

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K**

(Mark One)

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

For the fiscal year ended December 31, 2020

OR

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

Commission file number 1-12387

TENNECO INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of
incorporation or organization)

**500 North Field Drive
Lake Forest, IL**

(Address of principal executive offices)

76-0515284

(I.R.S. Employer
Identification No.)

60045

(Zip Code)

Registrant's telephone number, including area code: (847) 482-5000

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

Title of each class	Trading Symbol	Name of each Exchange on which registered
Class A Voting Common Stock, par value \$.01 per share	TEN	New York Stock Exchange
Preferred Stock Purchase Rights		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

Note — Checking the box above will not relieve any registrant required to file reports pursuant to Section 13 or 15(d) of the Exchange Act from their obligations under those Sections.

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 during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

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

Large accelerated filer	<input type="checkbox"/>	Accelerated filer	<input checked="" type="checkbox"/>
Non-accelerated filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

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

The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant as of June 30, 2020, computed by reference to the price at which the registrant's common stock was last sold on the New York Stock Exchange on June 30, 2020, was approximately \$0.4 billion.

The number of shares of Class A Voting Common Stock, par value \$0.01 per share: 66,435,872 shares outstanding as of February 22, 2021. The number of shares of Class B Non-Voting Common Stock, par value \$0.01 per share: 15,253,363 shares outstanding as of February 22, 2021.

Documents Incorporated by Reference:

Portions of Tenneco Inc.'s Definitive Proxy Statement related to the 2021 Annual Meeting of Stockholders to be filed subsequently are incorporated by reference into Part III of this Form 10-K.

CAUTIONARY STATEMENT FOR PURPOSES OF THE “SAFE HARBOR” PROVISIONS OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 concerning, among other things, our prospects and business strategies. These forward-looking statements are included in various sections of this report. The words “may,” “will,” “believe,” “should,” “could,” “plan,” “expect,” “anticipate,” “estimate,” and similar expressions (and variations thereof), identify these forward-looking statements. Although we believe the expectations reflected in these forward-looking statements are based on reasonable assumptions, these expectations may not prove to be correct. Because these forward-looking statements are also subject to risks and uncertainties, actual results may differ materially from the expectations expressed in the forward-looking statements. Important factors that could cause actual results to differ materially from the expectations reflected in the forward-looking statements include:

- general economic, business, market and social conditions, including the effects of the COVID-19 pandemic;
- disasters, local and global public health emergencies or other catastrophic events, such as fires, earthquakes and flooding, pandemics or epidemics (including the COVID-19 pandemic), where we or other customers do business and any resultant disruptions in the supply or production of goods or services to us or by us in demand by our customers or in the operation of our system, disaster recovery capabilities or business continuity capabilities;
- our ability (or inability) to successfully execute cost reduction, performance improvement and other plans, including our plans in response to the COVID-19 pandemic and our previously announced accelerated performance improvement plan (“Accelerate”), and to realize the anticipated benefits from these plans;
- changes in capital availability or costs, including increases in our cost of borrowing (i.e., interest rate increases), the amount of our debt, our ability to access capital markets at favorable rates, and the credit ratings of our debt and our financial flexibility to respond to the COVID-19 pandemic;
- our ability to maintain compliance with the agreements governing our indebtedness and otherwise have sufficient liquidity through the COVID-19 pandemic;
- our ability to comply with the covenants contained in our debt instruments;
- our working capital requirements;
- our ability to source and procure needed materials, components and other products, and services in accordance with customer demand and at competitive prices;
- the cost and outcome of existing and any future claims, legal proceedings or investigations, including, but not limited to, any of the foregoing arising in connection with product performance, product safety or intellectual property rights;
- changes in consumer demand for our original equipment (“OE”) products or aftermarket products, prices and our ability to have our products included on top selling vehicles, including any shifts in consumer preferences away from historically higher margin products for our customers and us, to other lower margin vehicles, for which we may or may not have supply arrangements;
- the continued evolution of the automotive industry towards car and ride sharing, and autonomous vehicles;
- in an effort to reduce greenhouse gas emissions, governments and vehicle manufactures have announced plans to limit production of diesel and gasoline powered vehicles in various national and local jurisdictions globally;
- the cyclical nature of the global vehicle industry, including the performance of the global aftermarket sector and the impact of vehicle parts' longer product lives;
- changes in automotive and commercial vehicle manufacturers' production rates and their actual and forecasted requirements for our products, due to difficult economic conditions and/or regulatory or legal changes affecting internal combustion engines and/or aftermarket products;
- our dependence on certain large customers, including the loss of any of our large OE manufacturer customers (on whom we depend for substantial portion of our revenues), or the loss of market shares by these customers if we are unable to achieve increased sales to other OE-customers or any change in customer demand due to delays in the adoption or enforcement of worldwide emissions regulations;
- new technologies that reduce the demand for certain of our products or otherwise render them obsolete;
- our ability to introduce new products and technologies that satisfy customers' needs in a timely fashion;
- the overall highly competitive nature of the automotive and commercial vehicle parts industries, and any resultant inability to realize the sales represented by our awarded book of business (which is based on anticipated pricing and volumes over the life of the applicable program);

- risks inherent in operating a multi-national company, including economic conditions, such as currency exchange and inflation rates, political conditions in the countries where we operate or sell our products, adverse changes in trade agreements, tariffs, immigration policies, political stability or instability, tax and other laws, and potential disruptions of production and supply;
- increasing competition from lower cost, private-label products;
- damage to the reputation of one or more of our leading brands;
- the impact of improvements in automotive parts on aftermarket demand for some of our products;
- industry-wide strikes, labor disruptions at our facilities or any labor or other economic disruptions at any of our significant customers or suppliers or any of our customers' other suppliers;
- developments relating to our intellectual property, including our ability to adapt to changes in technology and the availability and effectiveness of legal protection for our innovations and brands;
- costs related to product warranties and other customer satisfaction actions;
- the failure, breach of, or potential disruption to, our information technology systems, including cyber attacks, such as ransomware or similar intrusions, cyber incidents, or misappropriation, exposure or corruption of sensitive information stored on such systems and the interruption to our business that such failure, breach or disruption may cause;
- the impact of consolidation among vehicle parts suppliers and customers on our ability to compete in the highly competitive automotive and commercial vehicle supplier industry;
- changes in distribution channels or competitive conditions in the markets and countries where we operate;
- customer acceptance of new products;
- our ability to successfully integrate, and benefit from, any acquisitions we complete;
- our ability to effectively manage our joint ventures and other third-party relationships;
- the potential impairment in the carrying value of our long-lived assets, goodwill, and other intangible assets or the inability to fully realize our deferred tax assets;
- the negative impact of fuel price volatility on transportation and logistics costs, raw material costs, discretionary purchases of vehicles or aftermarket products and demand for off-highway equipment;
- increases in the costs of raw materials or components, including our ability to successfully reduce the impact of any such cost increases through materials substitutions, cost reduction initiatives, customer recovery, and other methods;
- changes by the Financial Accounting Standards Board ("FASB") or the Securities and Exchange Commission ("SEC") of generally accepted accounting principles or other authoritative guidance;
- changes in accounting estimates and assumptions, including changes based on additional information;
- any changes by the International Organization for Standardization ("ISO") or other such committees in their certification protocols for processes and products, which may have the effect of delaying or hindering our ability to bring new products to market;
- the impact of the extensive, increasing, and changing laws and regulations to which we are subject, including environmental laws and regulations, which may result in our incurrence of environmental liabilities in excess of the amount reserved or increased costs or loss of revenues relating to products subject to changing regulation;
- potential volatility in our effective tax rate;
- acts of war and/or terrorism, as well as actions taken or to be taken by the United States and other governments as a result of further acts or threats of terrorism, and the impact of these acts on economic, financial and social conditions in the countries where we operate;
- pension obligations and other postretirement benefits;
- our hedging activities to address commodity price fluctuations; and
- the timing and occurrence (or non-occurrence) of other transactions, events and circumstances which may be beyond our control.

In addition, this report includes forward-looking statements regarding the Company's ongoing review of strategic alternatives, including the potential separation of the Company into a powertrain technology company and an aftermarket and ride performance company. Important factors that could cause actual results to differ materially from the expectations reflected in the forward-looking statements include (in addition to the risks set forth above):

- the ability to identify and consummate strategic alternatives that yield additional value for shareholders;
- the timing, benefits and outcome of the Company's strategic review process;

- the structure, terms and specific risk and uncertainties associated with any potential strategic alternative;
- potential disruptions in our business and stock price as a result of our exploration, review and pursuit of any strategic alternatives;
- the possibility that the Company may not complete a separation of the aftermarket and ride performance business from the powertrain technology business (or achieve some or all of the anticipated benefits of such a separation on the timeline contemplated or at all);
- the ability to retain and hire key personnel and our ability to maintain relationships with customers, suppliers or other business partners;
- the potential diversion of management's attention resulting from a separation or other strategic alternative;
- the risk the combined company and each separate company following the separation will underperform relative to our expectations;
- the ongoing transaction costs and risk we may incur greater costs following separation of the business or other strategic alternative; and
- the risk a separation is determined to be a taxable transaction.

The risks included here are not exhaustive. Refer to “Part I, Item 1A — Risk Factors” of this report for further discussion regarding our exposure to risks. Additionally, new risk factors emerge from time to time and it is not possible for us to predict all such risk factors, nor to assess the impact such risk factors might have on our business or the extent to which any factor or combination of factors may cause actual results to differ materially from those contained in any forward-looking statements. Given these risks and uncertainties, investors should not place undue reliance on forward-looking statements as a prediction of actual results. Unless otherwise indicated in this report, the forward-looking statements in this report are made as of the date of this report, and, except as required by law, the Company does not undertake any obligation, and disclaims any obligation, to publicly disclose revisions or updates to any forward-looking statements.

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PART I

ITEM 1. BUSINESS.

General

Our company, Tenneco Inc., designs, manufactures, markets, and distributes products and services for light vehicle, commercial truck, off-highway, industrial, motorsport, and aftermarket customers. We manufacture innovative clean air, powertrain and ride performance products and systems, and serve both original equipment (“OE”) manufacturers and the repair and replacement markets worldwide. As used herein, the term “Tenneco,” “we,” “us,” “our,” or the “Company” refers to Tenneco Inc. and its consolidated subsidiaries.

We were incorporated in Delaware in 1996. In 2005, we changed our name from Tenneco Automotive Inc. to Tenneco Inc. The name Tenneco better represents the expanding number of markets we serve. Our Class A Voting Common Stock is traded on the New York Stock Exchange (“NYSE”) under the symbol “TEN.”

On October 1, 2018, we completed the acquisition of Federal-Mogul LLC (“Federal-Mogul”) (the “Federal-Mogul Acquisition”). Following the closing of the Federal-Mogul Acquisition, we agreed to use our reasonable best efforts to pursue the separation of the combined company into an Aftermarket and Ride Performance company and a Powertrain Technology company. As such, we previously announced that we are reviewing a full range of strategic options to enhance shareholder value creation. In light of current market conditions and other factors, our current efforts to optimize shareholder value creation are also focused on operational improvements, reducing structural costs, lowering capital intensity, reducing debt, and growth in targeted business lines.

Tenneco consists of four operating segments: Clean Air, Powertrain, Ride Performance, and Motorparts:

- The Clean Air segment designs, manufactures, and distributes a variety of products and systems designed to reduce pollution and optimize engine performance, acoustic tuning, and weight on a vehicle for light vehicle, commercial truck, and off-highway OE customers;
- The Powertrain segment designs, manufactures, and distributes a variety of original equipment powertrain products for light vehicle, commercial truck, off-highway, and industrial applications to OE customers for use in new vehicle production and original equipment service (“OES”) parts to support their service and distribution channels;
- The Ride Performance segment designs, manufactures, markets, and distributes a variety of ride performance solutions and systems to a global OE and aftermarket customer base, including noise, vibration, and harshness (“NVH”) performance materials, advanced suspension technologies (“AST”), ride control, and braking; and
- The Motorparts segment designs, manufactures, sources, markets, and distributes a broad portfolio of leading brand-name products in the global vehicle aftermarket while also servicing the OES market. Motorparts products are organized into categories, including shocks and struts, steering and suspension, braking, sealing, emissions control, engine, and maintenance. Motorparts products are marketed and sold under industry leading brand-names including Monroe®, Champion®, Öhlins®, MOOG®, Walker®, Fel-Pro®, Wagner®, Ferodo®, Rancho®, Thrush®, National®, Sealed Power®, and others.

Available Information on our Website

Our Internet address is www.tenneco.com. We make our proxy statements, annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports, as filed with or furnished to the Securities and Exchange Commission (“SEC”), available free of charge on our website as soon as reasonably practicable after submission to the SEC. Securities ownership reports on Forms 3, 4 and 5 are also available free of charge on our website as soon as reasonably practicable after submission to the SEC.

Our Audit Committee, Compensation Committee, and Nominating and Governance Committee Charters, Corporate Governance Principles, Stock Ownership Guidelines, Audit Committee policy regarding accounting complaints, Code of Ethical Conduct for Financial Managers, Code of Conduct, Policy and Procedures for Transactions with Related Persons, Equity Award Policy, Clawback Policy, Insider Trading Policy, policy for communicating with the Board of Directors, and Audit Committee policy regarding the pre-approval of audit, non-audit, tax and other services are also available free of charge on our website at www.tenneco.com. The contents of our website are not, however, a part of this report.

In addition, we will make a copy of any of these documents available to any person, without charge, upon written request to Tenneco Inc., 500 North Field Drive, Lake Forest, Illinois 60045, Attn: General Counsel. We intend to satisfy the disclosure requirements under Item 5.05 of Form 8-K and applicable NYSE rules regarding amendments to, or waivers of, our Code of Ethical Conduct for Financial Managers and Code of Conduct by posting this information on our website.

DESCRIPTION OF OUR BUSINESS

We design, manufacture, market, and distribute innovative products and services for light vehicle, commercial truck, off-highway, industrial, motorsport, and aftermarket customers. We serve both original equipment (“OE”) vehicle designers and manufacturers and the repair and replacement markets worldwide. Our portfolio of the industry’s most well-respected, enduring brands includes Monroe®, Champion®, Öhlins®, MOOG®, Walker®, Fel-Pro®, Wagner®, Ferodo®, Rancho®, Thrush®, National®, and Sealed Power®, and others. We seek to leverage our OE product engineering and development capability, manufacturing know-how, and expertise in managing a broad and deep range of replacement parts to service the aftermarket. We effectively manage the life cycle of a broad range of products to a diverse customer base.

We source various raw materials and component parts for use in our manufacturing processes through the global supply chain. As a Tier 1 parts supplier, we produce individual component parts for vehicles as well as groups of components that are combined as modules or systems within vehicles. These parts, modules, and systems are sold globally to the world’s leading light vehicle and commercial truck manufacturers as well as aftermarket customers, including a wide range of distributors, retail parts stores, and mass merchants that distribute our products to professional service providers, “do-it-yourself” consumers, and directly to service chains.

Our Industry

The parts industry for vehicles and engines is generally separated into two categories, both of which we operate within: OE parts that are sold in large quantities directly for use by manufacturers of light vehicles, commercial vehicles, and other mobility markets; and “aftermarket” or repair and replacement parts that are sold in varying quantities to wholesalers, retailers, and installers, as well as Original Equipment Service (“OES”) parts sold to OE customers to support their service channels. Light vehicles are comprised of passenger cars and light trucks, which include sport-utility vehicles (“SUVs”), crossover vehicles (“CUVs”), pick-up trucks, vans, and multi-purpose passenger vehicles. Commercial vehicles include commercial trucks, off-highway vehicles and industrial equipment. Other mobility markets include two-wheel and motorsports.

Global OE Industry

Products for the global OE industry are sold directly to OE manufacturers that use these parts, which include components, systems, subsystems, and modules, in the manufacture of new light vehicles, commercial vehicles, rail, two-wheeler, and motorsports. Demand for component parts in the OE market is generally a function of the number of new vehicles/engines produced, which is driven by macroeconomic conditions and other factors such as fuel prices, consumer confidence, employment trends, regulatory requirements, technology trends, and trade agreements. Although OE demand is tied to planned vehicle production, parts suppliers also have the opportunity to grow revenues by increasing their product content per vehicle. Companies, like us, with a global presence, leading technology and innovation, and advanced product, engineering, manufacturing, and customer support capabilities are best positioned to take advantage of these opportunities.

Key Industry Trends Affecting the Global OE Industry

Global Light Vehicle Sales and Production

Our business is directly affected by automotive sales and automotive vehicle production levels. Both of these depend on a number of factors, including global and regional economic conditions, population growth, public health conditions, and policies. There have been periods of increased market volatility and uncertainty in the level of economic growth in China, which has resulted in periods of lower automotive production growth rates than previously experienced. Despite these declines, and the recent moderations in the level of economic growth in China, rising income levels in China are expected to result in stronger growth rates over the long-term.

We have a strong local presence in China, including a manufacturing base and well-established customer relationships. Each of our business segments have operations and sales in China. Our business in China remains sensitive to economic and market conditions, and may be affected if the pace of growth slows in China or if there are reductions in vehicle demand in China. However, we continue to believe there is long-term growth potential in this market based on increasing long-term automotive and vehicle content demand.

Sourcing by OE Manufacturers and Component Part Number Proliferation

As OE manufacturers expand their reach, many are looking for suppliers with a global footprint and the capability to supply them with full system integration and solutions, rather than individual standalone products.

