance with GAAP. These include certain costs and expenses of shared services, such as information technology, human resources, legal, finance and supply chain management. We do not allocate gains (losses) of corporate owned life insurance or restructuring charges related to corporate functions to individual segments. EBITDA may not be consistent with measures used by other companies.

Summarized financial information regarding our reportable operating segments at December 31, is shown in the table below:

In millions	Engine	Distribution	Components	Power Systems	New Power	Total Segments	Intersegment Eliminations ⁽¹⁾	Total
2019								
External sales	\$ 7,570	\$ 8,040	\$ 5,253	\$ 2,670	\$ 38	\$ 23,571	\$ —	\$ 23,571
Intersegment sales	2,486	31	1,661	1,790	—	5,968	(5,968)	—
Total sales	10,056	8,071	6,914	4,460	38	29,539	(5,968)	23,571
Research, development and engineering expenses	337	28	300	230	106	1,001	—	1,001
Equity, royalty and interest income from investees	200	52	40	38	—	330	—	330
Interest income	15	15	8	8	—	46	—	46
Segment EBITDA (excluding restructuring actions)	1,472	693	1,117	524	(148)	3,658	73	3,731
Restructuring actions ⁽²⁾	18	37	20	12	1	88	31	119
Segment EBITDA	1,454	656	1,097	512	(149)	3,570	42	3,612
Depreciation and amortization ⁽³⁾	202	115	222	118	12	669	—	669
Net assets	1,094	2,536	2,911	2,245	472	9,258	—	9,258
Investments and advances to equity investees	575	296	193	171	2	1,237	—	1,237
Capital expenditures	240	136	191	107	26	700	—	700
2018								
External sales	\$ 8,002	\$ 7,807	\$ 5,331	\$ 2,625	\$ 6	\$ 23,771	\$ —	\$ 23,771
Intersegment sales	2,564	21	1,835	2,001	1	6,422	(6,422)	—
Total sales	10,566	7,828	7,166	4,626	7	30,193	(6,422)	23,771
Research, development and engineering expenses	311	20	272	230	69	902	—	902
Equity, royalty and interest income from investees	238	46	54	56	—	394	—	394
Interest income	11	13	5	6	—	35	—	35
Segment EBITDA	1,446	563	1,030	614	(90)	3,563	(87)	3,476
Depreciation and amortization ⁽³⁾	190	109	185	119	6	609	—	609
Net assets	1,265	2,677	2,878	2,262	138	9,220	—	9,220
Investments and advances to equity investees	561	278	206	177	—	1,222	—	1,222
Capital expenditures	254	133	182	129	11	709	—	709

(Table continued on next page)

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In millions	Engine	Distribution	Components	Power Systems	New Power	Total Segments	Intersegment Eliminations ⁽¹⁾	Total
2017								
External sales	\$ 6,661	\$ 7,029	\$ 4,363	\$ 2,375	\$ —	\$ 20,428	\$ —	\$ 20,428
Intersegment sales	2,292	29	1,526	1,683	—	5,530	(5,530)	—
Total sales	8,953	7,058	5,889	4,058	—	25,958	(5,530)	20,428
Research, development and engineering expenses	280	19	241	214	—	754	—	754
Equity, royalty and interest income from investees ⁽⁴⁾	219	44	40	54	—	357	—	357
Interest income	6	6	3	3	—	18	—	18
Segment EBITDA	1,143	500	917	411	—	2,971	55	3,026
Depreciation and amortization ⁽³⁾	184	116	163	117	—	580	—	580
Net assets	1,180	2,446	2,811	2,137	—	8,574	—	8,574
Investments and advances to equity investees	531	267	194	164	—	1,156	—	1,156
Capital expenditures	188	101	127	90	—	506	—	506

⁽¹⁾ Includes intersegment sales, intersegment profit in inventory eliminations and unallocated corporate expenses. The year ended December 31, 2019, includes a \$31 million restructuring charge related to corporate functions. There were no significant unallocated corporate expenses for the years ended December 31, 2018 and 2017.

⁽²⁾ See Note 4 "RESTRUCTURING ACTIONS," for additional information.

⁽³⁾ Depreciation and amortization, as shown on a segment basis, excludes the amortization of debt discount and deferred costs included in the *Consolidated Statements of Net Income* as "Interest expense." The amortization of debt discount and deferred costs were \$3 million, \$2 million and \$3 million for the years ended 2019, 2018 and 2017, respectively. A portion of depreciation expense is included in "Research, development and engineering expense."

