
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, 2018

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:

Title of each class	Name of each exchange on which registered
Common Stock, \$2.50 par value	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 (§ 229.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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 \$21.7 billion at July 1, 2018. This value includes all shares of the registrant's common stock, except for treasury shares.

As of February 1, 2019, there were 157,338,874 shares outstanding of \$2.50 par value common stock.

Documents Incorporated by Reference

Portions of the registrant's definitive Proxy Statement for its 2019 annual meeting of shareholders, which will be filed with the Securities and Exchange Commission on Schedule 14A within 120 days after the end of 2018, will be incorporated by reference in Part III of this Form 10-K to the extent indicated therein upon such filing.

CUMMINS INC. AND SUBSIDIARIES
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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:

- a sustained slowdown or significant downturn in our markets;
- changes in the engine outsourcing practices of significant customers;
- the development of new technologies that reduce demand for our current products and services;
- increased scrutiny from regulatory agencies, as well as unpredictability in the adoption, implementation and enforcement of emission standards around the world;
- product recalls;
- policy changes in international trade;
- the United Kingdom's decision to end its membership in the European Union;
- lower than expected acceptance of new or existing products or services;
- a slowdown in infrastructure development and/or depressed commodity prices;
- supply shortages and supplier financial risk, particularly from any of our single-sourced suppliers;
- exposure to potential security breaches or other disruptions to our information technology systems and data security;
- a major customer experiencing financial distress;
- the actions of, and income from, joint ventures and other investees that we do not directly control;
- our plan to reposition our portfolio of product offerings through exploration of strategic acquisitions and divestitures and related uncertainties of entering such transactions;
- failure to realize expected results from our investment in Eaton Cummins Automated Transmission Technologies joint venture;
- 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;
- political, economic and other risks from operations in numerous countries;
- changes in taxation;
- global legal and ethical compliance costs and risks;
- aligning our capacity and production with our demand;
- 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;

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- the performance of our pension plan assets and volatility of discount rates;
- labor relations;
- changes in accounting standards;
- 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 and natural gas engines and powertrain-related component products, including filtration, aftertreatment, turbochargers, fuel systems, controls systems, air handling systems, transmissions, electric power generation systems, batteries and electrified power systems. 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 and independent distributor locations and over 7,600 dealer locations in more than 190 countries and territories.

OPERATING SEGMENTS

We have five complementary operating segments: Engine, Distribution, Components, Power Systems and Electrified 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.

Engine Segment

Engine segment sales and earnings before interest expense, income taxes, noncontrolling interests, depreciation and amortization (EBITDA) as a percentage of consolidated results were:

	Years ended December 31,		
	2018	2017	2016
Percent of consolidated net sales ⁽¹⁾	35 %	34 %	35 %
Percent of consolidated EBITDA ⁽¹⁾	41 %	38 %	34 %

⁽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, 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 (Fiat Chrysler) and Nissan 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, Xuzhou Construction Machinery Group, Komatsu, John Deere, JLG Industries, Inc. and LiuGong. The principal customers of our light-duty on-highway engines are Anhui Jianghuai Automobile Co., Ltd., China National Heavy Duty Truck Group and Gorkovskiy Avtomobilny Zavod. The principal customers of our pick-up on-highway engines are Fiat Chrysler and Nissan.

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,		
	2018	2017	2016
Percent of consolidated net sales ⁽¹⁾	26%	27%	28%
Percent of consolidated EBITDA ⁽¹⁾	16%	17%	20%

⁽¹⁾ Measured before intersegment eliminations

Our Distribution segment consists of 28 wholly-owned and 10 joint venture distributors that service and distribute the full range of our products and services to end-users at approximately 450 locations in over 90 distribution territories. Our wholly-owned distributors are located in key markets, including North America, Australia, Europe, China, Africa, Russia, Japan, Brazil, Singapore and Central America, while our joint venture distributors are located in key markets, including South America, the Middle East, India, Thailand and Singapore.

The Distribution segment consists of product lines which service and/or distribute the full range of our products and services, including Parts, Engines, Power generation and Service.

The Distribution segment is organized into eight primary geographic regions, including North America, Asia Pacific, Europe, China, Africa and Middle East, India, Latin America and Russia. Asia Pacific is composed of six smaller regional distributor organizations (South Pacific, Korea, Japan, Philippines, Malaysia and Singapore) which allow us to better manage these vast geographic territories.

Our distribution network consists of independent, partially-owned and wholly-owned distributors which provide parts and full service to our customers. These solutions include maintenance contracts, engineering services and integrated products, where we customize our products to cater to specific needs of end-users. Our distributors also serve and develop dealers, predominantly OEM dealers, in their territories by providing new products, technical support, tools, training, parts and product information.

The distribution segment is responsible for managing the operations of our wholly-owned and partially owned distributors as well as our relationships with independent distributors. Our Distribution segment serves a highly diverse customer base with approximately 40 percent and 38 percent of its 2018 and 2017 sales, respectively, being generated from new engines and power generation equipment, with its remaining sales generated by parts and service revenue.

Our distributors 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.

Components Segment

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

	Years ended December 31,		
	2018	2017	2016
Percent of consolidated net sales ⁽¹⁾	24 %	23 %	21 %
Percent of consolidated EBITDA ⁽¹⁾	29 %	31 %	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 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. We develop aftertreatment systems, turbochargers, fuel systems and electronics to meet increasingly stringent emissions and fuel economy standards.

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 19, "ACQUISITIONS", in the Notes to our *Consolidated Financial Statements* for additional information.

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 and medium-duty commercial vehicle markets. 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, Fiat 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, Honeywell International, 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,		
	2018	2017	2016
Percent of consolidated net sales ⁽¹⁾	15 %	16 %	16 %
Percent of consolidated EBITDA ⁽¹⁾	17 %	14 %	15 %

⁽¹⁾ Measured before intersegment eliminations

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

- **Power generation** - We design, manufacture, sell and support back-up 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, 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. We also serve global rental accounts for diesel and gas generator sets.
- **Industrial** - We design, manufacture, sell and support diesel and natural gas 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. Across these markets, we have major customers in North America, Europe, China and the South Pacific.
- **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, AVK and Markon brands and range in output from 3 kilovolt-amperes (kVA) to 12,000 kVA.

This segment continuously explores emerging technologies and provides integrated power generation products. We use our own research and development capabilities as well as those of our business partnerships to develop cost-effective and environmentally sound power solutions.

Our customer base for our 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 independent engine manufacturers as well as OEMs who manufacture engines for their own products. We compete with a variety of engine manufacturers and generator set assemblers across the world. Our primary competitors are CAT, MTU (Rolls Royce Power Systems Group) and Kohler/SDMO (Kohler Group), but we also compete with INNIO, FG Wilson (CAT group), Generac, Mitsubishi (MHI) and numerous regional generator set assemblers. Our alternator business competes globally with Marathon Electric and Meccalte, among others.

Electrified Power Segment

Our Electrified Power segment designs, manufactures, sells and supports electrified power systems ranging from fully electric to hybrid. We currently offer the Cummins PowerDrive series of fully electric and hybrid powertrain systems targeting various applications in the Class 4-8 commercial vehicle markets and are developing the Cummins Battery Electric System and the Cummins Hybrid Power Plug-In System for the urban bus market, which are expected to launch in 2019 and 2020, respectively. We also design and manufacture battery modules, packs and systems for commercial, industrial and material handling applications. We use a range of cell chemistries which are suitable for pure electric, hybrid and plug-in hybrid applications. In addition to electrified powertrains for urban buses, we intend to deliver product offerings to other markets as they adopt electric solutions, including, but not limited to, pick-up and delivery applications and industrial markets. We invest in and utilize our internal research and development capabilities, along with strategic acquisitions and partnerships, to meet our objectives.

We anticipate our customer base for Electrified Power offerings will be highly diversified, with customer groups varying by their power and range needs. We have secured a partnership with Gillig for our urban bus electrified powertrain in North America. Outside of North America, our largest anticipated geographic markets are Europe and China.

In the markets served by our Electrified Power segment, we compete with electric start-ups, vehicle manufacturers and vertically integrated OEMs. Our primary competitors include Proterra, Inc., Motiv Power Systems, Inc., Daimler, PACCAR, Volvo, Navistar, TRATON AG, BYD Company Limited, BAE Systems plc and Siemens AG.

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 Note3, "INVESTMENTS IN EQUITY INVESTEEs," to the *Consolidated Financial Statements*.

Our equity income from these investees was as follows:

In millions	Years ended December 31,					
	2018		2017		2016	
Manufacturing entities						
Beijing Foton Cummins Engine Co., Ltd.	\$ 72	21%	\$ 94	30%	\$ 52	20%
Dongfeng Cummins Engine Company, Ltd.	58	17%	73	24%	46	18%
Chongqing Cummins Engine Company, Ltd.	51	15%	41	13%	38	15%
Cummins Westport, Inc.	28	8%	9 ⁽¹⁾	3%	11	4%
Dongfeng Cummins Emission Solutions Co., Ltd.	14	4%	13	4%	9	3%
Tata Cummins, Ltd.	14	4%	(7) ⁽¹⁾	(2)%	6	2%
All other manufacturers	73	23%	56 ⁽¹⁾	18%	43	17%
Distribution entities						
Komatsu Cummins Chile, Ltda.	26	8%	30	10%	34	13%
North American distributors	—	—%	—	—%	21 ⁽²⁾	8%
All other distributors	—	—%	(1)	—%	—	—%
Cummins share of net income ⁽³⁾	\$ 336	100%	\$ 308	100%	\$ 260	100%

⁽¹⁾ U.S. tax legislation passed in December 2017 decreased our equity earnings at certain equity investees, including a \$7 million unfavorable impact to Cummins Westport, Inc. due to the remeasurement of deferred taxes and \$15 million unfavorable impact to Tata Cummins, Ltd. and a \$17 million unfavorable impact to "All other manufacturers" due to withholding tax adjustments on foreign earnings. See Note 4, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

⁽²⁾ During 2016, we acquired the remaining interests in the final unconsolidated North American Distributor joint venture.

⁽³⁾ 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 Income*, see Note 3, "INVESTMENTS IN EQUITY INVESTEEs," 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 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 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 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 consists of 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 high performance heavy-duty diesel engines in Beijing. These engines are used in heavy-duty commercial trucks in China and will be used by Cummins either directly sourced from China and/or locally assembled in other markets. 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, one of the largest medium-duty and heavy-duty truck manufacturers in China. DCEC produces Cummins 3.9 to 13-liter diesel engines, with a power range from 80 to 680 horsepower, and natural gas engines.
- **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.
- **Cummins Westport, Inc.** - Cummins Westport, Inc. is a joint venture in Canada with Westport Innovations Inc. to market and sell automotive spark-ignited natural gas engines worldwide and to participate in joint technology projects on low-emission technologies.
- **Dongfeng Cummins Emission Solutions Co., Ltd.** - Dongfeng Cummins Emission Solutions Co. Ltd. is a joint venture in China with Dongfeng Industrial Company, a subsidiary of Dongfeng Motor Group Company Limited, a manufacturer of numerous on-highway vehicles. This joint venture produces, purchases and sells advanced diesel engine aftertreatment solutions to support the full line of Dongfeng's commercial vehicles.
- **Tata Cummins, Ltd.** - Tata Cummins, Ltd. is a joint venture in India with Tata Motors Ltd., the largest automotive company in India and a member of the Tata group of companies. This joint venture manufactures Cummins' 3.8 to 8.9-liter diesel engines in India with a power range from 75 to 400 horsepower for use in trucks manufactured by Tata Motors, as well as for various industrial and power generation applications.

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 Subsidiary

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 19, "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 20 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, 2018, our analysis indicates that we have approximately 80 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 and our Distribution segment normally experiences seasonal declines in its first quarter business activity due to holiday periods in Asia and Australia.

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 15 percent of our consolidated net sales in 2018, 14 percent in 2017 and 13 percent in 2016. 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 2018. 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 74 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 Fiat Chrysler to supply engines for its Ram trucks. Collectively, our net sales to these four customers, including PACCAR, were 35 percent of our consolidated net sales in 2018, 33 percent in 2017 and 33 percent in 2016. Excluding PACCAR, net sales to any single customer were less than 9 percent of our consolidated net

sales in 2018, less than 7 percent in 2017 and less than 7 percent in 2016. 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, 2018, we did not have any significant backlogs.

RESEARCH AND DEVELOPMENT

In 2018, we continued to invest in future critical technologies and products. We will continue to make investments to improve our current technologies, meet future emission requirements around the world and improve fuel economy.

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. 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 \$894 million in 2018, \$734 million in 2017 and \$616 million in 2016. Contract reimbursements were \$120 million, \$137 million and \$131 million in 2018, 2017 and 2016, 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 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 2017/2018 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) is also available on the website. This 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 have the following environmental sustainability goals and commitments:

- 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 CO₂;
- achieving a 32 percent energy intensity reduction from company facilities by 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 2020;

- increasing our recycling rate from 88 percent to 95 percent and achieving zero disposal at 30 sites by 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 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 in the Top 25 in Newsweek's 2018 Green Ranking of U.S. companies, as well as named to the Dow Jones North American Sustainability Index for the thirteenth consecutive year in 2018 and given the highest scores possible in the 2018 inaugural ESG rating from Institutional Investor Services.

ENVIRONMENTAL COMPLIANCE

Product Certification and Compliance

We strive to have robust certification and compliance processes, adhering to all emissions regulations worldwide, including prohibiting the use of defeat devices in all of our products. We are transparent with all governing bodies in these processes, from disclosure of the design and operation of the emission control system, to test processes and results, and later to any necessary reporting and corrective action processes if required.

We work collaboratively and proactively with emission regulators globally to ensure emission standards are clear, appropriately stringent and enforceable, in an effort to ensure our products deliver on our commitments to our customers and the environment in real world use every day.

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. Our failure to comply with these standards could result in adverse effects on our future financial results.

EU and EPA Engine Certifications

The current on-highway NOx and PM emission standards came into effect in the European Union (EU) on January 1, 2013, (Euro VI) and on January 1, 2010, for the EPA. To meet the more stringent heavy-duty on-highway emission standards, 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 NOx aftertreatment. NOx 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 California Air Resources Board (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 NOx 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 (VGT™) 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 will come into effect between the 2019 - 2020 time frame for all power 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 VGT™. 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 2019. 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, 2018, we employed approximately 62,610 persons worldwide. Approximately 21,460 of our employees worldwide are represented by various unions under collective bargaining agreements that expire between 2019 and 2022.

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.

EXECUTIVE OFFICERS OF THE REGISTRANT

Following are the names and ages of our executive officers, their positions with us at January 31, 2019 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 (56)	Chairman of the Board of Directors and Chief Executive Officer (2012)	
Richard J. Freeland (61)	Director, President and Chief Operating Officer (2014)	Vice President and President— Engine Business (2010-2014)
Sherry A. Aaholm (56)	Vice President—Chief Information Officer (2013)	
Peter W. Anderson (52)	Vice President—Global Supply Chain and Manufacturing (2017)	Principal/Partner, Ernst & Young LLP (2006-2017)
Sharon R. Barner (61)	Vice President—General Counsel (2012)	
Steven M. Chapman (64)	Group Vice President—China and Russia (2009)	
Christopher C. Clulow (47)	Vice President - Corporate Controller (2017)	Controller, Components Segment (2015-2017) Executive Director—Heavy, Medium and Light Duty Finance (2011-2015)
Jill E. Cook (55)	Vice President—Chief Human Resources Officer (2003)	
Tracy A. Embree (45)	Vice President and President— Components Group (2015)	Vice President and President— Turbo Technologies (2012-2014)
Thaddeus B. Ewald (51)	Vice President—Corporate Strategy and Business Development (2010)	
Donald G. Jackson (49)	Vice President—Treasurer (2015)	Executive Director—Assistant Treasurer (2013-2015)
Norbert Nusterer (50)	Vice President and President—Power Systems (2016)	Vice President—New and ReCon Parts (2011-2016)
Mark J. Osowick (51)	Vice President—Human Resources Operations (2014)	Executive Director—Human Resources, Components Segment & India ABO (2010-2014)
Srikanth Padmanabhan (54)	Vice President and President—Engine Business (2016)	Vice President—Engine Business (2014-2016) Vice President and General Manager—Cummins Emission Solutions (2008-2014)
Marya M. Rose (56)	Vice President—Chief Administrative Officer (2011)	
Jennifer Rumsey (45)	Vice President—Chief Technical Officer (2015)	Vice President—Engineering, Engine Business (2014-2015) Vice President—Heavy, Medium and Light Duty Engineering (2013-2014)
Livingston L. Satterthwaite (58)	Vice President and President—Distribution Business (2015)	Vice President and President—Power Generation (2008-2015)
Mark A. Smith (51)	Vice President—Financial Operations (2016)	Vice President—Investor Relations and Business Planning and Analysis (2014-2016) Executive Director—Investor Relations (2011-2014)

Patrick J. Ward (55)

Vice President—Chief Financial Officer (2008)

Our Chairman and Chief Executive Officer is elected annually by our Board of Directors and holds office until the meeting of the Board of Directors at which his election is next considered. Other officers are appointed by the Chairman and Chief Executive Officer, are ratified by our Board of Directors and hold office for such period as the Chairman and Chief Executive Officer or the Board of Directors 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.

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. Although in 2018 we experienced demand growth in most of our North American on-highway and certain off-highway markets and continued strong demand in Chinese markets, as well as growth in many of our other international markets, 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, our results of operations, financial condition and cash flows would likely have a materially adverse impact.

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

Several of our engine customers, including PACCAR, Volvo, Navistar, Fiat 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 fact, several of these customers have expressed their intention to significantly increase their own engine production and to decrease engine purchases from us. 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.

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, 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 materially adverse impact our results of operations, financial condition and cash flows.

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 materially 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 materially 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 materially adverse impact on our results of operations, financial condition 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 a known or suspected performance issue. Any significant product recalls could have material adverse effects on our results of operations, financial condition and cash flows. See Note 9, "PRODUCT WARRANTY LIABILITY" to the *Consolidated Financial Statements* for additional information.

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. nationals 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, 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.

The United Kingdom's decision to end its membership in the European Union could materially and adversely impact our results of operations, financial condition and cash flows.

In June 2016, a majority of voters in the United Kingdom elected to withdraw from the European Union (EU) in a national referendum (BREXIT). Additionally, the results of the United Kingdom'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 United Kingdom'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 United Kingdom and the EU and increased regulatory complexities. The effects of BREXIT will depend on any agreements the United Kingdom 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, access to human capital and some of our target markets and jurisdictions in which we operate, and adversely change 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 United Kingdom determines which EU laws to replace or replicate. Any of these effects of BREXIT, among others, could have a materially 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 materially 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, including with respect to the demand for diesel engines, even if such allegations prove to be inaccurate or unfounded.

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. Although many of our off-highway markets began to recover in 2017 and 2018, additional 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.

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

During 2018, we single sourced approximately 20 percent of the total types of parts in our product designs, compared to approximately 20 percent in 2017. 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 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. 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, could result in unauthorized public disclosures of information and create financial liability, subject us to legal or regulatory sanctions, disrupt our ability to conduct our business 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.

Financial distress or a change-in-control of one of our large truck OEM customers could have a materially 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 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 2018, we recognized \$394 million of equity, royalty and interest income from investees, compared to \$357 million in 2017. 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.

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.

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 achieve our projected market penetration. 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 impairment charges, negatively impacting our earnings.

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 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.

The adoption of new tax legislation or exposure to additional income tax liabilities could adversely affect our profitability.

On December 22, 2017, the U.S. enacted the Tax Cuts and Jobs Act (Tax Legislation) and all adjustments to the 2017 estimates were incorporated into our financial results in 2018. There continues to be a risk that states or foreign jurisdictions may amend their tax laws in response to the Tax Legislation, which could have a material impact on our future results.

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.

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

We can experience capacity constraints and longer lead times for certain products in times of growing demand while we can also experience idle capacity as economies slow or demand for certain products decline. 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 increase manufacturing capacity to a level that meets demand for our products, which could prevent us from meeting increased customer demand and could harm our business. However, 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.

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 materially 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 materially 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, 2018, we employed approximately 62,610 persons worldwide. Approximately 21,460 of our employees worldwide are represented by various unions under collective bargaining agreements that expire between 2019 and 2022. 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.

Our financial statements are subject to changes in accounting standards that could adversely impact our profitability or financial position.

Our financial statements are subject to the application of generally accepted accounting principles (GAAP) in the United States of America, which are periodically revised and/or expanded. Accordingly, from time to time, we are required to adopt new or revised accounting standards issued by recognized authoritative bodies, including the Financial Accounting Standards Board. Recently, accounting standard setters issued new guidance which further interprets or seeks to revise accounting pronouncements related to lease accounting as well as to issue new standards expanding disclosures. The impact of accounting pronouncements that have been issued but not yet implemented is disclosed in our annual and quarterly reports on Form 10-K and Form 10-Q. An assessment of proposed standards is not provided, as such proposals are subject to change through the exposure process and, therefore, their effects on our financial statements cannot be meaningfully assessed. It is possible that future accounting standards we are required to adopt could change the current accounting treatment that we apply to our consolidated financial statements and that such changes could have a material adverse effect on our reported results of operations and financial position.

ITEM 1B. Unresolved Staff Comments

None.

ITEM 2. Properties

Manufacturing Facilities

Our principal manufacturing facilities include our plants used by the following segments in the following locations:

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, Stamford
	Nigeria: Lagos	
Electrified Power	Indiana: Columbus	

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

Distribution Facilities

The principal distribution facilities that serve all of our segments are located in the following locations:

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

Headquarters and Other Offices

Our Corporate Headquarters are located in Columbus, Indiana. Additional marketing, operational headquarters and supply chain facilities are in the following locations:

U.S. Facilities	Facilities Outside the U.S.
Indiana: Columbus, Indianapolis	Belgium: Rumst
Kentucky: Walton	Brazil: Guarulhos
Tennessee: Memphis, Nashville	China: Beijing, Shanghai, Wuhan
Washington, D.C.	India: Pune
	Mexico: San Luis Potosi
	Russia: Moscow
	Singapore: Singapore
	South Africa: Johannesburg
	Turkey: Izmir
	U.K.: London, Stockton
	United Arab Emirates: Dubai

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 9, "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.

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 Noted 4, "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⁾
October 1 - November 4	1,441,542	\$ 137.97	1,441,542	80,751
November 5 - December 2	740,384	145.34	735,907	78,448
December 3 - December 31	406,164	135.90	404,859	85,313
Total	2,588,090	139.75	2,582,308	

⁽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 our Board of Directors 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 of Directors does not limit the number of shares that may be purchased and were excluded from this column. The dollar value remaining available for future purchases under the 2018 program as of December 31, 2018, was \$1.9 billion.

In October 2018, our Board of Directors authorized the acquisition of up to \$2 billion of additional common stock upon completion of the 2016 repurchase plan. In December 2016, our Board of Directors authorized the acquisition of up to \$1 billion of additional common stock upon completion of the 2015 repurchase plan. During the three months ended December 31, 2018, we repurchased \$167 million of common stock under the 2016 Board of Directors authorized plan, completing this program, and repurchased \$94 million of common stock under the 2018 authorization.

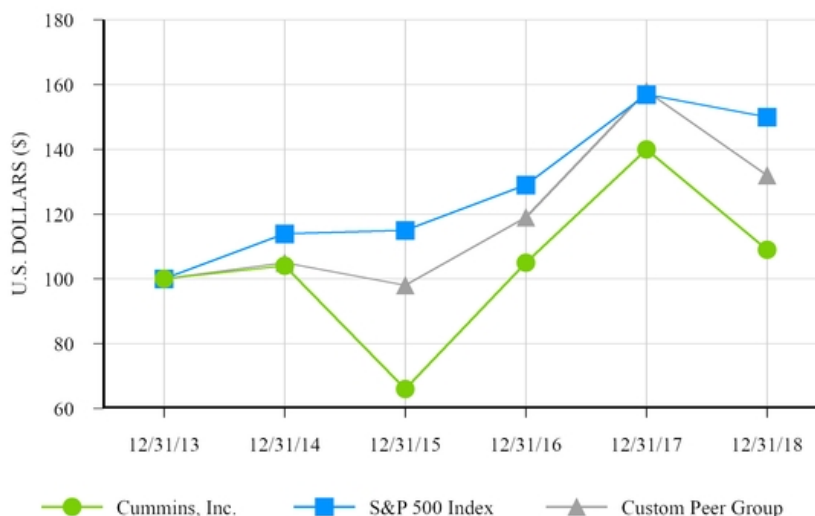
During the three months ended December 31, 2018, we repurchased 5,782 shares of common stock from employees in connection with the Key Employee Stock Investment Plan which allows certain employees, other than officers, to purchase shares of common stock on an installment basis up to an established credit 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. 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, 2013
ASSUMES DIVIDENDS REINVESTED
FISCAL YEAR ENDING DECEMBER 31, 2018

ITEM 6. Selected Financial Data

The selected financial information presented below for each of the last five years ended December 31, beginning with 2018, 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	2018	2017	2016	2015	2014
For the years ended December 31,					
Net sales	\$ 23,771	\$ 20,428	\$ 17,509	\$ 19,110	\$ 19,221
<i>U.S. percentage of sales</i>	56%	54%	54%	56%	52%
<i>Non-U.S. percentage of sales</i>	44%	46%	46%	44%	48%
Gross margin ⁽¹⁾	5,737	5,100	4,458	4,947	4,861
Research, development and engineering expenses ⁽¹⁾	902	754	637	735	754
Equity, royalty and interest income from investees	394	357	301	315	370
Interest expense	114	81	69	65	64
Net income attributable to Cummins Inc. ⁽²⁾	2,141	999	1,394	1,399	1,651
Earnings per common share attributable to Cummins Inc. ⁽³⁾					
Basic	\$ 13.20	\$ 5.99	\$ 8.25	\$ 7.86	\$ 9.04
Diluted	13.15	5.97	8.23	7.84	9.02
Cash dividends declared per share	4.44	4.21	4.00	3.51	2.81
Net cash provided by operating activities ⁽⁴⁾	\$ 2,378	\$ 2,277	\$ 1,939	\$ 2,065	\$ 2,283
Capital expenditures	709	506	531	744	743
At December 31,					
Cash and cash equivalents	\$ 1,303	\$ 1,369	\$ 1,120	\$ 1,711	\$ 2,301
Total assets	19,062	18,075	15,011	15,134	15,764
Long-term debt ⁽⁵⁾	1,597	1,588	1,568	1,576	1,577
Total equity ⁽⁶⁾	8,259	8,164	7,174	7,750	8,093

⁽¹⁾ In 2018, we adopted the standard related to pension and other postretirement benefit costs resulting in reclassification of balances between *Cost of sales, Selling, general and administrative expenses, Research, development and engineering expenses* and *Other income, net*. Reclassifications resulted in an increase in gross margin of \$10 million and \$6 million and an increase in *Research, development and engineering expenses* of \$2 million and \$1 million for the years ended December 31, 2017 and 2016, respectively. Reclassifications were not made for the years ended December 31, 2015 and 2014 as the changes were immaterial.

⁽²⁾ 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 and 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). For the year ended December 31, 2014, net income attributable to Cummins Inc. included \$32 million of restructuring and other charges (\$21 million after-tax) for operating actions related to the Power Systems segment.

⁽³⁾ For the year ended December 31, 2018 results for basic and diluted earnings per share were reduced by \$0.24 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.

⁽⁴⁾ In 2017, we adopted new rules related to accounting for stock compensation which resulted in a net reclassification of \$4 million, \$6 million and \$17 million of compensation payments from operating to financing activities for the years ended December 31, 2016, 2015 and 2014, respectively.

⁽⁵⁾ In 2015, we adopted new rules related to balance sheet debt issuance costs, which resulted in the reclassification of our December 31, 2014, debt balance, reducing our long-term debt by \$12 million.

⁽⁶⁾ For the years ended December 31, 2018, 2017, 2016, 2015 and 2014, we recorded non-cash charges (credits) to equity of (\$74) million, (\$28) million, \$65 million, \$63 million and \$78 million, respectively, to record net actuarial losses (gains) associated with the valuation of our pension plans. These losses (gains) include the effects of market conditions on our pension trust assets and the effects of economic factors on the valuation of the pension liability. For the years ended December 31, 2018, 2017, 2016, 2015 and 2014, we recorded non-cash charges (credits) to equity of \$326 million, (\$315) million, \$431 million, \$290 million and \$227 million, respectively, to record unrealized losses (gains) associated with the foreign currency translation adjustments.

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**
- **2019 OUTLOOK**
- **RESULTS OF OPERATIONS**
- **OPERATING SEGMENT RESULTS**
- **LIQUIDITY AND CAPITAL RESOURCES**
- **CONTRACTUAL OBLIGATIONS AND OTHER COMMERCIAL COMMITMENTS**
- **APPLICATION OF CRITICAL ACCOUNTING ESTIMATES**
- **RECENTLY ADOPTED AND RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS**

EXECUTIVE SUMMARY AND FINANCIAL HIGHLIGHTS

We are a global power leader that designs, manufactures, distributes and services diesel and natural gas engines and powertrain-related component products, including filtration, aftertreatment, turbochargers, fuel systems, controls systems, air handling systems, transmissions, electric power generation systems, batteries and electrified power systems. 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 and independent distributor locations and over 7,600 dealer locations in more than 190 countries and territories.

Our reportable operating segments consist of Engine, Distribution, Components, Power Systems and Electrified Power. This reporting structure is organized according to the products and markets each segment serves. The Engine segment produces engines (15 liters and less in size) 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 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.