Because of these trends, OE manufacturers are increasingly seeking suppliers capable of supporting vehicle platforms on a global basis. They want suppliers like us with design, production, engineering, and logistics capabilities that can be accessed not just in North America and Europe but also in emerging markets such as India and China. OE manufacturers have standardized on global platforms, designing basic mechanical structures suitable for a number of similar vehicle models and are able to accommodate different features across regions. This standardization will drive growth in production of light vehicles designed on global platforms. Accordingly, global platforms, identified as platforms produced in more than one region, are expected to grow. While the overall number of vehicle platforms will consolidate and decrease, the component level complexity to meet the diversified consumer and regulatory requirements around the world is expected to cause component part number proliferation.

As new and existing OE manufacturers look to simplify and streamline design, they are also increasingly selecting suppliers like us that provide fully-engineered, integrated systems, and solutions. OE manufacturers have steadily outsourced more of the design and manufacturing of vehicle parts and systems to simplify the assembly process, lower costs, and reduce development times. Furthermore, they have demanded from their parts suppliers fully integrated, functional modules, and systems made possible with the development of advanced electronics in addition to innovative, individual vehicle components, and parts that may not readily interface together.

Increasing Technologically Sophisticated Content and Vehicle Complexity

As end users and consumers continue to demand vehicles with improved performance, safety, and functionality at competitive prices, the components and systems in these vehicles are becoming technologically more advanced and sophisticated. Mechanical functions are being replaced with electronics and mechanical and electronic devices are being integrated into single systems. In addition, value added features delivered through software control algorithms and over-the-air updates are becoming more prevalent, creating new avenues for product differentiation and customization.

Enhanced Vehicle Safety and Handling

To serve the needs of their customers and meet government mandates, OE manufacturers are seeking parts suppliers that invest in new technologies, capabilities, and products, which advance vehicle safety and handling, such as roll-over protection systems, advanced suspension technologies, and safer, more durable materials. Suppliers, like us, that are able to offer such innovative products and technologies have a distinct competitive advantage. We offer adjustable and adaptive damping as well as semi-active suspension systems designed to improve vehicle stability, handling, and control.

We also are a global leader in the development of leading friction formulas that improve vehicle stopping distances and performance. As the commercial truck customers migrate to air disc brake systems, we remain at the forefront of providing the brake friction necessary for these new systems.

Many of our aftermarket products directly affect vehicle performance. Product quality, reliability, and consistency are paramount to our end-customers, the majority of whom are professional service technicians. Our engineering expertise and product capabilities from chassis to braking allow us to provide around-the-wheel offering. Additionally, we have a number of braking products including disc pads for passenger cars, motorcycles, and commercial vehicles; drum brake shoes and linings for commercial vehicles; and brake accessories including rotors, drums, hydraulics, hardware, and brake fluid.

Advanced Suspension, Autonomous Driving, and Shared Mobility

There is a growing demand for autonomy and new mobility services. A number of trends are driving “Auto 2.0,” defined as the transformation of cars into hybrid systems, fully-electric and autonomous vehicles, the consumer shift from individual car ownership to ride-sharing, and multi-modal forms of mobility.

We expect higher levels of autonomy will drive increased passenger expectations for a comfortable ride, which, in turn, will create additional content opportunities per vehicle and heighten demand for advanced suspension technology products, including full-corner/around-the-wheel intelligent suspension systems and broader motion management solutions. Advanced suspension technology is expected to grow with adoption led by existing and emerging global OE manufacturers. Increased connectivity also presents additional prospects for active suspension systems, predictive vehicle diagnostics, and system-based integration within the vehicle as well as broader vehicle to everything (“V2X”) communications. The addition of Öhlins to the portfolio is expected to continue to accelerate the development of advanced suspension technology solutions, while also fast-tracking time to market. It will also enhance our portfolio in broader mobility markets through the addition of Öhlins’ range of premium OE and aftermarket automotive and motorsports performance products.

The electrification of vehicles continues to expand, driven by government regulations, as well as a shift in consumer mobility options from individual mobility to shared mobility. Shared mobility describes a range of transportation options that involve the shared use of a vehicle, motorcycle, scooter, bicycle or other means of travel; it provides users with short-term access to transportation on an as-needed basis. Shared mobility may reduce vehicle volumes in established markets, but it also provides an opportunity for us to develop higher-mileage, durable solutions to meet the needs of new mobility fleets, as well as aftermarket replacement solutions and services. Additionally, ride comfort will become an important differentiator in the future.

Focus on Fuel Efficiency Improvements and Powertrain Evolution, including Electrification

Continued evolution and focus on climate change and environmental sustainability by consumers and governments worldwide is increasing the expectations for the auto industry to develop more fuel-efficient and reduced emissions solutions. Various jurisdictions around the world have announced plans to limit the production of new diesel and gasoline powered vehicles in the future. Major vehicle manufacturers have announced their intention to reduce and phase out production of diesel and gasoline powered vehicles during the next two decades. However, for the foreseeable future, it is expected that the majority of the powertrains for light and commercial vehicles will be gasoline and diesel engines (including hybrids, which combine a battery electric drive with a combustion engine). While we see similar electrification trends for light vehicle and commercial vehicle in the long-term, we expect light vehicles will experience those trends in advance of commercial vehicles. We expect to monitor those trends and adopt our business strategy accordingly.

The evolution of alternative powertrain technology, including the increased adoption of fully electric and hybrid powertrains, will also create further opportunities for increased ride performance and NVH capabilities, as consumers look for smoother, quieter, and more efficient rides. Engine downsizing and hybridization will lead to a proliferation of NVH requirements per platform as road noise and other NVH properties that were once masked by engine noise become more apparent to consumers. Furthermore, fully electric vehicles (“EVs”) will likely have a suite of fundamentally different NVH, braking, and ride performance requirements. Our capabilities in the suspension, braking, and NVH performance materials categories provide the opportunity to develop solutions to maximize driving comfort, ride performance, and motion management for consumers worldwide in the increasing electrification and hybridization of the global vehicle fleet.

The demand for smaller but more powerful engines requires more technology per engine to withstand the higher output requirements and reduce friction, which we estimate will result in an increase in content per engine for our powertrain business. With a global manufacturing presence, we believe we are well-positioned to meet expectations of our global customers.

Commercial Vehicles

Our business is also directly affected by commercial vehicle sales and production levels. Both of these depend on a number of factors, including global and regional economic conditions, population growth, public health conditions, and policies. In addition, regulations have been adopted to regulate tailpipe emissions of criteria pollutants and greenhouse gasses such as carbon dioxide, as well as brake dust emissions and copper content. Reducing carbon-dioxide (“CO₂”) emissions requires improving fuel economy; as a result, improved combustion efficiency and reduction of vehicle mass have become priorities. The products our clean air segment provides reduce the tailpipe emissions of criteria pollutants. As a leading supplier of clean air systems and friction materials with strong technical capabilities in both areas, we believe we are well positioned to benefit from the more rigorous environmental standards being adopted around the world. Current regulations in the developed markets are being adopted in the developing markets and should increase content opportunities for our business in the medium-term.

Global Aftermarket Industry

Products for the global aftermarket are sold directly to a wide range of distributors, retail parts stores, and mass merchants that distribute these products to professional service providers, “do-it-yourself” consumers, and directly to service chains, as well as OES parts sold to OE customers to support their service channels. Demand for aftermarket products historically has been driven by four primary factors:

- i. the number of vehicles in operation (“VIO”);
- ii. the average age of VIO;
- iii. vehicle usage trends, including miles driven and gasoline consumption; and
- iv. component replacement and wear rates.

These factors, while applicable in all regions, vary depending on the composition of VIO and other factors.

Key trends affecting the Global Aftermarket Industry

Global Growth of Vehicles in Operation, Average Vehicle Age, and Vehicle Usage Trends

With increased age and usage, vehicles become subject to maintenance, repair, and component part replacement thereby increasing the overall demand for aftermarket parts. The global number of VIO is expected to grow, with the number of VIO in emerging markets such as China expected to increase significantly. The number of VIO in mature markets, such as North America is expected to grow, and to a lot lesser extent in Europe. We have strong aftermarket positions in North America, Europe, and South America and a growing aftermarket position in Asia. We expect there to be aftermarket growth opportunities in emerging markets such as China and India where the VIO are expected to increase. We are positioning ourselves to capitalize on this growth by leveraging our industry renowned brands and market-leading capabilities to develop the distributor base, drive brand recognition, increase product coverage, and build the supply chain in emerging growth markets.

Non-Branded Private Labels

We have some of the strongest and most recognized brands in the automotive aftermarket. We will continue to invest in product innovation, marketing, and brand support that differentiates our premium branded products for their quality and performance while also supporting lower priced, mid-grade offerings. Additionally, we will continue to drive productivity and cost reduction efforts and enhance our already strong global sourcing capabilities to remain competitive in each product tier.

Retailers or wholesale distributors creating private label brands still rely on established suppliers to design and manufacture their private label products and, in some cases, utilize co-branding to support their private label offerings. We intend to selectively continue to co-brand with private label distributors where it can help to strategically grow our branded products portfolio.

Supply Chain Velocity and Distribution Capability

Efficient distribution capabilities are essential as the aftermarket industry works to balance product availability with overall inventory in the ecosystem. Installers expect the right product to be available at the right time and the need for fast, predictable local parts delivery is growing as consumers' expectations for quick, high quality service increase. In addition, we are seeing the developing aftermarket augment traditional distribution and service models with real-time scheduling through personalized internet applications. We are adjusting our fulfillment models to optimize this complexity and better align and synchronize with our customers and supply base to reduce non-value add steps, time, and distance in our value chain. We are also engaging with key customers to jointly optimize product availability and delivery.

The increasing global vehicle population, brand and vehicle complexity, and need for rapid new part introduction, as well as new distribution channels (including e-commerce) continue to drive significant stock keeping unit ("SKU") proliferation and business complexity. Our recent investments in our supply chain and information technology capabilities are designed to manage this complexity, which we believe will be an important competitive differentiator.

Channel Consolidation

In the more mature markets of North America and Europe, there has been increasing consolidation in the aftermarket distribution channel with larger aftermarket distributors and retailers gaining market share. These distributors generally require larger, more capable suppliers that have the ability to provide world-class product expertise, category management capabilities, brand management, and supply chain support, as well as a competitive manufacturing and sourcing network. We have undertaken many initiatives to enhance the value of our branded products to end-market consumers and diversify our revenue base.

Growth of e-Commerce Capabilities and Changing Consumer Decision Making

Reaching end-customers, which include professional service providers, technicians, and "do-it-yourself" consumers, directly through online and mobile application capabilities, including e-commerce, is expected to have an increasing effect on the global aftermarket industry and how aftermarket products are marketed and sold. The establishment of a robust online presence will be critical for suppliers regardless of whether they intend to participate directly in e-commerce. We invested heavily in e-commerce initiatives to improve our capabilities and connectivity to our end-customers, including a new online order management system, customer relationship management tools, global brand websites, and data analytics capabilities. We will continue to invest in these competencies.

Additionally, consumers increasingly are utilizing online research prior to making buying or repair decisions. We will continue to expand our online presence in order to connect with our customers and more effectively communicate the value of our premium aftermarket brands.

Resilience during Economic Downturn

Aftermarket products are largely stable, non-discretionary, and less susceptible to cyclicalities as customers often have no choice but to replace automotive parts that are worn. During the 2008 economic downturn, the number of consumers with the ability to purchase new vehicles declined and led to increased demand for aftermarket parts in order to keep older vehicles road-worthy. During 2020 the COVID-19 global pandemic, we also experienced expanded demand from “do-it-yourself” consumers and e-commerce, which partially offset the short-term demand decline due to lockdowns and travel restrictions.

Customers

We strive to develop long-standing business relationships with our customers around the world. We work collaboratively with our OE customers in all stages of production and post production service, including design, development, component sourcing, quality assurance, manufacturing, and delivery. For both OE and aftermarket customers, we provide timely delivery of quality products at competitive prices and deliver customer service. With our diverse product mix and numerous facilities in major markets worldwide, we believe we are well positioned to meet customer needs.

Our OE customers consist of automotive and commercial vehicle manufacturers as well as agricultural, off-highway, two-wheel, marine, railroad, aerospace, high performance, and power generation and industrial application manufacturers. We have well-established relationships with substantially all major American, European, and Asian automotive OE manufacturers. In automotive, legacy OE customer consolidation continues to occur and could increase our exposure to certain customers in the future.

The following customers accounted for 10% or more of our net sales in any of the last three years.

Customer	2020	2019	2018
General Motors Company	11 %	11 %	12 %
Ford Motor Company	10 %	10 %	12 %

Our aftermarket customers include a wide range of distributors that redistribute products to local parts suppliers, distributors, engine rebuilders, retail parts stores, e-commerce retailers, mass merchants, and service chains. The breadth of our product lines, the value of our reputable brands, the strength of our leading marketing expertise, a sizable sales force, and supply chain and logistics capabilities are central to our success in the aftermarket. We have a large and diverse aftermarket customer base.

Competition

We operate in highly competitive markets. Customer loyalty is a key element of competition in these markets and is developed through long-standing relationships, customer service, high quality value-added products, and timely delivery. Product pricing and services provided are other important competitive factors.

As a supplier of OE and aftermarket parts, we compete with vehicle manufacturers, some of which are also customers of ours, and numerous independent suppliers. We believe we are meeting these competitive challenges by developing leading technologies, strengthening our brand proposition, efficiently integrating and expanding our manufacturing and distribution operations, optimizing our product coverage within our core businesses, restructuring our operations and transferring production to best cost countries, and utilizing our worldwide network of technical centers to develop and provide value-added solutions to our customers.

Seasonality

Our businesses are somewhat seasonal. OE production is historically higher in the first half of the year compared to the second half. It typically decreases in the third quarter due to OE plant shutdowns for model changeovers and European holidays, and softens further in the fourth quarter due to reduced production during the end-of-year holiday season in North America and Europe. Shut-down periods in the rest of the world generally vary by country. Our aftermarket operations experience relatively higher demand during the spring as vehicle owners prepare for the summer driving season. While seasonality does affect our business, actual results may vary from the above trends due to global and local economic dynamics, global pandemics, as well as industry-specific platform launches and other production-related events.

Order Fulfillment

For OE customers, we generally receive long-term production contracts for specific products supplied for particular vehicles with target volumes. These supply relationships typically extend over the life of the related vehicle, subject to interim design and technical specification revisions. In addition to customary commercial terms and conditions, long-term production contracts generally provide for annual price adjustments based upon expected productivity improvements, material price variation, and other factors. OE customers typically retain the right to terminate agreements due to changing business conditions, but they generally cannot terminate agreements given development cycles and change costs. OE order fulfillment is typically manufactured in response to customer purchase order releases, as we ship directly from a manufacturing location to a customer for use in vehicle production and assembly. Accordingly, our manufacturing locations turn finished goods inventory relatively quickly, producing from on-hand raw materials and work-in-process inventory within relatively short manufacturing cycles. Risks to us include a change in vehicle production, lower than expected vehicle or engine production by one or more of our OE customers, or termination of the business based upon perceived or actual shortfalls in delivery, quality or value.

For our global aftermarket customers, we generally establish arrangements that encompass substantially all parts offered within a particular product line. In some cases, we will enter into agreements with terms ranging from one to three years that cover one or more product lines. Pricing is market responsive and subject to adjustment based upon competitive pressures, material costs, and other commercial factors. Typical price adjustments occur on an annual basis as part of the product line reviews or as environmental factors dictate. Global aftermarket order fulfillment is largely performed from finished goods inventory stocked in our regional distribution centers. Inventory stocking levels in our distribution centers are established based upon historical and anticipated future customer demand, adjusted for lead times, demand variability, and target service levels.

Although customer programs typically extend to future periods, and although there is an expectation we will supply certain levels of OE production over such periods, we believe outstanding purchase orders and product line arrangements do not constitute firm orders. Firm orders are limited to specific and authorized customer purchase order releases placed with our manufacturing and distribution centers for actual production and order fulfillment. Firm orders are typically fulfilled as promptly as possible after receipt from the conversion of available raw materials and work-in-process inventory for OE orders and from current on-hand finished goods inventory for aftermarket orders.

Clean Air Segment

Our Clean Air Segment operates 66 clean air manufacturing facilities worldwide, of which 17 facilities are located in North America, 20 in Europe, 3 in South America, and 26 in Asia Pacific. Within these manufacturing facilities in Asia Pacific, we operate 10 joint ventures in which we hold a controlling interest. Clean Air operates 7 engineering and technical facilities.

Clean Air designs, manufactures, markets, and distributes a variety of clean air products and systems designed to reduce pollution and optimize engine performance, acoustic tuning, and weight on a vehicle. Vehicle emission control products and systems play a critical role in safely conveying noxious exhaust gases away from the passenger compartment and reducing the level of pollutants and engine exhaust noise emitted to acceptable levels. Precise engineering of the exhaust system - which extends from the manifold that connects an engine's exhaust ports to an exhaust pipe, to the catalytic converter that eliminates pollutants from the exhaust, and to the muffler that modulates noise emissions - leads to a pleasantly tuned engine sound, reduced pollutants, and optimized engine performance.