⁽⁴⁾ U.S. tax legislation passed in December 2017 decreased our equity earnings at certain equity investees, negatively impacting our "Equity, royalty and interest income from investees" by \$23 million, \$4 million and \$12 million for the Engine, Distribution and Components segments, respectively. See Note 5, "INCOME TAXES," for additional information.

A reconciliation of our segment information to the corresponding amounts in the *Consolidated Statements of Net Income* is shown in the table below:

In millions	Years ended December 31,		
	2019	2018	2017
Total EBITDA	\$ 3,612	\$ 3,476	\$ 3,026
Less:			
Depreciation and amortization	669	\$ 609	580
Interest expense	109	\$ 114	\$ 81
Income before income taxes	\$ 2,834	\$ 2,753	\$ 2,365

A reconciliation of our segment net assets to the corresponding amounts in the *Consolidated Balance Sheets* is shown in the table below:

In millions	December 31,		
	2019	2018	2017
Net assets for operating segments	\$ 9,258	\$ 9,220	\$ 8,574
Cash, cash equivalents and marketable securities	1,470	1,525	1,567
Brammo Inc. assets	—	—	72 ⁽¹⁾
Net liabilities deducted in arriving at net assets ⁽²⁾	8,498	7,836	7,398
Pension and OPEB adjustments excluded from net assets	67	68	156
Deferred tax assets not allocated to segments	441	410	306
Deferred debt costs not allocated to segments	3	3	2
Total assets	\$ 19,737	\$ 19,062	\$ 18,075

⁽¹⁾ Assets associated with the Brammo Inc. acquisition were presented as a reconciling item as Brammo Inc. had not yet been assigned to a reportable segment at December 31, 2017. See Note 21, "ACQUISITIONS," for additional information.

⁽²⁾ Liabilities deducted in arriving at net assets include certain accounts payable, accrued expenses, long-term liabilities and other items.

See Note 2, "REVENUE RECOGNITION," for segment net sales by geographic area.

Long-lived assets include property, plant and equipment, net of depreciation, investments and advances to equity investees and other assets, excluding deferred tax assets, refundable taxes and deferred debt expenses. Long-lived segment assets by geographic area were as follows:

In millions	December 31,		
	2019	2018	2017
United States	\$ 3,555	\$ 3,174	\$ 3,157
China	893	823	795
India	616	577	563
United Kingdom	370	337	339
Netherlands	253	234	221
Mexico	175	171	136
Canada	139	114	116
Brazil	106	104	149
Other international countries	489	329	293
Total long-lived assets	\$ 6,596	\$ 5,863	\$ 5,769

Our largest customer is PACCAR Inc. Worldwide sales to this customer were \$3,937 million, \$3,643 million and \$2,893 million for the years ended December 31, 2019, 2018 and 2017, representing 17 percent, 15 percent and 14 percent, respectively, of our consolidated net sales. No other customer accounted for more than 10 percent of consolidated net sales.

SELECTED QUARTERLY FINANCIAL DATA
UNAUDITED

In millions, except per share amounts	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
	2019			
Net sales	\$ 6,004	\$ 6,221	\$ 5,768	\$ 5,578
Gross margin	1,532	1,641	1,494	1,313
Net income attributable to Cummins Inc.	663	675	622	300 ⁽¹⁾
Earnings per common share attributable to Cummins Inc.—basic ⁽²⁾	\$ 4.22	\$ 4.29	\$ 3.99	\$ 1.98 ⁽¹⁾
Earnings per common share attributable to Cummins Inc.—diluted ⁽²⁾	4.20	4.27	3.97	1.97 ⁽¹⁾
Cash dividends per share	1.14	1.14	1.311	1.311
Stock price per share				
High	\$ 162.34	\$ 171.84	\$ 175.91	\$ 186.73
Low	130.03	150.48	141.14	151.15
	2018			
Net sales	\$ 5,570	\$ 6,132	\$ 5,943	\$ 6,126
Gross margin	1,200 ⁽³⁾	1,440 ⁽³⁾	1,551	1,546
Net income attributable to Cummins Inc.	325 ⁽³⁾	545 ⁽³⁾	692	579
Earnings per common share attributable to Cummins Inc.—basic ⁽²⁾⁽⁴⁾	\$ 1.97 ⁽³⁾	\$ 3.33 ⁽³⁾	\$ 4.29	\$ 3.65
Earnings per common share attributable to Cummins Inc.—diluted ⁽²⁾⁽⁴⁾	1.96 ⁽³⁾	3.32 ⁽³⁾	4.28	3.63
Cash dividends per share	1.08	1.08	1.14	1.14
Stock price per share				
High	\$ 194.18	\$ 172.08	\$ 151.87	\$ 156.49
Low	154.58	131.58	129.90	124.40

⁽¹⁾ Net income attributable to Cummins Inc. and earnings per share were negatively impacted by \$119 million (\$90 million after-tax) of restructuring actions in the fourth quarter of 2019 (\$0.59 per basic share and \$0.59 per diluted share).