We formed the Electrified Power segment, effective January 1, 2018, which designs, manufactures, sells and supports electrified power systems ranging from fully electric to hybrid solutions along with innovative components and subsystems to serve all our markets as they adopt electrification, meeting the needs of our OEM partners and end customers. We currently offer the Cummins PowerDrive series of fully electric and hybrid powertrain systems targeting various applications in the Class 4-8 commercial vehicle markets and are developing the Cummins Battery Electric System and the Cummins Hybrid Power Plug-In System for the urban bus market, which are expected to launch in 2019 and 2020, respectively. We also design and manufacture battery modules, packs and systems for commercial, industrial and material handling applications. We use a range of cell chemistries which are suitable for pure electric, hybrid and plug-in hybrid applications. In addition to electrified powertrains for urban buses, we intend to deliver product offerings to other markets as they adopt electric solutions, including, but not limited to, pick-up and delivery applications and industrial markets. We invest in and utilize our internal research and development capabilities, along with strategic acquisitions and partnerships, to meet our objectives.

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 improved 16 percent in 2018 compared to 2017, with all operating segments reporting higher sales. Net sales in the United States (U.S.) and Canada improved by 19 percent primarily due to increased demand in the North American on-highway markets (primarily in the heavy- and medium-duty truck markets), increased demand in all of our distribution product lines, sales from the automated transmission business acquired during the third quarter of 2017 and increased industrial demand (especially in oil and gas and construction markets). International demand growth (excludes the U.S. and Canada) in 2018 improved international net sales by 12 percent compared to 2017, with sales up in most of our markets, especially in Europe, Asia Pacific, Latin America, China and India. The increase in international sales was primarily due to increased demand in industrial markets (especially construction and mining markets in China and Europe), increased on-highway demand (especially in Brazil, Europe and India), increased demand in our distribution business (especially in Western Europe, Asia Pacific and China) and increased demand for power generation equipment (primarily in the Middle East, Asia Pacific and China).

Effective January 1, 2018, we changed our segment measure of profitability to EBITDA (defined as earnings before interest expense, income taxes, noncontrolling interests, depreciation and amortization) as a primary basis for the Chief Operating Decision Maker to evaluate the performance of each of our operating segments. EBITDA assists investors and debt holders in comparing our performance on a consistent basis without regard for depreciation and amortization, which can vary significantly depending upon many factors. Prior periods have been revised to reflect the current presentation. Segment amounts exclude certain expenses not specifically identifiable to segments. The following tables contain sales and EBITDA by operating segment for the years ended December 31, 2018 and 2017. 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								
	2018			2017			Percent change 2018 vs. 2017		
	Sales	Percent of Total	EBITDA	Sales	Percent of Total	EBITDA	Sales	EBITDA	
Engine	\$ 10,566	44 %	\$ 1,446	\$ 8,953	44 %	\$ 1,143	18%	27%	
Distribution	7,828	33 %	563	7,058	34 %	500	11%	13%	
Components	7,166	30 %	1,030	5,889	29 %	917	22%	12%	
Power Systems	4,626	20 %	614	4,058	20 %	411	14%	49%	
Electrified Power	7	— %	(90)	—	— %	—	NM	NM	
Intersegment eliminations	(6,422)	(27)%	(87)	(5,530)	(27)%	55	16%	NM	
Total	\$ 23,771	100 %	\$ 3,476	\$ 20,428	100 %	\$ 3,026	16%	15%	

"NM" - not meaningful information

Net income attributable to Cummins Inc. for 2018 was \$2.1 billion, or \$13.15 per diluted share, on sales of \$23.8 billion, compared to 2017 net income attributable to Cummins Inc. of \$1.0 billion, or \$5.97 per diluted share, on sales of \$20.4 billion. The increase in net income attributable to Cummins Inc. and earnings per diluted share was driven by significantly higher net sales, the 2017 Tax Cuts and Jobs Act (Tax Legislation), higher gross margin and increased equity earnings from investees partially offset by \$368 million for an Engine System Campaign, higher research, development and engineering expenses, unfavorable foreign currency impacts (primarily the British pound, Brazilian real and Angolan kwanza partially offset by the Euro) and higher interest expense. Tax Legislation resulted in the U.S. statutory rate decreasing from 35 percent to 21 percent, added incremental income tax expense in 2017 of \$781 million to our tax provision (excluding the noncontrolling interest and equity investee adjustments) with a net impact of \$777 million unfavorable to net income. See Note 4, "INCOME TAXES," and Note 9, "PRODUCT WARRANTY LIABILITY," to the *Consolidated Financial Statements* for additional information on the Tax Legislation adjustments during the one year measurement period and the Engine System Campaign, respectively. The increase in gross margin was primarily due to higher volumes, improved mix and favorable pricing, partially offset by increased warranty costs (primarily \$368 million for an Engine System Campaign), higher compensation costs (driven by headcount growth to support increased sales) and unfavorable impacts from Chinese tariffs. Diluted earnings per share for 2018 benefited \$0.25 per share from fewer weighted average shares outstanding, primarily due to the stock repurchase programs, including shares acquired under the accelerated share repurchase agreement.

Net income and diluted earnings per share attributable to Cummins Inc., excluding Tax Legislation, were as follows:

In millions, except per share amounts	Years ended December 31,			
	2018		2017	
	Net Income	Diluted EPS	Net Income	Diluted EPS
Net income and diluted EPS attributable to Cummins Inc.	\$ 2,141	\$ 13.15	\$ 999	\$ 5.97
Net impact of Tax Legislation ⁽¹⁾	39	0.24	777	4.65
Net income and diluted EPS attributable to Cummins Inc. excluding Tax Legislation ⁽²⁾	\$ 2,180	\$ 13.39	\$ 1,776	\$ 10.62

⁽¹⁾ See Note 4, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

⁽²⁾ These measures are not in accordance with, or an alternative for, accounting principles generally accepted in the United States of America (GAAP) and may not be consistent with measures used by other companies. It should be considered supplemental data.

We generated \$2.4 billion of operating cash flows in 2018, compared to \$2.3 billion in 2017. See the section titled "Cash Flows" in the "LIQUIDITY AND CAPITAL RESOURCES" section for a discussion of items impacting cash flows.

In October 2018, our Board of Directors authorized the acquisition of up to \$2 billion of additional common stock upon completion of the 2016 repurchase plan. During 2018, we repurchased \$1.1 billion, or 7.9 million shares of common stock, including 3.5 million shares repurchased under the \$500 million accelerated share repurchase program. See Note 14 "SHAREHOLDERS' EQUITY," to *Consolidated Financial Statements* for additional information.

On August 22, 2018, we entered into a new five-year \$2.0 billion revolving credit agreement and a 364-day \$1.5 billion credit agreement that expire on August 22, 2023 and August 21, 2019, respectively. These new credit facilities replace our previous five-year \$1.75 billion and 364-day \$1.0 billion facilities and will be used primarily to provide backup liquidity for our commercial paper borrowings and general corporate purposes. See Note 10 "DEBT," to *Consolidated Financial Statements* for additional information.

Our debt to capital ratio (total capital defined as debt plus equity) at December 31, 2018, was 23.1 percent, compared to 19.7 percent at December 31, 2017. The increase was primarily due to an increase in outstanding commercial paper. At December 31, 2018, 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.

In July 2018, our Board of Directors authorized an increase to our quarterly dividend of 5.6 percent from \$1.08 per share to \$1.14 per share.

Our global pension plans, including our unfunded and non-qualified plans, were 115 percent funded at December 31, 2018. Our U.S. qualified plan, which represents approximately 54 percent of the worldwide pension obligation, was 131 percent funded and our United Kingdom (U.K.) plan was 115 percent funded. We expect to contribute approximately \$123 million to our global pension plans in 2019. In addition, we expect our 2019 net periodic pension cost to approximate \$56 million. See application of critical accounting estimates within MD&A and Note 11, "PENSIONS AND OTHER POSTRETIREMENT BENEFITS," to the *Consolidated Financial Statements*, for additional information concerning our pension and other post retirement benefit plans.

2019 OUTLOOK

Our outlook reflects the following positive trends and challenges to our business that we expect could impact our revenue and earnings potential in 2019:

Positive Trends

- We anticipate North American medium-duty truck and heavy-duty truck demand will remain strong.
- We expect demand for pick-up trucks in North America will remain strong.
- We anticipate power generation markets will remain strong, with increased demand in global data center markets.
- We expect construction markets will remain strong in North America and Europe.
- We expect demand in mining markets to stabilize.
- Improving economic conditions in Brazil could positively impact demand across our business.

Challenges

- We are experiencing cost increases as a result of trade tariffs recently imposed by the U.S. and some of its trading partners, especially China.
- Prolonged trade disputes could negatively impact demand and trigger additional costs.
- Market demand in truck and construction markets in China is expected to decline.
- We anticipate demand in oil and gas markets in North America will decline.
- Marine markets are expected to remain weak.
- Uncertainty in the U.K. surrounding its ability to negotiate favorable terms in its withdrawal from the European Union could have material negative impacts on our European operations in the near and long-term.

In summary, we expect demand to remain strong in many of our most important markets, but also face headwinds in China and with Brexit.

RESULTS OF OPERATIONS

In millions (except per share amounts)	Years ended December 31,			Favorable/(Unfavorable)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
	Amount	Amount	Amount	Amount	Percent	Amount	Percent
NET SALES	\$ 23,771	\$ 20,428	\$ 17,509	\$ 3,343	16 %	\$ 2,919	17 %
Cost of sales	18,034	15,328	13,051	(2,706)	(18)%	(2,277)	(17)%
GROSS MARGIN	5,737	5,100	4,458	637	12 %	642	14 %
OPERATING EXPENSES AND INCOME							
Selling, general and administrative expenses	2,437	2,429	2,099	(8)	— %	(330)	(16)%
Research, development and engineering expenses	902	754	637	(148)	(20)%	(117)	(18)%
Equity, royalty and interest income from investees	394	357	301	37	10 %	56	19 %
Loss contingency	—	5	138	5	100 %	133	96 %
Other operating income (expense), net	(6)	65	(5)	(71)	NM	70	NM
OPERATING INCOME	2,786	2,334	1,880	452	19 %	454	24 %
Interest income	35	18	23	17	94 %	(5)	(22)%
Interest expense	114	81	69	(33)	(41)%	(12)	(17)%
Other income, net	46	94	96	(48)	(51)%	(2)	(2)%
INCOME BEFORE INCOME TAXES	2,753	2,365	1,930	388	16 %	435	23 %
Income tax expense	566	1,371	474	805	59 %	(897)	NM
CONSOLIDATED NET INCOME	2,187	994	1,456	1,193	NM	(462)	(32)%
Less: Net income (loss) attributable to noncontrolling interests	46	(5)	62	(51)	NM	67	NM
NET INCOME ATTRIBUTABLE TO CUMMINS INC.	\$ 2,141	\$ 999	\$ 1,394	\$ 1,142	NM	\$ (395)	(28)%
Diluted earnings per common share attributable to Cummins Inc.	\$ 13.15	\$ 5.97	\$ 8.23	\$ 7.18	NM	\$ (2.26)	(27)%

"NM" - not meaningful information

Percent of sales	Favorable/(Unfavorable) Percentage Points				
	2018	2017	2016	2018 vs. 2017	2017 vs. 2016
Gross margin	24.1 %	25.0%	25.5%	(0.9)	(0.5)
Selling, general and administrative expenses	10.3 %	11.9%	12.0%	1.6	0.1
Research, development and engineering expenses	3.8 %	3.7%	3.6%	(0.1)	(0.1)

2018 vs. 2017
Net Sales

Net sales increased \$3.3 billion, primarily driven by the following:

- Engine segment sales increased 18 percent, primarily due to higher demand across all markets, especially in North American heavy-duty truck, global construction markets and medium-duty truck markets.
- Components segment sales increased 22 percent, due to higher demand across all businesses, especially the emission solutions business, stronger market demand for trucks in North America and Western Europe, sales from the automated transmission business acquired in the third quarter of 2017 and the turbo technologies business due to higher demand in North America and Western Europe.
- Distribution segment sales increased 11 percent, primarily due to higher demand in most geographic regions, especially in North America, and increased demand in all product lines.
- Power Systems segment sales increased 14 percent, due to higher demand for all product lines, especially in power generation due to stronger demand in North America, Middle East and Australia, and industrial sales driven by higher demand in global mining markets and oil and gas markets in North America.

Sales to international markets (excluding the U.S. and Canada), based on location of customers, were 41 percent of total net sales in 2018, compared with 42 percent of total net sales in 2017. 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: raw 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 \$637 million and decreased 0.9 points as a percentage of sales. The increase in gross margin was primarily due to higher volumes, improved mix and favorable pricing, partially offset by increased warranty costs (primarily \$368 million for an Engine System Campaign), higher compensation costs (driven by headcount growth to support increased sales) and unfavorable impacts from Chinese tariffs. The decrease in gross margin percentage was primarily due to the Engine System Campaign. See Note 9, "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 2018 and 1.8 percent in 2017. 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 \$8 million, primarily due to higher consulting expense and increased administrative expense driven by the acquisition of the automated transmission business in the third quarter of 2017. Overall, selling, general and administrative expenses, as a percentage of sales, improved to 10.3 percent in 2018 from 11.9 percent in 2017, primarily as the result of lower variable compensation expense on higher sales.

Research, Development and Engineering Expenses

Research, development and engineering expenses increased \$148 million, primarily due to investments in the Electrified Power segment, increased compensation expense driven by headcount growth and expenses from the automated transmission business acquired in the third quarter of 2017, higher consulting expense and lower expense recovery. Overall, research, development and engineering expenses, as a percentage of sales, increased to 3.8 percent in 2018 from 3.7 percent in 2017. 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 development activities around fully electric and hybrid powertrain solutions.

Equity, Royalty and Interest Income From Investees

Equity, royalty and interest income from investees increased \$37 million, primarily due to a \$39 million unfavorable deferred tax adjustment recognized in 2017 in conjunction with the adoption of the 2017 Tax Legislation that did not repeat in 2018. The primary equity, royalty and interest income fluctuations by equity investee were higher earnings at Tata Cummins Ltd., Cummins Westport, Chongqing Cummins Engine Company, Ltd. and higher royalty and interest income, partially offset by lower earnings at Beijing Foton Cummins Engine Company, Ltd. and Dongfeng Cummins Engine Company, Ltd. See Note 3, "INVESTMENTS IN EQUITY INVESTEES," to our *Consolidated Financial Statements* for additional information on the deferred tax adjustments by investee.

Other Operating Income (Expense), Net

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

In millions	Years ended December 31,	
	2018	2017
Royalty income, net	\$ 38	\$ 50
Gain on sale of assets, net	2	20
Loss on write off of assets	(19)	(4)
Amortization of intangible assets	(20)	(12)
Other, net	(7)	11
Total other operating income (expense), net	\$ (6)	\$ 65

Interest Income

Interest income increased \$17 million, primarily due to higher interest rates on cash and marketable security balances.

Interest Expense

Interest expense increased \$33 million, primarily due to higher weighted-average debt outstanding and higher interest rates.

Other Income, Net

Other income, net was as follows:

In millions	Years ended December 31,	
	2018	2017
Non-service pension and other postretirement benefits credit	\$ 60	\$ 31
Rental income	8	7
Dividend income	3	5
Bank charges	(11)	(10)
Change in cash surrender value of corporate owned life insurance	(20)	50
Foreign currency loss, net	(34)	(6)
Other, net	40	17
Total other income, net	\$ 46	\$ 94

Income Tax Expense

Our effective tax rate for 2018 was 20.6 percent compared to 58.0 percent for 2017.

The year ended December 31, 2018, contained \$14 million, or \$0.09 per share, 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.

On December 22, 2017, the U.S. enacted Tax Legislation which, among other things, changed the U.S. statutory rate to 21 percent effective January 1, 2018. The impact of the Tax Legislation resulted in an incremental tax provision charge of \$781 million in 2017.

The change in the effective tax rate for the year ended, December 31, 2018 versus 2017, was primarily due to lower U.S. tax rates in 2018 associated with Tax Legislation and the significant 2017 Tax Legislation expenses in 2017.

We expect our 2019 effective tax rate to be 21.5 percent, excluding any discrete items.

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 increased \$51 million, primarily due to the absence of a \$43 million favorable withholding tax adjustment on Cummins India Ltd. in 2017, a \$24 million unfavorable Tax Legislation withholding tax adjustment in 2018 and higher earnings in our automated transmission business during 2018. See Note 17, "NONCONTROLLING INTERESTS," to our *Consolidated Financial Statements* for additional information on the withholding tax adjustments.

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 \$1.1 billion and \$7.18 per share, respectively, primarily due to significantly higher net sales, Tax Legislation, higher gross margin and increased equity earnings from investees partially offset by \$368 million for an Engine System Campaign, higher research, development and engineering expenses, unfavorable foreign currency impacts (primarily the British pound, Brazilian real and Angolan kwanza partially offset by the Euro) and higher interest expense. See Note 9, "PRODUCT WARRANTY LIABILITY," to the *Consolidated Financial Statements* for additional information on the the Engine System Campaign.

Tax Legislation resulted in the U.S. statutory rate decreasing from 35 percent to 21 percent, added incremental income tax expense in 2017 of \$781 million to our tax provision (excluding the noncontrolling interest and equity investee adjustments) with a net impact of \$777 million unfavorable to net income. The 2018 charges reflect final adjustments and subsequent guidance issued by the Internal Revenue Service. The components of the 2018 and 2017 charges were as follows:

In millions	Impact of Tax Legislation ⁽¹⁾	
	2018	2017
Income tax expense	\$ 12	\$ 781
Decrease in equity, royalty and other income from investees	3	39
Decrease (increase) in income attributable to noncontrolling interests ⁽²⁾	24	(43)
Net impact of Tax Legislation	\$ 39	\$ 777

⁽¹⁾ See Note 4, "INCOME TAXES," Note 3, "INVESTMENTS IN EQUITY INVESTEEES" and Note 17, "NONCONTROLLING INTERESTS," to our *Consolidated Financial Statements* for additional information.

⁽²⁾ Noncontrolling interest was adjusted for withholding taxes on foreign earnings which changed the income eliminated for Cummins ownership interest attributable to Cummins India, Ltd.

Diluted earnings per share for 2018 benefited \$0.25 per share from fewer weighted average shares outstanding, primarily due to the stock repurchase programs, including shares acquired under the accelerated share repurchase agreement.

2017 vs. 2016

Net Sales

Net sales increased \$2.9 billion, primarily driven by the following:

- Engine segment sales increased 15 percent, primarily due to higher demand in most North American on-highway markets and improved demand in most global construction markets.
- Components segment sales increased 22 percent, due to higher demand across all businesses, especially the emission solutions business, due to strong on-highway sales in India, North America and China.
- Distribution segment sales increased 14 percent, primarily due to an increase in organic sales and higher sales related to the acquisition of a North American distributor in the fourth quarter of 2016.

- Power Systems segment sales increased 15 percent, due to higher demand in all product lines, especially in industrial markets, due to higher demand in global mining and North American oil and gas markets.

Sales to international markets (excluding the U.S. and Canada), based on location of customers, were 42 percent of total net sales in 2017, compared with 42 percent of total net sales in 2016.

Gross Margin

Gross margin increased \$642 million, primarily due to higher volumes, improved leverage and lower material costs, partially offset by higher warranty costs (\$264 million primarily due to campaigns in the Engine, Components and Power Systems segments and changes in estimates in the Engine and Components segments) and increased variable compensation expense of \$150 million. Gross margin decreased 0.5 points as a percentage of sales due to increased warranty costs and increased variable compensation expense.

The provision for warranties issued, excluding campaigns, as a percentage of sales, was 1.8 percent in 2017 and 1.7 percent in 2016. 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 \$330 million, primarily due to higher compensation expense (\$257 million), especially variable compensation, and higher consulting expense (\$52 million). Overall, selling, general and administrative expenses, as a percentage of sales, improved to 11.9 percent in 2017 from 12.0 percent in 2016.

Research, Development and Engineering Expenses

Research, development and engineering expenses increased \$117 million, primarily due to increased compensation expense (\$76 million), especially variable compensation, and higher consulting expense (\$20 million). Overall, research, development and engineering expenses, as a percentage of sales, increased to 3.7 percent in 2017 from 3.6 percent in 2016. Research activities continue to focus on development of new products to meet future emission standards around the world and improvements in fuel economy performance.

Equity, Royalty and Interest Income From Investees

Equity, royalty and interest income from investees increased \$56 million, primarily due to higher earnings at Beijing Foton Cummins Engine Co. and Dongfeng Cummins Engine Company, Ltd., despite \$39 million of unfavorable impacts from Tax Legislation related to withholding taxes on foreign earnings and remeasurement of deferred taxes. See Note 4, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

Loss Contingency

In 2017, we recorded a charge of \$5 million in addition to the 2016 charge of \$138 million for a loss contingency. See Note9, "PRODUCT WARRANTY LIABILITY," to the *Consolidated Financial Statements* for additional information.

Other Operating Income (Expense), Net

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

In millions	Years ended December 31,	
	2017	2016
Royalty income, net	\$ 50	\$ 28
Gain on sale of assets, net	20	2
Loss on write off of assets	(4)	(18)
Amortization of intangible assets	(12)	(9)
Other, net	11	(8)
Total other operating income (expense), net	<u>\$ 65</u>	<u>\$ (5)</u>

Interest Income

Interest income decreased \$5 million, primarily due to lower investment balances in China and Brazil.

Interest Expense

Interest expense increased \$12 million, primarily due to higher weighted-average debt outstanding and hedge ineffectiveness on our interest rate swap.

Other Income, Net

Other income, net was as follows:

In millions	Years ended December 31,	
	2017	2016
Change in cash surrender value of corporate owned life insurance	\$ 50	\$ 18
Non-service pension and other postretirement benefits credit	31	48
Rental income	7	5
Dividend income	5	5
Gain on sale of equity investee ⁽¹⁾	—	17
Gain on fair value adjustment for consolidated investees ⁽²⁾	—	15
Foreign currency loss, net	(6)	(12)
Bank charges	(10)	(9)
Other, net	17	9
Total other income, net	\$ 94	\$ 96

⁽¹⁾ See Note 3, "INVESTMENTS IN EQUITY INVESTEES," to the *Consolidated Financial Statements* for additional information.

⁽²⁾ See Note 19, "ACQUISITIONS," to the *Consolidated Financial Statements* for additional information.

Income Tax Expense

Our income tax rates are generally less than the 35 percent U.S. statutory income tax rate, primarily because of lower taxes on foreign earnings and research tax credits. On December 22, 2017, the U.S. enacted the Tax Cuts and Jobs Act. Our effective tax rate for 2017 was 58.0 percent compared to 24.6 percent for 2016. The impacts of the Tax Legislation resulted in additional income tax expense of \$781 million to our tax provision (excluding the noncontrolling interest and equity investee adjustments). See Note 4, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

Noncontrolling Interests

Noncontrolling interests in income of consolidated subsidiaries decreased \$67 million, primarily due to the \$43 million impact of Tax Legislation on Cummins India Ltd. regarding withholding taxes on foreign earnings, the acquisition of the remaining interest in Wuxi Cummins Turbo Technologies Co. Ltd. in the fourth quarter of 2016 and elimination of the net loss for the automated transmission business.

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. decreased \$395 million and \$2.26 per share, respectively, primarily due to the \$777 million impact of Tax Legislation, increased selling, general and administrative expenses and higher research, development and engineering expenses, partially offset by higher net sales and gross margin, lower charges for a loss contingency and higher equity, royalty and interest income from investees. Diluted earnings per share for 2017 was negatively impacted \$4.65 per share due to the Tax Legislation, partially offset by a benefit of \$0.04 per share from fewer weighted-average shares outstanding, primarily due to purchases under the stock repurchase program. See Note 4, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

Comprehensive Income - Foreign Currency Translation Adjustment

The foreign currency translation adjustment was a net gain (loss) of \$(356) million, \$335 million and \$(448) million for the years ended December 31, 2018, 2017 and 2016, respectively. The details were as follows:

In millions	Years ended December 31,					
	2018		2017		2016	
	Translation adjustment	Primary currency driver vs. U.S. dollar	Translation adjustment	Primary currency driver vs. U.S. dollar	Translation adjustment	Primary currency driver vs. U.S. dollar
Wholly-owned subsidiaries	\$ (266)	British pound, Chinese renminbi, Indian rupee, Brazilian real	\$ 255	British pound, Chinese renminbi, Indian rupee	\$ (397)	British pound, Chinese renminbi, partially offset by Brazilian real
Equity method investments	(60)	Chinese renminbi, Indian rupee, British pound	60	Chinese renminbi, Russian ruble, Indian rupee	(34)	Chinese renminbi, Indian rupee, partially offset by Mexican peso
Consolidated subsidiaries with a noncontrolling interest	(30)	Indian rupee	20	Indian rupee	(17)	Chinese renminbi, Indian rupee
Total	<u>\$ (356)</u>		<u>\$ 335</u>		<u>\$ (448)</u>	

OPERATING SEGMENT RESULTS

Our reportable operating segments consist of the Engine, Distribution, Components, Power Systems and Electrified Power segments. This reporting structure is organized according to the products and markets each segment serves. Effective January 1, 2018, we changed our measure to EBITDA as a primary basis for the Chief Operating Decision Maker to evaluate the performance of each of our reportable operating segments. Segment amounts exclude certain expenses not specifically identifiable to segments. See Note 20, "OPERATING SEGMENTS," to the *Consolidated Financial Statements* for additional information.

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

Engine Segment Results

Financial data for the Engine segment was as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
	Amount	Amount	Amount	Amount	Percent	Amount	Percent
External sales	\$ 8,002	\$ 6,661	\$ 5,774	\$ 1,341	20 %	\$ 887	15 %
Intersegment sales	2,564	2,292	2,030	272	12 %	262	13 %
Total sales	10,566	8,953	7,804	1,613	18 %	1,149	15 %
Research, development and engineering expenses	311	280	227	(31)	(11)%	(53)	(23)%
Equity, royalty and interest income from investees	238	219	148	19	9 %	71	48 %
Interest income	11	6	10	5	83 %	(4)	(40)%
Loss contingency ⁽¹⁾	—	5	138	5	100 %	133	96 %
Segment EBITDA	1,446	1,143	849	303	27 %	294	35 %
				Percentage Points		Percentage Points	
Segment EBITDA as a percentage of total sales	13.7 %	12.8 %	10.9 %	0.9		1.9	

⁽¹⁾ See respective sections of "RESULTS OF OPERATIONS" for additional information.

Sales for our Engine segment by market were as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
	Amount	Amount	Amount	Amount	Percent	Amount	Percent
Heavy-duty truck	\$ 3,652	\$ 2,840	\$ 2,443	\$ 812	29%	\$ 397	16%
Medium-duty truck and bus	2,855	2,513	2,272	342	14%	241	11%
Light-duty automotive	1,819	1,727	1,581	92	5%	146	9%
Total on-highway	8,326	7,080	6,296	1,246	18%	784	12%
Off-highway	2,240	1,873	1,508	367	20%	365	24%
Total sales	\$ 10,566	\$ 8,953	\$ 7,804	\$ 1,613	18%	\$ 1,149	15%

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)			
				2018 vs. 2017		2017 vs. 2016	
	2018	2017	2016	Amount	Percent	Amount	Percent
Heavy-duty	128,500	95,900	79,000	32,600	34%	16,900	21%
Medium-duty	311,100	268,100	229,100	43,000	16%	39,000	17%
Light-duty	273,400	257,500	228,600	15,900	6%	28,900	13%
Total unit shipments	713,000	621,500	536,700	91,500	15%	84,800	16%

2018 vs. 2017

Sales

Engine segment sales increased \$1.6 billion. The following were the primary drivers by market:

- Heavy-duty truck engine sales increased \$812 million, primarily due to higher demand in North American heavy-duty truck markets with increased shipments of 40 percent.
- Off-highway sales increased \$367 million, primarily due to improved demand in global construction markets with increased international unit shipments of 37 percent, mainly in China and Western Europe, and increased unit shipments of 30 percent in North America.
- Medium-duty truck and bus sales increased \$342 million, primarily due to higher demand in North American medium-duty truck markets with increased engine shipments of 14 percent.

Total on-highway-related sales for 2018 were 79 percent of total engine segment sales, compared to 79 percent in 2017.

Segment EBITDA

Engine segment EBITDA increased \$303 million, primarily due to higher gross margin, decreased selling, general and administrative expenses and increased equity, royalty and interest income from investees, partially offset by increased research, development and engineering expenses and unfavorable foreign currency fluctuations primarily in the Brazilian real. The increase in gross margin was primarily due to higher volumes, improved pricing and favorable mix, partially offset by increased warranty costs (primarily \$184 million for an Engine System Campaign) and higher compensation expense. See Note 9, "PRODUCT WARRANTY LIABILITY," to the *Consolidated Financial Statements* for additional information on the Engine System Campaign.

Gross margin as a percentage of sales declined primarily due to the increased warranty costs. The decrease in selling, general and administrative expenses was primarily due to lower variable compensation expense. An increase in research, development and engineering expenses was primarily due to lower expense recovery and higher compensation expense. The increase in equity, royalty and interest income from investees was primarily due to higher earnings at Tata Cummins, Ltd. and Cummins Westport, Inc. as the result of unfavorable Tax Legislation remeasurement adjustments of \$15 million and \$7 million in 2017, respectively, which did not repeat in 2018, partially offset by lower earnings at Beijing Foton Cummins Engine Co., Ltd.

2017 vs. 2016

Sales

Engine segment sales increased \$1.1 billion. The following were the primary drivers by market:

- Heavy-duty truck engine sales increased \$397 million, primarily due to higher demand in North American heavy-duty truck markets with increased shipments of 20 percent.
- Off-highway sales increased \$365 million, primarily due to improved demand in global industrial markets, especially in international construction markets, with increased unit shipments of 54 percent primarily in China and Western Europe.
- Medium-duty truck and bus sales increased \$241 million, primarily due to higher demand in North American medium-duty truck markets with increased engine shipments of 20 percent.