The following table sets forth a description of the product lines sold by our Clean Air segment:

Product	Description
Catalytic converters and diesel oxidation catalysts	Devices consisting of a substrate coated with precious metals enclosed in a steel casing used to reduce harmful gaseous emissions such as carbon monoxide.
Diesel particulate filters (DPFs)	Devices to capture and regenerate particulate matter emitted from diesel engines.
Burner systems	Devices which actively combust fuel and air inside the exhaust system to create extra heat for DPF regeneration, or to improve the efficiency of selective catalytic reduction ("SCR") systems.
Lean NOx traps	Devices which reduce nitrogen oxide (NOx) emissions from diesel powertrains using capture and store technology.
Hydrocarbon vaporizers and injectors	Devices to add fuel to a diesel exhaust system in order to regenerate particulate filters or Lean NOx traps.
SCR systems	Devices which reduce NOx emissions from diesel powertrains using urea mixers and injected reductants such as Verband der Automobil industrie e.V.'s AdBlue® or Diesel Exhaust Fluid (DEF).
SCR-coated diesel particulate filters (SDPF) systems	Lightweight and compact devices combining the SCR catalyst and the particulate filter onto the same substrate for reducing NOx and particulate matter emissions.
Urea dosing systems	Systems comprised of a urea injector, pump, and control unit, among other parts, that dose liquid urea onto SCR catalysts.
Four-way catalysts	Devices that combine a three-way catalyst and a particulate filter onto a single device by having the catalyst coating of a converter directly applied onto a particulate filter.
Alternative NOx reduction technologies	Devices which reduce NOx emissions from diesel powertrains, by using, for example, alternative reductants such as diesel fuel, E85 (85% ethanol, 15% gasoline), or solid forms of ammonia.
Mufflers and resonators	Devices to provide noise elimination and acoustic tuning.
Fabricated exhaust manifolds	Components that collect gases from individual cylinders of a vehicle's engine and direct them into a single exhaust pipe. Fabricated manifolds can form the core of an emissions module that includes an integrated catalytic converter (maniverter) and/or turbocharger.
Pipes	Utilized to connect various parts of both the hot and cold ends of an exhaust system.
Hydroformed assemblies	Forms in various geometric shapes, such as Y-pipes or T-pipes, which provide optimization in both design and installation as compared to conventional pipes.
Elastomeric hangers and isolators	Used for system installation and elimination of noise and vibration, and for the improvement of useful life.
Aftertreatment control units	Computerized electronic devices that utilize embedded software to regulate the performance of active aftertreatment systems, including the control of sensors, injectors, vaporizers, pumps, heaters, valves, actuators, wiring harnesses, relays and other mechatronic components.

For the catalytic converters, SCR systems, and other substrate-based devices we sell, we need to procure substrates coated with precious metals or purchase the complete systems in the case of catalytic converter systems. We obtain these components and systems from third parties, often at the OE manufacturer's direction, or directly from OE vehicle and engine manufacturers. See Item 7. "Management's Discussion and Analysis of Financial Condition and Results of Operations" for more information on our sales of these products.

Powertrain Segment

Our Powertrain Segment operates 83 manufacturing sites worldwide, of which 23 facilities are located in North America, 32 are located in Europe, 5 are located in South America, and 23 in Asia Pacific, serving a large number of major light vehicle, commercial truck, off-highway, and industrial customers worldwide. Within these manufacturing facilities, we operate 18 joint ventures in which we hold a controlling interest. Powertrain has also invested globally in nonconsolidated affiliates that have multiple manufacturing sites, primarily in China, Turkey, and the United States ("U.S."). Powertrain operates 11 engineering and technical facilities.

Powertrain designs, manufactures, markets, and distributes a variety of powertrain products and systems. Powertrain offers its customers a diverse array of market-leading products for OE applications, including pistons, piston rings, piston pins, cylinder liners, valvetrain products, valve seats and guides, ignition products, dynamic seals, bonded piston seals, combustion and exhaust gaskets, static gaskets and seals, rigid heat shields, engine bearings, industrial bearings, bushings and washers, systems protection sleeves, acoustic shielding, and flexible heat shields. In addition, Powertrain supplies OES parts to OE customers to support their service and distribution channels.

The following table sets forth a description of the product lines sold by our Powertrain segment:

Product	Description
Pistons	Pistons convert the energy created by the combustion event into mechanical energy to drive a car; Pistons can be made from aluminum or steel, both casted and forged; Highly efficient engines impose high demands on pistons in terms of rigidity and temperature resistance.
Piston rings	Piston rings are mounted on the piston to seal the combustion chamber while the piston is moving up and down; Modern rings need to resist high temperature and very abrasive environments without significant wear; Rings are critical for low oil consumptions.
Cylinder liners	Cylinder liners, or sleeves, are specially engineered where surfaces formed within the engine block, working in tandem with the piston and ring, as the chamber in which the thermal energy of the combustion process is converted into mechanical energy.
Valve seats and guides	Valve seats and guides are produced from powdered metal based on sophisticated metal-ceramic structures to meet extreme requirements for hardness.
Bearings	Bearings provide the low-friction environment for rotating components like crankshafts and camshafts; Modern bearings are able to deal with very low viscosity oil even in highly repetitive motions like in stop/start-conditions.
Spark plugs	Modern spark plugs for engines fueled by gasoline or natural gas have to ignite fuel even at very high combustion pressure and with very clean fuel-air mixture - combined with extended life expectation well over 100,000 miles for turbo-charged engines.
Valvetrain products	Valvetrain products include mainly engine valves but also retainers, rotators, cotters, and tappets for use in both diesel and gas engines; the most demanding applications require sodium-filled hollow valves for fast heat dissipation.
System protection	System protection products include protection sleeves for wire harness and for oil and water tubes as well as acoustic and EMI/RFI shielding, heat and abrasion protection, and safety/ crash protection for cables and tubes for engines and cars.
Seals and gaskets	Cylinder-head gaskets and other hot and cold gaskets are sealing engines and engine components; dynamic and static seals protecting rotating engine and transmission components against oil and gas leakages. Such seals and gaskets are made from high-alloyed steel as well as from sophisticated rubber and polymers.

Ride Performance Segment

Our Ride Performance segment operates 36 ride performance manufacturing facilities worldwide, of which 8 facilities are located in North America, 14 in Europe, 3 in South America, and 11 in Asia Pacific. Within these manufacturing facilities, we operate 3 joint ventures in which we hold a controlling interest. We operate 15 engineering and technical facilities worldwide.

Ride Performance designs, manufactures, markets, and distributes a variety of ride performance solutions and systems to a global OE customer base, including NVH performance materials, advanced suspension technologies, ride control, and braking. In addition to automotive light vehicles and commercial vehicles, Ride Performance also services a wide range of other mobility markets such as rail, two-wheelers (which includes motorcycles and mountain bikes), and motorsports.

The following table sets forth a description of the product lines sold by our Ride Performance segment:

Product	Description
NVH Performance Materials	Highly engineered NVH isolation technology and value-added products for light vehicle and commercial vehicle markets.
Advanced Suspension Technologies	Advanced passive and semi-active suspension with tuning support and controls capability for the light vehicle, two-wheel and motorsports markets.
Ride Control	Providing conventional shocks, struts, and dampers with value-added tuning solutions for the light vehicle and commercial vehicle markets.
Braking	Friction materials, including cutting edge formulations for the light vehicle, commercial vehicle, and rail markets.

Motorparts Segment

Our Motorparts segment operates 16 manufacturing sites, of which 7 facilities are located in North America, 4 in Europe, 2 in South America, and 3 in Asia Pacific. It also operates 33 distribution centers and warehouses; 6 engineering and technical centers; and 10 various technical training service centers worldwide. Motorparts shares engineering testing facilities with our Ride Performance segment.

Motorparts designs, manufactures, markets, and distributes leading, brand-name products to a diversified and global aftermarket customer base. Within the business, Motorparts has many of the most recognized brands in the automotive industry, including Monroe®, Champion®, Öhlins®, MOOG®, Walker®, Fel-Pro®, Wagner®, Ferodo®, Rancho®, Thrush®, National®, Sealed Power®, and others. We believe our brand equity in the aftermarket is a key asset especially as customers consolidate and distribution channels converge with many of our brands leading their product categories. We are dedicated to being stewards of these brands and continually strengthening their equity through robust marketing programs. Motorparts products are organized across the following seven categories:

Product	Description
Shocks and Struts	Shock absorbers, strut assemblies, bare strut, coil springs, top mounts, and ride control accessories.
Steering and Suspension	Control arms, ball joints, tie rod ends, wheel bearings, sway bar links and hub assemblies, joints.
Braking	Pads, rotors, drums and fluids.
Sealing	Head gaskets, valve cover gaskets, oil seals, and other gaskets.
Engine	Pistons, piston ring set, engine bearings, liners, pumps.
Emissions Control	Catalytic converters, exhaust manifolds, exhaust pipes, and mufflers.
Maintenance	Spark plugs, air filters, oil filters, cabin air filter, forward lighting, batteries, headlamps, chemicals.

Sales, Marketing and Distribution

We have separate and distinct sales and marketing efforts for our OE and aftermarket customers.

For OE sales, our sales and marketing team is an integrated group of sales professionals, including skilled engineers and program managers, who are organized globally by customer business unit and product type (e.g., Ride Performance, Clean Air, and Powertrain). Our sales and marketing teams are focused on meeting and exceeding our customer's needs by delivering engineered products and services on time; maximizing profit for our investors while financing continued growth and product development; and developing a common system approach to create a superior customer experience. Our teams provide the appropriate mix of operational and technical expertise needed to interface successfully with OE manufacturers. Our business capture process involves targeting select programs and working closely with the OE manufacturer platform engineering and purchasing teams. Bidding on OE automotive platforms typically encompasses many months of engineering and business development activity. Throughout the process, our sales team, program managers, and product engineers assist the OE customer in defining the project's technical and business requirements. A normal part of the process includes our engineering and sales personnel working on customers' integrated product teams, creating a statement of requirements, and assisting our customers with full system or component design and development concepts that deliver on expectations and create value for OE manufacturer customers. Given that Clean Air, Ride Performance, and Powertrain operations typically involve long-term production contracts awarded on a platform-by-platform basis, our strategy is to leverage our engineering expertise and strong customer relationships to target and win new business and increase operating margins.

For aftermarket sales and marketing, our sales force is generally organized by region and customer and covers multiple product lines. We sell aftermarket products through five primary channels of distribution: (1) traditional three-step distribution system of full-line warehouse distributors, jobbers, and service providers; (2) two-step distribution system of warehouse distributors that distribute directly to the service providers; (3) direct sales to retailers; (4) direct sales to service provider chains; and (5) direct sales through e-commerce channels. Our aftermarket sales and marketing representatives cover all levels of the distribution channel, stimulating interest in our products and helping our products move through the distribution system. Also, to generate demand for our products, we run print, online, outdoor advertisements, digital advertising and social media, as well as training conducted by our field sales force and e-training courses. In addition, we maintain detailed websites for certain of our brands.

Business Strategy

We are a leading diversified, global supplier of innovative products and services to light vehicle, commercial truck, off-highway, industrial, and aftermarket customers. Our strategy focuses on addressing the evolving needs of our OE and aftermarket customers around the world to drive growth. The key components of our business strategy are described below:

Continue to optimize operational performance by aggressively pursuing cost competitiveness in all business segments and continuing to drive cash flow generation and meet capital allocation objectives

As we continue to expand our distribution and service capabilities globally, we seek to continue optimizing our performance through enhanced efficiencies in order to meet the world-class delivery performance our customers increasingly require. We have made and will continue to make investments in our global distribution network to optimize our manufacturing and fulfillment footprint and manage complexities of our supply chain. By achieving efficiency gains and cost competitiveness, we strive to generate strong cash flow and meet our capital allocation objectives, including deleveraging our balance sheet.

From a design perspective, we will bring a lean mindset to our portfolio to ensure standardization, remove redundancies, focus on our core business, reduce transit costs, leverage economies of scale, and optimize manufacturing productivity. We will also continually look for ways to innovate and leverage cross- and up-sell opportunities to the market through a customer-centric product development process. From a manufacturing perspective, we will maintain a continuous improvement philosophy by streamlining plant operations and our network, and executing projects to improve efficiency.

Serving our customers also requires that we compete effectively at the unit cost level, in particular with OE customers. We are making concerted and systematic efforts to continuously improve our position on the cost curve for each of our component part categories including deploying value stream simplification principals. In doing so, we will continue to be a preferred supplier to our customers.

We will be mindful of the changing market conditions that might necessitate adjustments to our resources and manufacturing capacity around the world. We will also remain committed to protecting the environment as well as the health and safety of our employees.

Pursue focused transactional opportunities, consistent with our capital allocation priorities, product line enhancements, technological advancements, geographic positioning, penetration of emerging markets and market share growth

Throughout our history, we have successfully identified and capitalized on acquisitions, alliances, and divestitures to achieve strategic growth and alignment. Through these transactions, we have (1) expanded our product portfolio with complementary technologies; (2) realized incremental business from existing customers; (3) gained access to new customers; (4) achieved leadership positions in geographic regions outside North America; and (5) re-focused on areas that will contribute to our profitable growth.

We intend to continue to explore strategic alliances, joint ventures, acquisitions, divestitures, and other transactions that complement, expand, enhance or realign our existing products, technology, systems development efforts, customer base and/or global presence. We are committed to developing a broader ecosystem-based approach that allows us to work with new and existing customers, suppliers, and entrants to provide timely and leading-edge solutions across the mobility market. We will align with companies that have proven products, proprietary technology, advanced research capabilities, broad geographic reach, and/or strong market positions to further strengthen our product leadership, technology position, global reach, and customer relationships.

Adapt cost structure to economic realities

We aggressively respond to difficult economic environments, aligning our operations to any resulting reductions in production levels and replacement demand and executing comprehensive restructuring and cost-reduction initiatives. Suppliers must continually identify and implement product innovation and cost reduction activities to fund customer annual price concession expectations in order to retain current business as well as to be competitively positioned for future new business opportunities.

Original Equipment Specific Strategies

The converging forces of connectivity, autonomy, electrification, and shared mobility are spawning a new age of automotive autonomy and a unique opportunity to position our business for significant growth and profitability. We strive to strengthen our global position by designing, manufacturing, delivering, and marketing technologically innovative products and solutions for OE manufacturers. The key components of our OE strategy are described below:

Capitalize on our breadth of technology, differentiated products, and global reach to support and strengthen relationships with existing and emerging OE customers across the world

We conduct business with nearly all of the major automotive OE customers around the world. Within the highly competitive automotive parts industry, we seek to extend the significant advantages that come from our world-class global manufacturing, engineering and distribution footprint and global sourcing capabilities. This footprint enables the design, production and delivery of premium parts emphasizing quality, safety and reliability virtually anywhere in the world and also supports the continual innovation of new products, technologies, and solutions for new and existing OE customers.

Maintain technological leadership to drive further growth from secular market trends

In order to maintain our strong market positions, we are focused on meeting changing performance requirements and keeping up with emerging OE trends such as connectivity, autonomy, shared mobility, and electrification. In pursuit of delivering the ideal ride characteristics for any application, our ride performance division will leverage its innovative technology, NVH performance materials, differentiated products, and advanced system capabilities to provide innovative solutions. Aligning product lines and technical capabilities creates an ideal foundation to meet changing performance requirements for comfort and safety and again ultimately reinventing the ride of the future. The 2019 acquisition of Öhlins will continue to accelerate the development of advanced technology suspension solutions, while also fast-tracking time to market. That acquisition is yet another example of our strategy to leverage key technologies that will better position us to take advantage of secular trends. It also enhances our portfolio in broader mobility markets through the addition of Öhlins' range of premium OE and aftermarket automotive and motorsports performance products. In addition, our suite of mobility solutions under development represents an opportunity to drive greater partnership with OE manufacturers and broader mobility ecosystem players, creating and capturing value, and growth with higher value content per vehicle.

OE manufacturers are responding to changing end customer trends and preferences alongside their own challenging cost structures by reducing design and production complexities and investing in advanced technologies that enable vehicle electrification and autonomy. We anticipate that OE suppliers with high technology capabilities in vehicle system integration will be able to enable a more seamless transition to next-generation electric vehicles and become preferred suppliers to OE manufacturers. Though many vehicle and customer requirements will evolve, we believe one of the remaining characteristics that will continue to provide differentiated experience and value in the future of mobility is the ride experience. By leveraging our deep component level expertise as well as working with partners across the broader mobility ecosystem, our intent is to lead in the next generation development of motion management products, systems and solutions to engineer the ideal ride for any customer.

Invest in applications that benefit from global light vehicle battery electric vehicle (BEV) adoption

We continually assess our growth investment priorities. Industry forecasts project global light vehicle BEV penetration rates to increase steadily in the current decade. In response, we have prioritized investments in light vehicle product lines and applications that have content growth opportunities in light vehicle BEV and are agnostic to an anticipated increase in adoption rates.

Penetrate adjacent market segments

We seek to penetrate a variety of adjacent sales opportunities and achieve growth in higher-margin businesses by applying our design, engineering and manufacturing capabilities. For example, we aggressively leverage our technology and engineering leadership in powertrain, clean air, ride performance and aftermarket into adjacent sales opportunities for commercial trucks, buses, agricultural equipment, construction machinery, and other vehicles in other regions around the world.

We design and launch clean air products for commercial vehicle customers such as Caterpillar, for whom we are their global diesel clean air system integrator, John Deere, Navistar, Deutz, Daimler Trucks, Scania, Weichai Power, FAW Group, and Kubota. We also engineer and build modular NOx-reduction systems for large engines that meet standards of the International Maritime Organization, among others.

Aftermarket Specific Strategies

Our aftermarket business strategy incorporates a go-to-market model that we believe differentiates us from our competitors and creates structural support for sustained revenue growth. The model is designed to drive revenue growth by capitalizing on three of the company's key competitive strengths: a leading portfolio of products and brands; extensive global manufacturing, distribution and service capabilities; and market intelligence gathered from the company's distributors, installers and consumers.