⁽²⁾ Earnings per share in each quarter is computed using the weighted-average number of shares outstanding during that quarter while earnings per share for the full year is computed using the weighted-average number of shares outstanding during the year. Thus, the sum of the four quarters earnings per share may not equal the full year earnings per share.

⁽³⁾ Gross margin, net income attributable to Cummins Inc. and earnings per share in 2018 were negatively impacted by an Engine Campaign charge of \$187 million (\$144 million after-tax) in the first quarter (\$0.87 per basic share and \$0.87 per diluted share). The second quarter of 2018 was negatively impacted by an additional charge of \$181 million (\$139 million after-tax) (\$0.85 per basic share and \$0.85 per diluted share).

⁽⁴⁾ Net income attributable to Cummins Inc., basic and diluted earnings per share were impacted by Tax Legislation adjustments. Net income attributable to Cummins Inc. was reduced by \$74 million and \$8 million in the first and second quarter, respectively, while it increased in the third and fourth quarter \$33 million and \$10 million, respectively. Basic and diluted earnings per share were reduced by \$0.45 per share and \$0.05 per share in the first and second quarters, respectively, while they increased in the third and fourth quarters by \$0.20 per share and \$0.06 per share, respectively.

At December 31, 2019, there were approximately 3,123 holders of record of Cummins Inc.'s \$2.50 par value common stock.

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

None.

ITEM 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

As of the end of the period covered by this Annual Report on Form 10-K, our management evaluated, with the participation of our Chief Executive Officer and Chief Financial Officer, the effectiveness of the design and operation of our disclosure controls and procedures as defined in Exchange Act Rules 13a-15(e) and 15d-15(e). Based upon that evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that our disclosure controls and procedures were effective as of the end of the period covered by this Annual Report on Form 10-K.

Changes in Internal Control over Financial Reporting

There has been no change in our internal control over financial reporting during the quarter ended December 31, 2019, that materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management's Report on Internal Control Over Financial Reporting

The information required by Item 9A relating to Management's Annual Report on Internal Control Over Financial Reporting and Attestation Report of the Registered Public Accounting Firm is incorporated herein by reference to the information set forth under the captions "Management's Report on Internal Control Over Financial Reporting" and "Report of Independent Registered Public Accounting Firm," respectively, under Item 8.

ITEM 9B. Other Information

None.

PART III

ITEM 10. Directors, Executive Officers and Corporate Governance

The information required by Item 10 is incorporated by reference to the relevant information under the captions "Corporate Governance," "Election of Directors" in our 2020 Proxy Statement, which will be filed within 120 days after the end of 2019. Information regarding our executive officers may be found in Part 1 of this annual report under the caption "Information About Our Executive Officers." Except as otherwise specifically incorporated by reference, our Proxy Statement is not deemed to be filed as part of this annual report.

ITEM 11. Executive Compensation

The information required by Item 11 is incorporated by reference to the relevant information under the caption "Executive Compensation" in our 2020 Proxy Statement, which will be filed within 120 days after the end of 2019.

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

Information concerning our equity compensation plans at December 31, 2019, was as follows:

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights ⁽¹⁾	Weighted-average exercise price of outstanding options, warrants and rights ⁽²⁾	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in the first column)
Equity compensation plans approved by security holders	3,636,198	\$ 140.36	6,860,002

⁽¹⁾ The number is comprised of 3,237,570 stock options, 395,931 performance shares and 2,697 restricted shares. See Note 19, "STOCK INCENTIVE AND STOCK OPTION PLANS," to the *Consolidated Financial Statements* for a description of how options and shares are awarded.

⁽²⁾ The weighted-average exercise price relates only to the 3,237,570 stock options. Performance and restricted shares do not have an exercise price and, therefore, are not included in this calculation.

We have no equity compensation plans not approved by security holders.

The remaining information required by Item 12 is incorporated by reference to the relevant information under the caption "Stock Ownership of Directors, Management and Others" in our 2020 Proxy Statement, which will be filed within 120 days after the end of 2019.