- Light-duty automotive sales increased \$146 million, primarily due to higher sales to Chrysler and higher sales of light commercial vehicles, partially offset by lower sales to Nissan.

Total on-highway-related sales for 2017 were 79 percent of total engine segment sales, compared to 81 percent in 2016.

Segment EBITDA

Engine segment EBITDA increased \$294 million, primarily due to improved gross margin, lower loss contingency charges and increased equity, royalty and interest income from investees, partially offset by higher selling, general and administrative expenses and higher research, development and engineering expenses. The increase in gross margin was primarily due to higher volumes, partially offset by increased warranty costs for campaigns, changes in estimates and higher variable compensation expense.

Gross margin as a percentage of sales declined primarily due to the increased warranty costs and increased variable compensation expense. An increase in selling, general and administrative expenses was primarily due to higher compensation expense, especially variable compensation expense, and higher consulting expense. The increase in research, development and engineering expenses was primarily due to higher compensation expense, especially higher variable compensation expense, and higher consulting expense. The increase in equity, royalty and interest income from investees was primarily due to higher earnings at Beijing Foton Cummins Engine Co. and Dongfeng Cummins Engine Company, Ltd., despite unfavorable impacts from Tax Legislation related to withholding taxes on foreign earnings and remeasurement of deferred taxes of \$23 million.

Distribution Segment Results

Financial data for the Distribution segment was as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
				Amount	Percent	Amount	Percent
External sales	\$ 7,807	\$ 7,029	\$ 6,157	\$ 778	11 %	\$ 872	14 %
Intersegment sales	21	29	24	(8)	(28)%	5	21 %
Total sales	7,828	7,058	6,181	770	11 %	877	14 %
Research, development and engineering expenses	20	19	13	(1)	(5)%	(6)	(46)%
Equity, royalty and interest income from investees	46	44	70	2	5 %	(26)	(37)%
Interest income	13	6	4	7	NM	2	50 %
Segment EBITDA ⁽¹⁾	563	500	508	63	13 %	(8)	(2)%
				Percentage Points		Percentage Points	
Segment EBITDA as a percentage of total sales	7.2%	7.1%	8.2%	0.1		(1.1)	

⁽¹⁾ Segment EBITDA for 2016 included a gain of \$15 million resulting from the acquisition of a controlling interest in a North American distributor. See Note 19, "ACQUISITIONS," to the *Consolidated Financial Statements* for additional information.

Sales for our Distribution segment by region were as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
				Amount	Percent	Amount	Percent
North America	\$ 5,341	\$ 4,733	\$ 3,973	\$ 608	13 %	\$ 760	19 %
Asia Pacific	856	767	720	89	12 %	47	7 %
Europe	538	440	440	98	22 %	—	— %
China	320	267	235	53	20 %	32	14 %
Africa and Middle East	241	327	366	(86)	(26)%	(39)	(11)%
India	194	190	175	4	2 %	15	9 %
Latin America	169	167	149	2	1 %	18	12 %
Russia	169	167	123	2	1 %	44	36 %
Total sales	\$ 7,828	\$ 7,058	\$ 6,181	\$ 770	11 %	\$ 877	14 %

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

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
				Amount	Percent	Amount	Percent
Parts	\$ 3,234	\$ 3,040	\$ 2,627	\$ 194	6 %	\$ 413	16 %
Engines	1,634	1,369	1,100	265	19 %	269	24 %
Power generation	1,486	1,337	1,239	149	11 %	98	8 %
Service	1,474	1,312	1,215	162	12 %	97	8 %
Total sales	\$ 7,828	\$ 7,058	\$ 6,181	\$ 770	11 %	\$ 877	14 %

2018 vs. 2017

Sales

Distribution segment sales increased \$770 million. The following were the primary drivers by region:

- North American sales increased \$608 million, representing 79 percent of the total change in Distribution segment sales, primarily due to increased demand across all product lines.
- European sales increased \$98 million, primarily due to higher demand for whole goods.
- Asia Pacific sales increased \$89 million, primarily due to higher volumes in whole goods and service.

These increases were partially offset by decreased sales of 26 percent in Africa and the Middle East.

Segment EBITDA

Distribution segment EBITDA increased \$63 million, primarily due to higher gross margin and lower selling, general and administrative expenses, partially offset by the absence of a gain on sale of assets in the third quarter of 2017 and unfavorable foreign currency fluctuations (primarily in the Angolan kwanza and Australian dollar). The increase in gross margin was primarily due to higher volumes and improved pricing, partially offset by increased compensation expense and unfavorable foreign currency fluctuations (primarily in the Australian dollar and Angolan kwanza). Gross margin as a percentage of sales declined primarily due to the increase in compensation expense and unfavorable foreign currency fluctuations. The decrease in selling, general and administrative expenses was primarily due to lower variable compensation expense, partially offset by increased compensation expense.

2017 vs. 2016

Sales

Distribution segment sales increased \$877 million, primarily due to an increase in organic sales of \$684 million (primarily in North America) and \$267 million of sales related to the acquisition of a North American distributor in the fourth quarter of 2016.

Segment EBITDA

Distribution segment EBITDA decreased \$8 million, primarily due to higher selling, general and administrative expenses, lower equity, royalty and interest income from investees, partially offset by higher gross margin. The increase in gross margin was primarily due to higher organic volumes and the acquisition of a North American distributor in the fourth quarter of 2016, partially offset by increased variable compensation expense. Gross margin as a percentage of sales declined primarily due to the increase in variable compensation expense. The increase in selling, general and administrative expenses was primarily due to higher variable compensation expense, increased compensation expense related to the acquisition of a North American distributor and higher consulting expense. The decrease in equity, royalty and interest income from investees was the result of the acquisition of a North American distributor in 2016 and unfavorable impacts from Tax Legislation related to withholding taxes on foreign earnings of \$4 million.

Components Segment Results

Financial data for the Components segment was as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
				Amount	Percent	Amount	Percent
External sales	\$ 5,331	\$ 4,363	\$ 3,514	\$ 968	22 %	\$ 849	24 %
Intersegment sales	1,835	1,526	1,322	309	20 %	204	15 %
Total sales	7,166	5,889	4,836	1,277	22 %	1,053	22 %
Research, development and engineering expenses	272	241	208	(31)	(13)%	(33)	(16)%
Equity, royalty and interest income from investees	54	40	41	14	35 %	(1)	(2)%
Interest income	5	3	4	2	67 %	(1)	(25)%
Segment EBITDA	1,030	917	774	113	12 %	143	18 %
				Percentage Points		Percentage Points	
Segment EBITDA as a percentage of total sales	14.4%	15.6%	16.0%	(1.2)		(0.4)	

Sales for our Components segment by business were as follows:

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
				Amount	Percent	Amount	Percent
Emission solutions	\$ 3,177	\$ 2,675	\$ 2,238	\$ 502	19%	\$ 437	20%
Turbo technologies	1,343	1,179	1,036	164	14%	143	14%
Filtration	1,265	1,153	1,010	112	10%	143	14%
Electronics and fuel systems	838	718	552	120	17%	166	30%
Automated transmissions	543	164	—	379	NM	164	NM
Total sales	\$ 7,166	\$ 5,889	\$ 4,836	\$ 1,277	22%	\$ 1,053	22%

"NM" - not meaningful information

2018 vs. 2017

Sales

Components segment sales increased \$1.3 billion across all lines of business. The following were the primary drivers by business:

- Emission solutions sales increased \$502 million, primarily due to stronger market demand for trucks in North America and Western Europe.
- Automated transmissions which was consolidated during the third quarter of 2017, delivered higher sales of \$379 million in North America.

- Turbo technologies sales increased \$164 million, primarily due to higher demand in North America and Western Europe.
- Electronics and fuel systems sales increased \$120 million, primarily due to higher demand in North America.
- Filtration sales increased \$112 million, primarily due to higher demand in North America and Western Europe.

Segment EBITDA

Components segment EBITDA increased \$113 million, as higher gross margin and increased equity, royalty and interest income from investees was partially offset by increased research, development and engineering expenses and higher selling, general and administrative expenses. The increase in gross margin was primarily due to higher volumes, improved mix and lower material costs, partially offset by increased warranty costs (primarily \$184 million for an Engine System Campaign) and higher compensation expense driven by the acquisition of the automated transmission business in the third quarter of 2017. See Note 9, "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 primarily due to higher administrative expenses for the automated transmission business, partially offset by lower variable compensation expense. The increase in research, development and engineering expenses was primarily due to higher compensation and administrative expenses due to the addition of the automated transmission business and increased consulting expense. The increase in equity, royalty and interest income from investees was primarily due to higher earnings at Fleetguard Filtration Systems India Pvt. as the result of unfavorable Tax Legislation adjustments in 2017.

2017 vs. 2016

Sales

Components segment sales increased \$1.1 billion across all lines of business. The following were the primary drivers by business:

- Emission solutions sales increased \$437 million, primarily due to increased sales of products to meet new emission standards in India and stronger market demand for trucks in North America and China.
- Electronics and fuel systems sales increased \$166 million, primarily due to higher demand in China, Mexico and India.
- Automated transmissions contributed North American sales of \$164 million following the consolidation of the business during the third quarter of 2017.
- Turbo technologies sales increased \$143 million, primarily due to higher demand in China and North America.
- Filtration sales increased \$143 million, primarily due to higher demand in North America, Australia and China.

Segment EBITDA

Components segment EBITDA increased \$143 million, as higher gross margin was partially offset by increased selling, general and administrative expenses. The increase in gross margin was primarily due to higher volumes, lower material costs and improved leverage, partially offset by higher warranty costs driven by campaigns and changes in estimates, unfavorable pricing and increased variable compensation expense. The increase in selling, general and administrative expenses was primarily due to higher compensation expense, especially variable compensation expense and expenses related to the addition of the automated transmission business. Decreased equity, royalty and interest income from investees due to unfavorable impacts from Tax Legislation related to withholding taxes on foreign earnings of \$12 million was mostly offset by increased 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)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
				Amount	Percent	Amount	Percent
External sales	\$ 2,625	\$ 2,375	\$ 2,064	\$ 250	11 %	\$ 311	15 %
Intersegment sales	2,001	1,683	1,453	318	19 %	230	16 %
Total sales	4,626	4,058	3,517	568	14 %	541	15 %
Research, development and engineering expenses	230	214	189	(16)	(7)%	(25)	(13)%
Equity, royalty and interest income from investees	56	54	42	2	4 %	12	29 %
Interest income	6	3	5	3	100 %	(2)	(40)%
Segment EBITDA	614	411	378	203	49 %	33	9 %

				Percentage Points	Percentage Points
Segment EBITDA as a percentage of total sales	13.3 %	10.1 %	10.7 %	3.2	(0.6)

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

In millions	Years ended December 31,			Favorable/(Unfavorable)			
	2018	2017	2016	2018 vs. 2017		2017 vs. 2016	
				Amount	Percent	Amount	Percent
Power generation	\$ 2,586	\$ 2,305	\$ 2,256	\$ 281	12%	\$ 49	2%
Industrial	1,663	1,399	941	264	19%	458	49%
Generator technologies	377	354	320	23	6%	34	11%
Total sales	\$ 4,626	\$ 4,058	\$ 3,517	\$ 568	14%	\$ 541	15%

2018 vs. 2017

Sales

Power Systems segment sales increased \$568 million across all product lines. The following were the primary drivers:

- Power generation sales increased \$281 million, primarily due to higher demand in North America, Middle East and Australia.
- Industrial sales increased \$264 million, primarily due to higher demand in global mining markets, especially in China, Eastern Europe, Japan and North America, and oil and gas markets in North America.

Segment EBITDA

Power Systems segment EBITDA increased \$203 million, primarily due to higher gross margin, partially offset by increased research, development and engineering expenses and higher selling, general and administrative expenses. The increase in gross margin was primarily due to increased volumes, lower warranty expense and reduced material costs, partially offset by higher compensation expense driven by volume growth. The increase in selling, general and administrative expenses was primarily due to higher consulting expense. The increase in research, development and engineering expenses was primarily due to higher compensation expense.

2017 vs. 2016

Sales

Power Systems segment sales increased \$541 million across all product lines. The following were the primary drivers:

- Industrial sales increased \$458 million, primarily due to higher demand in global mining markets, especially in Europe, North America and China, and oil and gas markets in North America.

- Power generation sales increased \$49 million, primarily due to higher demand in Western Europe, North America and China, partially offset by lower demand in the Middle East, Africa and Eastern Europe.
- Generator technologies sales increased \$34 million, primarily due to higher demand in Europe.

Segment EBITDA

Power Systems segment EBITDA increased \$33 million, primarily due to higher gross margin, favorable foreign currency fluctuations and higher equity, royalty and interest income from investees, partially offset by increased selling, general and administrative expenses, higher research, development and engineering expenses and the absence of a \$17 million gain on the sale of an equity investee (Cummins Olyan Energy) recorded in 2016. The increase in gross margin was primarily due to increased volumes, partially offset by higher warranty cost related to a campaign accrual and higher variable compensation expense. The increase in selling, general and administrative expenses was primarily due to higher variable compensation expense and higher consulting expense. The increase in research, development and engineering expenses was primarily due to higher variable compensation expense, increased project spending and higher consulting expense. The increase in equity, royalty and interest income from investees was primarily due to the absence of a joint venture asset impairment recorded in 2016.

Electrified Power Segment Results

We formed the Electrified Power segment during the first quarter of 2018. The primary focus of the segment is on research and development activities around fully electric and hybrid powertrain solutions. Our intellectual property is developed both in house as well as through acquisitions. As of December 31, 2018, we completed three acquisitions, which provided us with intellectual property as well as start-up sales of \$7 million. On November 1, 2017, we purchased Brammo Inc., a designer and manufacturer of lithium battery packs, electric drivetrains and other electric power applications. On January 31, 2018, we purchased Johnson Matthey Battery Systems Ltd., a high voltage automotive battery systems designer and on August 15, 2018, we purchased Efficient Drivetrains, Inc., which designs and produces hybrid and fully-electric power solutions for commercial markets. See Note 19, "ACQUISITIONS," to the *Consolidated Financial Statements* for additional information on acquisitions. We invested \$69 million in research and development activities, which along with the gross margins generated by our acquisitions and selling, general and administrative expenses resulted in a segment EBITDA loss of \$90 million.

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 Income*.

In millions	Years ended December 31,		
	2018	2017	2016
TOTAL SEGMENT EBITDA	\$ 3,563	\$ 2,971	\$ 2,509
Intersegment elimination ⁽¹⁾	(87)	55	17
TOTAL EBITDA	3,476	3,026	2,526
Less:			
Interest expense	114	81	69
Depreciation and amortization ⁽²⁾	609	580	527
INCOME BEFORE INCOME TAXES	2,753	2,365	1,930
Less: Income tax expense	566	1,371	474
CONSOLIDATED NET INCOME	2,187	994	1,456
Less: Net income (loss) attributable to noncontrolling interests	46	(5)	62
NET INCOME ATTRIBUTABLE TO CUMMINS INC.	\$ 2,141	\$ 999	\$ 1,394

⁽¹⁾ Includes intersegment sales, intersegment profit in inventory eliminations and unallocated corporate expenses. There were no significant unallocated corporate expenses

⁽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 Income* as "Interest expense." The amortization of debt discount and deferred costs was \$2 million, \$3 million and \$3 million for the years ended December 31, 2018, 2017 and 2016, respectively.

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, 2018	December 31, 2017
Working capital ⁽¹⁾	\$ 3,434	\$ 3,251
Current ratio	1.54	1.57
Accounts and notes receivable, net	\$ 3,866	\$ 3,618
Days' sales in receivables	57	59
Inventories	\$ 3,759	\$ 3,166
Inventory turnover	4.9	5.0
Accounts payable (principally trade)	\$ 2,822	\$ 2,579
Days' payable outstanding	56	53
Total debt	\$ 2,476	\$ 2,006
Total debt as a percent of total capital	23.1 %	19.7 %

⁽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	
	2018	2017	2016	2018 vs. 2017	2017 vs. 2016
Net cash provided by operating activities	\$ 2,378	\$ 2,277	\$ 1,939	\$ 101	\$ 338
Net cash used in investing activities	(974)	(1,052)	(917)	78	(135)
Net cash used in financing activities	(1,400)	(1,074)	(1,413)	(326)	339
Effect of exchange rate changes on cash and cash equivalents	(70)	98	(200)	(168)	298
Net (decrease) increase in cash and cash equivalents	\$ (66)	\$ 249	\$ (591)	\$ (315)	\$ 840

2018 vs. 2017

Net cash provided by operating activities increased \$101 million, primarily due to higher earnings of \$388 million, excluding the net change in the non-cash impact of 2017 Tax Legislation of \$805 million, lower net pension contributions of \$210 million, higher non-cash losses on corporate owned life insurance of \$78 million and increased equity earnings (net of dividends) of \$30 million, partially offset by higher working capital requirements of \$575 million and a decrease in deferred tax expense of \$43 million. During 2018, higher working capital requirements resulted in a cash outflow of \$485 million compared to a cash inflow of \$90 million in 2017, primarily due to higher accounts payable and inventory levels in 2018 to support business growth.

Net cash used in investing activities decreased \$78 million, primarily due to the absence of the acquisition of Eaton Cummins Automated Transmission Technologies for \$600 million in the third quarter of 2017, partially offset by higher capital expenditures of \$203 million, lower cash flows from derivatives not designated as hedges of \$178 million and higher net investments in marketable securities of \$109 million.

Net cash used in financing activities increased \$326 million, primarily due to higher repurchases of common stock of \$689 million, partially offset by increased borrowings of commercial paper of \$396 million.

The effect of exchange rate changes on cash and cash equivalents increased \$168 million, primarily due to unfavorable fluctuations in the British pound of \$123 million.

2017 vs. 2016

Net cash provided by operating activities increased \$338 million, primarily due to improved earnings of \$358 million, excluding the non-cash impact of Tax Legislation of \$820 million and lower working capital levels of \$352 million, partially offset by higher pension contributions of \$109 million, a decrease in deferred tax expense of \$104 million, lower loss contingency charges of \$117 million and higher equity earnings (net of dividends) of \$77 million. The lower working capital requirements in 2017 resulted in a cash inflow of \$90 million compared to a cash outflow of \$262 million in 2016.

Net cash used in investing activities increased \$135 million, primarily due to the acquisition of Eaton Cummins Automated Transmission Technologies for \$600 million in 2017 and the absence of \$60 million in proceeds from the sale of equity investees in 2016, partially offset by lower net investments in marketable securities of \$244 million, higher cash flows from derivatives not designated as hedges of \$178 million and higher proceeds from the disposal of property, plant and equipment of \$96 million.

Net cash used in financing activities decreased \$339 million versus 2016, primarily due to lower repurchases of common stock of \$327 million.

The effect of exchange rate changes on cash and cash equivalents increased \$298 million, primarily due to the British pound, which increased cash and cash equivalents \$249 million.

Sources of Liquidity

We generate significant ongoing cash flow. Cash provided by operations is our principal source of liquidity with \$2.4 billion provided in 2018. At December 31, 2018, our sources of liquidity included:

In millions	December 31, 2018			Primary location of international balances
	Total	U.S.	International	
Cash and cash equivalents	\$ 1,303	\$ 244	\$ 1,059	U.K., China, Singapore, Belgium, Mexico, Australia, Canada
Marketable securities ⁽¹⁾	222	58	164	India
Total	\$ 1,525	\$ 302	\$ 1,223	
Available credit capacity				
Revolving credit facilities ⁽²⁾	\$ 2,720			
International and other uncommitted domestic credit facilities	\$ 237			

⁽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 2019, respectively, are maintained primarily to provide backup liquidity for our commercial paper borrowings and general corporate purposes. At December 31, 2018, we had \$780 million of commercial paper outstanding, which effectively reduced the available capacity under our revolving credit facilities to \$2.7 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.

The Tax Legislation made significant changes to U.S. tax law, which included a one-time transition tax on accumulated foreign earnings of \$409 million with a cash impact of \$429 million as of December 31, 2018. The payments associated with this deemed repatriation will be paid over eight years. The unrepatriated foreign earnings at December 31, 2018, will be repatriated as needed to fund cash needs. The estimated accrued withholding taxes of \$184 million on foreign earnings that we plan to repatriate in the foreseeable future will be paid as cash is repatriated. See Note 4, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

Debt Facilities and Other Sources of Liquidity

On August 22, 2018, we entered into a new five-year revolving credit agreement with a syndicate of lenders. The new credit agreement provides us with a \$2.0 billion senior unsecured revolving credit facility until August 22, 2023. The credit capacity can be increased by up to \$1.0 billion prior to the maturity date. See Note 10, "DEBT," to our *Consolidated Financial Statements* for additional information.

On August 22, 2018, we entered into a new 364-day credit agreement that allows us to borrow up to \$1.5 billion of additional unsecured funds at any time through August 21, 2019. The credit capacity can be increased by up to \$500 million prior to the maturity date.

Both credit agreements include a financial covenant requiring that the leverage ratio of the total 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, 2018, our leverage ratio was 0.20 to 1.0. 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.

We can issue up to \$3.5 billion of unsecured, short-term promissory notes ("commercial paper") pursuant to our 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 facility and commercial paper programs should not exceed \$3.5 billion. See Note 10, "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 Securities and Exchange Commission (SEC) on February 16, 2016. Under this shelf registration we may offer, from time to time, debt securities, common stock, preferred and preference stock, depository shares, warrants, stock purchase contracts and stock purchase units. Our current shelf is scheduled to expire in February 2019. We have begun the renewal process and plan to file a new automatic shelf registration statement in the first quarter of 2019.

Uses of Cash

Stock Repurchases

In October 2018, our Board of Directors authorized the acquisition of up to \$2 billion of additional common stock upon completion of the 2016 repurchase plan. In December 2016, our Board of Directors authorized the acquisition of up to \$1 billion of additional common stock upon completion of the 2015 repurchase plan. For the year ended December 31, 2018, we made the following purchases under our stock repurchase programs:

In millions, except per share amounts	Shares Purchased	Average Cost Per Share	Total Cost of Repurchases	Cash Paid for Shares Not Received	Remaining Authorized Capacity ⁽¹⁾
November 2015, \$1 billion repurchase program					
April 1	0.3	\$ 166.79	\$ 46	\$ —	\$ —
December 2016, \$1 billion repurchase program					
April 1	0.7	\$ 164.48	\$ 117	\$ —	\$ 883
July 1	1.5	143.69	216	—	667
September 30	2.8	143.58	400	100	167
December 31	1.9	139.67	267	(100)	—
Subtotal	6.9	144.68	1,000	—	—
October 2018, \$2 billion repurchase program					
December 31	0.7	\$ 139.85	\$ 94	\$ —	\$ 1,906
Total	7.9	\$ 145.05	\$ 1,140	\$ —	—

⁽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.

On August 8, 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 intend to repurchase outstanding shares from time to time during 2019 to enhance shareholder value and to offset the dilutive impact of employee stock based compensation plans.

Dividends

Total dividends paid to common shareholders in 2018, 2017 and 2016 were \$718 million, \$701 million and \$676 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 our Board of Directors, who meet quarterly to consider our dividend payment. We expect to fund dividend payments with cash from operations.

In July 2018, our Board of Directors authorized an increase to our quarterly dividend of 5.6 percent from \$1.08 per share to \$1.14 per share. In July 2017, our Board of Directors authorized an increase to our quarterly dividend of 5.4 percent from \$1.025 per share to \$1.08 per share. In July 2016, our Board of Directors authorized an increase to our quarterly dividend of 5.1 percent from \$0.975 per share to \$1.025 per share. Cash dividends per share paid to common shareholders for the last three years were as follows:

	Quarterly Dividends		
	2018	2017	2016
First quarter	\$ 1.08	\$ 1.025	\$ 0.975
Second quarter	1.08	1.025	0.975
Third quarter	1.14	1.08	1.025
Fourth quarter	1.14	1.08	1.025
Total	\$ 4.44	\$ 4.21	\$ 4.00

Capital Expenditures

Capital expenditures, including spending on internal use software, were \$784 million, \$587 million and \$594 million in 2018, 2017 and 2016, respectively. We continue to invest in new product lines and targeted capacity expansions. We plan to spend an estimated \$650 million to \$700 million in 2019 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 2019. In addition we plan to spend an estimated \$65 million to \$75 million on internal use software in 2019.

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 2018, the investment loss on our U.S. pension trust was 1.7 percent while our U.K. pension trust loss was 1.8 percent. Approximately 74 percent of our pension plan assets are held in highly liquid investments such as fixed income and equity securities. The remaining 26 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,		
	2018	2017	2016
Defined benefit pension plans			
Voluntary contribution	\$ 15	\$ 233	\$ 133
Mandatory contribution	22	10	1
Defined benefit pension contributions	37	243	134
Defined contribution pension plans	\$ 104	\$ 84	\$ 68

We anticipate making total contributions of approximately \$123 million to our defined benefit pension plans in 2019. Expected contributions to our defined benefit pension plans in 2019 will meet or exceed the current funding requirements.

Current Maturities of Short and Long-Term Debt

We had \$780 million of commercial paper outstanding at December 31, 2018, 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 principal payments range from \$9 million to \$506 million over the next five years. See Note 10, "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	Short-Term	Outlook
	Senior Debt Rating	Debt Rating	
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 provides us with the financial flexibility needed to fund working capital, common stock repurchases, acquisitions, capital expenditures, dividend payments, projected pension obligations and debt service obligations. We continue to generate cash from operations in the U.S. and maintain access to our revolving credit facility as noted above.

CONTRACTUAL OBLIGATIONS AND OTHER COMMERCIAL COMMITMENTS

A summary of our contractual obligations and other commercial commitments, at December 31, 2018, are as follows:

Contractual Cash Obligations	Payments Due by Period				Total
	2019	2020-2021	2022-2023	After 2023	
In millions					
Long-term debt and capital lease obligations ⁽¹⁾	\$ 152	\$ 242	\$ 692	\$ 2,331	\$ 3,417
Operating leases	138	190	99	81	508
Capital expenditures	165	—	—	—	165
Purchase commitments for inventory	882	—	—	—	882
Other purchase commitments	290	27	6	12	335
Transitional tax liability	—	38	149	106	293
Other postretirement benefits	24	45	43	90	202
International and other domestic letters of credit	124	21	4	2	151
Performance and excise bonds	41	66	1	2	110
Guarantees, indemnifications and other commitments	26	6	9	11	52
Total	\$ 1,842	\$ 635	\$ 1,003	\$ 2,635	\$ 6,115

⁽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 \$71 million as of December 31, 2018. We are not able to reasonably estimate the period in which cash outflows relating to uncertain tax contingencies could occur. See Note 4, "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 our Board of Directors. 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 9, "PRODUCT WARRANTY LIABILITY," to our *Consolidated Financial Statements* contains a summary of the activity in our warranty liability account for 2018, 2017 and 2016 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, 2018, we recorded net deferred tax assets of \$147 million. The assets included \$340 million for the value of net operating loss and credit carryforwards. A valuation allowance of \$327 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.

On December 22, 2017, the U.S. enacted the Tax Cuts and Jobs Act (Tax Legislation). The SEC issued guidance permitting final calculations to be completed within a one year measurement period ending December 22, 2018. We made provisional estimates of the effects on our existing deferred tax balances, the one-time transition tax and the withholding tax accrued on those earnings not permanently reinvested at December 31, 2017. As additional tax reform guidance was released during 2018, any provisional amounts were reported in income from continuing operations in the period in which tax reform guidance was issued. We have completed our accounting for the tax effects of the enactment of the Tax Legislation and included in our reporting the nature and amount of any measurement period adjustments recognized during 2018 and the effect of measurement period adjustments on the effective tax rate.

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 4, "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, 2018, 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 approximately 37 percent of the time, including the additional positive returns expected from active investment management.

The one-year return for our U.S. plans was (1.7) percent for 2018. Our U.S. plan assets have averaged annualized returns of 10.22 percent over the prior ten years, and resulted in approximately \$313 million of actuarial gains in accumulated other comprehensive income in the same period. Based on the historical returns and forward-looking return expectations and 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 2019 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, 2018, 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 approximately 50 percent of the time. The one-year return for our U.K. plans was (1.8) percent for 2018. We have generated average annualized returns of 9.97 percent over ten years, resulting in approximately \$352 million of actuarial gains in accumulated other comprehensive income. 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 2019 for U.K. pension assets is reasonable. Our pension plan asset allocations at December 31, 2018 and 2017 and target allocation for 2019 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,	
	2019	2018	2017	2019	2018	2017
Liability matching	68.0%	68.0%	68.3%	56.5%	56.5%	56.1%
Risk seeking	32.0%	32.0%	31.7%	43.5%	43.5%	43.9%
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 2016-2018 and our expected rate of return for 2019.

	Long-term Expected Return Assumptions			
	2019	2018	2017	2016
U.S. plans	6.25%	6.50%	7.25%	7.50%
U.K. plans	4.00%	4.00%	4.50%	4.70%

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 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 \$889 million (\$699 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 market value of plan assets or the projected benefit obligation, 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 accumulated other comprehensive loss. At December 31, 2018, we had net pension actuarial losses of \$635 million and \$230 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 \$74 million after-tax in 2018. The loss is primarily due to lower asset returns in the U.S. and U.K., partially offset by higher discount rates 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 2019.