We expect this distinctive go-to-market model will result in a sustainable competitive advantage, particularly as the industry trends previously mentioned disrupt the traditional aftermarket landscape and business practices. We expect the demand for replacement parts to increase as a result of the increase in the average age of VIO and the increase in the average miles driven per year. The characteristics of aftermarket sales and distribution are defined regionally, which require localized strategies to address the key success factors of our customers. The key components of our aftermarket strategy are described below:

Leverage the strength of our global aftermarket leading brand positions, product portfolio and range, marketing and selling expertise, and distribution and logistics capabilities for global growth

We are well-positioned to capitalize on aftermarket trends and expand in mature markets (e.g. North America, Europe, and Australia) as well as high-growth regions (i.e. China, South America, India, and Southeast and Northeast Asia). Important factors enabling our growth strategy include our brand strength, broad product portfolio and range, sales and marketing expertise, supply chain and distribution capability. In addition, we also strive to maintain very close relationships with our customers and help position them for success.

Our aftermarket business includes multiple leading brands with strong product offerings. Our portfolio includes the industry's most well-respected and enduring brands. We will leverage our go-to-market model to build upon our brand strengths and grow our global aftermarket business by consistently delivering differentiated benefits, by growing our brand equity among our target end-customers, and by leveraging our broad product coverage and extensive distribution network. We are dedicated to being stewards of these brands and continually strengthening their equity through robust marketing programs. We are also focusing on leveraging our market connectivity to drive innovative solutions in both products and service to support or channel partners.

Continue to strengthen our aftermarket capabilities and product offerings in mature markets, including North America and Europe

The scale of our aftermarket business allows for strong distribution channels that significantly enhance our go-to-market capabilities across mature markets in North America and Europe. We continually rationalize our already strong distribution networks with the goal of improved customer service at a lower cost. This is achieved by continually harnessing and leveraging market intelligence, and sharing information with our channel partners to drive best practices in go-to-market, manufacturing and distribution processes.

The North America and Europe go-to-market capabilities will be defined by positioning our distribution and installer partners for success. We believe this will require maintaining an extensive catalog of products to provide the ability to address customer requirements quickly and easily. Managing a large and complex catalog of products requires an understanding of the composition of the car parc within the regions including wear patterns, typical replacement rates based on weather, road quality, and average miles driven annually. These compositions differ significantly by region, which will affect the range and frequency of replacement part requirements. The understanding of these regional dynamics will help us provide the right parts when they are needed and achieve the industry's best "Order to Delivery" times. We will continue to innovate product solutions that will be cost competitive and reliable, reduce install time, reduce the number of unique parts that installers need to inventory on-site, reduce the number of unique installer tools and equipment required, and improve installer safety.

In addition to having a comprehensive product offering, we also strive to maintain very close relationships with our customers and help position them for success. We have launched a series of "Tech First" initiatives to provide online, on demand, and onsite technical training and support to vehicle repair technicians who use and install our products in North America, Europe, and China and plan to expand into South America. This initiative included a network of Garage Gurus™ technical support centers that provide some of the most comprehensive training programs in the industry to educate our partners and customers with emerging vehicle technologies and vehicle repair operational skills. We believe it is key to our strategy to provide aftermarket parts that are simple to install and to make sure our customers have the resources to know how to install these parts properly. In having the right products and resources for our customers, we believe we will continue to be a preferred aftermarket supplier and continue to drive growth in the Americas and emerging economic areas.

Increase aftermarket position in high-growth regions, notably in Asia Pacific

The Asia Pacific region, particularly the high-growth markets of China and India, presents a significant opportunity for us to expand our business. We have made investments in distribution and in our sales force in both China and the rest of Asia to help drive growth in this increasingly important region. We must take into account the different operational requirements in Asia Pacific in order to drive aftermarket growth in this region.

The Asia Pacific light vehicle and commercial vehicle aftermarket industry is fragmented with a large number of small distributors and installers that require different strategies and solutions than more mature consolidated markets. Distribution in smaller volumes will require us to utilize a unique approach, as compared to the approach in mature markets, in order to compete on the basis of optimal "Order to Delivery" timeliness while maintaining a broad range of products.

Additionally, buying online is the preferred purchase method for many smaller distribution and installer partners. The sophistication of the existing online marketplaces in Asia Pacific will require us to develop adaptive and flexible omnichannel tools in order to compete effectively. We believe that developing a competitive online platform for our Asia Pacific customers will be the foundation for us to build a digital platform that will improve our competitiveness globally.

Environmental Matters

For additional information regarding environmental matters, see Item 3, "Legal Proceedings," Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations — Environmental Matters" and Note 15, "Commitments and Contingencies" of the consolidated financial statements included in Item 8, "Financial Statements and Supplementary Data."

Human Capital Resources

Employees

Our employees set the foundation for our ability to achieve our strategic objectives. As of December 31, 2020, we had approximately 73,000 employees with approximately 42% located in the Americas, 39% located in EMEA and 19% located in China and Asia Pacific. As of December 31, 2020, approximately 53% of our employee base was covered by collective bargaining agreements. With the exception of two facilities in the U.S., most of our unionized manufacturing facilities have their own contracts with their own expiration dates and, as a result, no contract expiration date affects more than one facility. Management believes that employee relations are favorable.

Safety, Health and Wellness

The health and safety of our employees and anyone who enters our workplace is of utmost importance to us. Our commitment to environmental, health and safety applies to all of our locations and all leadership levels within the organization. We utilize a robust tool kit of programs to achieve our health and safety goals.

In 2020, we introduced a range of new safety protocols in our facilities in an effort to protect our employees and support appropriate health and safety protocols in response to COVID-19 and the global pandemic. Through the use of education and awareness, provision of necessary personal protective equipment, and changes to our manufacturing sites and screening, we strive to make our workplaces a safe place for employees during the workday.

Creating a culture where all of our employees feel supported and valued is vital to Tenneco's values. We strive to ensure the health, safety and general well-being of our employees. We continue to evolve our programs to meet our employees' health and wellness needs, which we believe is critical to attract and retain employees, and we offer a competitive benefits package focused on fostering work/life integration.

Inclusion and Diversity

At Tenneco, we embrace the unique needs of each geographical market — from customer requirements to team member cultures. We actively cultivate the diverse talents of our team and strive to recruit and maintain a diverse and inclusive workforce everywhere we operate, which we believe enables better business decisions and rapid innovation. Our diversity and inclusion principles are also reflected in our employee training, in particular with respect to our policies against harassment in the workplace.

We have made progress in inclusion and diversity through a variety of diverse partnerships and organizations. Additionally, in 2020, to drive further changes in inclusion and diversity, we commissioned an IDEA (Inclusion, Diversity, Equity and Action) Board which partners with management to build a more robust inclusion and diversity strategy for the future. Tenneco's IDEA Board is sponsored by the Chief Executive Officer and the Senior Vice President and Chief Human Resources Officer and is made up of members from the Company representing locations, functions and business segments across the globe.

Competitive Pay

Our compensation programs are designed to align the compensation of our employees with the Company's performance and to provide proper incentives to attract, retain and motivate employees to achieve superior results. We believe the structure of our compensation programs balance incentive earnings for both short-term and long-term performance. Further, we are committed to fair pay and strive to be externally competitive while ensuring internal equity across the enterprise.

Talent Management

We have developed initiatives and opportunities to empower team members to progress their skill sets, focusing on tools and training to build capability and technical, professional and leadership skills throughout our organization, as well as use a progressive learning approach of "learn-do-lead" to develop our future leaders. We provide training programs in a variety of topics which cover both soft and technical skills. We also have supervisor development resources to continue to build tools for leaders to develop their teams on the job and in roles to create new opportunities to learn and grow. Core development programs are discussed in our Corporate Social Responsibility and Sustainability Report.

Team member engagement is critical to our success. To assess and improve employee retention and engagement, Tenneco surveys employees with the assistance of third-party consultants, and takes actions to understand our current engagement levels and to develop actions to address areas for improvement.

Tenneco is also focused on completing talent and performance reviews. Our in-depth talent reviews serve to identify high potential talent to advance in roles with greater responsibility, assess learning and development needs, and establish and refresh succession plans for critical leadership roles across the enterprise. Our performance review process promotes transparent communication of team member performance, which we believe is a key factor in our success. The performance and the talent reviews enable ongoing assessments, reviews, and mentoring to identify career development and training opportunities for our employees.

Raw Materials

We purchase various raw materials and component parts for use in our manufacturing processes, including ferrous and non-ferrous metals, non-metallic raw materials, stampings, castings, and forgings. We also purchase parts manufactured by other manufacturers for sale in the aftermarket. The principal raw material that we use is steel. We obtain steel from a number of sources pursuant to various contractual and other arrangements. We believe that an adequate supply of steel can presently be obtained from a number of different domestic and foreign suppliers. We address price increases by evaluating alternative materials and processes, reviewing material substitution opportunities, increasing component sourcing and parts assembly in best cost countries, strategically pursuing regional and global purchasing strategies for specific commodities, and aggressively negotiating with our customers to allow us to recover these higher costs from them.

Intellectual Property

We are the owner of a large number of U.S. and foreign country patents and trademarks relating to our products and businesses. We manufacture and distribute our aftermarket products and products sold directly to OE manufacturers under a number of trademarks that are well-recognized in the marketplace. The patents, trademarks and other intellectual property owned by or licensed to us are important in the manufacturing, marketing, and distribution of our products. The primary purpose in obtaining patents is to protect our designs, technologies, and products. However, we do not materially rely on any single patent, nor will the expiration of any single patent materially affect our business. While our current patents will expire in the normal course at various times between now and 2040, we continually develop new technologies and products and apply for and obtain new U.S. and foreign patents.

ITEM 1A. RISK FACTORS.

Business, Operational and Financial Risks

Future deterioration or prolonged difficulty in economic conditions could have a material adverse impact on our business, financial position, and liquidity.

We are a global company and, as such, our businesses are affected by economic conditions in the various geographic regions in which we do business. Economic difficulties generally lead to tightening of credit and liquidity. These conditions often lead to low consumer confidence or changes in consumer spending, which in turn may result in delayed and reduced purchases of durable goods such as automobiles and other vehicles. As a result, during difficult economic times our OE customers can significantly reduce their production schedules. For example, light vehicle production declined significantly during the global pandemic in 2020. Also, light vehicle and commercial vehicle production has declined significantly in South America in 2015 and 2016 and persistent challenges in the Chinese economy beginning in 2018 and continuing into 2021 may result in declining light vehicle and commercial vehicle production. Additionally, production of off-highway equipment with our content on them have been weak in certain product applications, such as agricultural and construction equipment in North America and Europe. Any deterioration or prolonged difficulty in economic conditions in any region in which we do business could have a material adverse effect on our business, financial position and liquidity.

In addition, economic difficulties often lead to disruptions in the financial markets, which may adversely impact the availability and cost of credit which could materially and negatively affect our company. Future disruptions in the capital and credit markets could adversely affect our customers' and our ability to access the liquidity that is necessary to fund operations on terms that are acceptable to us or at all.

Also, financial or other difficulties at any of our major customers could have a material adverse impact on us, including as a result of lost revenues, significant write downs of accounts receivable, significant impairment charges or additional restructuring beyond our current global plans. Severe financial or other difficulties at any of our major suppliers could have a material adverse effect on us if we are unable to obtain on a timely basis on similar economic terms the quantity and quality of components we require to produce our products.

Moreover, severe financial or operating difficulties at any light vehicle or commercial vehicle manufacturer or other supplier could have a significant disruptive effect on the entire industry, leading to supply chain disruptions and labor unrest, among other things. These disruptions could force original equipment manufacturers and, in turn, other suppliers, including us, to shut down production at plants. While the issues that our customers and suppliers face during economic difficulties may be primarily financial in nature, other difficulties, such as an inability to meet increased demand as conditions recover, could also result in supply chain and other disruptions.

The novel coronavirus (COVID-19) global pandemic has had and is expected to continue to have an adverse effect on our business and results of operations.

In late 2019, a novel strain of coronavirus, COVID-19, was first detected in Wuhan, China. In March 2020, the World Health Organization declared COVID-19 a global pandemic, and governmental authorities around the world have implemented measures to reduce the spread of COVID-19. These measures have adversely affected workforces, customers, consumer sentiment, economies, and financial markets, and, along with decreased consumer spending, reductions in revenue, and delays in payments from customers and partners, have led to an economic downturn in many of our markets. As a result of COVID-19, and in response to government mandates or recommendations, as well as decisions made to protect the health and safety of employees, consumers and communities, we and our customers have experienced significant closures and instances of reduced operations. Additionally, we have limited access at many of our corporate office and other facilities and have implemented a work from home policy for many corporate employees which may negatively impact productivity and cause other disruptions to our business.

The uncertainties created by the COVID-19 global pandemic, including the severity and duration of the outbreak and additional actions that may be taken by governmental authorities make it difficult to forecast the effects of the virus on the Company's future results, including our ability to execute our near-term and long-term business strategies and initiatives in the expected time frame. Additionally, it is possible that we may experience supply chain disruptions as well as labor shortages as a result of COVID-19, further disrupting operations and impacting revenues negatively. We may also face unforeseen liabilities as a result of the COVID-19 pandemic, including as a result of claims alleging exposure to COVID-19 in connection with our facilities or operations or we may be subject to fines or penalties to the extent we fail to comply with applicable requirements. To the extent the COVID-19 global pandemic adversely affects our business and financial results, it may also have the effect of heightening many of the other risks described in this "Risk Factors" section, such as those relating to our high level of indebtedness, our need to generate sufficient cash flows to service our indebtedness, our ability to comply with the covenants contained in the agreements that govern our indebtedness and to have access to sufficient liquidity through the COVID-19 pandemic, decreased revenue from loss of customer market share, and working capital requirements.

Factors that reduce demand for our products or reduce prices could materially and adversely impact our financial condition and results of operations.

Demand for and pricing of our products are subject to economic conditions and other factors present in the various domestic and international markets where our products are sold. Demand for our OE products is subject to the level of consumer demand for new vehicles that are equipped with our parts. The level of new light vehicle, commercial truck and off-highway vehicle purchases is cyclical, affected by such factors as general economic conditions, interest rates and availability of credit, consumer confidence, patterns of consumer spending, industrial construction levels, fuel costs, government incentives, and vehicle replacement cycles. Consumer preferences and government regulations also impact the demand for new light vehicle purchases equipped with our products. For example, if consumers increasingly prefer electric vehicles, demand for the vehicles equipped with our clean air and powertrain products could decrease.

Demand for our aftermarket, or replacement, products varies based upon such factors as general economic conditions; the level of new vehicle purchases, which initially displaces demand for aftermarket products; the severity of winter weather, which increases the demand for certain aftermarket products; the number of vehicles in operation; and other factors, including the average useful life of parts and number of miles driven.

The highly cyclical nature of the automotive and commercial vehicle industry presents a risk that is outside our control and that cannot be accurately predicted. Decreases in demand for automobiles and commercial vehicles and vehicle parts generally, or in the demand for our products in particular, could materially and adversely impact our financial condition and results of operations.

In addition, we believe that increasingly stringent environmental standards for emissions have presented and will continue to present an important opportunity for us to grow our clean air product line. We cannot assure you, however, that environmental standards for emissions will continue to become more stringent or that the adoption of any new standards will not be delayed beyond our expectations.

We may be unable to realize sales represented by our awarded business, which could materially and adversely impact our financial condition and results of operations.

The realization of future sales from awarded business is inherently subject to a number of important risks and uncertainties, including the number of vehicles that our OE customers will actually produce, the timing of that production and the mix of options that our OE customers and consumers may choose. For example, light vehicle production declined significantly during the global pandemic in 2020. More recently, light vehicle and commercial truck production declined significantly in South America in 2015 and 2016 and persistent challenges in the Chinese economy in 2018 and going into 2021 may result in declining light and commercial vehicle production in the region. In addition to the risks inherent in the cyclicity of vehicle production, our customers generally have the right to replace us with another supplier at any time for a variety of reasons and have demanded price decreases over the life of awarded business. Accordingly, we cannot assure you that we will in fact realize any or all of the future sales represented by our awarded business. Any failure to realize these sales could have a material adverse effect on our financial condition, results of operations, and liquidity.

In many cases, we must commit substantial resources in preparation for production under awarded OE business well in advance of the customer's production start date. In certain instances, the terms of our OE customer arrangements permit us to recover these pre-production costs if the customer cancels the business through no fault of our company. Although we have been successful in recovering these costs under appropriate circumstances in the past, we can give no assurance that our results of operations will not be materially impacted in the future if we are unable to recover these types of pre-production costs in the event of an OE customer's cancellation of awarded business.

Our level of debt makes us more sensitive to the effects of economic downturns; and provisions in our debt agreements could constrain our ability to react to changes in the economy or our industry.

As of December 31, 2020, we had \$3.2 billion of indebtedness outstanding under our new senior credit facility, \$2.0 billion of outstanding notes and \$0.2 billion of other debt. In addition, as a result of the acquisition we have increased exposure to interest rate fluctuations because our percentage of floating rate debt increased.

Our level of debt makes us more vulnerable to changes in our results of operations because a significant portion of our cash flow from operations is dedicated to servicing our debt and is not available for other purposes and our level of debt could impair our ability to raise additional capital if necessary. Further increases in interest rates will increase the amount of cash required for debt service. Under the terms of our senior secured credit facility, the indentures governing our notes and the agreements governing our other indebtedness, we are able to incur significant additional indebtedness in the future. The more we become leveraged, the more we, and in turn our security holders, become exposed to many of the risks described herein.