ITEM 13. Certain Relationships, Related Transactions and Director Independence

The information required by Item 13 is incorporated by reference to the relevant information under the captions "Corporate Governance" and "Other Information-Related Party Transactions" in our 2020 Proxy Statement, which will be filed within 120 days after the end of 2019.

ITEM 14. Principal Accounting Fees and Services

The information required by Item 14 is incorporated by reference to the relevant information under the caption "Selection of Independent Public Accountants" in our 2020 Proxy Statement, which will be filed within 120 days after the end of 2019.

PART IV

ITEM 15. Exhibits, Financial Statement Schedules

(a) The following *Consolidated Financial Statements* and schedules filed as part of this report can be found in Item 8 "Financial Statements and Supplementary Data":

- **Management's Report to Shareholders**
- **Report of Independent Registered Public Accounting Firm**
- ***Consolidated Statements of Net Income* for the years ended December 31, 2019, 2018 and 2017**
- ***Consolidated Statements of Comprehensive Income* for the years ended December 31, 2019, 2018 and 2017**
- ***Consolidated Balance Sheets* at December 31, 2019 and 2018**
- ***Consolidated Statements of Cash Flows* for the years ended December 31, 2019, 2018 and 2017**
- ***Consolidated Statements of Changes in Equity* for the years ended December 31, 2019, 2018 and 2017**
- ***Notes to the Consolidated Financial Statements***
- ***Selected Quarterly Financial Data (Unaudited)***

(b) The exhibits listed in the following Exhibit Index are filed as part of this Annual Report on Form 10-K.

**CUMMINS INC.
EXHIBIT INDEX**

Exhibit No.	Description of Exhibit
<u>3</u> (a)	<u>Restated Articles of Incorporation, as amended and restated, effective as of May 8, 2018 (incorporated by reference to Exhibit 3.2 to the Current Report on Form 8-K filed with the Securities and Exchange Commission on May 9, 2018 (File No. 001-04949)).</u>
<u>3</u> (b)	<u>By-Laws, as amended and restated, effective as of February 12, 2019 (incorporated by reference to Exhibit 3.2 to the Current Report on Form 8-K filed by Cummins Inc. with the Securities and Exchange Commission on February 13, 2019 (File No. 001-04949)).</u>
<u>4</u> (a)	<u>Indenture, dated as of September 16, 2013, by and between Cummins Inc. and U.S. Bank National Association (incorporated by reference to Exhibit 4.3 to the Registration Statement on Form S-3 filed with the Securities and Exchange Commission on September 16, 2013 (Registration Statement No. 333-191189)).</u>
<u>4</u> (b)	<u>First Supplemental Indenture, dated as of September 24, 2013, between Cummins Inc. and U.S. Bank National Association (incorporated by reference to Exhibit 4.1 of the Current Report on 8-K, filed by Cummins Inc. with the Securities and Exchange Commission on September 24, 2013 (File No. 001-04949)).</u>
<u>4</u> (c)	<u>Second Supplemental Indenture, dated as of September 24, 2013, between Cummins Inc. and U.S. Bank National Association (incorporated by reference to Exhibit 4.2 of the Current Report on 8-K, filed by Cummins Inc. with the Securities and Exchange Commission on September 24, 2013 (File No. 001-04949)).</u>
<u>4</u> (d)	<u>Description of Capital Stock (filed herewith).</u>
<u>10</u> (a)#	<u>2003 Stock Incentive Plan, as amended (incorporated by reference to Exhibit 10(a) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2009).</u>
<u>10</u> (b)#	<u>Target Bonus Plan (incorporated by reference to Exhibit 10(b) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2009).</u>
<u>10</u> (c)#	<u>Amendment to the Cummins Inc. Deferred Compensation Plan (incorporated by reference to Exhibit 10(c) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2018).</u>
<u>10</u> (d)#	<u>Deferred Compensation Plan, as amended (incorporated by reference to Exhibit 10(c) to Cummins Inc.'s Quarterly Report on Form 10-Q for the quarter ended September 27, 2015).</u>
<u>10</u> (e)#	<u>Supplemental Life Insurance and Deferred Income Plan, as amended and restated effective as of December 10, 2018 (incorporated by reference to Exhibit 10(d) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2018).</u>
<u>10</u> (f)	<u>Credit Agreement, dated as of August 22, 2018, by and among Cummins Inc., the subsidiary borrowers referred to therein and the Lenders party thereto (incorporated by reference to Exhibit 10.2 to Cummins Inc.'s Current Report on Form 8-K filed with the Securities and Exchange Commission on August 24, 2018) (File No. 001-04949)).</u>
<u>10</u> (g)#	<u>Deferred Compensation Plan for Non-Employee Directors, as amended (incorporated by reference to Exhibit 10(f) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2013).</u>
<u>10</u> (h)#	<u>Excess Benefit Retirement Plan, as amended (incorporated by reference to Exhibit 10(g) to Cummins Inc.'s Quarterly Report on Form 10-Q for the quarter ended September 28, 2014).</u>
<u>10</u> (i)#	<u>Cummins Inc. Employee Stock Purchase Plan, as amended (filed herewith).</u>
<u>10</u> (j)#	<u>Longer Term Performance Plan (incorporated by reference to Exhibit 10(i) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2009).</u>
<u>10</u> (k)#	<u>2006 Executive Retention Plan, as amended (incorporated by reference to Exhibit 10(j) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2011).</u>
<u>10</u> (l)#	<u>Senior Executive Target Bonus Plan (incorporated by reference to Exhibit 10(k) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2009).</u>
<u>10</u> (m)#	<u>Senior Executive Longer Term Performance Plan (incorporated by reference to Exhibit 10(l) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2009).</u>
<u>10</u> (n)#	<u>Form of Stock Option Agreement under the 2003 Stock Incentive Plan (incorporated by reference to Exhibit 10(m) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2009).</u>
<u>10</u> (o)#	<u>Form of Long-Term Grant Notice under the 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.2 to Cummins Inc.'s Quarterly Report on Form 10-Q for the quarter ended June 30, 2019).</u>
<u>10</u> (p)#	<u>2012 Omnibus Incentive Plan, as amended and restated (incorporated by reference to Exhibit 10 to Cummins Inc.'s Quarterly Report on Form 10-Q for the quarter ended July 1, 2018 (File No. 001-04949)).</u>
<u>10</u> (q)#	<u>Form of Stock Option Agreement under the 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10(p) to Cummins Inc.'s Annual Report on Form 10-K for the year ended December 31, 2013).</u>
<u>10</u> (r)#	<u>Key Employee Stock Investment Plan (incorporated by reference to Exhibit 10(q) to Cummins Inc.'s Quarterly Report on Form 10-Q for the quarter ended September 28, 2014).</u>
<u>10</u> (s)#	<u>Amended and Restated 364-Day Credit Agreement, dated as of August 21, 2019, by and among Cummins Inc., the subsidiary borrowers referred to therein, the lenders party thereto and JPMorgan Chase Bank, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 to the Current Report on Form 8-K filed by Cummins Inc. with the Securities and Exchange Commission on August 21, 2019 (File No.001-04949)).</u>