In millions	2019	2018	2017	2016
Net periodic pension cost	\$ 56	\$ 86	\$ 82	\$ 42

We expect 2019 net periodic pension cost to decrease compared to 2018, primarily due to higher discount rates 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 primarily due to lower expected asset returns in the U.S. and U.K. as we de-risked plan trust assets, partially offset by reduced loss amortizations in the U.S. and U.K. The increase in net periodic pension cost in 2017 compared to 2016 was due to on-boarding North American distributors to Cummins pension benefits, a lower expected rate of return in the U.S. and U.K. and lower discount rates 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			
	2019	2018	2017	2016
U.S. plans	4.36%	3.66%	4.12%	4.47%
U.K. plans	2.80%	2.55%	2.70%	3.95%

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, 2018, 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 2019 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	\$	(15)
0.25 percent decrease		16
Expected rate of return on assets		
1 percent increase		(48)
1 percent decrease		48

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 11, "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 will 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.

Our valuation method requires us to make projections of revenue, 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. We determined that 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 by approximately 21 percent. Total goodwill in this reporting unit is \$544 million and the total carrying amount at the time of the evaluation was \$1.2 billion. 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 that 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 15 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 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, 2018. 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, 2018 and 2017, 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, 2018, 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 \$91 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 10, "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 zero-cost collar contracts with designated banks to fix the cost of certain raw material purchases with the objective of minimizing changes in inventory cost due to market price fluctuations. These commodity zero-cost collar contracts represent an economic hedge, but are not designated for hedge accounting and are marked to market through earnings. Our cash flow hedges generally mature within two years.

At December 31, 2018, 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 \$2 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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- *Consolidated Statements of Comprehensive Income* for the years ended December 31, 2018, 2017 and 2016
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NOTE 17	NONCONTROLLING INTERESTS
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MANAGEMENT'S REPORT TO SHAREHOLDERS

Management's Report on Financial Statements and Practices

The accompanying *Consolidated Financial Statements* of Cummins Inc. were prepared by management, which is responsible for their integrity and objectivity. The statements were prepared in accordance with generally accepted accounting principles and include amounts that are based on management's best judgments and estimates. The other financial information included in the annual report is consistent with that in the financial statements.

Management also recognizes its responsibility for conducting our affairs according to the highest standards of personal and corporate conduct. This responsibility is characterized and reflected in key policy statements issued from time to time regarding, among other things, conduct of its business activities within the laws of the host countries in which we operate, within The Foreign Corrupt Practices Act and potentially conflicting interests of its employees. We maintain a systematic program to assess compliance with these policies.

To comply with the requirements of Section 404 of the Sarbanes-Oxley Act of 2002, we designed and implemented a structured and comprehensive compliance process to evaluate our internal control over financial reporting across the enterprise.

Management's Report on Internal Control Over Financial Reporting

The management of Cummins Inc. is responsible for establishing and maintaining adequate internal control over financial reporting. Internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and preparation of our *Consolidated Financial Statements* for external purposes in accordance with accounting principles generally accepted in the United States of America.

Management assessed the effectiveness of our internal control over financial reporting and concluded it was effective as of December 31, 2018. In making its assessment, management utilized the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control—Integrated Framework (2013).

The effectiveness of our internal control over financial reporting as of December 31, 2018, has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

Officer Certifications

Please refer to Exhibits 31(a) and 31(b) attached to this report for certifications required under Section 302 of the Sarbanes-Oxley Act of 2002.

/s/ N. THOMAS LINEBARGER

Chairman and Chief Executive Officer

/s/ PATRICK J. WARD

Vice President and Chief Financial Officer

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, 2018 and 2017, and the related consolidated statements of income, comprehensive income, cash flows, and changes in equity for each of the three years in the period ended December 31, 2018, 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, 2018, 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, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 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, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

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.

/s/ PricewaterhouseCoopers LLP
Indianapolis, IN
February 11, 2019

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

**CUMMINS INC. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME**

In millions, except per share amounts	Years ended December 31,		
	2018	2017	2016
NET SALES ^(a) (Note 2)	\$ 23,771	\$ 20,428	\$ 17,509
Cost of sales	18,034	15,328	13,051
GROSS MARGIN	5,737	5,100	4,458
OPERATING EXPENSES AND INCOME			
Selling, general and administrative expenses	2,437	2,429	2,099
Research, development and engineering expenses	902	754	637
Equity, royalty and interest income from investees (Note 3)	394	357	301
Loss contingency (Note 9)	—	5	138
Other operating income (expense), net	(6)	65	(5)
OPERATING INCOME	2,786	2,334	1,880
Interest income	35	18	23
Interest expense (Note 10)	114	81	69
Other income, net	46	94	96
INCOME BEFORE INCOME TAXES	2,753	2,365	1,930
Income tax expense (Note 4)	566	1,371	474
CONSOLIDATED NET INCOME	2,187	994	1,456
Less: Net income (loss) attributable to noncontrolling interests	46	(5)	62
NET INCOME ATTRIBUTABLE TO CUMMINS INC.	\$ 2,141	\$ 999	\$ 1,394
EARNINGS PER COMMON SHARE ATTRIBUTABLE TO CUMMINS INC. (Note 18)			
Basic	\$ 13.20	\$ 5.99	\$ 8.25
Diluted	\$ 13.15	\$ 5.97	\$ 8.23

^(a) Includes sales to nonconsolidated equity investees of \$1,267 million, \$1,174 million and \$1,028 million for the years ended December 31, 2018, 2017 and 2016, respectively.

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

In millions	Years ended December 31,		
	2018	2017	2016
CONSOLIDATED NET INCOME	\$ 2,187	\$ 994	\$ 1,456
Other comprehensive income (loss), net of tax (Note 15)			
Change in pension and other postretirement defined benefit plans	18	(4)	(31)
Foreign currency translation adjustments	(356)	335	(448)
Unrealized gain on marketable securities	—	2	1
Unrealized gain (loss) on derivatives	5	5	(12)
Total other comprehensive (loss) income, net of tax	(333)	338	(490)
COMPREHENSIVE INCOME	1,854	1,332	966
Less: Comprehensive income attributable to noncontrolling interests	17	15	45
COMPREHENSIVE INCOME ATTRIBUTABLE TO CUMMINS INC.	\$ 1,837	\$ 1,317	\$ 921

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,	
	2018	2017
ASSETS		
Current assets		
Cash and cash equivalents	\$ 1,303	\$ 1,369
Marketable securities (Note 5)	222	198
Total cash, cash equivalents and marketable securities	1,525	1,567
Accounts and notes receivable, net		
Trade and other	3,635	3,311
Nonconsolidated equity investees	231	307
Inventories (Note 6)	3,759	3,166
Prepaid expenses and other current assets	668	577
Total current assets	9,818	8,928
Long-term assets		
Property, plant and equipment, net (Note 7)	4,096	3,927
Investments and advances related to equity method investees (Note 3)	1,222	1,156
Goodwill (Note 8)	1,126	1,082
Other intangible assets, net (Note 8)	909	973
Pension assets (Note 11)	929	1,043
Other assets	962	966
Total assets	\$ 19,062	\$ 18,075
LIABILITIES		
Current liabilities		
Accounts payable (principally trade)	\$ 2,822	\$ 2,579
Loans payable (Note 10)	54	57
Commercial paper (Note 10)	780	298
Accrued compensation, benefits and retirement costs	679	811
Current portion of accrued product warranty (Note 9)	654	454
Current portion of deferred revenue (Note 1)	498	500
Other accrued expenses (Note 12)	852	915
Current maturities of long-term debt (Note 10)	45	63
Total current liabilities	6,384	5,677
Long-term liabilities		
Long-term debt (Note 10)	1,597	1,588
Pensions and other postretirement benefits (Note 11)	532	619
Accrued product warranty (Note 9)	740	466
Deferred revenue (Note 1)	658	604
Other liabilities (Note 12)	892	957
Total liabilities	\$ 10,803	\$ 9,911
Commitments and contingencies (Note 13)		
EQUITY		
Cummins Inc. shareholders' equity (Note 14)		
Common stock, \$2.50 par value, 500 shares authorized, 222.4 and 222.4 shares issued	\$ 2,271	\$ 2,210
Retained earnings	12,917	11,464
Treasury stock, at cost, 64.4 and 56.7 shares	(6,028)	(4,905)
Common stock held by employee benefits trust, at cost, 0.4 and 0.5 shares	(5)	(7)
Accumulated other comprehensive loss (Note 15)	(1,807)	(1,503)
Total Cummins Inc. shareholders' equity	7,348	7,259
Noncontrolling interests (Note 17)		
Total equity	\$ 8,259	\$ 8,164
Total liabilities and equity	\$ 19,062	\$ 18,075

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,		
	2018	2017	2016
CASH FLOWS FROM OPERATING ACTIVITIES			
Consolidated net income	\$ 2,187	\$ 994	\$ 1,456
Adjustments to reconcile consolidated net income to net cash provided by operating activities			
Impact of tax legislation, net (Note 4)	15	820	—
Depreciation and amortization	611	583	530
Deferred income taxes (Note 4)	(97)	(54)	50
Equity in income of investees, net of dividends	(93)	(123)	(46)
Pension contributions under (in excess of) expense, net (Note 11)	49	(161)	(92)
Other post retirement benefits payments in excess of expense, net (Note 11)	(19)	(5)	(25)
Stock-based compensation expense (Note 16)	53	41	32
Loss contingency charges, net of payments (Note 9)	(62)	5	122
Loss (gain) on corporate owned life insurance	26	(52)	(22)
Foreign currency remeasurement and transaction exposure	(46)	71	(55)
Changes in current assets and liabilities, net of acquisitions			
Accounts and notes receivable	(363)	(508)	(265)
Inventories	(695)	(407)	(4)
Other current assets	(162)	(12)	14
Accounts payable	302	639	188
Accrued expenses	433	378	(195)
Changes in other liabilities	75	241	200
Other, net	164	(173)	51
Net cash provided by operating activities	2,378	2,277	1,939
CASH FLOWS FROM INVESTING ACTIVITIES			
Capital expenditures	(709)	(506)	(531)
Investments in internal use software	(75)	(81)	(63)
Proceeds from disposals of property, plant and equipment	20	110	14
Investments in and advances to equity investees	(37)	(66)	(41)
Acquisitions of businesses, net of cash acquired (Note 19)	(70)	(662)	(94)
Investments in marketable securities—acquisitions (Note 5)	(368)	(194)	(478)
Investments in marketable securities—liquidations (Note 5)	331	266	306
Proceeds from sale of equity investees (Note 3)	—	—	60
Cash flows from derivatives not designated as hedges	(102)	76	(102)
Other, net	36	5	12
Net cash used in investing activities	(974)	(1,052)	(917)
CASH FLOWS FROM FINANCING ACTIVITIES			
Proceeds from borrowings	36	6	111
Net borrowings of commercial paper (Note 10)	482	86	212
Payments on borrowings and capital lease obligations	(62)	(60)	(163)
Net borrowings under short-term credit agreements	1	12	19
Distributions to noncontrolling interests	(30)	(29)	(65)
Dividend payments on common stock (Note 14)	(718)	(701)	(676)
Repurchases of common stock (Note 14)	(1,140)	(451)	(778)
Acquisitions of noncontrolling interests (Note 19)	—	—	(98)
Other, net	31	63	25
Net cash used in financing activities	(1,400)	(1,074)	(1,413)
EFFECT OF EXCHANGE RATE CHANGES ON CASH AND CASH EQUIVALENTS	(70)	98	(200)
Net (decrease) increase in cash and cash equivalents	(66)	249	(591)
Cash and cash equivalents at beginning of year	1,369	1,120	1,711
CASH AND CASH EQUIVALENTS AT END OF PERIOD	\$ 1,303	\$ 1,369	\$ 1,120

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, 2015	\$ 556	\$ 1,622	\$ 10,322	\$ (3,735)	\$ (11)	\$ (1,348)	\$ 7,406	\$ 344	\$ 7,750
Net income			1,394				1,394	62	1,456
Other comprehensive income (loss), net of tax (Note 15)						(473)	(473)	(17)	(490)
Issuance of common stock		6					6	—	6
Employee benefits trust activity (Note 14)		23			3		26	—	26
Repurchases of common stock (Note 14)				(778)			(778)	—	(778)
Cash dividends on common stock (Note 14)			(676)				(676)	—	(676)
Distributions to noncontrolling interests							—	(65)	(65)
Stock based awards		(5)		24			19	—	19
Acquisitions of noncontrolling interests (Note 19)		(73)					(73)	(25)	(98)
Other shareholder transactions		24					24	—	24
BALANCE AT DECEMBER 31, 2016	<u>\$ 556</u>	<u>\$ 1,597</u>	<u>\$ 11,040</u>	<u>\$ (4,489)</u>	<u>\$ (8)</u>	<u>\$ (1,821)</u>	<u>\$ 6,875</u>	<u>\$ 299</u>	<u>\$ 7,174</u>
Impact of tax legislation (Note 4)			126				126	—	126
Net income			999				999	(5)	994
Other comprehensive income (loss), net of tax (Note 15)						318	318	20	338
Issuance of common stock		6					6	—	6
Employee benefits trust activity (Note 14)		17			1		18	—	18
Repurchases of common stock (Note 14)				(451)			(451)	—	(451)
Cash dividends on common stock (Note 14)			(701)				(701)	—	(701)
Distributions to noncontrolling interests							—	(29)	(29)
Stock based awards		3		35			38	—	38
Acquisition of business (Note 19)							—	600	600
Other shareholder transactions		31					31	20	51
BALANCE AT DECEMBER 31, 2017	<u>\$ 556</u>	<u>\$ 1,654</u>	<u>\$ 11,464</u>	<u>\$ (4,905)</u>	<u>\$ (7)</u>	<u>\$ (1,503)</u>	<u>\$ 7,259</u>	<u>\$ 905</u>	<u>\$ 8,164</u>
Impact of adopting accounting standards (Note 1)			30				30	—	30
Net income			2,141				2,141	46	2,187
Other comprehensive income (loss), net of tax (Note 15)						(304)	(304)	(29)	(333)
Issuance of common stock		12					12	—	12
Employee benefits trust activity (Note 14)		15			2		17	—	17
Repurchases of common stock (Note 14)				(1,140)			(1,140)	—	(1,140)
Cash dividends on common stock (Note 14)			(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	<u>\$ 556</u>	<u>\$ 1,715</u>	<u>\$ 12,917</u>	<u>\$ (6,028)</u>	<u>\$ (5)</u>	<u>\$ (1,807)</u>	<u>\$ 7,348</u>	<u>\$ 911</u>	<u>\$ 8,259</u>

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 and natural gas engines and powertrain-related component products, including filtration, aftertreatment, turbochargers, fuel systems, controls systems, air handling systems, transmissions, electric power generation systems, batteries and electrified power systems. 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 and independent distributor locations and over 7,600 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 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 2017 and 2016 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. 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 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 Income*. Our remaining United States (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 judgment 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, income taxes and deferred tax valuation allowances, lease classification 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. See "RECENTLY ADOPTED AND RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS" below for additional information.

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, battery systems, 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 of shipment.

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 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.

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, 2018, was \$710 million. We expect to recognize the related revenue of \$211 million over the next 12 months and \$499 million over periods up to 10 years. See NOTE 9, "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 cost incurred when providing goods and services to our customers or represent sale-based royalties.

Deferred and Unbilled 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.

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 2018.

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

In millions	December 31, 2018	January 1, 2018
Unbilled revenue	\$ 64	\$ 6
Deferred revenue, primarily extended warranty	1,156	1,052
Revenue recognized ⁽¹⁾	(361)	—

⁽¹⁾ Relates to year-to-date revenues recognized from amounts included in deferred revenue at the beginning of the year. Revenue recognized in the period from performance obligations satisfied in previous periods was immaterial.

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, 2018.

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 year-end exchange rates. We translate income and expenses to U.S. dollars using weighted-average exchange rates for the year. 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 using historical exchange rates. We include in income the resulting gains and losses, including the effect of derivatives in our *Consolidated Statements of Income*, which combined with transaction gains and losses amounted to a net loss of \$34 million, \$6 million and \$12 million for the years ended December 31, 2018, 2017 and 2016, 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 physical forward contracts, options 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 10, "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 effective portion of 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.

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 physical forward contracts 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. 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.

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 4, "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,		
	2018	2017	2016
Cash payments for income taxes, net of refunds	\$ 699	\$ 622	\$ 430
Cash payments for interest, net of capitalized interest	114	82	68

Marketable Securities

We account for marketable securities in accordance with GAAP for investments in debt and equity securities. Effective January 1, 2018 and forward, with the adoption of the new Financial Accounting Standards Board (FASB) standard, only 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, 2018 and 2017, all of our debt securities were classified as available-for-sale.

With the adoption of the new standard, 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 "RECENTLY ADOPTED AND RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS" section below for additional information and NOTE 5, "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 \$15 million and \$16 million for the years ended December 31, 2018, and 2017 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, 2018 and 2017, approximately 13 percent and 12 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 6, "INVENTORIES," for additional information.

Property, Plant and Equipment

We record property, plant and equipment, inclusive of assets under capital leases, at cost. 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 is recorded in depreciation expense. We expense normal maintenance and repair costs as incurred. Depreciation expense totaled \$455 million, \$467 million and \$434 million for the years ended December 31, 2018, 2017 and 2016, respectively. See NOTE 7, "PROPERTY, PLANT AND EQUIPMENT," 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.

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 adopted the FASB's revised rules for goodwill impairment testing in 2018, which simplified the subsequent measurement of goodwill by removing the second step of the two-step impairment test. The amendment requires an entity to perform its 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 two 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 two situations are described further below:

- Within our Components segment, our emission solutions and filtration 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.

Our valuation method requires us to make projections of revenue, 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. We determined that 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 by approximately 21 percent. Total goodwill in this reporting unit is \$544 million and the total carrying amount at the time of the evaluation was \$1,200 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 that the estimated fair value would exceed the carrying value by a significant amount.

At December 31, 2018, our recorded goodwill was \$1,126 million, approximately 48 percent of which resided in the automated transmissions reporting unit, 34 percent in the aggregated emission solutions and filtration reporting unit, 8 percent in the electrified power reporting unit and 7 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 8, "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 8, "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 8, "GOODWILL AND OTHER INTANGIBLE ASSETS," for additional information.

Warranty

We charge the estimated costs of warranty programs, other than product campaigns, to cost of sales at the time products are sold and revenue is recognized. We use historical experience to develop the estimated liability for our various warranty programs. 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 9, "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. 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 \$894 million, \$734 million and \$616 million for the years ended December 31, 2018, 2017 and 2016 respectively. Contract reimbursements were \$120 million, \$137 million and \$131 million for the years ended December 31, 2018, 2017 and 2016 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 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 May 2014, the FASB amended its standards related to revenue recognition to replace all existing revenue recognition guidance and provide a single, comprehensive model for all contracts with customers. The revised standard contains principles to determine the measurement of revenue and timing of when it is recognized. The underlying principle is that we recognize revenue to depict the transfer of goods or services to customers at an amount that we expect to be entitled to in exchange for those goods or services. The guidance provides a five-step analysis of transactions to determine when and how revenue is recognized. Other major provisions include capitalization of certain contract costs, consideration of the time value of money in the transaction price and allowing estimation of variable consideration to be recognized before contingencies are resolved in certain circumstances. The amendment also requires additional disclosure about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in those judgments as well as assets recognized from costs incurred to fulfill these contracts.

The standard allowed for either full or modified retrospective adoption effective for annual and interim periods beginning January 1, 2018 and we adopted using the modified retrospective approach. We elected to apply this guidance retrospectively only to contracts that were not completed at January 1, 2018.

We identified a change in the manner in which we account for certain license income. We license certain technology to our unconsolidated joint ventures that meets the definition of functional under the standard, which requires that revenue be recognized at a point in time rather than the previous requirement of recognizing it over the license term. Using the modified retrospective adoption method, we recorded an adjustment to our opening equity balance at January 1, 2018, to account for the differences between existing license income recorded and what would have been recorded under the new standard for contracts for which we started recognizing revenue prior to the adoption date. There was not a material impact on any individual year from this change.

We also identified transactions where revenue recognition was historically limited to the amount of billings not contingent on our future performance. With the allocation provisions of the new model, we accelerated the timing of revenue recognition for amounts related to satisfied performance obligations that would be delayed under the historical guidance. The impact of this change was not material.

On an ongoing basis, this amendment is not expected to have a material impact on our *Consolidated Financial Statements* including our internal controls over financial reporting, but resulted in expanded disclosures in the Notes to our *Consolidated Financial Statements*.

We recorded a net increase to opening retained earnings of \$28 million, net of tax, as of January 1, 2018, due to the cumulative impact of adopting the new revenue standard, with the impact primarily related to our technology licenses that now qualify for point in time recognition rather than over time. The impact to any individual financial statement line item as a result of applying the new standard, as compared to the old standard, was not material for the year ended December 31, 2018.

In August 2018, the FASB amended its standards related to the disclosures of pension and other postretirement benefit plans in the financial statements. The amendments removed certain existing disclosure requirements and added the requirement to disclose an explanation of the reasons for significant gains and losses related to changes in the benefit obligation for the period. The amendments also clarified the existing disclosure requirements related to the projected benefit obligation (PBO), the fair value of plan assets for plans with PBOs in excess of plan assets and the accumulated benefit obligation (ABO) and fair value of plan assets for plans with ABOs in excess of plan assets. These amendments are required to be applied on a retrospective basis to all periods presented. We early adopted the amendments at December 31, 2018.

In March 2017, the FASB amended its standards related to the presentation of pension and other postretirement benefit costs in the financial statements beginning January 1, 2018. Under the new standard, we are required to separate service costs from all other elements of pension costs and reflect the other elements of pension costs outside of operating income in our *Consolidated Statements of Income*. In addition, the standard limits the amount eligible for capitalization (into inventory or self-constructed assets) to the amount of service cost. This portion of the standard was applied on a prospective basis. The remainder of the new standard was applied on a retrospective basis using a practical expedient as the estimation basis for the reclassification of prior period non-service cost components of net periodic benefit cost from operating income to non-operating income. As a result, we revised our *Consolidated Statements of Income* by the following amounts:

In millions	Favorable / (Unfavorable)	
	2017	2016
Cost of sales	\$ 10	\$ 6
Selling, general and administrative expenses	(39)	(53)
Research, development and engineering expenses	(2)	(1)
Total change in operating income	(31)	(48)
Other non-operating income, net	31	48
Total change in income before income taxes	\$ —	\$ —

In January 2017, the FASB amended its standards related to goodwill impairment testing to simplify the annual testing process. Under the amendment, the impairment of goodwill is now calculated as the difference between the fair value of the reporting unit and the carrying value of the reporting unit. Step two of the former impairment model is no longer required. We early adopted this standard in the fourth quarter of 2018 as allowed by the amendment, in order to streamline our impairment testing process. The standard applies prospectively beginning with our assessments performed in the fourth quarter. As we did not have any impairments of goodwill during the year, adoption of the standard did not have an impact on our *Consolidated Financial Statements*.

In August 2016, the FASB amended its standards related to the classification of certain cash receipts and cash payments which became effective for us beginning January 1, 2018. The new standard made eight targeted changes to how cash receipts and cash payments are presented and classified in the statement of cash flows. Adoption of this standard did not have a material impact on our *Consolidated Financial Statements*.

In January 2016, the FASB amended its standards related to the accounting for certain financial instruments which became effective for us beginning January 1, 2018. This amendment addresses certain aspects of recognition, measurement, presentation and disclosure. The standard resulted in a cumulative effect increase to opening retained earnings of \$2 million in our *Consolidated Financial Statements*.

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, with early adoption permitted. The standard allows for either prospective or retrospective transition. We are still evaluating the impact of this standard on our financial statements.

In August 2017, the FASB amended its standards related to accounting for derivatives and hedging. These amendments allow 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. The amendments are effective January 1, 2019. The revised standard is required to be adopted on a modified retrospective basis for any cash flow or net investment hedge relationships that exist on the date of adoption and prospectively for disclosures. We do not expect the amendments to have a material effect 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. Early adoption is permitted for fiscal years beginning after December 15, 2018, including interim periods within those fiscal years. We do not expect adoption of this standard to have a material impact on our *Consolidated Financial Statements*.

In February 2016, the FASB amended its standards related to the accounting for leases. Under the new standard, lessees will now be required to recognize substantially all leases on the balance sheet as both a right-of-use asset and a liability. The standard will continue to have two types of leases for income statement recognition purposes: operating leases and finance leases. Operating leases will 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 today's standards. Finance leases will result in an accelerated expense similar to the accounting for capital leases under today's standards. The determination of a lease classification as operating or finance will occur in a manner similar to today's 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. The new standard is effective on January 1, 2019 and we will adopt on a modified retrospective basis with a cumulative effect adjustment, if any, to be recorded in retained earnings on January 1, 2019. We do not expect this adjustment to be material. Based on our current lease portfolio, adoption of the standard will result in an increase in operating lease assets and liabilities in a range of \$445 million to \$495 million with an immaterial impact on our *Consolidated Statements of Income*, however this estimate is subject to change as we finalize our implementation. We are implementing enhanced internal controls and a software solution to comply with the requirements of the standard.

NOTE 2. 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,		
	2018	2017	2016
United States	\$ 13,218	\$ 11,010	\$ 9,476
China	2,324	2,137	1,544
India	965	805	621
Other international	7,264	6,476	5,868
Total net sales	\$ 23,771	\$ 20,428	\$ 17,509

Segment Revenue

Engine segment external sales by market were as follows:

In millions	Year ended December 31, 2018
Heavy-duty truck	\$ 2,885
Medium-duty truck and bus	2,536
Light-duty automotive	1,501
Total on-highway	6,922
Off-highway	1,080
Total sales	\$ 8,002

Distribution segment external sales by region were as follows:

In millions	Year ended December 31, 2018
North America	\$ 5,331
Asia Pacific	851
Europe	536
China	317
Africa and Middle East	242
India	192
Latin America	169
Russia	169
Total sales	\$ 7,807

Distribution segment external sales by product line were as follows:

In millions	Year ended December 31, 2018	
Parts	\$	3,222
Engines		1,632
Service		1,471
Power generation		1,482
Total sales	\$	7,807

Components segment external sales by business were as follows:

In millions	Year ended December 31, 2018	
Emission solutions	\$	2,780
Filtration		1,010
Turbo technologies		761
Automated transmissions		543
Electronics and fuel systems		237
Total sales	\$	5,331

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

In millions	Year ended December 31, 2018	
Power generation	\$	1,467
Industrial		801
Generator technologies		357
Total sales	\$	2,625

NOTE 3. INVESTMENTS IN EQUITY INVESTEEES

Investments and advances related to equity method investees and our ownership percentage was as follows:

In millions	Ownership %	December 31,	
		2018	2017
Komatsu alliances	20-50%	\$ 238	\$ 219
Beijing Foton Cummins Engine Co., Ltd.	50%	203	223
Dongfeng Cummins Engine Company, Ltd.	50%	160	146
Chongqing Cummins Engine Company, Ltd.	50%	102	84
Cummins-Scania XPI Manufacturing, LLC	50%	101	87
Tata Cummins, Ltd.	50%	58	59
Other	Various	360	338
Investments and advances related to equity method investees		\$ 1,222	\$ 1,156

We have approximately \$743 million in our investment account at December 31, 2018, that represents cumulative undistributed income in our equity investees. Dividends received from our unconsolidated equity investees were \$242 million, \$219 million and \$212 million in 2018, 2017 and 2016, respectively.

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

In millions	Years ended December 31,		
	2018	2017	2016
Manufacturing entities			
Beijing Foton Cummins Engine Co., Ltd.	\$ 72	\$ 94	\$ 52
Dongfeng Cummins Engine Company, Ltd.	58	73	46
Chongqing Cummins Engine Company, Ltd.	51	41	38
Cummins Westport, Inc.	28	9 ⁽¹⁾	11
Dongfeng Cummins Emission Solutions Co., Ltd.	14	13	9
Tata Cummins, Ltd.	14	(7) ⁽¹⁾	6
All other manufacturers	73	56 ⁽¹⁾	43
Distribution entities			
Komatsu Cummins Chile, Ltda.	26	30	34
North American distributors	—	—	21 ⁽²⁾
All other distributors	—	(1)	—
Cummins share of net income	336	308	260
Royalty and interest income	58	49	41
Equity, royalty and interest income from investees	\$ 394	\$ 357	\$ 301

⁽¹⁾ U.S. tax legislation passed in December 2017 decreased our equity earnings at certain equity investees, including a \$7 million unfavorable impact to Cummins Westport, Inc. due to the remeasurement of deferred taxes and \$15 million unfavorable impact to Tata Cummins, Ltd. and a \$17 million unfavorable impact to "All other manufacturers" due to withholding tax adjustments on foreign earnings. See Note 4, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

⁽²⁾ During 2016, we acquired the remaining interest in the final unconsolidated North American distributor joint venture.

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 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) are included in "Equity, royalty and interest income from investees" and "Investments and advances related to equity method investees" in our *Consolidated Statements of 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 consists of 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 high performance heavy-duty diesel engines in Beijing. These engines are used in heavy-duty commercial trucks in China and will be used by Cummins either directly sourced from China and/or locally assembled in other markets. 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, one of the largest medium-duty and heavy-duty truck manufacturers in China. DCEC produces Cummins 3.9 to 13-liter diesel engines, with a power range from 80 to 680 horsepower, and natural gas engines.
- **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.

- **Cummins Westport, Inc.** - Cummins Westport, Inc. is a joint venture in Canada with Westport Innovations Inc. to market and sell automotive spark-ignited natural gas engines worldwide and to participate in joint technology projects on low-emission technologies.
- **Dongfeng Cummins Emission Solutions Co., Ltd.** - Dongfeng Cummins Emission Solutions Co. Ltd. is a joint venture in China with Dongfeng Industrial Company, a subsidiary of Dongfeng Motor Group Company Limited, a manufacturer of numerous on-highway vehicles. This joint venture produces, purchases and sells advanced diesel engine aftertreatment solutions to support the full line of Dongfeng's commercial vehicles.
- **Tata Cummins, Ltd.** - Tata Cummins, Ltd. is a joint venture in India with Tata Motors Ltd., the largest automotive company in India and a member of the Tata group of companies. This joint venture manufactures Cummins' 3.8 to 8.9-liter diesel engines in India with a power range from 75 to 400 horsepower for use in trucks manufactured by Tata Motors, as well as for various industrial and power generation applications.