Our ability to make payments on our indebtedness depends on our ability to generate cash in the future. If we do not generate sufficient cash flow to meet our debt service, capital investment and working capital requirements, we may need to seek additional financing or sell assets. If we require such financing and are unable to obtain it, we could be forced to sell assets under unfavorable circumstances and we may not be able to sell assets quickly enough or for sufficient amounts to enable us to meet our obligations.

In addition, our senior credit facility and our other debt agreements contain covenants that limit our flexibility in planning for or reacting to changes in our business and our industry, including limitations on our ability to:

- declare dividends or redeem or repurchase capital stock;
- prepay, redeem or purchase other debt;
- incur liens;
- make loans, guarantees, acquisitions and investments;
- incur additional indebtedness;
- amend or otherwise alter debt and other material agreements;
- engage in mergers, acquisitions or asset sales; and
- engage in transactions with affiliates.

Our failure to comply with the covenants contained in our debt instruments, including as a result of events beyond our control, could result in an event of default, which could materially and adversely affect our operating results and our financial condition.

Our senior credit facility and other agreements governing financings we enter into from time to time require us to maintain certain financial ratios. Our senior credit facility and our other financing instruments require us to comply with various operational and other covenants. If there were an event of default under any of our financing instruments that was not cured or waived, the holders of the defaulted financing could cause all amounts outstanding with respect to that financing to be due and payable immediately (which, in turn, could also result in an event of default under one or more of our other financing arrangements). If such event occurs, the lenders under our senior credit facility could elect to terminate their commitments, cease making further loans and institute foreclosure proceedings against our assets and we could lose access to our factoring and supply chain financing programs. We cannot assure you that our assets or cash flow would be sufficient to fully repay borrowings under our outstanding financing instruments, either upon maturity or if accelerated, upon an event of default, or that we would be able to refinance or restructure the payments on those financing instruments. This would have a material adverse impact on our liquidity, financial position and results of operations, and on our ability to affect our share repurchase and dividend programs. For example, in 2020 we amended our senior credit agreement to relax the financial ratios we are required to maintain to facilitate operational flexibility in light of our outlook for the second half of 2020. Even though we were able to obtain amendments in 2020, we cannot assure you that we would be able to obtain amendments on commercially reasonable terms, or at all, if required in the future.

Our working capital requirements may negatively affect our liquidity and capital resources.

Our working capital requirements can vary significantly, depending in part on the level, variability and timing of our customers' worldwide vehicle production and the payment terms with our customers and suppliers. If our working capital needs exceed our cash flows from operations, we would look to our cash balances and availability for borrowings under our borrowing arrangements to satisfy those needs, as well as potential sources of additional capital, which may not be available on satisfactory terms and in adequate amounts, if at all.

We may be unable to realize the expected benefits of our initiatives to improve operating performance and generate cost savings and improvements.

We regularly implement strategic and other initiatives designed to improve our operating performance. Our inability to implement these initiatives in accordance with our plans or our failure to achieve the goals of these initiatives could have a material adverse effect on our business. We rely on these initiatives to offset pricing pressures from our suppliers and our customers, as described above, as well as to manage the impacts of production cuts. Our implementation of announced initiatives is from time to time subject to legal challenge in certain non-U.S. jurisdictions (where applicable employment laws differ from those in the U.S.). Furthermore, the terms of our senior credit facility and the indentures governing our notes may restrict the types of initiatives we undertake. In the past we have been successful in obtaining the consent of our senior lenders where appropriate in connection with our initiatives. We cannot assure you, however, that we will be able to pursue, successfully implement or realize the expected benefits of any initiative or that we will be able to sustain improvements made to date.

Exchange rate fluctuations could cause a decline in our financial condition and results of operations.

As a result of our international operations, we are subject to increased risk because we generate a significant portion of our net sales and incur a significant portion of our expenses in currencies other than the U.S. dollar. For example, where we have a greater portion of costs than revenues generated in a foreign currency, we are subject to risk if the foreign currency in which our costs are paid appreciates against the currency in which we generate revenue because the appreciation effectively increases our cost in that country.

The financial condition and results of operations of some of our operating entities are reported in foreign currencies and then translated into U.S. dollars at the applicable exchange rate for inclusion in our consolidated financial statements. As a result, appreciation of the U.S. dollar against these foreign currencies generally will have a negative impact on our reported revenues and operating profit while depreciation of the U.S. dollar against these foreign currencies will generally have a positive effect on reported revenues and operating profit.

We do not generally seek to mitigate the impacts of currency through the use of derivative financial instruments. To the extent we are unable to match revenues received in foreign currencies with costs paid in the same currency, exchange rate fluctuations in that currency could have a material adverse effect on our business.

From time to time we experience significant increases and fluctuations in raw materials pricing and increases in certain lead times; and future changes in the prices of raw materials or utility services, or future increases in lead times, could have a material adverse impact on us.

Significant increases in the cost of certain raw materials used in our products, mainly steel, oil and rubber, or the cost of utility services required to produce our products, to the extent they are not timely reflected in the price we charge our customers or are otherwise mitigated, could materially and adversely impact our results. For example, in March 2018, the current U.S. administration imposed a 25% tariff on steel imports and a 10% tariff on aluminum imports and over the course of 2018 and 2019, the U.S. government imposed additional tariffs on products from China. In addition, during 2017, carbon steel prices as well as raw material prices (such as ferrochrome, iron ore, scrap and coking coal) to produce carbon steel remained at high levels after the sharp increases in 2016. In addition, both the European Union as well as the U.S. continue to impose a variety of anti-dumping duties on carbon steel as well as stainless steel. This not only results in higher domestic pricing but limits opportunities in terms of off shore buying. Carbon steel prices in North America increased further in the fourth quarter of 2017 in the run-up to the mandated “232 Section Investigations” against the import deadline of mid-January 2018.

We attempt to mitigate price increases by evaluating alternative materials and processes, reviewing material substitution opportunities, increasing component sourcing and parts assembly in best cost countries, and strategically pursuing regional and global purchasing strategies for specific commodities. We also aggressively negotiate to recover these higher costs from our customers, and in some cases, such as with respect to steel surcharges, we have the contractual right to recover some or all of these higher costs from certain of our customers. However, if we are successful in recovering these higher costs, we may not receive that recovery in the same period that the costs were incurred and the benefit of the recovery may not be evenly distributed throughout the year.

We also continue to pursue productivity initiatives and other opportunities to reduce costs through restructuring activities. During periods of economic recovery, the cost of raw materials and utility services generally rise. Accordingly, we cannot ensure that we will not face further increased prices in the future or, if we do, whether our actions will be effective in containing them.

By entering into new product lines and employing new technologies, our ability to produce certain of these products may be constrained due to longer lead times for our facilities, as well as those of our suppliers. We attempt to mitigate the negative effects of these longer lead times by improving the accuracy of our long-term planning; however, we cannot provide any certainty that we will always be successful in avoiding disruptions to our delivery schedules.

Our aftermarket sales may be negatively impacted by increasing competition from lower cost, private-label products.

Distribution channels in the aftermarket have continued to consolidate and, as a result, our sales to large retail customers represent a significant portion of our aftermarket business. Private-label aftermarket products, which are typically manufactured at a lower cost, often containing little or no premium technology, and are branded with a store or other private-label brand, are increasingly available to these large retail customers. Our aftermarket business is facing increasing competition from these lower cost, private-label products and there is growing pressure to expand our entry-level product lines so that retailers may offer a greater range of price points to their consumer customers. We cannot assure you that we will be able to maintain or increase our aftermarket sales to these large retail customers or that increased competition from these lower cost, private-label aftermarket products will not have an adverse impact on our aftermarket business.

If the reputation of one or more of our leading brands is harmed, aftermarket sales may be negatively impacted.

Our aftermarket sales are dependent on the reputation and success of our brands, including Monroe®, Champion®, Öhlins®, MOOG®, Walker®, Fel-Pro®, Wagner®, Ferodo®, Rancho®, Thrush®, National®, Sealed Power® and others. Product liability claims or recalls could result in negative publicity that could harm the reputation of our brands. If one or more of our leading brands suffers damage to its reputation due to real or perceived quality or safety issues, our financial results could be adversely affected.

Improvements in automotive parts are adversely affecting aftermarket demand for some of our products.

The average useful life of automotive parts has steadily increased in recent years due to innovations in products and technologies. The longer product lives allow vehicle owners to replace parts of their vehicles less often. As a result, a portion of sales in the aftermarket has been displaced. In addition, advancements in technology may lead to enhancements in aftermarket product performance that render our product obsolete. This has adversely impacted, and could continue to adversely impact, our aftermarket sales. Also, any additional increases in the average useful lives of automotive parts or other enhancements in aftermarket performance would further adversely affect the demand for our aftermarket products.

Natural disasters, local and global public health emergencies, political crises, and other catastrophic events or other events outside of our control may affect our facilities or the facilities of third parties on which we depend and could impact our business and our results of operations and financial condition.

If any of our facilities or the facilities of our suppliers, third-party service providers, or customers, is affected by natural disasters (such as earthquakes, tornados, tsunamis, power shortages or outages, floods or monsoons), public health crises (such as pandemics and epidemics), political crises (such as terrorism, war, political instability or other conflict), or other events outside of our control, our business and our results of operations and financial condition could suffer. Any such disruption could cause delays in the production and distribution of our products and the loss of sales and customers. Moreover, these types of events could negatively impact consumer spending or the economy in the impacted regions or depending upon the severity, globally, which could adversely impact our business and our results of operations and financial condition.

Certain of our operations are conducted through joint ventures, which have unique risks.

Certain of our operations are conducted through joint ventures. Our joint ventures are governed by mutually established agreements that we entered into with our partners, and, as such, we do not unilaterally control the joint ventures. There is a risk that our partners' objectives for the joint ventures may not be aligned with ours, leading to potential disagreements over management of the joint ventures. At some of our joint ventures, our joint venture partner is also affiliated with the largest customer of the joint venture, which may create a conflict between the interests of our partner and the joint venture. Also, our ability to sell our interest in a joint venture may be subject to contractual and other limitations.

Additional risks associated with joint ventures include our partners failing to satisfy contractual obligations, conflicts arising between us and any of our partners, a change in the ownership of any of our partners and our limited ability to control compliance with applicable rules and regulations. Accordingly, any such occurrences could adversely affect our financial condition, operating results and cash flows.

We are subject to risks related to operating a multi-national company.

We have manufacturing and distribution facilities in many regions across six continents. For the fiscal year ended December 31, 2020, a significant portion of our net sales were derived from operations outside North America. Current events including the possibility of renegotiated trade deals and international tax law treaties, create a level of uncertainty, and potentially increased complexity, for multi-national companies. These uncertainties could have a material adverse effect on our business and our results of operations and financial condition. In addition, international operations are subject to various risks which could have a material adverse effect on those operations or our business as a whole, including:

- currency exchange rate fluctuations, including those in countries with hyperinflationary economies;
- exposure to local economic conditions and labor issues;
- exposure to local political conditions, including the risk of seizure of assets by a foreign government;
- exposure to local social conditions, including corruption and any acts of war, terrorism or similar events;
- exposure to local public health issues and the resultant impact on economic and political conditions;
- inflation in certain countries;
- limitations on the repatriation of cash, including imposition or increase of withholding and other taxes on remittances and other payments by foreign subsidiaries;
- retaliatory tariffs and restrictions limiting free movement of goods and an unfavorable trade environment, including as a result of political conditions and changes in the laws in the U.S. and elsewhere and as described in more details below; and
- requirements for manufacturers to use locally produced goods.

Entering new markets poses new competitive threats and commercial risks.

As we have expanded into markets beyond light vehicles, we expect to diversify our product sales by leveraging technologies being developed for the light vehicle segment. Such diversification requires investments and resources which may not be available as needed. We cannot guarantee that we will be successful in leveraging our capabilities into new markets and thus, in meeting the needs of these new customers and competing favorably in these new markets. Further, a significant portion of our growth potential is dependent on our ability to increase sales to commercial truck and off-highway vehicle customers. While we believe that we can achieve our growth targets with the production contracts that have been or will be awarded to us, our future prospects will be negatively affected if those customers underlying these contracts experience reduced demand for their products, or financial difficulties.

We have recorded a significant amount of long-lived assets, goodwill, and other intangible assets, which may become impaired in the future and negatively affect our operating results.

We have recorded a significant amount of long-lived assets, goodwill, and other identifiable intangibles assets, including customer relationships, trademarks and brand names, and developed technologies due to the Federal-Mogul Acquisition. Long lived assets, goodwill, and other identifiable intangible assets were approximately \$4.8 billion as of December 31, 2020, or 40% of our total assets. Under generally accepted accounting principles in the U.S., long-lived assets, excluding goodwill and indefinite lived intangible assets, are required to be evaluated for impairment whenever adverse events or changes in circumstances indicate a possible impairment. If business conditions or other factors cause profitability and cash flows to decline, we may be required to record non-cash impairment charges. Goodwill and indefinite-lived intangible assets must be evaluated for impairment annually or more frequently if events indicate it is warranted. Impairment of goodwill and other identifiable intangible assets may result from, among other things, deterioration in our performance, adverse market conditions, adverse changes in applicable laws or regulations, including changes that restrict the activities of or affect the products sold by our business, and a variety of other factors. The amount of any quantified impairment must be expensed immediately and could have a material adverse effect on our financial statements in the event that long lived assets, goodwill or other identifiable intangible assets become impaired.

The value of our deferred tax assets may not be realized, which could materially and adversely affect our operating results.

As of December 31, 2020, we had approximately \$196 million in net deferred tax assets. These deferred tax assets include net operating loss carryovers and tax credits that can be used to offset taxable income in future periods and reduce income taxes payable in those future periods. Each quarter, we determine the probability of the realization of deferred tax assets, using significant judgments and estimates with respect to, among other things, historical operating results and expectations of future earnings and tax planning strategies. If we determine in the future that there is not sufficient positive evidence to support the valuation of these assets, due to the risk factors described herein or other factors, we may be required to further adjust the valuation allowance to reduce our deferred tax assets. Such a reduction could result in material non-cash expenses in the period in which the valuation allowance is adjusted and could have a material adverse effect on our financial statements.

We may not be able to fully utilize our net operating loss and other tax carryforwards.

Under Section 382 of the Internal Revenue Code of 1986, as amended (the “Code”), and corresponding provisions of state law, if a corporation undergoes an “ownership change,” the corporation’s ability to use its pre-change net operating loss carryforwards and other pre-change tax attributes to offset its post-change income or taxes may be limited. A corporation generally experiences an “ownership change” if the percentage of its shares of stock owned by its “5-percent shareholders,” as such term is defined in Section 382 of the Code, increases by more than 50 percentage points over a rolling three-year period. We may experience ownership changes in the future as a result of subsequent shifts in our stock ownership, some of which may be outside of our control. If an ownership change occurs and our ability to use our tax attributes is materially limited, it would harm our future operating results by effectively increasing our future tax obligations.

In April 2020, our Board of Directors approved a Section 382 Rights Agreement (the “Section 382 Rights Plan”), which may cause substantial dilution to a person or group that attempts to acquire 4.9% or more of the Company’s Class A Voting Common Stock on terms not approved by our Board of Directors. The purpose of the Rights Plan is to protect value by preserving the Company’s ability to use certain of its tax attributes to offset potential future income taxes. Although the Section 382 Rights Plan is intended to reduce the likelihood of an “ownership change” that could adversely affect utilization of our tax assets, there is no assurance that the Section 382 Rights Plan will prevent all transfers that could result in such an “ownership change.” The Section 382 Rights Plan could make it more difficult for a third party to acquire, or could discourage a third party from acquiring, a large block of our Class A Voting Common Stock. A third party that acquires in excess of 4.9% or more of our Class A Voting Common Stock could suffer substantial dilution of its ownership interest under the terms of the Section 382 Rights Plan. This may adversely affect the marketability of our Class A Voting Common Stock by discouraging existing or potential investors from acquiring our stock or additional shares of our stock.

Our expected annual effective tax rate could be volatile and materially change as a result of changes in mix of earnings and other factors.

Our overall effective tax rate is equal to our total tax expense as a percentage of our total profit or loss before tax. However, tax expenses and benefits are determined separately for each tax paying entity or group of entities that is consolidated for tax purposes in each jurisdiction. Losses in certain jurisdictions may provide no current financial statement tax benefit. As a result, changes in the mix of profits and losses between jurisdictions, among other factors, could have a significant impact on our overall effective tax rate.

The Company’s hedging activities to address commodity price fluctuations may not be successful in offsetting future increases in those costs or may reduce or eliminate the benefits of any decreases in those costs.

In order to mitigate short-term variation in operating results due to the aforementioned commodity price fluctuations, the Company hedged a portion of near-term exposure to certain raw materials used in production processes, primarily copper, nickel, tin, zinc, high-grade aluminum and aluminum alloy. The results of this hedging practice could be positive, neutral or negative in any period depending on price changes in the hedged exposures.

Our hedging activities are not designed to mitigate long-term commodity price fluctuations and, therefore, will not protect from long-term commodity price increases. Our future hedging positions may not correlate to actual raw materials costs, which would accelerate the recognition in our operating results of unrealized gains and losses on hedging positions.

If we cannot attract, retain, and motivate employees, we may be unable to compete effectively, and lose the ability to improve and expand our businesses.