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<u>10</u>	<u>(t)#</u>	<u>Amendment No. 1, dated as of August 21, 2019, by and among Cummins Inc., certain of its subsidiaries party thereto, the lenders party thereto and JPMorgan Chase Bank, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.2 to the Current Report on Form 8-K filed by Cummins Inc. with the Securities and Exchange Commission on August 21, 2019 (File No. 001-04949)).</u>
<u>21</u>		<u>Subsidiaries of the Registrant (filed herewith).</u>
<u>23</u>		<u>Consent of PricewaterhouseCoopers LLP (filed herewith).</u>
<u>24</u>		<u>Powers of Attorney (filed herewith).</u>
<u>31</u>	<u>(a)</u>	<u>Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).</u>
<u>31</u>	<u>(b)</u>	<u>Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).</u>
<u>32</u>		<u>Certifications Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith).</u>
101	.INS*	Inline XBRL Instance Document - the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101	.SCH*	Inline XBRL Taxonomy Extension Schema Document.
101	.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101	.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101	.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document.
101	.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104		Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).

A management contract or compensatory plan or arrangement.

* Filed with this annual report on Form 10-K are the following documents formatted in iXBRL (Inline Extensible Business Reporting Language): (i) the Consolidated Statements of Net Income for the years ended December 31, 2019, 2018 and 2017, (ii) the Consolidated Statements of Comprehensive Income for the years ended December 31, 2019, 2018 and 2017, (iii) the Consolidated Balance Sheets for the years ended December 31, 2019 and 2018, (iv) the Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017, (v) the Consolidated Statements of Changes in Equity for the years ended December 31, 2019, 2018 and 2017 and (vi) Notes to the Consolidated Financial Statements.

ITEM 16. Form 10-K Summary (optional)

Not Applicable.