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,		
	2018	2017	2016
Net sales	\$ 7,352	\$ 7,050	\$ 5,654
Gross margin	1,373	1,422	1,182
Net income	647	680	499
Cummins share of net income	\$ 336	\$ 308	\$ 260
Royalty and interest income	58	49	41
Total equity, royalty and interest from investees	\$ 394	\$ 357	\$ 301
Current assets	\$ 3,401	\$ 3,416	
Non-current assets	1,449	1,379	
Current liabilities	(2,669)	(2,567)	
Non-current liabilities	(218)	(237)	
Net assets	\$ 1,963	\$ 1,991	
Cummins share of net assets	\$ 1,144	\$ 1,116	

Sale of Equity Investee

In the fourth quarter of 2016, we sold our remaining 49 percent interest in Cummins Olayan Energy for \$61 million and recognized a gain of \$17 million. We received cash of \$58 million with the remaining balance receivable in subsequent periods.

NOTE 4. INCOME TAXES

The following table summarizes income before income taxes:

In millions	Years ended December 31,		
	2018	2017	2016
U.S. income	\$ 1,239	\$ 1,237	\$ 995
Foreign income	1,514	1,128	935
Income before income taxes	\$ 2,753	\$ 2,365	\$ 1,930

Income tax expense (benefit) consists of the following:

In millions	Years ended December 31,		
	2018	2017	2016
Current			
U.S. federal and state	\$ 303	\$ 355	\$ 211
Foreign	348	289	213
Impact of tax legislation	153	349	—
Total current	804	993	424
Deferred			
U.S. federal and state	(71)	(42)	57
Foreign	(26)	(12)	(7)
Impact of tax legislation	(141)	432	—
Total deferred	(238)	378	50
Income tax expense	\$ 566	\$ 1,371	\$ 474

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

	Years ended December 31,		
	2018	2017	2016
Statutory U.S. federal income tax rate	21.0 %	35.0 %	35.0 %
State income tax, net of federal effect	0.9	0.6	0.8
Differences in rates and taxability of foreign subsidiaries and joint ventures	(0.2)	(6.4)	(7.2)
Research tax credits	(1.2)	(1.4)	(1.7)
Impact of tax legislation	0.5	33.1	—
Other, net	(0.4)	(2.9)	(2.3)
Effective tax rate	20.6 %	58.0 %	24.6 %

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. Our effective tax rate for 2018 was 20.6 percent compared to 58.0 percent for 2017 and 24.6 percent for 2016. The impacts of the Tax Legislation resulted in additional tax expense of \$12 million in 2018 and \$781 million in 2017.

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 INVESTEEES," 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 INVESTEEES," and NOTE 17, "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 at 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.

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,	
	2018	2017
Deferred tax assets		
U.S. state carryforward benefits	\$ 191	\$ 200
Foreign carryforward benefits	149	159
Employee benefit plans	245	274
Warranty expenses	401	300
Accrued expenses	94	95
Other	65	70
Gross deferred tax assets	1,145	1,098
Valuation allowance	(327)	(347)
Total deferred tax assets	818	751
Deferred tax liabilities		
Property, plant and equipment	(255)	(250)
Unremitted income of foreign subsidiaries and joint ventures	(184)	(331)
Employee benefit plans	(202)	(224)
Other	(30)	(31)
Total deferred tax liabilities	(671)	(836)
Net deferred tax assets (liabilities)	\$ 147	\$ (85)

Our 2018 U.S. carryforward benefits include \$191 million of state credit and net operating loss carryforward benefits that begin to expire in 2019. Our foreign carryforward benefits include \$149 million of net operating loss carryforwards that begin to expire in 2019. 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 \$327 million and decreased in 2018 by a net \$20 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,	
	2018	2017
Prepaid and other current assets		
Refundable income taxes	\$ 117	\$ 152
Other assets		
Deferred income tax assets	410	306
Long-term refundable income taxes	6	6
Accrued expenses		
Income tax payable	97	77
Other liabilities and deferred revenue		
Income tax payable	293	281
Deferred income tax liabilities	263	391

A reconciliation of unrecognized tax benefits for the years ended December 31, 2018, 2017 and 2016 was as follows:

In millions	December 31,		
	2018	2017	2016
Balance at beginning of year	\$ 41	\$ 59	\$ 135
Additions to current year tax positions	10	11	10
Additions to prior years' tax positions	27	9	18
Reductions to prior years' tax positions	(2)	(3)	—
Reductions for tax positions due to settlements with taxing authorities	(5)	(35)	(104)
Balance at end of year	\$ 71	\$ 41	\$ 59

Included in the December 31, 2018, 2017 and 2016, balances are \$62 million, \$32 million and \$31 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 \$4 million, \$4 million and \$3 million as of December 31, 2018, 2017 and 2016, 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 United Kingdom (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 2014.

NOTE 5. MARKETABLE SECURITIES

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

In millions	December 31,					
	2018			2017		
	Cost	Gross unrealized gains/(losses) ⁽¹⁾	Estimated fair value	Cost	Gross unrealized gains/(losses) ⁽¹⁾	Estimated fair value
Equity securities						
Debt mutual funds	\$ 103	\$ 1	\$ 104	\$ 170	\$ —	\$ 170
Certificates of deposit	101	—	101	12	—	12
Equity mutual funds	16	—	16	12	3	15
Debt securities	1	—	1	1	—	1
Total marketable securities	\$ 221	\$ 1	\$ 222	\$ 195	\$ 3	\$ 198

⁽¹⁾ Unrealized gains and losses for debt securities are recorded in other comprehensive income (See NOTE 15, "ACCUMULATED OTHER COMPREHENSIVE LOSS," to our *Consolidated Financial Statements* for more information). Effective January 1, 2018, with the adoption of the new FASB standard, all unrealized gains and losses for equity securities are recorded in "Other income, net" in the *Consolidated Statements of Income*. See NOTE 1, "RECENTLY ADOPTED AND RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS," for detailed information about the adoption of this standard.

Effective January 1, 2018 and forward, only debt securities are classified as "held-to-maturity," "available-for-sale" or "trading". Only debt securities at December 31, 2018 are classified as available-for-sale securities, while all equity and debt securities at December 31, 2017, are classified as available-for-sale securities. 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 2018 or 2017.

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*— 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,		
	2018	2017	2016
Proceeds from sales of marketable securities	\$ 253	\$ 145	\$ 116
Proceeds from maturities of marketable securities	78	121	190
Investments in marketable securities - liquidations	\$ 331	\$ 266	\$ 306

NOTE 6. INVENTORIES

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

In millions	December 31,	
	2018	2017
Finished products	\$ 2,405	\$ 2,078
Work-in-process and raw materials	1,487	1,216
Inventories at FIFO cost	3,892	3,294
Excess of FIFO over LIFO	(133)	(128)
Total inventories	\$ 3,759	\$ 3,166

NOTE 7. PROPERTY, PLANT AND EQUIPMENT

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

In millions	December 31,	
	2018	2017
Land and buildings	\$ 2,398	\$ 2,332
Machinery, equipment and fixtures	5,391	5,285
Construction in process	530	441
Property, plant and equipment, gross	8,319	8,058
Less: Accumulated depreciation	(4,223)	(4,131)
Property, plant and equipment, net	\$ 4,096	\$ 3,927

NOTE 8. GOODWILL AND OTHER INTANGIBLE ASSETS

The following table summarizes the changes in the carrying amount of goodwill for the years ended December 31, 2018 and 2017:

In millions	Components	Electrified Power	Distribution	Power Systems	Engine	Segment Total	Unallocated	Total
Balance at December 31, 2016	\$ 386	\$ —	\$ 79	\$ 9	\$ 6	\$ 480	\$ —	\$ 480
Acquisitions	544 ⁽¹⁾	—	—	—	—	544	47 ⁽²⁾	591
Translation and other	10	—	—	1	—	11	—	11
Balance at December 31, 2017	940	—	79	10	6	1,035	47	1,082
Acquisitions	—	49 ⁽¹⁾	—	—	—	49	—	49
Translation and other	(5)	—	—	—	—	(5)	—	(5)
Allocation to segment	—	47 ⁽²⁾	—	—	—	47	(47)	—
Balance at December 31, 2018	<u>\$ 935</u>	<u>\$ 96</u>	<u>\$ 79</u>	<u>\$ 10</u>	<u>\$ 6</u>	<u>\$ 1,126</u>	<u>\$ —</u>	<u>\$ 1,126</u>

⁽¹⁾ See Note 19, "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 Electrified Power segment. See Note 19, "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,	
	2018	2017
Software	\$ 662	\$ 718
Less: Accumulated amortization	(372)	(386)
Software, net	290	332
Trademarks, patents, customer relationships and other	803	786
Less: Accumulated amortization	(184)	(145)
Trademarks, patents, customer relationships and other, net	619	641
Total other intangible assets, net	<u>\$ 909</u>	<u>\$ 973</u>

Amortization expense for software and other intangibles totaled \$153 million, \$112 million and \$92 million for the years ended December 31, 2018, 2017 and 2016, respectively. The projected amortization expense of our intangible assets, assuming no further acquisitions or dispositions, is as follows:

In millions	2019	2020	2021	2022	2023
Projected amortization expense	\$ 125	\$ 114	\$ 93	\$ 73	\$ 56

NOTE 9. 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,		
	2018	2017	2016
Balance, beginning of year	\$ 1,687	\$ 1,414	\$ 1,404
Provision for warranties issued	918	557	334
Deferred revenue on extended warranty contracts sold	293	240	231
Payments made during period	(443)	(398)	(385)
Amortization of deferred revenue on extended warranty contracts	(244)	(219)	(201)
Changes in estimates for pre-existing warranties	3	85	44
Foreign currency translation and other	(6)	8	(13)
Balance, end of year	\$ 2,208	\$ 1,687	\$ 1,414

Warranty related deferred revenues and the long-term portion of the warranty liabilities on our *Consolidated Balance Sheets* were as follows:

In millions	December 31,		Balance Sheet Location
	2018	2017	
Deferred revenue related to extended coverage programs			
Current portion	\$ 227	\$ 231	Current portion of deferred revenue
Long-term portion	587	536	Deferred revenue
Total	\$ 814	\$ 767	
Base product warranty			
Current portion	\$ 654	\$ 454	Current portion of accrued product warranty
Long-term portion	740	466	Accrued product warranty
Total	\$ 1,394	\$ 920	
Total warranty accrual	\$ 2,208	\$ 1,687	

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 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 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 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 will be completed in phases across the affected population with a projection to be substantially complete by December 31, 2020. The total remaining accrual related to this matter at December 31, 2018 was \$372 million and is included in the base warranty total in the above table.

Loss Contingency

Engine systems sold in the U.S. must be certified to comply with the EPA and CARB emission standards. EPA and CARB regulations require that in-use testing be performed on vehicles by the emission certificate holder and reported to the EPA and CARB in order to ensure ongoing compliance with these emission standards. We are the holder of this emission certificate for our engines, including engines installed in certain vehicles with one customer for which we did not also manufacture or sell the emission aftertreatment system. During 2015, a quality issue in certain of these third party aftertreatment systems caused some of our inter-related engines to fail in-use emission testing. In the fourth quarter of 2015, the vehicle manufacturer made a request that we assist in the design and bear the financial cost of a field campaign to address the technical issue purportedly causing some vehicles to fail the in-use testing.

As the certificate holder, we recorded a charge of \$60 million in 2015 for the expected cost of the proposed voluntary campaign. The campaign design was finalized with our original equipment manufacturer (OEM) customer, reviewed with the EPA and submitted for final approval in 2016. We concluded based upon additional in-use emission testing performed in 2016 that the campaign should be expanded to include a larger population of vehicles manufactured by this one OEM. We recorded additional charges of \$138 million in 2016 to reflect the estimated cost of our overall participation in the campaign.

In late 2016, litigation arose with our OEM customer regarding cost allocation for this campaign. In January 2018, a settlement was reached with our customer to fully resolve this matter, which resulted in an incremental charge of \$5 million recorded in the fourth quarter of 2017.

These charges are reflected in a separate line item on our *Consolidated Statements of Income*.

NOTE 10. DEBT**Loans Payable and Commercial Paper**

Loans payable at December 31, 2018 and 2017 were \$54 million and \$57 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:

Loans Payable	2018	2017	2016
Weighted-average interest rate	4.66%	3.01%	4.20%

We can issue up to \$3.5 billion of unsecured, short-term promissory notes ("commercial paper") pursuant to our 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 \$780 million and \$298 million in outstanding borrowings under our commercial paper programs at December 31, 2018 and 2017, respectively. The weighted-average interest rate for commercial paper at December 31 was as follows:

Commercial Paper	2018	2017	2016
Weighted-average interest rate	2.59%	1.56%	0.79%

Revolving Credit Facilities

On August 22, 2018, we entered into a new five-year revolving credit agreement with a syndicate of lenders. The new credit agreement provides us with a \$2 billion senior unsecured revolving credit facility until August 22, 2023. This credit agreement replaces the prior \$1.75 billion five-year credit agreement that would have matured on November 13, 2020. Amounts payable under our revolving credit facility will rank pro rata with all of our unsecured, unsubordinated indebtedness. Up to \$300 million under this credit facility is available for swingline loans. Advances under the facility bear interest at (i) a base rate or (ii) a rate equal to the LIBOR rate 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 LIBOR rate loans was 0.75 percent per annum as of December 31, 2018. Advances under the facility may be prepaid without premium or penalty, subject to customary breakage costs.

On August 22, 2018, we entered into a new 364-day credit agreement that allows us to borrow up to \$1.5 billion of additional unsecured funds at any time through August 21, 2019. This credit agreement replaces the prior \$1.0 billion 364-day credit

facility that would have matured on September 14, 2018. Up to \$150 million under this credit facility is available for swingline loans.

Both credit agreements include various covenants, including, among others, maintaining a total debt to total capital leverage ratio of no more than 0.65 to 1.0. At December 31, 2018, 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, 2018. We intend to maintain credit facilities of a similar aggregate amount by renewing or replacing these facilities before expiration.

At December 31, 2018, we had \$780 million of commercial paper outstanding, which effectively reduced the \$3.5 billion available capacity under our revolving credit facilities to \$2.72 billion.

At December 31, 2018, we also had \$237 million available for borrowings under our international and other domestic credit facilities.

Long-term Debt

In millions	December 31,	
	2018	2017
Long-term debt		
Senior notes, 3.65%, due 2023	\$ 500	\$ 500
Debentures, 6.75%, due 2027	58	58
Debentures, 7.125%, due 2028	250	250
Senior notes, 4.875%, due 2043	500	500
Debentures, 5.65%, due 2098 (effective interest rate 7.48%)	165	165
Other debt	64	76
Unamortized discount	(52)	(54)
Fair value adjustments due to hedge on indebtedness	25	35
Capital leases	132	121
Total long-term debt	1,642	1,651
Less: Current maturities of long-term debt	45	63
Long-term debt	\$ 1,597	\$ 1,588

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

In millions	2019	2020	2021	2022	2023
Principal payments	\$ 45	\$ 13	\$ 39	\$ 9	\$ 506

Interest on the \$500 million aggregate principal amount of 3.65% senior unsecured notes due in 2023 and the \$500 million aggregate principal amount of 4.875% senior unsecured notes due in 2043 pay interest semi-annually on April 1 and October 1 of each year.

Interest on the 6.75% debentures is payable on February 15 and August 15 of each year.

Interest on the \$250 million 7.125% debentures and \$165 million 5.65% debentures is payable on March 1 and September 1 of each year. The debentures are unsecured and are not subject to any sinking fund requirements. We can redeem the 7.125% debentures and the 5.65% 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. In addition, we are subject to a maximum debt-to-EBITDA ratio financial covenant. At December 31, 2018, 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 16, 2016. 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 2019.

Interest Expense

For the years ended December 31, 2018, 2017 and 2016, total interest incurred was \$116 million, \$85 million and \$75 million, respectively, and interest capitalized was \$2 million, \$4 million and \$6 million, respectively.

Interest Rate Risk

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 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 "Interest expense."

The following table summarizes these gains and losses for the years presented below:

In millions	Years ended December 31,					
	2018		2017		2016	
Income Statement Classification	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 expense ⁽¹⁾	\$ (8)	\$ 7	\$ (7)	\$ 8	\$ (8)	\$ 12

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

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,	
	2018	2017
Fair values of total debt ⁽¹⁾	\$ 2,679	\$ 2,301
Carrying values of total debt	2,476	2,006

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

NOTE 11. 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 security 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	
	2018	2017	2018	2017
Change in benefit obligation				
Benefit obligation at the beginning of the year	\$ 2,765	\$ 2,661	\$ 1,662	\$ 1,451
Service cost	120	107	29	26
Interest cost	98	106	41	40
Actuarial (gain) loss	(212)	61	(46)	53
Benefits paid from fund	(193)	(155)	(62)	(54)
Benefits paid directly by employer	(16)	(15)	—	—
Plan amendment	—	—	15 ⁽¹⁾	—
Exchange rate changes	—	—	(89)	146
Benefit obligation at end of year	\$ 2,562	\$ 2,765	\$ 1,550	\$ 1,662
Change in plan assets				
Fair value of plan assets at beginning of year	\$ 3,166	\$ 2,751	\$ 1,960	\$ 1,753
Actual return on plan assets	(36)	351	(33)	78
Employer contributions	—	219	21	9
Benefits paid	(193)	(155)	(62)	(54)
Exchange rate changes	—	—	(104)	174
Fair value of plan assets at end of year	\$ 2,937	\$ 3,166	\$ 1,782	\$ 1,960
Funded status (including unfunded plans) at end of year	\$ 375	\$ 401	\$ 232	\$ 298
Amounts recognized in consolidated balance sheets				
Pension assets - long-term	\$ 697	\$ 745	\$ 232	\$ 298
Accrued compensation, benefits and retirement costs - current liabilities	(14)	(14)	—	—
Pensions - long-term liabilities	(308)	(330)	—	—
Net amount recognized	\$ 375	\$ 401	\$ 232	\$ 298
Amounts recognized in accumulated other comprehensive loss				
Net actuarial loss	\$ 635	\$ 649	\$ 230	\$ 207
Prior service cost	8	8	16	—
Net amount recognized	\$ 643	\$ 657	\$ 246	\$ 207

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

In addition to the pension plans in the above table, we also maintain less significant defined benefit pension plans in 4 other countries outside of the U.S. and the U.K. that comprise approximately 4 percent and 5 percent of our pension plan assets and obligations, respectively, at December 31, 2018. These plans are reflected in "Other liabilities" on our *Consolidated Balance Sheets*. In 2018 and 2017, we made \$11 million and \$11 million of contributions to these plans, respectively.

The following table presents information regarding 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	
	2018	2017	2018	2017
Total accumulated benefit obligation	\$ 2,544	\$ 2,745	\$ 1,473	\$ 1,569
Plans with accumulated benefit obligation in excess of plan assets				
Accumulated benefit obligation	304	323	—	—
Plans with projected benefit obligation in excess of plan assets				
Projected benefit obligation	322	344	—	—

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		
	2018	2017	2016	2018	2017	2016
Service cost	\$ 120	\$ 107	\$ 90	\$ 29	\$ 26	\$ 21
Interest cost	98	106	109	41	40	50
Expected return on plan assets	(196)	(204)	(201)	(69)	(70)	(71)
Amortization of prior service cost	1	—	—	—	—	—
Recognized net actuarial loss	33	37	29	29	40	15
Net periodic pension cost	\$ 56	\$ 46	\$ 27	\$ 30	\$ 36	\$ 15

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	2018	2017	2016
Recognized net actuarial loss	\$ (62)	\$ (77)	\$ (44)
Incurred actuarial loss (gain)	91	(40)	107
Foreign exchange translation adjustments	(5)	30	(28)
Total recognized in other comprehensive loss (income)	\$ 24	\$ (87)	\$ 35
Total recognized in net periodic pension cost and other comprehensive loss (income)	\$ 110	\$ (5)	\$ 77

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	
	2018	2017	2018	2017
Discount rate	4.36%	3.66%	2.80%	2.55%
Cash balance crediting rate	4.03%	4.27%	—	—
Compensation increase rate	3.00%	2.99%	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		
	2018	2017	2016	2018	2017	2016
Discount rate	3.66%	4.12%	4.47%	2.55%	2.70%	3.95%
Expected return on plan assets	6.50%	7.25%	7.50%	4.00%	4.50%	4.70%
Compensation increase rate	3.00%	4.87%	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 6.5 percent in 2018. 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 in a rising interest rate environment, we have elected to reduce our assumption to 6.25 percent in 2019.

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	7.0%	+5.0/ -5.0%
Non-U.S. equities	2.0%	+3.0/ -2.0%
Global equities	6.0%	+3.0/ -3.0%
Total equities	15.0%	
Real estate	6.5%	+3.5/ -6.5%
Private equity/venture capital	6.5%	+3.5/ -6.5%
Opportunistic credit	4.0%	+6.0/ -4.0%
Fixed income	68.0%	+5.0/ -5.0%
Total	100.0%	

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 68 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 specifically discussed with the BPC and approved in their guidelines.

U.K. Plan Assets

For the U.K. qualified pension plans, our assumption for the expected return on assets was 4.0 percent in 2018. 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
Global equities	23.0%
Real estate/private markets	5.0%
Reinsurance	8.0%
Corporate credit instruments	7.5%
Fixed income	56.5%
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 56.5 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 2019.

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, 2018			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.	\$ 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 equity and real estate ⁽³⁾	—	—	316	316
Net plan assets subject to leveling	\$ 294	\$ 398	\$ 316	\$ 1,008
Pending trade/purchases/sales				9
Accruals ⁽⁴⁾				5
Investments measured at net asset value				1,915
Net plan assets				\$ 2,937

In millions	Fair Value Measurements at December 31, 2017			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.	\$ 102	\$ —	\$ —	\$ 102
Non-U.S.	56	—	—	56
Fixed income				
Government debt	—	691	—	691
Corporate debt				
U.S.	—	590	—	590
Non-U.S.	—	73	—	73
Asset/mortgage backed securities	—	78	—	78
Net cash equivalents ⁽¹⁾	50	25	—	75
Derivative instruments ⁽²⁾	—	3	—	3
Private equity and real estate ⁽³⁾	—	—	246	246
Net plan assets subject to leveling	\$ 208	\$ 1,460	\$ 246	\$ 1,914
Pending trade/purchases/sales				(96)
Accruals ⁽⁴⁾				12
Investments measured at net asset value				1,336
Net plan assets				\$ 3,166

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

⁽²⁾ Derivative instruments include interest rate swaps and credit default swaps.

⁽³⁾ The instruments in 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 audited financial statements of the funds.

⁽⁴⁾ 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. Equities* (\$343 million and \$428 million at December 31, 2018 and 2017, respectively) - These commingled funds have observable NAVs provided to investors and provide for liquidity either immediately or within a couple of days.
- *Government Debt* (\$602 million and \$347 million at December 31, 2018 and 2017, 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. Corporate Debt* (\$821 million and \$321 million at December 31, 2018 and 2017, respectively) - These commingled funds have observable NAVs provided to investors and provide for liquidity either immediately or within a couple of days.
- *Real Estate* (\$147 million and \$137 million at December 31, 2018 and 2017, 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* (\$2 million and \$103 million at December 31, 2018 and 2017, 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 Equity	Real Estate	Total
Balance at December 31, 2016	\$ 148	\$ 64	\$ 212
Actual return on plan assets			
Unrealized gains on assets still held at the reporting date	24	5	29
Purchases, sales and settlements, net	8	(3)	5
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

Fair Value of U.K. Plan Assets

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 0 years and is included in the table below in Level 3 for years ended December 31, 2018 and 2017 at a value of \$442 million and \$477 million, respectively.

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

In millions	Fair Value Measurements at December 31, 2018			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.	\$ —	\$ 47	\$ —	\$ 47
Non-U.S.	—	61	—	61
Fixed income				
Net cash equivalents ⁽¹⁾	12	—	—	12
Private equity, real estate and insurance ⁽²⁾	—	—	686	686
Net plan assets subject to leveling	\$ 12	\$ 108	\$ 686	\$ 806
Investments measured at net asset value				976
Net plan assets				\$ 1,782

In millions	Fair Value Measurements at December 31, 2017			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.	\$ —	\$ 63	\$ —	\$ 63
Non-U.S.	—	91	—	91
Fixed income				
Net cash equivalents ⁽¹⁾	29	—	—	29
Private equity, real estate and insurance ⁽²⁾	—	—	671	671
Net plan assets subject to leveling	\$ 29	\$ 154	\$ 671	\$ 854
Investments measured at net asset value				1,106
Net plan assets				\$ 1,960

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

⁽²⁾ The instruments in private equity, real estate and insurance funds, 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 statement of the funds.

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* (\$753 million and \$822 million at December 31, 2018 and 2017, 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* (\$100 million and \$144 million at December 31, 2018 and 2017, respectively) - These commingled funds have observable NAVs provided to investors and provide for liquidity either immediately or within a couple of days.
- *Re-insurance* (\$77 million and \$86 million at December 31, 2018 and 2017, respectively) - This commingled fund has a NAV that is determined on a monthly basis and the investment may be sold at that value.
- *Managed Futures Funds* (\$46 million and \$54 million at December 31, 2018 and 2017, 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.

The reconciliation of Level 3 assets was as follows:

In millions	Fair Value Measurements Using Significant Unobservable Inputs (Level 3)			
	Insurance	Real Estate	Private Equity	Total
Balance at December 31, 2016	\$ 439	\$ 57	\$ 117	\$ 613
Actual return on plan assets				
Unrealized gains on assets still held at the reporting date	38	10	28	76
Purchases, sales and settlements, net	—	(8)	(10)	(18)
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

Level 3 Assets

The investments in an insurance contract, venture capital, private equity, opportunistic credit and real estate funds, 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 \$123 million to our defined benefit pension plans in 2019. The table below presents expected future benefit payments under our pension plans:

In millions	Qualified and Non-Qualified Pension Plans					
	2019	2020	2021	2022	2023	2024 - 2028
Expected benefit payments	\$ 244	\$ 246	\$ 250	\$ 257	\$ 259	\$ 1,342

Other Pension Plans

We also sponsor defined contribution plans for certain hourly and salaried employees. Our contributions to these plans were \$104 million, \$84 million and \$68 million for the years ended December 31, 2018, 2017 and 2016.

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,	
	2018	2017
Change in benefit obligation		
Benefit obligation at the beginning of the year	\$ 318	\$ 364
Interest cost	11	14
Plan participants' contributions	21	24
Actuarial gain	(51)	(35)
Benefits paid directly by employer	(53)	(49)
Benefit obligation at end of year	\$ 246	\$ 318
Funded status at end of year	\$ (246)	\$ (318)
Amounts recognized in consolidated balance sheets		
Accrued compensation, benefits and retirement costs - current liabilities	\$ (22)	\$ (29)
Postretirement benefits other than pensions-long-term liabilities	(224)	(289)
Net amount recognized	\$ (246)	\$ (318)
Amounts recognized in accumulated other comprehensive loss:		
Net actuarial (gain) loss	\$ (24)	\$ 27
Prior service credit	(4)	(4)
Net amount recognized	\$ (28)	\$ 23

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 9 percent and 6 percent of our OPEB obligations at December 31, 2018 and 2017, respectively. These plans are reflected in "Other liabilities" in our *Consolidated Balance Sheets*.

Components of Net Periodic Other Postretirement Benefits Cost

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

In millions	Years ended December 31,		
	2018	2017	2016
Interest cost	\$ 11	\$ 14	\$ 16
Recognized net actuarial loss	—	6	5
Net periodic other postretirement benefit cost	\$ 11	\$ 20	\$ 21

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,		
	2018	2017	2016
Recognized net actuarial loss	\$ —	\$ (6)	\$ (6)
Incurred actuarial (gain) loss	(51)	(35)	9
Total recognized in other comprehensive (income) loss	\$ (51)	\$ (41)	\$ 3
Total recognized in net periodic other postretirement benefit cost and other comprehensive (income) loss	\$ (40)	\$ (21)	\$ 24

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:

	2018	2017
Discount rate	4.25%	3.55%

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

	2018	2017	2016
Discount rate	3.55%	4.00%	4.35%

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 7.63 percent annual rate of increase in the per capita cost of covered health care benefits was assumed in 2018. 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	2019	2020	2021	2022	2023	2024 - 2028
Expected benefit payments	\$ 24	\$ 23	\$ 22	\$ 22	\$ 21	\$ 90

NOTE 12. OTHER ACCRUED EXPENSES AND OTHER LIABILITIES

Other accrued expenses included the following:

In millions	December 31,	
	2018	2017
Marketing accruals	\$ 199	\$ 146
Other taxes payable	196	197
Income taxes payable	97	77
Other	360	495
Other accrued expenses	\$ 852	\$ 915

Other liabilities included the following:

In millions	December 31,	
	2018	2017
Income tax payable ⁽¹⁾	\$ 293	\$ 281
Deferred income taxes	263	391
Accrued compensation	173	151
Other long-term liabilities	163	134
Other liabilities	\$ 892	\$ 957

⁽¹⁾ Long-term income taxes payable are the result of Tax Legislation and relate to the non-current portion of the one-time transition tax on accumulated foreign earnings. See Note 4, "INCOME TAXES," to our Consolidated Financial Statements for additional information.

NOTE 13. 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.

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, 2018, the maximum potential loss related to these guarantees was \$52 million.