Our success and ability to grow depends, in part, on our ability to hire, retain, and motivate sufficient numbers of talented people with the increasingly diverse skills needed to serve clients and expand our business in many locations around the world. We face intense competition for highly qualified, specialized technical, managerial and other personnel. Recruiting, training, retention, and benefit costs place significant demands on our resources. The inability to attract qualified employees in sufficient numbers to meet particular demands or the loss of key management employees or a significant number of our employees could have an adverse effect on us.

Our business could be adversely impacted as a result of actions by activist stockholders, including potential proxy contests.

We value constructive input from investors and regularly engage in dialogue with our stockholders regarding strategy and performance. The Board of Directors and management team are committed to acting in the best interests of all of our stockholders. There can be no assurance, however, that the actions taken by the Board of Directors and management in seeking to maintain constructive engagement with our stockholders will be successful, and we may be subject to formal or informal actions or requests from stockholders or others. Responding to such actions could be costly and time-consuming, divert the attention and resources of management and employees, and may have an adverse effect on our business, results of operations and cash flow and the market price of our common stock.

Uncertainties related to, or the results of, any actions by activist stockholders could cause our stock price to experience periods of volatility. We cannot predict, and no assurances can be given as to the outcome or timing of any matters relating to actions by activist stockholders or the ultimate impact on our business, liquidity, financial condition or results of operations.

The Company's pension obligations and other postretirement benefits could adversely affect the Company's operating margins and cash flows.

Pension and other postretirement benefit obligations have increased. The automotive industry, like other industries, continues to be affected by the rising cost of providing pension and other postretirement benefits. In addition, the Company sponsors certain defined benefit plans worldwide that are underfunded and will require cash payments. If the performance of the assets in the pension plans does not meet the Company's expectations, or other actuarial assumptions are updated, the Company's required contributions may be higher than it expects.

Industry Risks

We are dependent on certain large customers for future revenue. The loss of all or a substantial portion of our revenues from any of these customers or the loss of market share by these customers could have a material adverse impact on us.

We depend on major vehicle manufacturers for a substantial portion of our revenues. For example, during the fiscal year ended December 31, 2020, General Motors and Ford accounted for 11% and 10% of our net sales. Following the Federal-Mogul Acquisition, we are increasingly dependent on certain major aftermarket customers for our revenues. The loss of all or a substantial portion of our revenues from any of our large-volume customers could have a material adverse effect on our financial condition and results of operations by reducing cash flows and our ability to spread costs over a larger revenue base. Circumstances that could result in a loss of revenues from our large-volume customers include, without limitation, the transition away from the production of gasoline powered vehicles (such as the most recent announcements by General Motors and Ford) and the transition to electrified powertrains, whether voluntary or mandated. We may experience decreased revenues from these customers for a variety of reasons, including but not limited to: (i) in the case of our OE customers, loss of awarded platforms, reduced demand for our customers' products, and work stoppages or other disruptions impacting OE production, and (ii) in the case of our aftermarket customers, reduced or delayed consumer requirements and competition from other brands or lower-cost alternatives. Further, our aftermarket customers are generally able to change suppliers more quickly than OE customers, which heightens these risks with respect to our aftermarket business.

For all of our customers, we face additional risks including (i) national and local mandates to phase-out or limit the use or sale of gasoline or diesel powered vehicles; and (ii) our customers failure to pay us for a variety of other reasons, including their respective financial conditions.

In addition, our customers compete intensively against each other. The loss of market share by any of our major customers could have a material adverse effect on our business unless we are able to achieve increased sales to other major customers.

The hourly workforce in the industry in which we participate is highly unionized and our business could be adversely affected by labor disruptions in the U.S. or internationally.

A portion of our hourly workforce in North America and the majority of our hourly workforce in other regions are unionized. Although we consider our current relations with our employees to be satisfactory, if major work disruptions were to occur, our business could be adversely affected by, for instance, a loss of revenues, increased costs or reduced profitability. We have not experienced a material labor disruption in our recent history, but there can be no assurance that we will not experience a material labor disruption at one of our facilities in the future in the course of renegotiation of our labor arrangements or otherwise.

In addition to the risk of a work stoppage at one of our facilities, labor disruptions at other domestic or international companies may have an adverse effect on us. In the U.S., substantially all of the hourly employees of General Motors, Ford and Stellantis in North America and many of their other suppliers are represented by The International Union, United Automobile, Aerospace and Agricultural Implement Workers of America (“UAW”) under collective bargaining agreements. Internationally, certain vehicle manufacturers, their suppliers and their respective employees are also subject to labor agreements. In September 2019, General Motors hourly workers represented by the UAW went on strike, which affected the volumes at certain of our North American plants in the third quarter of 2019. Although the strike was resolved on October 25, 2019, the strike affected volumes in the fourth quarter of 2019 as well. A work stoppage or strike at one of our production facilities, at those of a customer, or impacting a supplier of ours or any of our customers, either domestically or internationally, could have an adverse impact on us by disrupting demand for our products or our ability to manufacture our products.

We may have difficulty competing favorably in the highly competitive light vehicle and commercial vehicle supplier industry.

The light vehicle and commercial vehicle supplier automotive parts industry is highly competitive. Although the overall number of competitors has decreased due to ongoing industry consolidation, we face significant competition within each of our major product areas, including from new competitors entering the markets which we serve. The principal competitive factors include price, quality, service, product performance, design and engineering capabilities, new product innovation, global presence and timely delivery. As a result, many suppliers have established or are establishing themselves in emerging, low-cost markets to reduce their costs of production and be more conveniently located for customers. We cannot assure you that we will be able to continue to compete favorably in this competitive market or that increased competition will not have a material adverse impact on our business by reducing our ability to increase or maintain sales or profit margins.

In addition, our competitors may foresee the course of market development more accurately than we do, develop products that are superior to ours, adapt more quickly than we do to new technologies or evolving customer requirements or develop or introduce new products or solutions before we do, particularly in respect of potential transformative technologies such as autonomous driving solutions. As a result, our products may not be able to compete successfully with their products. These trends may adversely affect our sales as well as the profit margins on our products. Failure to innovate and to develop or acquire products that capitalize on new technologies could have a material adverse impact on our results of operations.

Furthermore, due to the cost focus of our major OE customers, we have been, and expect to continue to be, requested to reduce prices as part of our initial business quotations and over the life of OE vehicle platforms we have been awarded. We cannot be certain that we will be able to generate cost savings and operational improvements in the future that are sufficient to offset price reductions requested by existing OE customers and necessary to win additional business. OE customers also direct us to engage specific suppliers for component purchases not allowing us to leverage our own supply base and realize cost reductions on this directed spend.

The decreasing number of customers and suppliers in our industry could make it more difficult for us to compete favorably.

Our financial condition and results of operations could be adversely affected because the customer base for our parts and services is decreasing in both the OE market and aftermarket. As a result, we are competing for business from fewer customers. Furthermore, consolidation among suppliers have resulted in fewer, larger suppliers who benefit from purchasing and distribution economies of scale. If we cannot achieve cost savings and operational improvements sufficient to allow us to compete favorably in the future with these larger companies, our financial condition and results of operations could be adversely affected.

If we do not respond appropriately, the evolution towards connectivity, autonomy, shared mobility and electrification could adversely affect our business.

The light vehicle industry is increasingly focused on the development of advanced driver assistance technologies, with the goal of developing and introducing a commercially viable, fully autonomous vehicle. Continued focus on climate change and environmental sustainability is increasing the expectations for the auto industry to develop more fuel-efficient solutions from consumers and governments worldwide. For example, General Motors recently joined other vehicle manufacturers, including Ford, Nissan and Volvo, in committing to becoming carbon neutral after announcing its plans to reach carbon neutrality by 2040 and to stop selling gasoline powered light vehicles by 2035. To achieve these goals, General Motors is investing substantially in electrification. The increased adoption of electrified powertrains could result in lower demand for some of our products. There has also been an increase in consumer preferences for car and ride sharing, as opposed to automobile ownership, which may result in a long-term reduction in the number of vehicles per capita. The evolution of the industry towards connectivity, autonomy, shared mobility and electrification has also attracted increased competition from entrants outside the traditional light vehicle industry. Failure to innovate and to develop or acquire new and compelling products that capitalize upon new technologies in response to OE and consumer preferences could have a material adverse impact on our results of operations.

Legal, Regulatory and Policy Risks

We are subject to, and could be further subject to, government investigations or actions by other third parties.

We are subject to a variety of laws and regulations that govern our business both in the U.S. and internationally, including antitrust laws, violations of which can involve civil or criminal sanctions. Responding to governmental investigations or other actions may be both time-consuming and disruptive to our operations and could divert the attention of our management and key personnel from our business operations.

We cannot assure you that the reserve we have established to resolve these matters will not change materially from time to time or that the costs, charges and liabilities associated with these matters will not exceed any amounts reserved for them in our consolidated financial statements.

We may incur costs related to product warranties, environmental and regulatory matters, legal proceedings and other claims, which could have a material adverse impact on our financial condition and results of operations.

From time to time, we receive product warranty claims from our customers, pursuant to which we may be required to bear costs of repair or replacement of certain of our products. Vehicle manufacturers require their outside suppliers to guarantee or warrant their products and to be responsible for the operation of these component products in new vehicles sold to consumers. Warranty claims may range from individual customer claims to full recalls of all products in the field. We cannot assure you that costs associated with providing product warranties will not be material, or that those costs will not exceed any amounts reserved in our consolidated financial statements. For a description of our accounting policies regarding warranty reserves, see Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Critical Accounting Policies”.

Our global operations subject us to extensive governmental regulations worldwide. Foreign, federal, state and local laws and regulations may change from time to time and our compliance with new or amended laws and regulations in the future may materially increase our costs and could adversely affect our results of operations and competitive position. For example, we are subject to a variety of environmental and pollution control laws and regulations in all jurisdictions in which we operate. Soil and groundwater remediation activities are being conducted at certain of our current and former real properties. We record liabilities for these activities when environmental assessments indicate that the remedial efforts are probable and the costs can be reasonably estimated. On this basis, we have established reserves that we believe are adequate for the remediation activities at our current and former real properties for which we could be held responsible. Although we believe our estimates of remediation costs are reasonable and are based on the latest available information, the cleanup costs are estimates and are subject to change as more information becomes available about the extent of remediation required. In future periods, we could incur cash costs or charges to earnings if we are required to undertake remediation efforts as the result of ongoing analysis of the environmental status of our properties. In addition, violations of the laws and regulations we are subject to could result in civil and criminal fines, penalties and sanctions against us, our officers or our employees, as well as prohibitions on the conduct of our business, and could also materially affect our reputation, business and results of operations.

We also from time to time are involved in a variety of legal proceedings, claims or investigations. These matters typically are incidental to the conduct of our business. Some of these matters involve allegations of damages against us relating to environmental liabilities, intellectual property matters, personal injury claims, taxes, employment matters or commercial or contractual disputes or allegations relating to legal compliance by us or our employees. For example, we are subject to a number of lawsuits initiated by a significant number of claimants alleging health problems as a result of exposure to asbestos. Many of these cases involve significant numbers of individual claimants. Many of these cases also involve numerous defendants. As major asbestos manufacturers or other companies that used asbestos in their manufacturing processes continue to go out of business, we may experience an increased number of these claims.

We cannot assure you that the costs, charges and liabilities associated with these matters will not be material, or that those costs, charges and liabilities will not exceed any amounts reserved for them in our consolidated financial statements. In future periods, we could be subject to cash costs or charges to earnings if any of these matters are resolved unfavorably to us. See Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Environmental and Legal Contingencies”.

Changes in tax law or trade agreements and new or changed tariffs could have a material adverse effect on us.

Changes in U.S. political, regulatory and economic conditions and/or changes in laws and policies governing U.S. tax laws, foreign trade (including trade agreements and tariffs), manufacturing, and development and investment in the territories and countries where we and/or our customers operate could adversely affect our operating results and business.

For example, on December 22, 2017, the U.S. President signed into law new legislation that significantly revised the U.S. Internal Revenue Code. The newly enacted federal income tax law, among other things, contains significant changes to corporate taxation, including the reduction of the corporate income tax rate from a top marginal rate of 35% to a flat rate of 21%, a one-time transition tax on offshore earnings at reduced tax rates regardless of whether the earnings are repatriated, elimination of U.S. tax on foreign dividends (subject to certain important exceptions), new taxes on certain foreign earnings, a new minimum tax related to payments to foreign subsidiaries and affiliates, immediate deductions for certain new investments as opposed to deductions for depreciation expense over time, and the modification or repeal of many business deductions and credits.

In addition, the U.S., Mexico and Canada have renegotiated the North American Free Trade Agreement (“NAFTA”). The revised agreement, the US-Mexico-Canada Agreement (“USMCA”), contains new and revised provisions that alter the prior rules governing when imports and exports of autos and auto parts are eligible for duty-free treatment. Generally, these new rules require a higher percentage of the overall content of the auto or autopart to originate in one of the USMCA's countries (the U.S., Mexico or Canada). The USMCA was effective July 1, 2020. Our manufacturing facilities in the U.S., Mexico and Canada are dependent on duty-free trade within the USMCA region. We have significant movement of goods within NAFTA region, and the imposition of customs duties on imports could negatively impact our financial performance.

Moreover, in March 2018, the U.S. government imposed a 25% ad valorem tariff on certain steel imports and a 10% ad valorem tariff on certain aluminum imports. These tariffs (known as “Section 232 tariffs”) apply to certain steel and aluminum imports from almost all countries. In addition, over the course of 2018 and 2019, the U.S. government imposed additional tariffs on products from China valued at \$550 billion, with some limited exceptions (known as “Section 301 tariffs”). As a result of the tariffs, China and other countries have implemented retaliatory actions with respect to U.S. imports into their countries, which could adversely affect our business, financial condition or results of operations.

Intellectual Property Risks

Developments relating to our intellectual property could materially impact our business.

We and others in our industry hold a number of patents and other intellectual property rights, including licenses, which are critical to our respective businesses and competitive positions. Notwithstanding our intellectual property portfolio, our competitors may develop similar or superior proprietary technologies. Further, as we expand into regions where the protection of intellectual property rights is less robust, the risk of others replicating our proprietary technologies increases, which could result in a deterioration of our competitive position. On occasion, we may assert claims against third parties who are taking actions that we believe are infringing on our intellectual property rights. Similarly, third parties may assert claims against us and our customers and distributors alleging our products infringe upon third party intellectual property rights. These claims, regardless of their merit or resolution, are frequently costly to prosecute, defend or settle and divert the efforts and attention of our management and employees. Claims of this sort also could harm our relationships with our customers and might deter future customers from doing business with us. If any such claim were to result in an adverse outcome, we could be required to take actions which may include: expending significant resources to develop or license non-infringing products; paying substantial damages to third parties, including to customers to compensate them for their discontinued use or replacing infringing technology with non-infringing technology; or cessation of the manufacture, use or sale of the infringing products. Any of the foregoing results could have a material adverse effect on our business, financial condition, results of operations or our competitive position.

We may not be able to respond quickly enough to changes in technology and to develop our intellectual property into commercially viable products.

Changes in competitive technologies may render certain of our products obsolete or less attractive. Our ability to anticipate changes in technology and to successfully develop and introduce new and enhanced products on a timely basis are significant factors in our ability to remain competitive and to maintain or increase our revenues.

We cannot provide assurance that certain of our products will not become obsolete or that we will be able to achieve the technological advances that may be necessary for us to remain competitive and maintain or increase our revenues in the future. We are also subject to the risks generally associated with new product introductions and applications, including lack of market acceptance, delays in product development or production, and failure of products to operate properly. If we are unable to react to changes in the marketplace, including the potential introduction of technologies such as autonomous vehicles, our financial performance could be adversely affected.

Information Technology Risks

We are increasingly dependent on information technology, and if we are unable to protect against service interruptions or security breaches, our business could be adversely affected.

Our operations rely on a number of information technologies to manage, store, and support business activities. Some of these technologies are managed by third-party service providers and are not under our direct control. We have put in place a number of systems, processes, and practices designed to protect against the failure of our systems, as well as the misappropriation, exposure or corruption of the information stored thereon. Unintentional service disruptions or intentional actions such as intellectual property theft, cyber-attacks, ransomware attacks, unauthorized access or malicious software, may lead to such misappropriation, exposure or corruption if our, or our service providers', protective measures prove to be inadequate. In addition, the costs to eliminate or alleviate network security problems, bugs, viruses, ransomware, worms, malicious software programs and security vulnerabilities could be significant, and our efforts to address these problems may not be successful, resulting potentially in the theft, loss, destruction or corruption of information that we store electronically. Further, these events may cause operational impediments or otherwise adversely affect our product sales, financial condition and/or results of operations. We could also encounter violations of applicable law, contracts or reputational damage from the disclosure of confidential information belonging to us or our employees, customers or suppliers. In addition, the disclosure of non-public information could lead to the loss of our intellectual property and/or diminished competitive advantages. Should any of the foregoing events occur, we may be required to incur significant costs to protect against damage caused by these disruptions or security breaches in the future. In addition, evolving and expanding compliance and operational requirements under the privacy laws of the jurisdictions in which we operate, such as the EU General Data Protection Regulation, or GDPR, which took effect in May 2018, impose significant costs that are likely to increase over time or potential fines for non-compliance.

Risks Relating to the Federal-Mogul Acquisition and our Review of Strategic Alternatives

We may fail to realize all of the anticipated benefits of the Federal-Mogul Acquisition or those benefits may take longer to realize than expected.

Our success will depend, in part, on our ability (and the ability of each separate company following the potential separation or another strategic alternative) to realize the anticipated benefits of the Federal-Mogul Acquisition, including the sustainability of synergies and cost savings; or realization of the sales and growth opportunities we identified. These benefits may not be achieved within the anticipated time frame, or at all. The failure to meet the challenges involved in the integration process and realize the anticipated benefits of the Federal-Mogul Acquisition could cause an interruption of, or a loss of momentum in, our operations and could have a material adverse effect on our (and each separate company's) business, financial condition and results of operations.

Our review of strategic alternatives to enhance shareholder value creation, including the potential separation of our businesses, is subject to various risks and uncertainties. We may not complete or achieve the intended benefits of the separation or any other strategic alternative, and pursuit thereof may involve significant time and expense, which could disrupt or adversely affect our business.

We have previously announced our review of a full range of strategic alternatives to enhance shareholder value creation, including a potential separation of the Company into an Aftermarket and Ride Performance company and a Powertrain Technology company. We made significant progress to facilitate the potential separation of our businesses and completed all necessary system and process components required for the Aftermarket and Ride Performance and Powertrain Technology companies to operate independently. However, in light of current market conditions and other factors, our current efforts to optimize shareholder value creation are also focused on operational improvements, reducing structural costs, lowering capital intensity, reducing debt, and growth in targeted business lines.

As circumstances warrant, we will evaluate multiple strategic alternatives, as well as options to optimize shareholder value. We cannot, however, assure you that we will be able to identify and consummate strategic alternatives that yield additional value. The timing, benefits and outcome of any strategic review process or the structure, terms and specific risks and uncertainties associated with any particular strategic alternative are uncertain. Any pursuit of any such strategic alternative could result in material disruptions in our business and otherwise have an adverse effect on our results of operations.

There can be no assurance that such a separation of our businesses or another strategic alternative will be completed. We expect that the process of completing a potential planned separation or other strategic alternative will be time consuming and involve significant costs and expenses, which may be significantly higher than what we currently anticipate and may not yield a benefit if the separation or other strategic alternative is not completed. We may encounter impediments to the completion of the separation or another strategic alternative that renders it impossible or impracticable.

Any potential separation of our businesses or pursuit of another strategic alternative could cause disruptions and create uncertainty surrounding our business and affect our relationships with our customers, suppliers and employees. We (or each separate company after the potential separation or other strategic alternative) may not realize some or all of the anticipated strategic, financial, operational or other benefits from the potential separation of our businesses or any other alternative we pursue.

Our current stockholders may have reduced ownership and voting interests following the exercise of certain rights under the Purchase Agreement and exercise less influence over management.

We have granted certain registration rights to American Entertainment Properties Corporation (“AEP”) for the resale of the shares issued in connection with the Federal-Mogul Acquisition. These registration rights facilitate the resale of such shares into the public market, and any such resale increases the number of shares of our Class A Common Stock available for public trading. Sales of a substantial number of shares of our Class A Common Stock in the public market, or the perception that such sales might occur, could have a material adverse effect on the price of our Class A Common Stock.

When AEP transfers shares of its Class B Common Stock to a third-party, the shares of Class B Common Stock so transferred will automatically convert in shares of Class A Common Stock. Each holder of Class B Common Stock may convert a number of such shares into an equal number of shares of Class A Common Stock, provided that such conversion would not result in such holder, AEP, Icahn Enterprises Holding L.P., and Icahn Enterprises L.P. and any of their affiliates owning, in the aggregate, more than 15 percent of the Class A Common Stock issued and outstanding immediately following such conversion. When AEP transfers any shares of its Class B Common Stock to a third party, or when AEP converts its shares, our current stockholders will experience a proportionate reduction in voting power.

ITEM 1B. UNRESOLVED STAFF COMMENTS.

None.

ITEM 2. PROPERTIES.

We lease our principal executive offices, which are located at 500 North Field Drive, Lake Forest, Illinois, 60045.

	Reportable Segments				Total
	Clean Air	Powertrain	Ride Performance	Motorparts	
Manufacturing plants:					
North America	17	23	8	7	55
Europe	20	32	14	4	70
South America	3	5	3	2	13
Asia Pacific	26	23	11	3	63
	66	83	36	16	201
Engineering and technical facilities	7	11	15	6	39
Distribution centers and warehouses	—	—	—	33	33
Total as of December 31, 2020	73	94	51	55	273
Lease					
	45	25	17	27	114
Own					
	28	69	34	28	159
Total as of December 31, 2020	73	94	51	55	273

Our manufacturing facilities are located in Argentina, Australia, Belgium, Brazil, Canada, China, Czech Republic, France, Germany, Hungary, India, Italy, Japan, Mexico, Morocco, Philippines, Poland, Portugal, Romania, Russia, South Africa, South Korea, Spain, Sweden, Thailand, the United Kingdom, the U.S., and Vietnam.

Within our manufacturing facilities listed above, we operate 35 joint ventures in which we own a controlling interest. In addition, we have numerous joint ventures in which we hold a noncontrolling interest that operate manufacturing facilities primarily in China, Turkey, and the U.S., which are not included in the table above.

Certain of our engineering and technical facilities listed above are located at our manufacturing facilities. We also have warehouses and distribution facilities at our manufacturing sites and a few off-site locations, substantially all of which we lease, and a network of 10 technical support centers that provide some of the most comprehensive training programs in the industry that educate our partners and customers with emerging vehicle technologies and vehicle repair operational skills.

We believe that substantially all of our plants and equipment are, in general, well maintained and in good operating condition. They are considered adequate for present needs and, as supplemented by planned construction, are expected to remain adequate for the near future.

We also believe that we generally have satisfactory title to the properties owned and used in our respective businesses. In the United States, substantially all of our owned real property is pledged to secure our obligations under our senior credit facility.

ITEM 3. LEGAL PROCEEDINGS.

We are involved in environmental remediation matters, legal proceedings, claims (including warranty claims), and investigations. These matters are typically incidental to the conduct of our business and create the potential for contingent losses. We accrue for potential contingent losses when our review of available facts indicates that it is probable a loss has been incurred and the amount of the loss is reasonably estimable. Each quarter, we assess our loss contingencies based upon currently available facts, existing technology, presently enacted laws and regulations, and taking into consideration the likely effects of inflation and other societal and economic factors and record adjustments to these reserves as required. As an example, we consider all available evidence, including prior experience in remediation of contaminated sites, other companies' cleanup experiences and data released by the U.S. Environmental Protection Agency or other organizations when we evaluate our environmental remediation contingencies. All of our loss contingency estimates are subject to revision in future periods based on actual costs or new information. With respect to our environmental liabilities, where future cash flows are fixed or reliably determinable, we have discounted those liabilities. We evaluate recoveries separately from the liability and, when they are assured, recoveries are recorded and reported separately from the associated liability in our consolidated financial statements.

Environmental Matters

We are subject to a variety of environmental and pollution control laws and regulations in all jurisdictions in which we operate. We have been notified by the U.S. Environmental Protection Agency, other national environmental agencies, and various provincial and state agencies that we may be a potentially responsible party ("PRP") under such laws for the cost of remediating hazardous substances pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") and other national and state or provincial environmental laws. PRP designation typically requires the funding of site investigations and subsequent remedial activities. Many of the sites that are likely to be the costliest to remediate are often current or former commercial waste disposal facilities to which numerous companies sent wastes. Despite the potential joint and several liability which might be imposed on us under CERCLA and some of the other laws pertaining to these sites, our share of the total waste sent to these sites generally has been small. We believe our exposure for liability at these sites is limited.

On a global basis, we have also identified certain other present and former properties at which we may be responsible for cleaning up or addressing environmental contamination, in some cases as a result of contractual commitments and/or federal or state environmental laws. We are seeking to resolve our responsibilities for those sites for which a claim has been received.

We expense or capitalize, as appropriate, expenditures for ongoing compliance with environmental regulations. As of December 31, 2020, we have an obligation to remediate or contribute towards the remediation of certain sites, including the sites discussed above at which it may be a PRP.

Our estimated share of environmental remediation costs for all these sites is recognized in the consolidated balance sheets on a discounted basis and the amounts at December 31, 2020 and 2019 are as follows:

	December 31	
	2020	2019
Accrued expenses and other current liabilities	\$ 8	\$ 8
Deferred credits and other liabilities	26	28
	<u>\$ 34</u>	<u>\$ 36</u>

For those locations where the liability was discounted, the weighted average discount rate used was 0.73% and 1.30% at December 31, 2020 and 2019.

Our expected payments of environmental remediation costs for non-indemnified locations are estimated to be approximately:

	2021	2022	2023	2024	2025	2026 and thereafter
Expected payments	\$ 8	\$ 3	\$ 2	\$ 2	\$ 2	\$ 14

In addition to amounts described above, we estimate that we will make expenditures for property, plant and equipment for environmental matters of approximately \$18 million in 2021 and \$7 million in 2022.

Based on information known to us from site investigations and the professional judgment of consultants, we have established reserves that we believe are adequate for these costs. Although we believe these estimates of remediation costs are reasonable and are based on the latest available information, the costs are estimates, difficult to quantify based on the complexity of the issues, and are subject to change as more information becomes available about the extent of remediation required. At some sites, we expect that other parties will contribute to the remediation costs. In addition, certain environmental statutes provide that our liability could be joint and several, meaning that we could be required to pay amounts in excess of our share of remediation costs. The financial strength of other PRPs at these sites has been considered, where appropriate, in our determination of our estimated liability. We do not believe that any potential costs associated with our current status as a PRP, or as a liable party at the other locations referenced herein, will be material to our annual consolidated financial position, results of operations, or liquidity.

Antitrust Investigations and Litigation

We have been subject to antitrust investigation and litigation since 2014. With the administrative closure of the European Commission's antitrust inquiry on April 27, 2017, settlements on civil putative claims in the United States and Canada, and the granting of unconditional leniency from the Department of Justice in October 2020, we do not expect to incur any additional material costs for investigations by competition agencies or civil lawsuits related to possible violations of antitrust laws relating to products supplied by us and our subsidiaries, including Federal-Mogul.

We established a reserve of \$132 million in our second quarter 2017 financial results for settlement costs that were probable, reasonably estimable, and expected to be necessary to resolve its antitrust matters globally, which primarily involves the resolution of civil suits and related claims. Of the \$132 million reserve that was established, \$112 million and \$79 million was paid through December 31, 2020 and 2019. In connection with the resolution of certain claims, \$11 million and \$9 million was released from the reserve as a change in estimate during the years ended December 31, 2020 and 2019. Less than \$1 million remains at December 31, 2020 and was recorded in "Accrued expenses and other current liabilities" in the consolidated balance sheets. There are no further material updates on these matters.

Other Legal Proceedings, Claims and Investigations

For many years we have been and continue to be subject to lawsuits initiated by claimants alleging health problems as a result of exposure to asbestos. Our current docket of active and inactive cases is less than 500 cases in the U.S. and less than 50 in Europe.

With respect to the claims filed in the U.S., the substantial majority of the claims are related to alleged exposure to asbestos in our line of Walker® exhaust automotive products although a significant number of those claims appear also to involve occupational exposures sustained in industries other than automotive. A small number of claims have been asserted against one of our subsidiaries by railroad workers alleging exposure to asbestos products in railroad cars. We believe, based on scientific and other evidence, it is unlikely that U.S. claimants were exposed to asbestos by our former products and that, in any event, they would not be at increased risk of asbestos-related disease based on their work with these products. Further, many of these cases involve numerous defendants. Additionally, in many cases the plaintiffs either do not specify any, or specify the jurisdictional minimum, dollar amount for damages.

With respect to the claims filed in Europe, the substantial majority relate to occupational exposure claims brought by current and former employees of Federal-Mogul facilities in France and amounts paid out were not material. A small number of occupational exposure claims have also been asserted against Federal-Mogul entities in Italy and Spain.

As major asbestos manufacturers and/or users continue to go out of business or file for bankruptcy, we may experience an increased number of these claims. We vigorously defend ourselves against these claims as part of our ordinary course of business. In future periods, we could be subject to cash costs or charges to earnings if any of these matters are resolved unfavorably to us. To date, with respect to claims that have proceeded sufficiently through the judicial process, we have regularly achieved favorable resolutions. Accordingly, we presently believe that these asbestos-related claims will not have a material adverse effect on our annual consolidated financial position, results of operations or liquidity.

We are also from time to time involved in other legal proceedings, claims or investigations. Some of these matters involve allegations of damages against us relating to environmental liabilities (including toxic tort, property damage and remediation), intellectual property matters (including patent, trademark and copyright infringement, and licensing disputes), personal injury claims (including injuries due to product failure, design or warning issues, and other product liability related matters), taxes, unclaimed property, employment matters, and commercial or contractual disputes, sometimes related to acquisitions or divestitures. Additionally, some of these matters involve allegations relating to legal compliance.

While we vigorously defend ourselves against all of these legal proceedings, claims and investigations and take other actions to minimize our potential exposure, in future periods, we could be subject to cash costs or charges to earnings if any of these matters are resolved on unfavorable terms. Although the ultimate outcome of any legal matter cannot be predicted with certainty, based on current information, including our assessment of the merits of the particular claim, we do not expect the legal proceedings, claims or investigations currently pending against us will have any material adverse effect on our annual consolidated financial position, results of operations or liquidity.

Warranty Matters

We provide warranties on some of our products. The warranty terms vary but range from one year up to limited lifetime warranties on some of our premium aftermarket products. Provisions for estimated expenses related to product warranty are made at the time products are sold or when specific warranty issues are identified with our products. These estimates are established using historical information about the nature, frequency, and average cost of warranty claims. We believe that the warranty reserve is appropriate; however, actual claims incurred could differ from the original estimates, requiring adjustments to the reserve. The reserve is included in both current and long-term liabilities on the consolidated balance sheets.

ITEM 4. MINE SAFETY DISCLOSURES.

Not applicable.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

The following provides information concerning the persons who serve as our executive officers as of February 24, 2021.

<u>Name and Age</u>	<u>Offices Held</u>
Brian J. Kessler (54)	Chief Executive Officer
Kevin W. Baird (59)	Executive Vice President and Chief Operating Officer
Matti Masanovich (49)	Executive Vice President and Chief Financial Officer
Peng (Patrick) Guo (55)	Executive Vice President and President Clean Air
Rainer Jueckstock (61)	Executive Vice President and President Powertrain
Bradley S. Norton (57)	Executive Vice President and President Original Equipment
Scott Usitalo (62)	Executive Vice President and President Motorparts
Thomas J. Sabatino, Jr. (62)	Executive Vice President, General Counsel and Corporate Secretary
Kaled Awada (46)	Senior Vice President and Chief Human Resources Officer
John S. Patouhas (54)	Vice President and Chief Accounting Officer

Brian J. Kessler — Mr. Kessler became Chief Executive Officer in January 2020. He served as Co-Chief Executive Officer from October 2018 to January 2020. He was previously Chief Executive Officer from May 2017 to September 2018. He served as Chief Operating Officer from January 2015 to May 2017. Prior to joining Tenneco, he spent more than 20 years working for Johnson Controls Inc., most recently serving as President of the Johnson Controls Power Solutions business. In 2013, he was elected a corporate officer, and was a member of the Johnson Controls executive operating team. Mr. Kessler also served as the sponsor of Johnson Controls' Manufacturing Operations Council. Mr. Kessler joined JCI in 1994 and during his tenure held leadership positions in all of the company's business units, including serving as Vice President and General Manager, Service-North America, Systems and Services Europe, and Unitary Products Group, for the Building Efficiency business. He began his career with the Ford Motor Company in 1989 and worked in North America Assembly Operations for five years, specializing in manufacturing management. Mr. Kessler became a director of our company in October 2016.

Kevin W. Baird — Mr. Baird joined Tenneco as the Executive Vice President and Chief Operating Officer in August 2020. Prior to joining Tenneco, Mr. Baird was at Guardian Industries ("Guardian"), a wholly owned subsidiary of Koch Industries, Inc., where he spent the prior six years serving as the Chief Executive Officer of its Guardian Glass business. Baird joined Guardian in 2008 as the Chief Executive Officer of SRG Global, Inc., Guardian's automotive trim business.

Matti Masanovich — Mr. Masanovich joined Tenneco as the Executive Vice President and Chief Financial Officer in August 2020. Prior to joining Tenneco, Mr. Masanovich was Chief Financial Officer of Superior Industries International, Inc. since September 2018. Previously, he was with General Cable Corporation, serving from November 2016 to July 2018 as Senior Vice President and Chief Financial Officer. Prior to that, Mr. Masanovich served as the short-term Vice President and Controller of International Automotive Components, an automotive interiors supplier, from August 2016 to October 2016. From November 2013 to April 2016, Mr. Masanovich served as Global Vice President of Finance, Packard Electrical and Electronic Architecture (E/EA) Division in Shanghai, China at APTIV (formerly Delphi Automotive).

Peng (Patrick) Guo — Mr. Guo was named Executive Vice President and President Clean Air in March 2017. Previously, Mr. Guo was Executive Vice President, Asia Pacific since December 2016, and was Senior Vice President and General Manager, Asia Pacific from October 2014 until December 2016. Mr. Guo served as Vice President and Managing Director, China from 2007 until October 2014. From 1996 to 2003, Mr. Guo served as General Manager, Asia Aftermarket Operations while based in Beijing, China. He left Tenneco in October 2003 to become president of the AGC Automotive China Operations for the Asahi Glass Company. He returned to Tenneco in July 2007. Before joining Tenneco, Mr. Guo was an engineer at the Ford Motor Company, which included assignments in manufacturing, quality and product design.