We have arrangements with certain suppliers that require us to purchase minimum volumes or be subject to monetary penalties. At December 31, 2018, if we were to stop purchasing from each of these suppliers, the aggregate amount of the penalty would be approximately \$65 million. Most of these arrangements enable us to secure 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, 2018, the total commitments under these contracts were \$70 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 \$110 million at December 31, 2018.

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.

Leases

We lease certain manufacturing equipment, facilities, warehouses, office space and equipment, aircraft and automobiles for varying periods under lease agreements. Most of the leases are non-cancelable operating leases with fixed rental payments, expire over the next 10 years and contain renewal provisions. Rent expense under these leases was as follows:

In millions	Years ended December 31,		
	2018	2017	2016
Rent expense	\$ 217	\$ 215	\$ 210

The following is a summary of the leased property under capital leases by major classes:

In millions	December 31,	
	2018	2017
Building	\$ 180	\$ 158
Equipment	92	94
Land	15	16
Less: Accumulated depreciation	(152)	(137)
Total	\$ 135	\$ 131

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 14. SHAREHOLDERS' EQUITY

Preferred and Preference Stock

We are authorized to issue one million shares each of zero par value preferred and 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, 2018, 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, 2015	222.4	47.2	0.9
Shares acquired	—	7.3	—
Shares issued	—	(0.3)	(0.2)
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	<u>222.4</u>	<u>64.4</u>	<u>0.4</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, 2018, consisting of shares issued and repurchased is presented in our *Consolidated Statements of Changes in Equity*.

In October 2018, our Board of Directors authorized the acquisition of up to \$2 billion of additional common stock upon completion of the 2016 repurchase plan. In December 2016, our Board of Directors authorized the acquisition of up to \$1 billion of additional common stock upon completion of the 2015 repurchase plan. For the year ended December 31, 2018, we made the following purchases under our stock repurchase programs:

In millions (except per share amounts) For each quarter ended	2018 Shares Purchased	Average Cost Per Share	Total Cost of Repurchases	Cash Paid for Shares Not Received	Remaining Authorized Capacity ⁽¹⁾
November 2015, \$1 billion repurchase program					
April 1	0.3	\$ 166.79	\$ 46	\$ —	\$ —
December 2016, \$1 billion repurchase program					
April 1	0.7	\$ 164.48	\$ 117	\$ —	\$ 883
July 1	1.5	143.69	216	—	667
September 30	2.8	143.58	400	100	167
December 31	1.9	139.67	267	(100)	—
Subtotal	<u>6.9</u>	<u>144.68</u>	<u>1,000</u>	<u>—</u>	<u>—</u>
October 2018, \$2 billion repurchase program					
December 31	0.7	\$ 139.85	\$ 94	\$ —	\$ 1,906
Total	<u>7.9</u>	<u>\$ 145.05</u>	<u>\$ 1,140</u>	<u>\$ —</u>	<u>—</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.

In 2016, 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 4.7 million shares at an average price of \$105.50 per share.

We repurchased \$1,140 million, \$451 million and \$778 million of our common stock in the years ended December 31, 2018, 2017 and 2016, respectively.

Quarterly Dividends

Total dividends paid to common shareholders in 2018, 2017 and 2016 were \$718 million, \$701 million and \$676 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 our Board of Directors, who meet quarterly to consider our dividend payment. We expect to fund dividend payments with cash from operations.

In July 2018, the Board of Directors authorized an increase to our quarterly dividend of 5.6 percent from \$1.08 per share to \$1.14. In July 2017, the Board of Directors authorized a 5.4 percent increase to our quarterly cash dividend on our common stock from \$1.025 per share to \$1.08 per share. In July 2016, the Board of Directors approved a 5.1 percent increase to our quarterly dividend on our common stock from \$0.975 per share to \$1.025 per share. Cash dividends per share paid to common shareholders for the last three years were as follows:

	Quarterly Dividends		
	2018	2017	2016
First quarter	\$ 1.08	\$ 1.025	\$ 0.975
Second quarter	1.08	1.025	0.975
Third quarter	1.14	1.08	1.025
Fourth quarter	1.14	1.08	1.025
Total	\$ 4.44	\$ 4.21	\$ 4.00

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, 2018, 2017 and 2016 were \$12 million, \$17 million and \$23 million, respectively.

NOTE 15. 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 marketable securities ⁽¹⁾	Unrealized gain (loss) on derivatives	Total attributable to Cummins Inc.	Noncontrolling interests	Total
Balance at December 31, 2015	\$ (654)	\$ (696)	\$ (2)	\$ 4	\$ (1,348)		
Other comprehensive income before reclassifications							
Before tax amount	(111)	(469)	1	(38)	(617)	\$ (17)	\$ (634)
Tax benefit	44	38	—	6	88	—	88
After tax amount	(67)	(431)	1	(32)	(529)	(17)	(546)
Amounts reclassified from accumulated other comprehensive income ⁽²⁾	36	—	—	20	56	—	56
Net current period other comprehensive income (loss)	(31)	(431)	1	(12)	(473)	\$ (17)	\$ (490)
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 4)	(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)		

⁽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 Income* instead of comprehensive income. Unrealized gains and losses for debt securities will continue to be reported in comprehensive income. See NOTE 1, "SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES," "RECENTLY ADOPTED AND RECENTLY ISSUED ACCOUNTING PRONOUNCEMENTS" section for additional information.

⁽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 \$(126) million related to Tax Legislation and \$23 million related to 2017 activity. See Note 4, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

NOTE 16. STOCK INCENTIVE AND STOCK OPTION PLANS

In May of 2017 the Board of Directors approved an amendment to the shareholder approved stock incentive plan (the Plan) to increase the number of available shares. The revised Plan allows for the 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 even 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, 2018, 2017 and 2016, was approximately \$52 million, \$39 million and \$31 million, respectively. In addition, non-employee director share-based compensation expense for the years ended December 31, 2018, 2017 and 2016, was approximately \$1 million, \$2 million and \$1 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, 2018, 2017 and 2016, was \$2 million, \$2 million and \$1 million, respectively. The total unrecognized compensation expense (net of estimated forfeitures) related to nonvested awards for our employee share-based plans was approximately \$46 million at December 31, 2018 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, 2015	2,029,686	\$ 115.02		
Granted	984,430	109.24		
Exercised	(215,890)	87.27		
Forfeited	(63,462)	119.56		
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	6.7	\$ 37
Exercisable, December 31, 2016	1,149,549	\$ 104.19	4.8	\$ 38
Exercisable, December 31, 2017	1,063,889	\$ 115.26	4.7	\$ 66
Exercisable, December 31, 2018	1,366,722	\$ 124.97	4.7	\$ 18

The weighted-average grant date fair value of options granted during the years ended December 31, 2018, 2017 and 2016, was \$34.21, \$36.86 and \$25.28, respectively. The total intrinsic value of options exercised during the years ended December 31, 2018, 2017 and 2016, was approximately \$9 million, \$19 million and \$9 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, 2015	420,369	\$ 123.88	4,254	\$ 111.40
Granted	169,150	98.26	8,089	117.69
Vested	(115,680)	106.55	(2,502)	114.57
Forfeited	(69,345)	110.52	—	—
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

The total vesting date fair value of performance shares vested during the years ended December 31, 2018, 2017 and 2016 was \$13 million, \$13 million and \$12 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, 2018, 2017 and 2016, 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:

	2018	2017	2016
Expected life (years)	6	6	5
Risk-free interest rate	2.72%	2.08%	1.34%
Expected volatility	25.40%	29.97%	30.96%
Dividend yield	2.48%	2.28%	2.10%

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 17. NONCONTROLLING INTERESTS

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

In millions	December 31,	
	2018	2017
Eaton Cummins Automated Transmission Technologies ⁽¹⁾	\$ 602	\$ 609
Cummins India Ltd. ⁽²⁾	293	280
Other	16	16
Total	\$ 911	\$ 905

⁽¹⁾ See Note 19, "ACQUISITIONS," for additional information.

⁽²⁾ Noncontrolling interest for Cummins India Ltd. increased \$24 million and decreased \$43 million in 2018 and 2017, respectively, primarily due to withholding taxes on foreign earnings as a result of Tax Legislation. See Note 4, "INCOME TAXES," to our *Consolidated Financial Statements* for additional information.

NOTE 18. EARNINGS PER SHARE

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 14, "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:

Dollars in millions, except per share amounts	Years ended December 31,		
	2018	2017	2016
Net income attributable to Cummins Inc.	\$ 2,141	\$ 999	\$ 1,394
Weighted-average common shares outstanding			
Basic	162,172,831	166,625,320	169,038,410
Dilutive effect of stock compensation awards	600,516	645,545	298,206
Diluted	162,773,347	167,270,865	169,336,616
Earnings per common share attributable to Cummins Inc.			
Basic	\$ 13.20	\$ 5.99	\$ 8.25
Diluted	13.15	5.97	8.23

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,		
	2018	2017	2016
Options excluded	969,385	31,991	1,091,799

NOTE 19. ACQUISITIONS

Acquisitions for the years ended December 31, 2018, 2017 and 2016 were as follows:

Entity Acquired (Dollars in millions)	Date of Acquisition	Additional Percent Interest Acquired	Payments to Former Owners	Acquisition Related Debt Retirements	Total Purchase Consideration	Type of Acquisition ⁽¹⁾	Gain Recognized ⁽¹⁾	Goodwill Acquired	Intangibles Recognized ⁽²⁾	Net Sales Previous Fiscal Year Ended
2018										
Efficient Drivetrains, Inc.	08/15/18	100%	\$ 51	\$ 2	\$ 64 ⁽³⁾	COMB	—	\$ 49	\$ 15	\$ 3
Johnson Matthey Battery Systems, Ltd.	01/31/18	100%	9	—	9	COMB	—	—	5	3
2017										
Brammo Inc.	11/01/17	100%	\$ 60	\$ —	\$ 68 ⁽³⁾	COMB	\$ —	\$ 47	\$ 23	\$ 4
Eaton Cummins Automated Transmission Technologies	07/31/17	50%	600 ⁽⁴⁾	—	600	COMB	—	544	596	— ⁽⁴⁾
2016										
Wuxi Cummins Turbo Technologies Co. Ltd	12/05/16	45%	\$ 86	\$ —	\$ 86	EQUITY	\$ —	\$ —	\$ —	\$ —
Cummins Pacific LLC	10/04/16	50%	32	67	99	COMB	15	4	8	391 ⁽⁵⁾
Cummins Northeast LLC	01/01/16	35%	12	—	12	EQUITY	—	—	—	—

⁽¹⁾ All results from acquired entities (excluding Brammo Inc. in 2017) were included in segment results subsequent to the acquisition date. Previously consolidated entities were accounted for as equity transactions (EQUITY). Newly consolidated entities were accounted for as business combinations (COMB) with gains recognized based on the requirement to remeasure our pre-existing ownership to fair value in accordance with GAAP and are included in the *Consolidated Statements of Income* as "Other income, net. The Brammo Inc. acquisition was allocated to the newly formed Electrified Power Segment on January 1, 2018.

⁽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. See additional information below.

⁽⁵⁾ Sales amounts are not fully incremental to our consolidated sales as the amount would be reduced by the elimination of sales to the previously unconsolidated entity.

Eaton Cummins Automated Transmission Technologies

In April 2017, we entered into an agreement to form a joint venture with Eaton Corporation PLC (Eaton), which closed on July 31, 2017 (the acquisition date). We purchased 50 percent interest in the new venture named Eaton Cummins Automated Transmission Technologies for \$600 million in cash. In addition, each partner contributed \$20 million for working capital. The joint venture will design, assemble, sell and support medium-duty and heavy-duty automated transmissions for the commercial vehicle market, including new product launches. The new generation products (Precision and Endurant) were launched in 2016 and 2017, respectively, and are owned by the joint venture. Eaton will continue to manufacture and sell the old generation products to the joint venture which will be marked up and sold to end customers. Eaton will also sell certain transmission components to the joint venture at prices approximating market rates. In addition, Eaton will provide certain manufacturing and administrative services to the joint venture, including but not limited to manufacturing labor in Mexico, information technology services, accounting services and purchasing services, at prices approximating market rates. Pro forma financial information was not provided as historical activity related to the products contributed to the joint venture was not material.

We consolidated the results of the joint venture in our Components segment 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. The joint venture had an enterprise value at inception of \$1.2 billion. Due to the structure of the joint venture and equal sharing of economic benefits, we did not apply a discount for lack of control to the noncontrolling interests. The final purchase price allocation was as follows:

In millions	
Inventory	\$ 3
Fixed assets	58
Intangible assets	
Customer relationships	424
Technology	172
Goodwill	544
Liabilities	(1)
Total business valuation	1,200
Less: Noncontrolling interest	600
Total purchase consideration	\$ 600

Customer relationship assets represent the value of the long-term strategic relationship the business has with its significant customers, which we are amortizing over 25 years. The assets were valued using an income approach, specifically the "multi-period 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. This value is considered a level 3 measurement under the GAAP fair value hierarchy. Key assumptions used in the valuation of customer relationships include: (1) a rate of return of 10 percent and (2) an attrition rate of 3 percent. *Technology* assets primarily represent the associated patents and know how related to the Endurant and Precision next generation automated transmissions, which we are amortizing over 15 years. These assets were valued using the "relief-from-royalty" method, which is a combination of both 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 impacting this value include: (1) a market royalty rate of 5 percent, (2) a rate of return of 10 percent and (3) an economic depreciation rate of 7.5 percent. This value is considered a level 3 measurement under the GAAP fair value hierarchy. Annual amortization of the intangible assets for the next 6 years is expected to approximate \$28 million.

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. Approximately \$31 million of the goodwill is deductible for tax purposes. Among the factors contributing to a purchase price resulting in the recognition of goodwill is the ability to integrate and optimize the engine and transmission development to deliver the world's best power train, to realize synergies in service and aftermarket growth and to utilize our strength in international markets where automated transmission adoption rates are very low.

Included in our 2017 results were revenues of \$164 million and a net loss of \$11 million related to this joint venture.

NOTE 20. 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.

Our reportable operating segments consist of Engine, Distribution, Components, Power Systems and Electrified Power. This reporting structure is organized according to the products and markets each segment serves. The Engine segment produces engines (15 liters and less in size) 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 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.

We formed the Electrified Power segment, effective January 1, 2018, which designs, manufactures, sells and supports electrified power systems ranging from fully electric to hybrid solutions along with innovative components and subsystems to serve all our markets as they adopt electrification, meeting the needs of our OEM partners and end customers. We currently offer the Cummins PowerDrive series of fully electric and hybrid powertrain systems targeting various applications in the Class 4-8 commercial vehicle markets and are developing the Cummins Battery Electric System and the Cummins Hybrid Power Plug-In System for the urban bus market, which are expected to launch in 2019 and 2020, respectively. We also design and manufacture battery modules, packs and systems for commercial, industrial and material handling applications. We use a range of cell chemistries which are suitable for pure electric, hybrid and plug-in hybrid applications. In addition to electrified powertrains for urban buses, we intend to deliver product offerings to other markets as they adopt electric solutions, including, but not limited to, pick-up and delivery applications and industrial markets. We invest in and utilize our internal research and development capabilities, along with strategic acquisitions and partnerships, to meet our objectives.

Effective January 1, 2018, we changed our segment measure of profitability to 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. EBITDA assists investors and debt holders in comparing our performance on a consistent basis without regard for depreciation and amortization, which can vary significantly depending upon many factors. Prior periods have been revised to reflect the current presentation. 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 changes in cash surrender value of corporate owned life insurance 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 ⁽¹⁾	Power Systems	Electrified Power	Total Segments	Intersegment Eliminations ⁽²⁾	Total
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 ⁽⁴⁾	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
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 ⁽⁵⁾	219	44	40	54	—	357	—	357
Interest income	6	6	3	3	—	18	—	18
Loss contingency ⁽⁶⁾	5	—	—	—	—	5	—	5
Segment EBITDA	1,143	500	917	411	—	2,971	55	3,026
Depreciation and amortization ⁽³⁾	184	116	163	117	—	580	—	580
Net assets ⁽⁴⁾	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

(Table continued on next page)

In millions	Engine	Distribution	Components	Power Systems	Electrified Power	Total Segments	Intersegment Eliminations ⁽²⁾	Total
2016								
External sales	\$ 5,774	\$ 6,157	\$ 3,514	\$ 2,064	\$ —	\$ 17,509	\$ —	\$ 17,509
Intersegment sales	2,030	24	1,322	1,453	—	4,829	(4,829)	—
Total sales	7,804	6,181	4,836	3,517	—	22,338	(4,829)	17,509
Research, development and engineering expenses	227	13	208	189	—	637	—	637
Equity, royalty and interest income from investees	148	70	41	42	—	301	—	301
Interest income	10	4	4	5	—	23	—	23
Loss contingency ⁽⁶⁾	138	—	—	—	—	138	—	138
Segment EBITDA	849	508 ⁽⁷⁾	774	378 ⁽⁸⁾	—	2,509	17	2,526
Depreciation and amortization ⁽³⁾	163	116	133	115	—	527	—	527
Net assets ⁽⁴⁾	1,334	2,157	1,643	2,202	—	7,336	—	7,336
Investments and advances to equity investees	427	204	176	139	—	946	—	946
Capital expenditures	200	96	143	92	—	531	—	531

⁽¹⁾ Includes Eaton Cummins Automated Transmission Technologies joint venture results consolidated during the third quarter of 2017. See Note 19, "ACQUISITIONS," for additional information.

⁽²⁾ Includes intersegment sales, intersegment profit in inventory eliminations and unallocated corporate expenses. There were no significant unallocated corporate expenses for the years ended 2018, 2017 and 2016, respectively.

⁽³⁾ Depreciation and amortization as shown on a segment basis excludes the amortization of debt discount and deferred costs that are included in the *Consolidated Statements of Income* as "Interest expense." The amortization of debt discount and deferred costs were \$2 million, \$3 million and \$3 million for the years ended 2018, 2017 and 2016, respectively. A portion of depreciation expense is included in "Research, development and engineering expense."

⁽⁴⁾ In 2018, we reevaluated our net asset allocation methodology and realigned it to both simplify and better represent our reportable segments consistent with how the Chief Operating Decision Maker evaluates them. In accordance with the realignment, we reclassified historical segment net assets for 2016 and 2017 to be consistent with our 2018 presentation. Key changes during the realignment were to remove cash equivalents and marketable securities from segment net assets as these corporate items are not managed and evaluated at the segment level.

⁽⁵⁾ 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 4, "INCOME TAXES," for additional information.

⁽⁶⁾ See Note 9, "PRODUCT WARRANTY LIABILITY," for additional information.

⁽⁷⁾ Distribution segment EBITDA included gains on the fair value adjustment resulting from the acquisition of controlling interests in North American distributors of \$15 million for the year ended December 31, 2016. See Note 19, "ACQUISITIONS," for additional information.

⁽⁸⁾ Power Systems segment EBITDA included a \$17 million gain on the sale of an equity investee for the year ended December 31, 2016. See Note 3, "INVESTMENTS IN EQUITY INVESTEES," for additional information.

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

In millions	Years ended December 31,		
	2018	2017	2016
Total EBITDA	\$ 3,476	\$ 3,026	\$ 2,526
Less:			
Depreciation and amortization	609	\$ 580	527
Interest expense	114	\$ 81	\$ 69
Income before income taxes	\$ 2,753	\$ 2,365	\$ 1,930

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,		
	2018	2017	2016
Net assets for operating segments ⁽¹⁾	\$ 9,220	\$ 8,574	\$ 7,336
Cash, cash equivalents and marketable securities	1,525	1,567	1,380
Brammo Inc. assets	—	72 ⁽²⁾	—
Liabilities deducted in arriving at net assets	7,836	7,398	6,157
Pension and other postretirement benefit adjustments excluded from net assets	68	156	(284)
Deferred tax assets not allocated to segments	410	306	420
Deferred debt costs not allocated to segments	3	2	2
Total assets	\$ 19,062	\$ 18,075	\$ 15,011

⁽¹⁾ In 2018, we reevaluated our net asset allocation methodology and realigned it to both simplify and better represent our reportable segments consistent with how the Chief Operating Decision Maker evaluates them. In accordance with the realignment, we reclassified historical segment net assets for 2016 and 2017 to be consistent with our 2018 presentation. Key changes during the realignment were to remove cash equivalents and marketable securities from segment net assets as these corporate items are not managed and evaluated at the segment level.

⁽²⁾ 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 19, "ACQUISITIONS," for additional information.

See Note 2, "DISAGGREGATION OF REVENUE," 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,		
	2018	2017	2016
United States	\$ 3,174	\$ 3,157	\$ 3,092
China	823	795	652
India	577	563	475
United Kingdom	337	339	254
Netherlands	234	221	197
Mexico	171	136	131
Canada	114	116	132
Brazil	104	149	149
Other international countries	329	293	236
Total long-lived assets	\$ 5,863	\$ 5,769	\$ 5,318

Our largest customer is PACCAR Inc. Worldwide sales to this customer were \$3,643 million, \$2,893 million and \$2,359 million for the years ended December 31, 2018, 2017 and 2016 representing 15 percent, 14 percent and 13 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
	2018			
Net sales	\$ 5,570	\$ 6,132	\$ 5,943	\$ 6,126
Gross margin	1,200 ⁽¹⁾	1,440 ⁽¹⁾	1,551	1,546
Net income attributable to Cummins Inc. ⁽²⁾	325 ⁽¹⁾	545 ⁽¹⁾	692	579
Earnings per common share attributable to Cummins Inc.—basic ^{(2) (3)}	\$ 1.97 ⁽¹⁾	\$ 3.33 ⁽¹⁾	\$ 4.29	\$ 3.65
Earnings per common share attributable to Cummins Inc.—diluted ^{(2) (3)}	1.96 ⁽¹⁾	3.32 ⁽¹⁾	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
	2017			
Net sales	\$ 4,589	\$ 5,078	\$ 5,285	\$ 5,476
Gross margin	1,132	1,251	1,341	1,376
Net income (loss) attributable to Cummins Inc.	396	424	453	(274) ⁽²⁾
Earnings (loss) per common share attributable to Cummins Inc.—basic ⁽³⁾	\$ 2.36	\$ 2.53	\$ 2.72	\$ (1.66) ⁽²⁾
Earnings (loss) per common share attributable to Cummins Inc.—diluted ⁽³⁾	2.36	2.53	2.71	(1.65) ⁽²⁾
Cash dividends per share	1.025	1.025	1.08	1.08
Stock price per share				
High	\$ 155.51	\$ 164.23	\$ 170.68	\$ 181.79
Low	134.06	143.83	150.25	158.75

⁽¹⁾ Gross margin, net income attributable to Cummins Inc. and earnings per share were negatively impacted by an Engine Campaign charge of \$187 million (\$144 million after tax) in the first quarter (\$0.87 per basic and diluted share). The second quarter was negatively impacted by an additional charge of \$181 million (\$139 million after tax) (\$0.85 per basic and diluted share). In 2017, a charge of \$29 million (\$21 million after tax) (\$0.13 per basic and diluted share) was recorded in the third quarter.

⁽²⁾ 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 quarter, respectively, while they increased in the third and fourth quarter by \$0.20 per share and \$0.06 per share, respectively. Net income attributable to Cummins Inc. and earnings per share were negatively impacted by \$777 million related to Tax Legislation. For the fourth quarter of 2017, results for basic and diluted earnings per share were reduced by \$4.70 per share and \$4.68 per share, respectively, due to tax reform.

⁽³⁾ 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.

At December 31, 2018, there were approximately 3,256 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, 2018, that has 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" and "Other Information —Section 16(a) Beneficial Ownership Reporting Compliance" in our 2019 Proxy Statement, which will be filed within 120 days after the end of 2018. Information regarding our executive officers may be found in Part 1 of this annual report under the caption "Executive Officers of the Registrant." 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 2019 Proxy Statement, which will be filed within 120 days after the end of 2018.

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

Information concerning our equity compensation plans at December 31, 2018, 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	3,659,405	\$ 130.55	7,849,044

⁽¹⁾ The number is comprised of 3,243,662 stock options, 410,350 performance shares and 5,393 restricted shares. See NOTE 16, "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 3,243,662 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 2019 Proxy Statement, which will be filed within 120 days after the end of 2018.

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 2019 Proxy Statement, which will be filed within 120 days after the end of 2018.

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 2019 Proxy Statement, which will be filed within 120 days after the end of 2018.

PART IV**ITEM 15. Exhibits and 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 Income for the years ended December 31, 2018, 2017 and 2016**
- **Consolidated Statements of Comprehensive Income for the years ended December 31, 2018, 2017 and 2016**
- **Consolidated Balance Sheets at December 31, 2018 and 2017**
- **Consolidated Statements of Cash Flows for the years ended December 31, 2018, 2017 and 2016**
- **Consolidated Statements of Changes in Equity for the years ended December 31, 2018, 2017 and 2016**
- **Notes to 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
3 (a)	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)).
3 (b)	By-Laws, as amended and restated, effective as of July 10, 2018 (incorporated by reference to Exhibit 3.2 to the Current Report on Form 8-K filed with the Securities and Exchange Commission on July 11, 2018 (File No. 001-04949)).
4 (a)	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)).
4 (b)	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)).
4 (c)	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)).
10 (a)#	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).
10 (b)#	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).
10 (c)#	Amendment to the Cummins Inc. Deferred Compensation Plan (filed herewith).
10 (c)#	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).
10 (d)#	Supplemental Life Insurance and Deferred Income Plan, as amended and restated effective as of December 10, 2018 (filed herewith).
10 (e)	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)).
10 (f)#	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).
10 (g)#	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).
10 (h)#	Employee Stock Purchase Plan, as amended (incorporated by reference to Annex B to Cummins Inc.'s definitive proxy statement filed with the Securities and Exchange Commission on Schedule 14A on March 27, 2012 (File No. 001-04949)).
10 (i)#	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).
10 (j)#	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).
10 (k)#	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).
10 (l)#	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).
10 (m)#	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).
10 (n)#	Form of Long-Term Grant Notice under the 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10(n) to Cummins Inc.'s Quarterly Report on Form 10-Q for the quarter ended March 29, 2015).
10 (o)#	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)).
10 (p)#	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).
10 (q)#	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).
10 (r)#	364-Day Credit Agreement, dated as of August 22, 2018, by and among Cummins Inc., the subsidiary borrowers referred to therein, the Lenders and Agents party thereto and JPMorgan Chase Bank, N.A., as Administrative Agent (incorporated by reference to Exhibit 10.1 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)).
21	Subsidiaries of the Registrant (filed herewith).
23	Consent of PricewaterhouseCoopers LLP (filed herewith).
24	Powers of Attorney (filed herewith).

31 (a)	Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).
31 (b)	Certification Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).
32	Certifications Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith).
101 .INS	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	XBRL Taxonomy Extension Schema Document.
101 .CAL	XBRL Taxonomy Extension Calculation Linkbase Document.
101 .DEF	XBRL Taxonomy Extension Definition Linkbase Document.
101 .LAB	XBRL Taxonomy Extension Label Linkbase Document.
101 .PRE	XBRL Taxonomy Extension Presentation Linkbase Document.

A management contract or compensatory plan or arrangement.

ITEM 16. Form 10-K Summary (optional)

Not Applicable.

**AMENDMENT TO THE
CUMMINS INC. DEFERRED COMPENSATION PLAN**

WHEREAS, Cummins Inc. (the "Company") maintains the Cummins Inc. Deferred Compensation Plan, as amended and restated (the "Plan").

WHEREAS, Section 5.04 of the Plan currently specifies that participants may change their investment elections under the Plan one time per month.

WHEREAS, the Company desires to amend the Plan to permit more frequent changes in investment elections.

NOW, THEREFORE, BE IT RESOLVED, that Section 5.04 of the Plan be, and it hereby is, amended and restated in its entirety to read as follows:

Section 5.04 Investment Options. The Administrator shall, from time to time, specify the available Investment Funds, which the Administrator may prospectively change or close to new investments in its discretion. Each Participant shall elect one or more Investment Funds to which his existing Accounts shall be allocated, in increments of 1%. The Administrator shall determine from time to time how frequently Participants may change their investment elections, provided that Participants shall be permitted to change their investment elections no less frequently than once per calendar year. The Administrator also may permit Participants to make separate investment elections with respect to their existing Accounts and future deferrals. The sole purpose of the Investment Funds is to measure Earnings Credits to the Participant's Accounts, and there is no requirement that amounts be invested in the Investment Funds.

IN WITNESS WHEREOF, the undersigned has executed this Amendment to the Plan as of this 29th day of November, 2018.

CUMMINS INC.

By: s/ Jill E. Cook

Jill E. Cook

Vice President - Chief Human Resources

Officer

**CUMMINS INC. SUPPLEMENTAL
LIFE INSURANCE AND DEFERRED INCOME PLAN**

As amended and restated effective as of December 10, 2018

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**ARTICLE I
RESTATEMENT AND PURPOSE**

Section 1.01. History and Restatement. Cummins Inc. (“Company”) established the predecessor of the Cummins Inc. Supplemental Life Insurance and Deferred Income Plan, effective January 1, 1986 (“Prior Program”). Effective January 1, 1997, the Company restated the Prior Program in its entirety, naming it the “Cummins Engine Company, Inc. Supplemental Life Insurance and Deferred Income Plan.” The Company has amended the Plan on several occasions since that time. The Company restated the Plan, effective January 1, 2008, to comply with the requirements of the final regulations under Code Section 409A. The Plan was amended and restated effective as of December 12, 2011 to incorporate certain changes to the terms of the Plan. The Plan is again amended and restated effective as of December 10, 2018.

Section 1.02. Application of Restatement. This restatement shall not apply to any amount that was accrued and Vested as of December 31, 2004 (“Grandfathered Amount”), and Grandfathered Amounts shall continue to be governed by the terms and conditions of the Plan as in effect on December 31, 2007; provided, however, the individual entitled to receive benefits following an Executive’s death that occurs on or after January 1, 2008, shall be determined pursuant to this restatement.

Section 1.03. Purpose. The purpose of the Plan is to provide (i) increased protection and liquidity for a select group of management or highly compensated employees of the Company and their families and (ii) a competitive retirement program for such employees. The Company intends for the retirement benefits portion of the Plan to qualify as an unfunded arrangement maintained primarily for the purpose of providing deferred compensation for a select group of management or highly compensated employees within the meaning of ERISA Sections 201, 301, and 401. The Company also intends for the Plan to satisfy the applicable requirements of Code Section 409A.

Section 1.04. Grantor Trust. The Company has established a grantor trust to hold assets for the provision of certain benefits under the Plan as well as other Employer benefits. Assets of the Trust are subject to the claims of the Employer’s general creditors.

**ARTICLE II
DEFINITIONS AND INTERPRETATION**

Section 2.01. Definitions. When the first letter of a word or phrase is capitalized herein, the word or phrase shall have the meaning specified below:

(a) “Administrator” means the Compensation Committee of the Board or such other person that the Compensation Committee designates as Administrator. To the extent that the Administrator delegates a duty of responsibility to an agent, the term “Administrator” shall include such agent.

(b) “Affiliated Employer” means (i) a member of a controlled group of corporations (as defined in Code Section 414(b)) of which the Company is a member or (ii) an unincorporated trade or business under common control (as defined in Code Section 414(c)) with the Company.

(c) “Alternate Payee” has the meaning set out in ERISA Section 206(d)(3)(K).

(d) “Annuity Starting Date” means the date as of which a benefit under the Plan is to commence or be paid (if payable as a lump sum).

(e) “Applicable Form” means a form provided by the Administrator for making an election or designation under the Plan. To the extent permitted by the Administrator, an Applicable Form may be provided and/or an election or designation made electronically.

(f) “Average Covered Compensation” means as follows: the average annualized Covered Compensation paid to the Executive during the 60 consecutive calendar months (of the 120 consecutive calendar months ending with the month in which the Executive’s Termination of Employment occurs) in which the Covered Compensation paid to the Executive is highest. Notwithstanding the preceding sentence, if the Executive Terminates Employment after a Change of Control, and his Covered Compensation includes base salary and bonus payments paid to him pursuant to the Executive Retention Plan following his Termination of Employment, the 120-month period referred to above shall be the 120 consecutive month period ending on the last day of the month for which such payments are payable under the Executive Retention Plan, if the determination of Average Covered Compensation over such period would provide a greater benefit to the Executive hereunder. If the Executive does not receive Covered Compensation for a period of at least 60 months, his Average Covered Compensation shall be determined based on the months in which he receives Covered Compensation.

(g) “Beneficiary” means the person or entity entitled to receive an Executive’s death benefits payable under the policies described in Article IV and Vested Survivor Benefits, if any, remaining after the Executive’s death. An Executive’s Beneficiary shall be determined as provided in Section 5.02.

(h) “Benefit Claim” means a request or claim for a benefit under the Plan, including a claim for greater benefits than have been paid.

(i) “Board” or “Board of Directors” means the Company’s Board of Directors or, where the context so permits, its designee.

(j) “Change of Control” means the occurrence of any of the following:

(1) there shall be consummated (A) any consolidation or merger of the Company in which the Company is not the continuing or surviving corporation or pursuant to which shares of the Company’s common stock would be converted in whole or in part into cash or other securities or property, other than a merger of the Company in which the holders of the Company’s common stock immediately before the merger have substantially the same proportionate ownership of common stock of the surviving corporation immediately after the merger, or (B) any sale, lease, exchange or transfer (in one transaction or a series of related transactions) of all or substantially all of the assets of the Company, or

(2) the liquidation or dissolution of the Company, or

(3) any 'person' (as such term is used in Sections 13(d)(3) and 14(d)(2) of the Securities Exchange Act of 1934, as amended ('the Exchange Act')), other than the Company or a subsidiary thereof or any employee benefit plan sponsored by the Company or a subsidiary thereof or a corporation owned, directly or indirectly, by the shareholders of the Company in substantially the same proportions as their ownership of stock of the Company, shall become the beneficial owners (within the meaning of Rule 13d-3 under the Exchange Act) of securities of the Company representing 30% or more of the combined voting power of the Company's then outstanding securities ordinarily (and apart from rights accruing in special circumstances) having the right to vote in the election of directors, as a result of a tender or exchange offer, open market purchases, privately negotiated purchases, or otherwise, or

(4) at any time during a period of two consecutive years, individuals who at the beginning of such period constituted the Board of Directors shall cease for any reason to constitute at least a majority thereof, unless the election or the nomination for election by the Company's stockholders of each new director during such two-year period was approved by a vote of at least two-thirds (2/3) of the directors then still in office who were directors at the beginning of such two-year period, or

(5) any other event shall occur that would be required to be reported in response to Item 6(e) (or any successor provision) of Schedule 14A or Regulation 14A promulgated under the Exchange Act.

Notwithstanding the preceding provisions, an event or series of events shall not constitute a Change of Control unless the event or series of events qualifies as a change in the ownership or effective control of the corporation or in the ownership of a substantial portion of the assets of the corporation within the meaning of Code Section 409A(a)(2)(A)(v).

(k) "Code" means the Internal Revenue Code of 1986, as amended from time to time.

(l) "Company" means Cummins Inc.

(m) "Covered Compensation" means, with respect to an Executive for a period, as follows: the total of base salary and short-term bonus earnings paid by the Employer to the Executive during such period; provided, however, if the Executive Terminates Employment after a Change of Control, his Covered Compensation shall include the total of all base salary and bonus payments paid to the Executive pursuant to the Executive Retention Plan following his Termination of Employment. For purposes of this Paragraph, "short-term bonus" means variable incentive compensation based on a performance measurement period of one year or less, including but not limited to amounts earned under the Company's Target Bonus Plan and Senior Executive Bonus Plan.

(n) "Deferred Vested Benefit" means the benefit payable pursuant to Section 6.04.

(o) "Denial" or "Denied" means a denial, reduction, termination, or failure to provide or make payment (in whole or in part) of a Plan benefit.

(p) "Domestic Relations Order" has the meaning specified in Code Section 414(p)(1)(B).

(q) “Employer” means the Company and all of its Affiliated Employers.

(r) “ERISA” means the Employee Retirement Income Act of 1974, as amended from time to time.

(s) “Excess Benefit Retirement Plan” means the Cummins Inc. Excess Benefit Retirement Plan, as amended from time to time.

(t) “Executive” means (i) an individual who has been designated by the Board as an officer of the Company and who is receiving United States taxable income or (ii) any other employee of the Company designated by the Board as an executive eligible to participate in the Plan; provided in each case that the individual has consented to the purchase of insurance policies as contemplated by Article IV (and otherwise cooperates with the Company to obtain such insurance) and completed any forms or other actions required by the Administrator as a condition of participation.

(u) “Executive Retention Plan” means the Cummins Inc. Executive Retention Plan, as amended from time to time, and any successor thereto.

(v) “Grandfathered Amount” has the meaning specified in Section 1.02.

(w) “Non-Grandfathered Amount” means a benefit under the Plan in excess of the Grandfathered Amount.

(x) “Pension Plan” means the Cummins Pension Plan provisions applicable to the Executive, as amended from time to time.

(y) “Plan” means the Cummins Inc. Supplemental Life Insurance and Deferred Income Plan, as set out in this document, as amended from time to time.

(z) “Present Actuarial Value” means the present value of a future stream of payments, as determined by the Administrator using the applicable mortality table and applicable interest rate promulgated pursuant to Code Section 417(e)(3), as determined by the Administrator in its discretion.

(aa) “Prior Program” means the predecessor of this Plan for the period from January 1, 1986, through December 31, 1996.

(bb) “Service” means the total of (i) the Executive’s employment service with the Employer, plus (ii) if the Executive Terminates Employment after a Change of Control, the period of months for which Termination Payments (as defined in the Executive Retention Plan) are paid or payable to the Executive under the Executive Retention Plan. For purposes of the Plan, an Executive shall receive credit for Service for all periods of employment with the Employer, expressed in full years and months (with credit for 1/12 of a year (one month) being credited for each month during which the Executive works one day).

(cc) “Specified Employee” means, with respect to the 12-month period beginning on the Specified Employee Effective Date, an individual who, (i) during any part of the 12-month period

ending on the Specified Employee Identification Date, is in salary grade 99 or compensation class 6, or (ii) is a “specified employee” within the meaning of Code Section 409A(a)(2)(B)(i) and the guidance thereunder.

(dd) “Specified Employee Effective Date” means, in the case of an Employee who Terminates Employment before December 31, 2009, the April 1 next following the Specified Employee Identification Date, and, in the case of an Employee who Terminates Employment after December 31, 2009, the January 1 next following the Specified Employee Identification Date.

(ee) “Specified Employee Identification Date” means December 31.

(ff) “Spouse” means, as of the Executive’s Annuity Starting Date, the person who is the Executive’s spouse (which may include a domestic partner) determined as set forth in the Cummins Pension Plan, provided that Administrator may establish such other procedures and require such evidence as it deems appropriate in determining whether a person is the Executive’s Spouse for purposes of this Plan.

(gg) “Supplemental Life Annuity” means the benefit payable to an Executive pursuant to Article VI.

(hh) “Survivor Benefit” means the benefit, if any, payable to an Executive’s Spouse or other Beneficiary pursuant to Article VI following the Executive’s death after Termination of Employment with Vested rights to a Supplemental Life Annuity.

(ii) “Termination of Employment,” “Terminates Employment,” or any variation thereof refers to a separation from service within the meaning of Code Section 409A(a)(2)(A)(i) for a reason other than the Executive’s death.

(jj) “Trust” means the grantor trust established by the Company to provide a source for the payment of retirement benefits under the Plan and benefits under certain other Employer programs.

(kk) “Trustee” means the Trustee of the Trust.

(ll) “Vested” means, with respect to an Executive, the portion of the Executive’s Supplemental Life Annuity in which the Executive has a non-forfeitable interest, to the extent provided herein.

(mm) “Vesting Service” means, with respect to an Executive, his total Service; provided, however, in determining the Executive’s total Vesting Service, he shall be credited with a full year of Vesting Service for any period of at least five months in addition to his full years of Service. For example, an Executive with four years and six months of Service shall be credited with five years of Vesting Service.

Section 2.02. Rules of Interpretation.

(a) The Plan is intended to comply with (i) Code Section 409A and (ii) the applicable

provisions of ERISA, and it shall be interpreted and administered in accordance with such intent. Except as provided in the preceding sentence or as otherwise expressly provided herein, the Plan shall be construed, enforced, and administered, and the validity thereof determined, in accordance with the internal laws of the State of Indiana without regard to conflict of law principles, and the following provisions of this Section.

(b) Words used herein in the masculine shall be construed to include the feminine, where appropriate, and *vice versa*, and words used herein in the singular or plural shall be construed to include the plural or singular, where appropriate.

(c) Headings and subheadings are used for convenience of reference only and shall not affect the interpretation of any provision hereof.

(d) If any provision of the Plan shall be held to violate the Code or ERISA or be illegal or invalid for any other reason, that provision shall be deemed null and void, but the invalidation of that provision shall not otherwise affect the Plan.

(e) Reference to any provision of the Code, ERISA or other law shall be deemed to include a reference to the successor of such provision.

ARTICLE III PARTICIPATION

An Executive shall commence participation in the Plan following his execution of a form provided by the Company within ninety (90) days (or such other time period as prescribed by the Administrator) after eligibility consenting to the Executive's participation in the Plan and to the Company's purchase of life insurance on the Executive's life. From time to time, the Executive shall also complete any forms required by the Administrator or an insurer and submit to any necessary physical examinations requested by an insurer.

ARTICLE IV INSURANCE POLICIES

Section 4.01. Purchase of Insurance Policies. An Executive shall be covered by one or more insurance policies with an aggregate face value of approximately three times the Executive's base salary. All such policies shall be owned by the Trustee. Additional policies shall be purchased as the Executive's salary is increased, except that the Company is under no obligation to purchase an incremental policy in a face amount of less than \$20,000. Coverage under all such policies shall terminate on the Executive's Termination of Employment.

Section 4.02. Premium Payments. The annual premium payable with respect to policies on the Executive's life shall be paid by the Trustee from the assets of the Trust, including, in the discretion of the Trustee, by borrowing against the value of any policies on the Executive's life. If at any time there are insufficient funds available in the Trust to permit payment of the premium, the Employer shall contribute additional funds to the Trust to permit the Trustee to pay such premium. To the extent an amount is includable in the Executive's taxable income or otherwise subject to tax withholding and reporting with respect to the coverage or benefits provided by the policies under

this Article IV, the Executive shall be required to pay or otherwise make arrangements satisfactory to the Employer to satisfy such tax obligations, and the Employer may withhold from any amounts owing to the Executive an amount sufficient to satisfy such tax obligations.

ARTICLE V DEATH BENEFITS

Section 5.01. Payment of Death Benefits. If the Executive dies before Termination of Employment, an amount equal to three times the Executive's annual base salary at the time of his death shall be paid to the Executive's Beneficiaries. Such amount shall be funded by the death benefits payable under the policies described in Article IV. Any excess of such death benefits over three times the Executive's annual base salary at the time of his death shall be paid to the Trustee.

Section 5.02. Designating a Beneficiary.

(a) The Beneficiary designation provisions in this Section 5.02(a) shall apply with respect to benefits payable under the policies described in Article IV and benefits provided in Section 6.05 with respect to Vested Survivor Benefits. The Executive may designate a Beneficiary only by filing a completed Applicable Form with the Administrator during his lifetime. The Executive's proper filing of a Beneficiary designation shall cancel all prior Beneficiary designations. If the Executive does not designate a Beneficiary, or if all properly designated Beneficiaries die before the Executive, the Executive's Beneficiary shall be his Spouse, if living at the time of the Executives death, or if his Spouse is not then living, the individual(s), if any, named as the Executive's beneficiary under his Employer-provided group life insurance program, who are living at the time of the Executive's death or, if no such beneficiaries are then living, the Executive's estate.

(b) Except to the extent the Executive's Beneficiary is the individual named as the Executive's beneficiary under his Employer-provided group life insurance program pursuant to the preceding paragraph and such program otherwise provides, the following rules shall determine the apportionment of payments due under the Plan among Beneficiaries in the event of the death of the Executive prior to Termination of Employment:

(1) If any Beneficiary designated by the Executive as a "Direct Beneficiary" dies before the Executive, his interest and the interest of his heirs in any payments under the Plan shall terminate and the percentage share of the remaining Beneficiaries designated as Direct Beneficiaries shall be increased on a pro rata basis. If no such Beneficiary survives the Executive, the Executive's entire interest in the Plan shall pass to any Beneficiary designated as a "Contingent Beneficiary."

(2) If any Beneficiary designated by the Executive as a "Contingent Beneficiary" dies before the Executive, his interest and the interest of his heirs in any payments under the Plan shall terminate and the percentage share of the remaining Beneficiaries designated as Contingent Beneficiaries shall be increased on a pro rata basis.

(3) If any Beneficiary dies after the Executive, but before payment is made to such Beneficiary, then the payment shall be made to the Beneficiary's estate.

**ARTICLE VI
RETIREMENT BENEFITS**

Section 6.01. General Provisions.

(a) No benefits shall be payable under this Article with respect to an Executive for whom death benefits have been paid pursuant to Article V.

(b) Benefits payable pursuant to this Article shall commence or be paid, if payable in a lump sum, on the Executive's Annuity Starting Date.

Section 6.02. Normal Retirement Benefit. Subject to the modifications specified in Appendix A with respect to certain Executives, an Executive with at least 10 years of Service who Terminates Employment on or after reaching age 60 shall receive from the Trustee, beginning as of the first day of the month coincident with or next following his Termination of Employment, in monthly installments, a Supplemental Life Annuity in an annual amount equal to:

(a) 2% of the Executive's Average Covered Compensation times his years of Service not exceeding 20 years; plus

(b) 1% of the Executive's Average Covered Compensation times his years of Service in excess of 20, up to a maximum of 10 years; plus

(c) in the case of an Executive who was one of the two most highly compensated Executives of the Company as of December 31, 2011, an additional 10% of Average Covered Compensation; minus

(d) the Executive's annual benefit from the Pension Plan and the Excess Benefit Plan, if applicable, determined as if such annual benefit (i) commenced on the first day of the month coincident with or next following the Executive's Termination of Employment and (ii) were payable in monthly installments in the form of a single life annuity to the Executive; minus

(e) any non-U.S. benefits set forth in Appendix B to which the Executive is or may become entitled, if any.

Section 6.03. Early Retirement. If an Executive with at least 10 years of Service Terminates Employment on or after age 55 but before reaching age 60, the Executive shall be entitled to receive from the Trustee, beginning as of the first day of the month coincident with or next following his Termination of Employment, in monthly installments, a Supplemental Life Annuity in an annual amount equal to the amount determined in accordance with Section 6.02, reduced as follows: by 1/3 of 1% for each full month by which the Executive's Annuity Starting Date precedes his 60th birthday; provided, however, in the case of an individual who was an Executive before 2006, no reduction shall be made, if the Executive (i) Terminates Employment after reaching age 55 and completing 20 years of Service and his total years of age and Service upon Termination of Employment are at least 80 or (ii) was a participant in the Prior Plan and has completed at least 30 years of Service upon Termination of Employment.

Section 6.04. Deferred Vested Benefit. An Executive who Terminates Employment before he is eligible for benefits pursuant to Section 6.02 or 6.03 shall be entitled to receive from the Trustee, beginning as of his Annuity Starting Date, in monthly installments, a Supplemental Life Annuity in an annual amount equal to his Vested percentage multiplied by the amount determined in accordance with Section 6.02, and reduced as provided in Section 6.03. The Annuity Starting Date for benefits payable pursuant to this Section shall be the first day of the month coincident with or next following the later of the Executive's (i) Termination of Employment or (ii) 55th birthday.

Section 6.05. Survivor Benefit. If the Executive dies after Termination of Employment with a Vested right to a Supplemental Life Annuity, the following survivor benefits shall be paid:

(a) If the Executive dies on or after his Annuity Starting Date, a survivor benefit equal to 50% of the monthly amount payable to the Executive during his life shall be paid to the Executive's Spouse for the remainder of her life, beginning with the first day of the month after the Executive's death; provided, however, if the Executive had not received Supplemental Life Annuity payments for at least 15 years before his death, his Spouse shall be entitled to receive the same monthly benefit that was payable to the Executive for the remainder of such 15-year period, and the 50% benefit thereafter for the remainder of her life. If the Executive and his Spouse, if any, should die before receiving Supplemental Life Annuity benefits for at least 15 years, a lump-sum payment equal to the Present Actuarial Value of the remaining benefit due to be paid over the 15-year period shall be paid to the Executive's designated Beneficiary.

(b) If the Executive dies before his Annuity Starting Date, a survivor benefit shall be paid pursuant to this Subsection, beginning as of the date that would have been the Executive's Annuity Starting Date, if he had Terminated Employment on the date of his death and lived until distribution of benefits under the Plan began. If the Executive is survived by his Spouse, a monthly survivor benefit shall be paid to his Spouse for the remainder of her life (i) in an amount equal to 100% of the amount that would have been payable to the Executive under the preceding provisions of this Article (if he had Terminated Employment on the date of his death and lived) for the first 15 years in which such payments were made, and (ii) in an amount equal to 50% of the amount that would have been payable to the Executive under the preceding provisions of this Article (if he had Terminated Employment on the date of his death and lived) for periods after the first 15 years in which such payments. If the Executive's Spouse dies before payments are made for a period of 15 years, a lump-sum payment equal to the Present Actuarial Value of the remaining benefit due to be paid over the 15-year period shall be paid to the Executive's designated Beneficiary. If the Executive is not survived by a Spouse, then a lump-sum payment equal to the Present Actuarial Value of the amount that would have been payable to the Executive under the preceding provisions of this Article, if he had Terminated Employment on the date of his death and lived for the first 15 years in which such payments were made, shall be paid to the Executive's designated Beneficiary.

Section 6.06. Distribution of Small Benefits. Notwithstanding the preceding provisions of this Article, if the Present Actuarial Value of the benefits payable to the Executive pursuant to this Article when added to the Present Actuarial Value of the benefits payable pursuant to the Company's Excess Benefit Retirement Plan is less than \$25,000 (as determined on the date of the Executive's Termination of Employment), then the Trustee shall pay the Present Actuarial Value of such payments as a single lump sum payment within 60 days following the Executive's Termination of Employment or death.

Section 6.07. Delay in Payment for Specified Employees. Notwithstanding any provision of this Plan to the contrary, to the extent required by Code Section 409A(a)(2)(B)(i), distribution of the Supplemental Life Annuity to an Executive who is a Specified Employee on account of his Termination of Employment for any reason other than death shall be delayed until the earliest date permitted by such section. If the Supplemental Life Annuity is payable in the form of a monthly annuity, the sum of the monthly payments that are required to be delayed in accordance with this Section shall be paid with the first permitted monthly payment. Any delayed payments shall be increased by interest from the first day of the month coincident with or next following the Executive's Termination of Employment to the date on which his benefit payments begin at the applicable interest rate for retroactive annuity starting dates under the Pension Plan.

Section 6.08. Rehires. In general, an Executive who Terminates Employment and is subsequently rehired by the Employer (a "Rehired Executive") shall not be eligible to accrue a benefit under this Plan for periods employment following rehire (the "Rehire Period") unless such Executive satisfies the participation requirements to be an Executive under Article III during such Rehire Period, including new designation by the Board. To the extent the Rehired Executive satisfies such participation requirements to be an Executive under Article III during such Rehire Period, the Rehired Executive shall be entitled to benefits under the Plan for such Rehire Period in accordance with the provisions of the Plan in effect at such time. Notwithstanding the foregoing, the following rules shall apply to any Rehired Executive for purposes of the Rehired Executive's benefit under the Plan, if any, attributable to periods prior to the initial Termination of Employment and/or related to such Rehire Period:

(a) Rehire After Commencement of Benefits. If the Rehired Executive is rehired by the Employer after he has commenced payment of benefits under the Plan, such benefits shall not be suspended or modified for any reason and shall continue to be paid during the Rehire Period without regard to the period following such rehire. If, at the time of the Rehired Executive's initial Termination of Employment, the Rehired Executive was not fully Vested in his Supplemental Life Annuity (as calculated at the initial Termination of Employment pursuant to Sections 6.02 and 6.03), such unvested portion of that amount (if any) shall be reinstated such that the Rehired Executive (i) may earn additional Vesting Service to apply to such benefit; provided, that such reinstated benefit shall also be subject to further offsets as provided under Sections 6.02(d) and (e) (taking into account any additional amounts calculated thereunder for purposes of the Rehire Period). Any portion of the Supplemental Life Annuity that vests in accordance with this Section 6.08(a) (subject to any applicable offsets) during the Rehire Period shall be paid to the Rehired Executive in the manner and at the time set forth in Sections 6.02, 6.03 or 6.04 based on when the Rehired Executive subsequently Terminates Employment.

(b) Rehire Before Commencement of Benefits. If the Rehired Executive is rehired prior to commencing benefits under the Plan, but is otherwise entitled to a deferred vested benefit pursuant to Section 6.04 based on his period of Service prior to his initial Termination of Employment, the following rules shall apply to the deferred vested benefit based on the period of Service prior to his initial Termination of Employment; provided that, for the avoidance of doubt, to the extent the Rehired Executive satisfies the participation requirements to be an Executive under Article III during the Rehire Period, the Rehired Executive shall be entitled to benefits under the Plan (and such benefits

shall become payable) for such Rehire Period in accordance with the provisions of the Plan in effect at such time:

(1) The Rehire Period shall not be taken into account for purposes of calculating the amount of such individual's Supplemental Life Annuity provided hereunder that is attributable to periods prior to the initial Termination of Employment (including, without limitation, for purposes of determining years of Service and Average Covered Compensation). Such amount shall be calculated as of the initial Termination of Employment.

(2) The portion of the deferred vested benefit described above that was Vested at the initial Termination of Employment shall commence on the first day of the month coincident with or next following the Executive's 55th birthday (regardless of whether the Executive is still in active employment during the Rehire Period), in accordance with the terms of the Plan.

(3) The portion of the deferred vested benefit described above that was not Vested at the initial Termination of Employment shall be reinstated such that the Rehired Executive (i) may earn additional Vesting Service to apply to such benefit for the Rehire Period; provided, that such reinstated benefit shall be subject to further offsets as provided under Sections 6.02(d) and (e) (taking into account any additional amounts calculated thereunder for purposes of the Rehire Period). Any portion of the Supplemental Life Annuity that vests in accordance with this Section 6.08(b) (subject to any applicable offsets) during the Rehire Period shall be paid to the Rehired Executive in the manner and at the time set forth in Sections 6.02, 6.03 or 6.04 based on when the Rehired Executive subsequently Terminates Employment.

**ARTICLE VII
VESTED BENEFITS**

An Executive's interest in his Supplemental Life Annuity shall become Vested in accordance with the following Schedule;

<u>Years of Vesting Service</u>	<u>Vested Percentage</u>
Fewer than 5	0
5	25
6	40
7	55
8	70
9	85
10 or more	100

**ARTICLE VIII
ACCELERATED PAYMENT UPON CHANGE OF CONTROL**

Upon a Change of Control, an Executive who is entitled to benefits under the Plan, other than an Executive who has Terminated Employment with a right to a Deferred Vested Benefit, shall become fully Vested in the Supplemental Life Annuity and, notwithstanding anything in Article VI to the contrary, shall receive, in place of future payments under the Plan, a lump sum payment equal to the Present Actuarial Value of the Supplemental Life Annuity accrued to the date of the Change of Control and remaining to be paid under the Plan. The lump sum Present Actuarial Value of the Supplemental Life Annuity benefit payable shall be calculated assuming that, solely for the purpose of reducing the benefit for early commencement, the Executive, other than one who is entitled to a Deferred Vested Benefit, has already met the conditions for unreduced benefits described in Section 6.03 at the earliest possible time, taking into consideration the Executive's age and Service.

**ARTICLE IX
ADMINISTRATION OF PLAN**

Section 9.01. Powers and Responsibilities of the Administrator.

(a) The Administrator shall have full responsibility and discretionary authority to control and manage the operation and administration of the Plan. The Administrator is authorized to accept service of legal process on behalf of the Plan. To the fullest extent permitted by applicable law, any action taken by the Administrator pursuant to a reasonable interpretation of the Plan shall be binding and conclusive on all persons claiming benefits under the Plan, except to the extent that a court of competent jurisdiction determines that such action was arbitrary or capricious.

(b) The Administrator's discretionary powers include, but are not limited to, the following:

- (1) to interpret Plan documents, decide all questions of eligibility, determine whether an Executive has Terminated Employment, determine the amount, manner, and timing of distributions under the Plan, and resolve any claims for benefits;
- (2) to prescribe procedures to be followed by an Executive, Beneficiary, or other person applying for benefits;
- (3) to appoint or employ persons to assist in the administration of the Plan and any other agents as it deems advisable;
- (4) to adopt such rules as it deems necessary or appropriate; and
- (5) to maintain and keep adequate records concerning the Plan, including sufficient records to determine each Executive's eligibility to participate and his interest in the Plan, and its proceedings and acts in such form and detail as it may decide.

Section 9.02. Indemnification. The Company shall indemnify and hold harmless the Administrator, any person serving on a committee that serves as Administrator, and any officer, employee, or director of an Employer to whom any duty or power relating to the administration of the Plan has been properly delegated from and against any cost, expense, or liability arising out of any act or omission in connection with the Plan, unless arising out of such person's own fraud or bad faith.

Section 9.03. Claims and Claims Review Procedure.

(a) All Benefit Claims must be made in accordance with procedures established by the Administrator from time to time. If an Executive or his designated Beneficiary believes he is entitled to a benefit under the Plan that is not provided, he may file a written claim for payments under the Plan with the Administrator provided such claim is filed within 90 days of the date payments under the Plan are made or begin to be made, or the date the Executive or his designated Beneficiary believes payments should have been made, as applicable. A Benefit Claim and any appeal thereof may be filed by the claimant or his authorized representative.

(b) The Administrator shall provide the claimant with written or electronic notice of its approval or Denial of a properly filed Benefit Claim within 90 days after receiving the claim, unless special circumstances require an extension of the decision period. If special circumstances require an extension of the time for processing the claim, the initial 90-day period may be extended for up to an additional 90 days. If an extension is required, the Administrator shall provide written notice of the required extension before the end of the initial 90-day period, which notice shall (i) specify the circumstances requiring an extension and (ii) the date by which the Administrator expects to make a decision.

(c) If a Benefit Claim is Denied, the Administrator shall provide the claimant with written or electronic notice containing (i) the specific reasons for the Denial, (ii) references to the applicable Plan provisions on which the Denial is based, (iii) a description of any additional material or information needed and why such material or information is necessary, and (iv) a description of the applicable review process and time limits.

(d) A claimant may appeal the Denial of a Benefit Claim by filing a written appeal with the Administrator within 60 days after receiving notice of the Denial. The claimant's appeal shall be deemed filed on receipt by the Administrator. If a claimant does not file a timely appeal, the Administrator's decision shall be deemed final, conclusive, and binding on all persons.

(e) The Administrator shall provide the claimant with written or electronic notice of its decision on appeal within 60 days after receipt of the claimant's appeal request, unless special circumstances require an extension of this time period. If special circumstances require an extension of the time to process the appeal, the processing period may be extended for up to an additional 60 days. If an extension is required, the Administrator shall provide written notice of the required extension to the claimant before the end of the original 60-day period, which shall specify the circumstances requiring an extension and the date by which the Administrator expects to make a decision. If the Benefit Claim is Denied on appeal, the Administrator shall provide the claimant with written or electronic notice containing a statement that the claimant is entitled to receive, upon request and free of charge, reasonable access to and copies of all documents, records, and other

information relevant to the Benefit Claim, as well as the specific reasons for the Denial on appeal and references to the applicable Plan provisions on which the Denial is based. The Administrator's decision on appeal shall be final, conclusive, and binding on all persons, subject to the claimant's right to file a civil action pursuant to ERISA Section 502(a).

(f) Notwithstanding the foregoing claims and appeals procedures, to avoid an additional tax on payments that may be payable under the Plan, a claimant must make a reasonable, good faith effort to collect any payment or benefit to which the claimant believes he is entitled to hereunder no later than 90 days after the latest date upon which the payment could have been timely made pursuant to Code Section 409A, and if not paid or provided, must take further enforcement measures within 180 days after such latest date.

ARTICLE X APPLICATION OF LIMITS ON PAYMENTS

Section 10.01. Determination of Cap or Payment. Effective December 12, 2011, notwithstanding any other provision of the Plan to the contrary, if payment of the lump sum Present Actuarial Value of the Supplemental Life Annuity pursuant to Article VIII ("Accelerated Payment") would cause some or all of the Accelerated Payment or any other payments made to or benefits received by the Executive in connection with a Change of Control (such payments or benefits, together with the Accelerated Payment, the "Total Payments") to be subject to the tax ("Excise Tax") imposed by Code Section 4999 but for this Article X, then the Total Payments shall be delivered either (a) in full or (b) in an amount such that the value of the aggregate Total Payments that the Executive is entitled to receive shall be One Dollar (\$1.00) less than the maximum amount that the Executive may receive without being subject to the Excise Tax, whichever of (a) or (b) results in the receipt by the Executive of the greatest benefit on an after-tax basis (taking into account applicable federal, state and local income taxes and the Excise Tax).

Section 10.02. Procedures.

(a) If the Executive or the Company believes that a payment or benefit due the Executive will result in some or all of the Total Payments being subject to the Excise Tax, then the Company, at its expense, shall obtain the opinion (which need not be unqualified) of nationally recognized tax counsel ("National Tax Counsel") selected by the Company (which may be regular outside counsel to the Company), which opinion sets forth (i) the amount of the Base Period Income (as defined below), (ii) the amount and present value of the Total Payments, (iii) the amount and present value of any excess parachute payments determined without regard to any reduction of Total Payments pursuant to Section 10.01(b), and (iv) the net after-tax proceeds to the Executive, taking into account applicable federal, state and local income taxes and the Excise Tax if (x) the Total Payments were delivered in accordance with Section 10.01(a) or (y) the Total Payments were delivered in accordance with Section 10.01(b). The opinion of National Tax Counsel shall be addressed to the Company and the Executive and shall be binding upon the Company and the Executive. If such National Tax Counsel opinion determines that Section 10.01(b) applies, then the Accelerated Payment or any other payment or benefit determined by such counsel to be includable in the Total Payments shall be reduced or eliminated so that under the bases of calculations set forth in such opinion there will be no excess parachute payment. In such event, payments or benefits included in the Total Payments shall be reduced or eliminated by applying the following principles, in order: (A) the payment or

benefit with the higher ratio of the parachute payment value to present economic value (determined using reasonable actuarial assumptions) shall be reduced or eliminated before a payment or benefit with a lower ratio; (B) the payment or benefit with the later possible payment date shall be reduced or eliminated before a payment or benefit with an earlier payment date; and (C) cash payments shall be reduced prior to non-cash benefits; provided that if the foregoing order of reduction or elimination would violate Code Section 409A, then the reduction shall be made pro rata among the payments or benefits included in the Total Payments (on the basis of the relative present value of the parachute payments).

(b) For purposes of this Article X: (i) the terms “excess parachute payment” and “parachute payments” shall have the meanings given in Code Section 280G and such “parachute payments” shall be valued as provided therein; (ii) present value shall be calculated in accordance with Code Section 280G(d)(4); (iii) the term “Base Period Income” means an amount equal to the Executive’s “annualized includible compensation for the base period” as defined in Code Section 280G(d)(1); (iv) for purposes of the opinion of National Tax Counsel, the value of any noncash benefits or any deferred payment or benefit shall be determined by the Company’s independent auditors in accordance with the principles of Code Sections 280G(d)(3) and (4); and (v) the Executive shall be deemed to pay federal income tax and employment taxes at the highest marginal rate of federal income and employment taxation, and state and local income taxes at the highest marginal rate of taxation in the state or locality of the Executive’s domicile, net of the maximum reduction in federal income taxes that may be obtained from the deduction of such state and local taxes.

(c) If National Tax Counsel so requests in connection with the opinion required by this Section 10.02, the Company shall obtain, at the Company’s expense, and the National Tax Counsel may rely on, the advice of a firm of recognized executive compensation consultants as to the reasonableness of any item of compensation to be received by the Executive solely with respect to its status under Code Section 280G.

(d) The Company agrees to bear all costs associated with, and to indemnify and hold harmless the National Tax Counsel from, any and all claims, damages and expenses resulting from or relating to its determinations pursuant to this Article X, except for claims, damages or expenses resulting from the gross negligence or willful misconduct of such firm.

(e) This Article X shall be amended to comply with any amendment or successor provision to Code Section 280G or Code Section 4999. If such provisions are repealed without successor, then this Article X shall be cancelled without further effect.

ARTICLE XI PRESERVATION OF ACCRUED BENEFITS

Nothing in this restatement shall reduce the Supplemental Life Annuity payable with respect to an Executive, to the extent accrued as of December 31, 2005, under the terms of the Plan, as in effect immediately before the January 1, 2009 restatement.

**ARTICLE XII
AMENDMENT AND TERMINATION**

The Plan shall continue in force with respect to any Executive until the completion of any payments due hereunder. The Company may, however, at any time, amend the Plan to provide that no additional benefits shall accrue with respect to any Executive under the Plan; provided, however, that no such amendment shall (i) deprive any Executive or Beneficiary of any benefit that accrued under the Plan before the adoption of such amendment; (ii) result in an acceleration of benefit payments in violation of Code Section 409A and the guidance thereunder, or (iii) result in any other violation of Section 409A or the guidance thereunder. The Company may also, at any time, amend the Plan retroactively or otherwise, if and to the extent that it deems such action appropriate in light of government regulations or other legal requirements.

**ARTICLE XIII
MISCELLANEOUS**

Section 13.01. Obligations of Employer. The Employer's only obligation hereunder shall be an unfunded and unsecured contractual obligation to make payments to Executives, Spouses, or other Beneficiaries entitled to benefits provided for herein when due, and only to the extent that such payments are not made from the Trust. Nothing herein shall give an Executive, Spouse, Beneficiary, or other person any right to a specific asset of an Employer or the Trust, other than as a general creditor of the Employer.

Section 13.02. Employment Rights. Nothing contain herein shall confer any right on an Executive to be continued in the employ of any Employer or affect the Executive's right to participate in and receive benefits under and in accordance with any pension, profit-sharing, incentive compensation, or other benefit plan or program of an Employer.

Section 13.03. Non-Alienation. Except as otherwise required by a Domestic Relations Order, no right or interest of an Executive, Spouse, or other Beneficiary under this Plan shall be subject to voluntary or involuntary alienation, assignment, or transfer of any kind. Payments shall be made to an Alternate Payee to the extent provided in a Domestic Relations Order. To the extent permitted by Code Section 409A, payments pursuant to a Domestic Relations Order may be made in a lump sum and before the Executive's earliest retirement age (as defined by ERISA Section 206(d)(3)(E)(ii)).

Section 13.04. Tax Withholding. The Employer or Trustee may withhold from any distribution hereunder amounts that the Employer or Trustee deems necessary to satisfy federal, state, or local tax withholding requirements (or make other arrangements satisfactory to the Employer or Trustee with regard to such taxes). None of the Company, any of its Affiliated Employers or the Trustee represents or guarantees to any Executive or any other person with an interest in a benefit under the Plan that any particular federal, foreign, state or local income, payroll, or other tax consequence will result from participation in the Plan or payment of benefits under the Plan. In addition, none of the Company, any of its Affiliated Employers or the Trustee shall be liable to any Executive or any other person with an interest in a benefit under the Plan for any taxes or other amounts owed by such Executive or other person as a result of a failure by the Company, its Affiliated Employers or the Trustee to correctly or optimally withhold or report taxes or taxable income with

respect to a benefit under the Plan at a specified time or in a specified amount, or for a failure to take corrective action with respect to such a failure.

Section 13.05. Other Plans. Amounts and benefits paid under the Plan shall not be considered compensation to the Executive for purposes of computing any benefits to which he may be entitled under any other pension or retirement plan maintained by an Employer.

Section 13.06. Liability of Affiliated Employers. If any payment to be made under the Plan is to be made on account of an Executive who is or was employed by an Affiliated Employer, the cost of such payment shall be borne in such proportion as the Company and the Affiliated Employer agree.

This Restatement of the Cummins Inc. Supplemental Life Insurance and Deferred Income Plan has been signed by the Company's duly authorized officer, acting behalf of the Company, this 13th day of December, 2018.

CUMMINS INC.

By: /s/ Jill E. Cook
Title Vice President and Chief Human Resources
Officer

APPENDIX A

Guidelines for Enhanced SERP For Executives Joining Cummins Mid-Career

General Criteria

The Company's Chief Executive Officer ("CEO") may designate an enhanced SERP benefit for an Executive (Officer or Executive Director) joining Cummins mid-career, provided that the Compensation Committee of the Board must approve such designation in the case of an Executive who is an executive officer of Cummins Inc. In determining whether an enhanced benefit is appropriate and, if so, the amount of such benefit, the CEO shall consider:

- any existing pension benefits of the Executive from previous employers;
- the recruiting and retention value of the enhanced benefit;
- the amount of time that the Executive is expected to work before retiring from Cummins (as a rule, at least age 55; as a target, at least age 58); and
- the amount of Service that the Executive will have upon likely retirement.

An enhanced benefit may also be used to assist the transition of other Officers, if the CEO determines that such a benefit is in the best interests of Cummins.

The enhanced retirement benefit formula is to be applied at the discretion of the CEO, who has the obligation to inform the Administrator of such benefits.

The CEO will define the benefit or formula applicable to each case in the future. Currently the CEO has authorized the following:

- Grow benefit by double-accrual approach: 4% per year for each of the first 10 years of Service; 2% per year for next five years of Service, maximum 50% at 15 years of Service.
- Replace "rule of 80" with "rule of 70", which means eligible for unreduced benefits upon achieving at least age 58, at least 10 years of Service, but the total of the two must be at least 70. (This does not mean a full 50% benefit, but merely unreduced accrued benefit.)
- Fully vested after five years of Service. (Normally vesting begins at five years and is not 100% until ten years of Service are completed).
- The benefit starting at age 60 will not be less than 50% of Average Covered Compensation
- Upon a Change of Control, the designated Executives:
 - become fully Vested, regardless of Service (no change from current Plan);

- will have a Final Average Total Cash Compensation equal the average for that received during their actual years of Service, if less than five years of Service;
- will be deemed to have met the requirements for unreduced commencement of benefits (no change from current Plan); and
- will receive a lump sum payment of the Present Actuarial Value of the benefit accrued to the date of the Change of Control, using the formula designated for the respective Executive (in the case of the existing group, the “double-accrual” formula).

The foregoing provisions apply to Executives designated by the CEO (and approved by the Administrator, in the case of any such Executives who are executive officers of Cummins Inc.).

The list of Executives designated by the CEO to receive an enhanced SERP benefit shall be maintained by the Company’s Vice President, Chief Human Resources Officer or her or his delegate and updated as necessary to reflect changes in the participants designated by the CEO or the Compensation Committee of the Board to receive the enhanced SERP benefit.

APPENDIX B

Non-U.S. Benefit Offsets

1. The Supplemental Life Annuity shall be offset as provided in Section 6.02(e), to the extent applicable, by the annualized equivalent of benefits to which the Executive is entitled under any other employer-funded non-U.S. retirement program similar to the US Cummins Pension Plan
2. The annualized equivalent shall be determined as follows: To the extent the benefit is provided in periodic payments or in a lump sum under the terms of the applicable non-U.S. retirement program, the annualized equivalent will be determined by calculating the present value, as of the first day of the month (a) coincident with or next following the Executive's Annuity Starting Date (for periodic payments) or (b) coincident with or next following the Executive's Termination of Employment (for lump sum payments), of a lump sum equivalent of the total of the projected periodic payments or the lump sum payment itself, as applicable, calculated by applying the applicable actuarial assumptions and discount rate set forth in Appendix 1 to the Cummins Pension Plan, and converting such lump sum to an annual benefit of equivalent present value assuming such annual benefit (i) commences on the first day of the month coincident with or next following the Executive's Annuity Starting Date (for periodic payments) or coincident with or next following Termination of Employment (for lump sum payments) and (ii) is payable in monthly installments in the form of a single life annuity to the Executive.
3. Notwithstanding anything to the contrary in the foregoing or the Plan, (a) the foregoing offset shall not apply to the extent such offset would cause additional taxes to be due under Code Section 409A and (b) in calculating the Supplemental Life Annuity, the Administrator may make a reasonable estimate of the Executive's benefits under non-U.S. arrangements and pay benefits under the Plan on that basis.

Acknowledgement and Agreement:

By signing below, I hereby acknowledge and agree to the application of the offset described in this Appendix B in calculating the benefits payable to me or my survivors or Beneficiaries under the Plan.

_____ Date: _____
[Executive Name]

CUMMINS INC.
SUBSIDIARIES OF THE REGISTRANT

EXHIBIT 21

Entity Name	Country or State of Organization
Anvl, Inc.	Delaware
Cherry Island Renewable Energy, LLC	Delaware
CIFC Worldwide Partner C.V.	The Netherlands
CMI Africa Holdings BV	The Netherlands
CMI Canada Financing Ltd.	United Kingdom
CMI Canada LP	Canada
CMI CGT Holdings LLC	Indiana
CMI Foreign Holdings B.V.	The Netherlands
CMI Global Equity Holdings B.V.	The Netherlands
CMI Global Equity Holdings C.V.	The Netherlands
CMI Global Holdings B.V.	The Netherlands
CMI Global Partner 2 C.V.	The Netherlands
CMI Global Partners B.V.	The Netherlands
CMI Group Holdings Cooperatief U.A.	The Netherlands
CMI International Finance Partner 1 LLC	Indiana
CMI International Finance Partner 2 LLC	Indiana
CMI International Finance Partner 3 LLC	Indiana
CMI International Finance Partner 4 LLC	Indiana
CMI International Finance Partner 5 LLC	Indiana
CMI Mexico LLC	Indiana
CMI PGI Holdings LLC	Indiana
CMI PGI International Holdings LLC	Indiana
CMI Turkish Holdings B.V.	The Netherlands
CMI UK Finance LP	United Kingdom
CMI UK Financing LP	United Kingdom
Consolidated Diesel Company	North Carolina
Consolidated Diesel of North Carolina Inc.	North Carolina
Consolidated Diesel, Inc.	Delaware
Cummins (China) Investment Co. Ltd.	China
Cummins Africa Middle East (Pty) Ltd.	South Africa
Cummins Afrique de l'Ouest	Senegal
Cummins Americas, Inc.	Indiana
Cummins Angola Lda.	Angola
Cummins Argentina-Servicios Mineros S.A.	Argentina
Cummins Asia Pacific Pte. Ltd.	Singapore
Cummins Aust Technologies Pty. Ltd.	Australia
Cummins Battery Systems North America LLC	Indiana
Cummins Belgium N.V.	Belgium
Cummins BLR LLC	Belarus
Cummins Botswana (Pty.) Ltd.	Botswana
Cummins Brasil Ltda.	Brazil
Cummins Burkina Faso SARL	Burkina Faso
Cummins Canada ULC	Canada

CUMMINS INC.
SUBSIDIARIES OF THE REGISTRANT

Cummins Caribbean LLC	Puerto Rico
Cummins CDC Holding Inc.	Indiana
Cummins Center of Excellence Singapore Pte. Ltd.	Singapore
Cummins Centroamerica Holding S.de R.L.	Panama
Cummins Child Development Center, Inc.	Indiana
Cummins Colombia S.A.S.	Colombia
Cummins Comercializadora S. de R.L. de C.V.	Mexico
Cummins Corporation	Indiana
Cummins Cote d'Ivoire SARL	Cote d'Ivoire
Cummins CV Member LLC	Indiana
Cummins Czech Republic s.r.o.	Czech Republic
Cummins Deutschland GmbH	Germany
Cummins Diesel International Ltd.	Barbados
Cummins Distribution Holdco Inc.	Indiana
Cummins East Asia Research & Development Co. Ltd.	China
Cummins Eastern Marine, Inc.	Canada
Cummins Electrified Power Europe Ltd.	Scotland
Cummins Electrified Power NA Inc.	Delaware
Cummins EMEA Holdings Limited	United Kingdom
Cummins Emission Solutions (China) Co., Ltd.	China
Cummins Emission Solutions Inc.	Indiana
Cummins Empresas Filantropicas	Mexico
Cummins Energetica Ltda.	Brazil
Cummins Engine (Beijing) Co. Ltd.	China
Cummins Engine (Shanghai) Co. Ltd.	China
Cummins Engine (Shanghai) Trading & Services Co. Ltd.	China
Cummins Engine Holding Company, Inc.	Indiana
Cummins Engine IP, Inc.	Delaware
Cummins Engine Venture Corporation	Indiana
Cummins Filtration (Shanghai) Co. Ltd.	China
Cummins Filtration GmbH	Germany
Cummins Filtration Inc.	Indiana
Cummins Filtration International Corp.	Indiana
Cummins Filtration International Corp. External Profit Company	South Africa
Cummins Filtration IP, Inc.	Delaware
Cummins Filtration Ltd.	Korea
Cummins Filtration SARL	France
Cummins Filtration Trading (Shanghai) Co., Ltd.	China
Cummins Filtros Ltda.	Brazil
Cummins Franchise Holdco LLC	Indiana
Cummins Fuel Systems (Wuhan) Co. Ltd.	China
Cummins Generator Technologies Americas Inc.	Pennsylvania
Cummins Generator Technologies (China) Co., Ltd.	China
Cummins Generator Technologies Germany GmbH	Germany
Cummins Generator Technologies India Private Ltd.	India

CUMMINS INC.
SUBSIDIARIES OF THE REGISTRANT

Cummins Generator Technologies Italy SRL	Italy
Cummins Generator Technologies Limited	United Kingdom
Cummins Generator Technologies Romania S.A.	Romania
Cummins Generator Technologies Singapore Pte Ltd.	Singapore
Cummins Ghana Limited	Ghana
Cummins Ghana Mining Limited	Ghana
Cummins Global Financing LP	United Kingdom
Cummins Global Technologies LLP	United Kingdom
Cummins Grupo Comercial Y. de Servicios, S. de R.L. de C.V.	Mexico
Cummins Grupo Industrial S. de R.L. de C.V.	Mexico
Cummins Holland B.V.	The Netherlands
Cummins Hong Kong Ltd.	Hong Kong
Cummins India Ltd.	India
Cummins Intellectual Property, Inc.	Delaware
Cummins International Finance LLC	Indiana
Cummins International Holdings Cooperatief U.A.	The Netherlands
Cummins International Holdings LLC	Indiana
Cummins Italia S.P.A.	Italy
Cummins Japan Ltd.	Japan
Cummins Korea Co. Ltd.	Korea
Cummins LLC Member, Inc.	Delaware
Cummins Ltd.	United Kingdom
Cummins Maroc SARL	Morocco
Cummins Middle East FZE	Dubai
Cummins Mining Services S. de R.L. de C.V.	Mexico
Cummins Mobility Services Inc.	Indiana
Cummins Mongolia Investment LLC	Mongolia
Cummins Mozambique Ltda.	Mozambique
Cummins Namibia Engine Sales and Service PTY LTD	Namibia
Cummins Natural Gas Engines, Inc.	Delaware
Cummins New Zealand Limited	New Zealand
Cummins Nigeria Ltd.	Nigeria
Cummins Norte de Colombia S.A.S.	Colombia
Cummins North Africa Regional Office SARL	Morocco
Cummins Norway AS	Norway
Cummins NV	Belgium
Cummins PGI Holdings Ltd.	United Kingdom
Cummins Power Generation (China) Co., Ltd.	China
Cummins Power Generation (S) Pte. Ltd.	Singapore
Cummins Power Generation (U.K.) Limited	United Kingdom
Cummins Power Generation Deutschland GmbH	Germany
Cummins Power Generation Inc.	Delaware
Cummins Power Generation Limited	United Kingdom
Cummins PowerGen IP, Inc.	Delaware
Cummins Research and Technology India Private Ltd.	India

CUMMINS INC.
SUBSIDIARIES OF THE REGISTRANT

Cummins Romania Srl	Romania
Cummins S. de R.L. de C.V.	Mexico
Cummins Sales and Service Korea Co., Ltd.	Korea
Cummins Sales and Service Philippines Inc.	Philippines
Cummins Sales and Service Private Limited	India
Cummins Sales and Service Singapore Pte. Ltd.	Singapore
Cummins Sales and Service Sdn. Bhd.	Malaysia
Cummins Sinai ve Otomotiv Urunleri Sanayi ve Ticaret Limited Sirketi	Turkey
Cummins South Africa (Pty.) Ltd.	South Africa
Cummins Southern Plains LLC	Texas
Cummins South Pacific Pty. Limited	Australia
Cummins Spain, S.L.	Spain
Cummins Sweden AB	Sweden
Cummins Technologies India Private Limited	India
Cummins Trade Receivables, LLC	Delaware
Cummins Turbo Technologies Limited	United Kingdom
Cummins Turkey Motor Güç Sistemleri Satış Servis Limited Şirketi	Turkey
Cummins UK Global Holdings Ltd.	United Kingdom
Cummins U.K. Holdings Ltd.	United Kingdom
Cummins U.K. Pension Plan Trustee Ltd.	United Kingdom
Cummins UK Holdings LLC	Indiana
Cummins Vendas e Servicos de Motores e Geradores Ltda.	Brazil
Cummins Venture Corporation	Delaware
Cummins West Africa Limited	Nigeria
Cummins West Balkans d.o.o. Nova Pasova	Serbia
Cummins XBorder Operations (Pty) Ltd	South Africa
Cummins (Xiangyang) Machining Co. Ltd.	China
Cummins Zambia Ltd.	Zambia
Cummins Zimbabwe Pvt. Ltd.	Zimbabwe
Distribuidora Cummins Centroamerica Costa Rica, S.de R.L.	Costa Rica
Distribuidora Cummins Centroamerica El Salvador, S.de R.L.	El Salvador
Distribuidora Cummins Centroamerica Guatemala, Ltda.	Guatemala
Distribuidora Cummins Centroamerica Honduras, S.de R.L.	Honduras
Distribuidora Cummins de Panama, S. de R.L.	Panama
Distribuidora Cummins S.A.	Argentina
Distribuidora Cummins S.A. Sucursal Bolivia	Bolivia
Distribuidora Cummins Sucursal Paraguay SRL	Paraguay
Dynamo Insurance Company, Inc.	Vermont
	China
Efficient Drivetrains (Beijing) New Power Technology Co. Ltd.	
Efficient Drivetrains (Shanghai) Co. Ltd.	China
Markon Engineering Company Ltd.	United Kingdom
Nelson Burgess Ltd.	United Kingdom
Newage Engineers GmbH	Germany
Newage Ltd. (U.K.)	United Kingdom
Newage Machine Tools Ltd.	United Kingdom

CUMMINS INC.
SUBSIDIARIES OF THE REGISTRANT

OOO Cummins	Russia
Petbow Limited	United Kingdom
Power Group International (Overseas Holdings) B.V.	Holland
Power Group International (Overseas Holdings) Ltd.	United Kingdom
Power Group International Ltd.	United Kingdom
Quickstart Energy Projects SpA	Chile
Shanghai Cummins Trade Co., Ltd.	China
Taiwan Cummins Sales & Services Co. Ltd.	Taiwan, Province of China
TOO Cummins	Kazakhstan
Worldwide Partner CV Member LLC	Indiana
Wuxi Cummins Turbo Technologies Co. Ltd.	China
Wuxi New Energy Automotive Technologies Co. Ltd.	China
ZED Connect Inc.	Delaware

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (No. 333-209544) and Form S-8 (Nos. 033-56115, 333-67391, 333-123368, 333-162796 (as amended by Post-Effective Amendment No.1), 333-172650, 333-181927 (as amended by Post-Effective Amendment No. 1), 333-184786, 333-218381 and 333-218387) of Cummins Inc. of our report dated February 11, 2019 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Indianapolis, Indiana

February 11, 2019

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

I hereby legally appoint each of Patrick J. Ward and Christopher C. Clulow as my attorneys-in-fact and agents, with full power of substitution and re-substitution, to sign on my behalf the Annual Report on Form 10-K, and any and all amendments thereto, of Cummins Inc. (the "Company") for the Company's year ended December 31, 2018 and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and to do anything else that said attorneys-in-fact and agents or any of them, or his or her substitute or substitutes, may lawfully do or cause to be done consistent herewith.

Dated: February 11, 2019

/s/ ROBERT J. BERNHARD

Robert J. Bernhard

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

I hereby legally appoint each of Patrick J. Ward and Christopher C. Clulow as my attorneys-in-fact and agents, with full power of substitution and re-substitution, to sign on my behalf the Annual Report on Form 10-K, and any and all amendments thereto, of Cummins Inc. (the "Company") for the Company's year ended December 31, 2018 and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and to do anything else that said attorneys-in-fact and agents or any of them, or his or her substitute or substitutes, may lawfully do or cause to be done consistent herewith.

Dated: February 11, 2019

/s/ FRANKLIN R. CHANG DIAZ

Franklin R. Chang Diaz

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

I hereby legally appoint each of Patrick J. Ward and Christopher C. Clulow as my attorneys-in-fact and agents, with full power of substitution and re-substitution, to sign on my behalf the Annual Report on Form 10-K, and any and all amendments thereto, of Cummins Inc. (the "Company") for the Company's year ended December 31, 2018 and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and to do anything else that said attorneys-in-fact and agents or any of them, or his or her substitute or substitutes, may lawfully do or cause to be done consistent herewith.

Dated: February 11, 2019

/s/ BRUNO V. DI LEO ALLEN

Bruno V. Di Leo Allen

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

I hereby legally appoint each of Patrick J. Ward and Christopher C. Clulow as my attorneys-in-fact and agents, with full power of substitution and re-substitution, to sign on my behalf the Annual Report on Form 10-K, and any and all amendments thereto, of Cummins Inc. (the "Company") for the Company's year ended December 31, 2018 and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and to do anything else that said attorneys-in-fact and agents or any of them, or his or her substitute or substitutes, may lawfully do or cause to be done consistent herewith.

Dated: February 11, 2019

/s/ STEPHEN B. DOBBS

Stephen B. Dobbs

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

I hereby legally appoint each of Patrick J. Ward and Christopher C. Clulow as my attorneys-in-fact and agents, with full power of substitution and re-substitution, to sign on my behalf the Annual Report on Form 10-K, and any and all amendments thereto, of Cummins Inc. (the "Company") for the Company's year ended December 31, 2018 and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and to do anything else that said attorneys-in-fact and agents or any of them, or his or her substitute or substitutes, may lawfully do or cause to be done consistent herewith.

Dated: February 11, 2019

/s/ RICHARD J. FREELAND

Richard J. Freeland

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

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Dated: February 11, 2019

/s/ ROBERT K. HERDMAN

Robert K. Herdman

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

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Dated: February 11, 2019

/s/ ALEXIS M. HERMAN

Alexis M. Herman

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

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Dated: February 11, 2019

/s/ THOMAS J. LYNCH

Thomas J. Lynch

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

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Dated: February 11, 2019

/s/ WILLIAM I. MILLER

William I. Miller

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

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Dated: February 11, 2019

/s/ GEORGIA R. NELSON

Georgia R. Nelson

Director

CUMMINS INC.

2018 Form 10-K

POWER OF ATTORNEY

I hereby legally appoint each of Patrick J. Ward and Christopher C. Clulow as my attorneys-in-fact and agents, with full power of substitution and re-substitution, to sign on my behalf the Annual Report on Form 10-K, and any and all amendments thereto, of Cummins Inc. (the "Company") for the Company's year ended December 31, 2018 and to file the same, with all exhibits thereto, and other documents in connection therewith, with the Securities and Exchange Commission, and to do anything else that said attorneys-in-fact and agents or any of them, or his or her substitute or substitutes, may lawfully do or cause to be done consistent herewith.

Dated: February 11, 2019

/s/ KAREN H. QUINTOS

Karen H. Quintos

Director

Certification

I, N. Thomas Linebarger, certify that:

1. I have reviewed this report on Form 10-K of Cummins Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 11, 2019

/s/ N. THOMAS LINEBARGER

N. Thomas Linebarger

Chairman and Chief Executive Officer

Certification

I, Patrick J. Ward, certify that:

1. I have reviewed this report on Form 10-K of Cummins Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 11, 2019

/s/ PATRICK J. WARD

Patrick J. Ward

Vice President and Chief Financial Officer

Cummins Inc.
CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Cummins Inc. (the "Company") on Form 10-K for the period ended December 31, 2018, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), each of the undersigned officers of the Company, certify, pursuant to 18 U.S.C. ss. 1350, as adopted pursuant to ss. 906 of the Sarbanes-Oxley Act of 2002, that to the best of such officer's knowledge:

- (1) The Report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934;
and
- (2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

February 11, 2019

/s/ N. THOMAS LINEBARGER

N. Thomas Linebarger
Chairman and Chief Executive Officer

February 11, 2019

/s/ PATRICK J. WARD

Patrick J. Ward
Vice President and Chief Financial Officer