Rainer Jueckstock — Mr. Jueckstock joined Tenneco as Executive Vice President and President Powertrain in October 2018. Prior to joining Tenneco, Mr. Jueckstock was Co-Chairman of the Board and Co-Chief Executive Officer of Federal-Mogul LLC from 2014 to 2018, and Chief Executive Officer, Federal-Mogul Powertrain from 2012 to 2018. Prior to his Co-Chairman and Co-Chief Executive Officer positions, Mr. Jueckstock was Senior Vice President, Powertrain Energy from 2005 to 2012, a member of the Strategy Board from 2005 to 2012 and an officer of Federal-Mogul Corporation from 2005 to 2012. He is a director of Plexus Corp.

Bradley S. Norton — Mr. Norton joined Tenneco as Executive Vice President in October 2018. Prior to joining Tenneco, Mr. Norton was Co-Chairman of the Board and Co-Chief Executive Officer of Federal-Mogul Holdings LLC from March 2017 to September 2018, and Senior Vice President, Chassis & Service, Federal-Mogul Motorparts from July 2014 to March 2017. He was also elected to the Board of Managers of Federal-Mogul LLC in March 2017.

Scott Usitalo — Mr. Usitalo has served as our Executive Vice President and President Motorparts since February 2020. Mr. Usitalo joined Tenneco as Senior Vice President and Chief Marketing Officer in November 2018. Prior to joining Tenneco, Mr. Usitalo was a marketing executive of Kimberly-Clark Company from 2007 to November 2018, most recently serving as Chief Marketing Officer. Prior to his role at Kimberly-Clark Company, Mr. Usitalo spent over 20 years with Procter & Gamble Company.

Thomas J. Sabatino, Jr. — Mr. Sabatino joined Tenneco as Executive Vice President, General Counsel and Corporate Secretary in February 2021. Prior to joining Tenneco, Mr. Sabatino served as the executive vice president and general counsel of Aetna from April 2016 to December 2018. Prior to joining Aetna, Mr. Sabatino served as senior executive vice president, chief administrative officer and general counsel of Hertz Global Holdings, Inc. from February 2015 through April 2016 and executive vice president, global legal and chief administrative officer of Walgreens Boots Alliance from September 2011 through January 2015.

Kaled Awada — Mr. Awada joined Tenneco as Senior Vice President and Chief Human Resources Officer in September 2018. Prior to joining Tenneco, Mr. Awada held Human Resources leadership positions of increasing responsibility at Aptiv PLC for three years, most recently Global Vice President, Human Resources, for the company's electrical distribution systems business. He previously held global Human Resources roles with Eaton Corporation, Textron Fastening Systems, and Faurecia Exhaust Systems.

John S. Patouhas — Mr. Patouhas has served as our Vice President and Chief Accounting Officer since February 2019. Mr. Patouhas served since 2015 as Vice President and Chief Accounting Officer of Federal-Mogul (a subsidiary of Tenneco since October 2018). From 2011 to 2015, Mr. Patouhas was Vice President and Corporate Controller at Altair Engineering, a product design and development, engineering software and cloud computing software provider. He has over 20 years' experience in financial reporting and corporate accounting at a variety of companies, and began his career as an auditor with Deloitte. Mr. Patouhas is a CPA and CGMA, and has an MBA from Wayne State University.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS, AND ISSUER PURCHASES OF EQUITY SECURITIES.

Our outstanding shares of Class A Common Stock, par value \$0.01 per share, are listed on the New York Stock Exchange under the symbol "TEN." As of February 22, 2021, there were approximately 8,700 holders of record of our Class A Common Stock, including brokers and other nominees, and two holders of record of our Class B Common Stock.

Purchase of equity securities by the issuer and affiliated purchasers

The following table provides information relating to our purchase of shares of our class A common stock in the fourth quarter of 2020. These purchases include shares withheld upon vesting of restricted stock for minimum tax withholding obligations. We generally intend to continue to satisfy statutory minimum tax withholding obligations in connection with the vesting of outstanding restricted stock through the withholding of shares.

Period	Total Number of Shares Purchased ⁽¹⁾	Average Price Paid	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Value of Shares That May Yet be Purchased Under These Plans or Programs
October 2020	5,006	\$ 9.45	—	\$ —
November 2020	49	\$ 10.34	—	\$ —
December 2020	713	\$ 25.33	—	\$ —
Total	5,768	\$ 11.42	—	\$ —

⁽¹⁾ Shares withheld upon vesting of restricted stock in the fourth quarter of 2020.

We presently have no share repurchase program in place.

Dividends

The Company suspended the quarterly dividend in the second quarter of 2019. Our dividend program and the payment of any future cash dividends are subject to continued capital availability, the judgment of our Board of Directors and our continued compliance with the provisions pertaining to the payment of dividends under our debt agreements.

For additional information concerning our payment of dividends, see Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations".

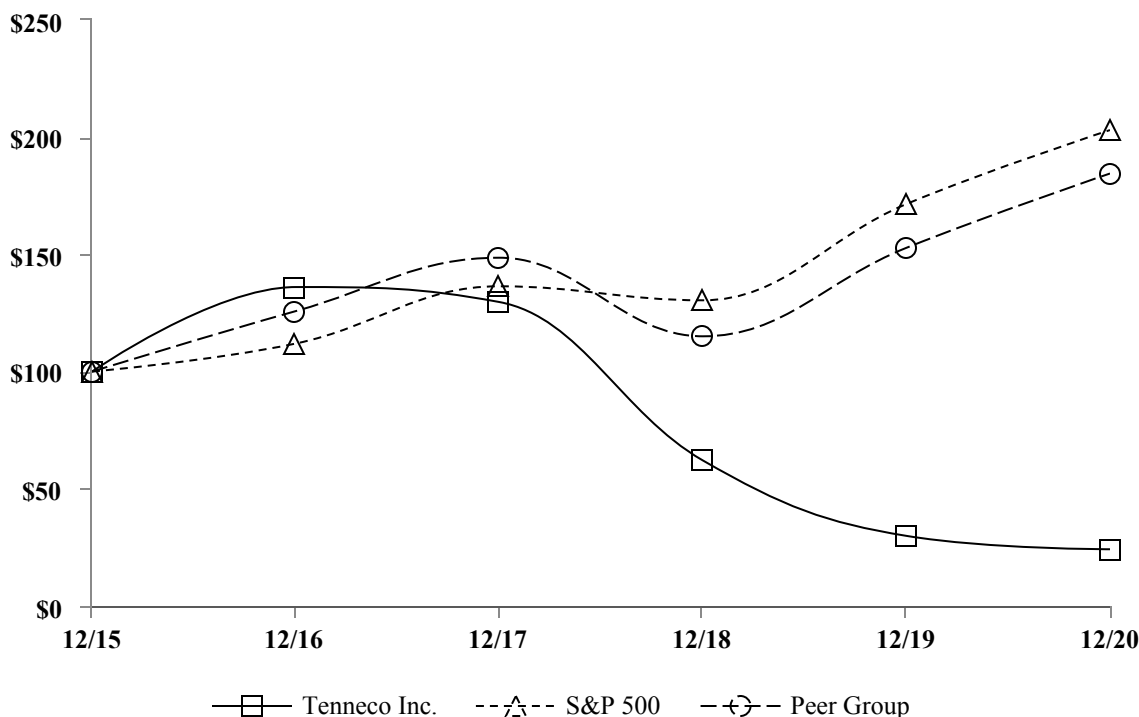
Recent sales of unregistered equity securities

None.

Share Performance

The following graph shows a five-year comparison of the cumulative total stockholder return on Tenneco’s common stock as compared to the cumulative total return of two other indexes: a custom composite index (“Peer Group”) and the Standard & Poor’s 500 Composite Stock Price Index. The companies included in the Peer Group are: American Axle & Manufacturing Co., BorgWarner Inc., Cummins Inc., Johnson Controls International Plc, Lear Corp., Magna International Inc., and Meritor, Inc. These comparisons assume an initial investment of \$100 and the reinvestment of dividends.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN*
Among Tenneco Inc., the S&P 500 Index,
and a Peer Group



*\$100 invested on 12/31/15 in stock or index, including reinvestment of dividends. Fiscal year ending December 31.

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	As of December 31					
	2015	2016	2017	2018	2019	2020
Tenneco Inc.	\$ 100.00	\$ 136.07	\$ 129.69	\$ 62.11	\$ 29.92	\$ 24.21
S&P 500	\$ 100.00	\$ 111.96	\$ 136.40	\$ 130.42	\$ 171.49	\$ 203.04
Peer Group	\$ 100.00	\$ 125.79	\$ 148.58	\$ 115.06	\$ 152.81	\$ 184.51

The graph and other information furnished in the section titled “Share Performance” under this Part II, Item 5 of this Form 10-K shall not be deemed to be “soliciting” material or to be “filed” with the Securities and Exchange Commission or subject to Regulation 14A or 14C, or to the liabilities of Section 18 of the Securities Exchange Act of 1934, as amended.

ITEM 6. SELECTED FINANCIAL DATA.

Not applicable.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS.

You should read the following discussion and analysis in conjunction with the consolidated financial statements and related notes included in Item 8, "Financial Statements and Supplementary Data". All references to "Tenneco," "we," "us," "our" and "the Company" refer to Tenneco Inc. and its consolidated subsidiaries. Notes referenced in this discussion and analysis refer to the notes to consolidated financial statements that are found in Item 8, "Financial Statements and Supplementary Data".

OVERVIEW

Our Business

We design, manufacture, market, and distribute products and services for light vehicle, commercial truck, off-highway, industrial, motorsport, and aftermarket customers. We manufacture innovative clean air, powertrain and ride performance products and systems, and serve both original equipment ("OE") manufacturers and the repair and replacement markets worldwide. We supply OE parts to vehicle manufacturers for use in light vehicles, commercial vehicles, and other mobility markets; and the global aftermarket with replacement parts that are sold to wholesalers, retailers, and installers, as well as original equipment service ("OES") parts to OE customers to support their service channels. We serve our customers through leading brands, including Monroe®, Champion®, Öhlins®, MOOG®, Walker®, Fel-Pro®, Wagner®, Ferodo®, Rancho®, Thrush®, National®, and Sealed Power®, and others. As of December 31, 2020, we operated 201 manufacturing facilities worldwide and employed approximately 73,000 people to service our customers' demands.

Tenneco consists of four operating segments, Clean Air, Powertrain, Ride Performance, and Motorparts:

- The Clean Air segment designs, manufactures, and distributes a variety of products and systems designed to reduce pollution and optimize engine performance, acoustic tuning, and weight on a vehicle for light vehicle, commercial truck, and off-highway OE customers;
- The Powertrain segment designs, manufactures, and distributes a variety of original equipment powertrain products for light vehicle, commercial truck, off-highway, and industrial applications to OE customers for use in new vehicle production and OES parts to support their service and distribution channels;
- The Ride Performance segment designs, manufactures, markets, and distributes a variety of ride performance solutions and systems to a global OE customer base, including noise, vibration, and harshness performance materials, advanced suspension technologies, ride control, and braking; and
- The Motorparts segment designs, manufactures, sources, markets, and distributes a broad portfolio of leading brand-names products in the global vehicle aftermarket while also servicing the original equipment servicers market. Motorparts products are organized into categories, including shocks and struts, steering and suspension, braking, sealing, emissions control, engine, and maintenance.

Costs related to other business activities, primarily corporate headquarter functions, are disclosed separately from the four operating segments as "Corporate." See Note 21, "Segment and Geographic Area Information", in our consolidated financial statements included in Item 8 for additional information.

The COVID-19 global pandemic has negatively affected the global economy, disrupted global supply chains, and created extreme volatility and disruptions to capital and credit markets in the global financial markets. We have responded quickly to protect our team members' health and safety while taking aggressive actions to mitigate the financial effect of the pandemic on us. In response to the pandemic, we expanded on structural cost reductions, and implemented a range of temporary cost reductions including plant closures, deferment of discretionary spending, and the reduction of capital expenditures. In addition, on April 15, 2020, our Board of Directors adopted a shareholder rights plan designed to protect the availability of our tax assets in the current volatile market environment and, on May 5, 2020, we entered into a third amendment to our credit agreement to increase the maximum leverage ratio and decrease the minimum interest coverage ratio. There are many uncertainties related to COVID-19 that could negatively affect our results of operations, financial position, and cash flows. We believe we will comply with our financial covenants, as required by our amended credit agreement and we believe our liquidity position continues to be adequate based on our current estimates and forecasts.

Other factors that we expect will continue to be critical to our success include winning new business awards, managing our overall global manufacturing and fulfillment footprint to ensure proper placement and workforce levels in line with business needs, maintaining competitive wages and benefits, maximizing efficiencies in manufacturing processes, positioning the business to adapt to changes in vehicle electrification, and reducing overall costs. In addition, our ability to adapt to key industry trends, such as a shift in consumer preferences to other vehicles in response to higher fuel costs and other economic and social factors, increasing technologically sophisticated content, changing aftermarket distribution channels, increasing environmental standards, and extended product life of automotive parts, also play a critical role in our success. Other factors that are critical to our success include adjusting to economic challenges such as managing the availability of materials or increases in the cost of raw materials and our ability to successfully reduce the effect of any such cost increases through material substitutions, cost reduction initiatives, and other methods.

Beginning in the second quarter of 2020, the Motorparts segment initiated a rationalization of its supply chain and distribution network to achieve supply chain efficiencies and improve throughput to its customers. As a result, certain assets including inventory, real estate, and personal property would no longer be utilized. As such, during the year ended December 31, 2020, the Motorparts segment recognized an \$82 million non-cash charge to write-down inventory to its net realizable value, a \$16 million impairment charge to write-down property, plant, and equipment to its fair value, and a \$9 million impairment charge to its operating lease right-of-use assets. Additionally, the Motorparts segment recognized \$4 million in restructuring charges related to cash severance expected to be paid in connection with this action.

Strategic Alternatives

Following the closing of the Federal-Mogul Acquisition, we agreed to use our reasonable best efforts to pursue the separation of the combined company into an Aftermarket and Ride Performance company and a Powertrain Technology company. As such, we have previously announced that we are reviewing a full range of strategic options to enhance shareholder value creation. In light of current market conditions and other factors, our current efforts to optimize shareholder value creation are also focused on operational improvements, reducing structural costs, lowering capital intensity, reducing debt, and growth in targeted business lines.

Financial Results for the Year Ended December 31, 2020

Consolidated revenues were \$15,379 million, a decrease of \$2,071 million, or 12%, for the year ended December 31, 2020. The primary driver of the decrease is from lower sales volume of \$1,810 million, largely attributable to the effects of COVID-19. The remaining decrease is attributable to a decrease in revenues of \$106 million, or less than 1%, related to the net effects of acquisitions and divestitures, the unfavorable effects of foreign currency exchange of \$89 million, and the net unfavorable effects of other of \$66 million.

Cost of sales was \$13,402 million, a decrease of \$1,510 million, or 10%, for the year ended December 31, 2020. The primary driver of the decrease is from lower sales volume of \$1,212 million, largely attributable to the effects of COVID-19. The remaining decrease is attributable to a decrease in cost of sales of \$96 million, or less than 1%, related to the net effects of acquisitions and divestitures, the favorable effects of materials sourcing of \$87 million, the favorable effects of foreign currency exchange of \$60 million, and the net favorable effects of other costs of \$137 million. This was partially offset by a non-cash charge of \$82 million related to the write-down of inventory in the Motorparts segment in connection with its initiative to rationalize its supply chain and distribution network. Included in other costs of \$137 million, is \$9 million of margin on discontinued product that was previously written-down.

Net loss increased by \$1,240 million to \$1,460 million for the year ended December 31, 2020 compared to \$220 million for the year ended December 31, 2019. The increase was primarily driven by:

- an increase in restructuring charges, net and non-cash asset impairment charges of \$496 million primarily related to the impairment of long-lived asset groups triggered by the effects of COVID-19 on the Company's projected financial information, global headcount and cost reduction initiatives, and other actions to optimize our distribution footprint and warehousing locations;
- a net increase in non-cash goodwill and intangible impairment charges of \$142 million, which was comprised of an increase of \$159 million in goodwill impairment charges, an increase of \$65 million in definite-lived intangible asset impairments, and a decrease of \$82 million in indefinite-lived intangible asset impairments; and
- an increase in income tax expense of \$440 million primarily attributable to the \$507 million in non-cash charges to tax expense relating to the full valuation allowances established for the U.S. deferred taxes for the year ended December 31, 2020 and \$98 million in non-cash charges to tax expense for changes in valuation allowance for deferred taxes relating to non-U.S. jurisdictions. This is partially offset by the federal and state tax benefits and foreign rate differential on the change of the loss before income taxes and noncontrolling interests of \$186 million for the year ended December 31, 2020.

These unfavorable effects were partially offset by:

- a decrease in selling, general, and administrative costs of \$249 million, primarily due to \$88 million in lower acquisition and expected separation costs, and the favorable effects of cost reduction initiatives implemented in response to the effects of COVID-19, including unpaid furloughs, net pay decreases, temporary support programs, and other compensation related expenses;
- a decrease in engineering, research, and development of \$51 million primarily due to the effects of COVID-19 and cost reduction initiatives; and
- a decrease in interest expense of \$45 million primarily attributable to lower interest rates on variable rate debt, which was partially offset by higher interest expense on higher average outstanding borrowings on the revolver. This also includes a decrease of \$11 million in financing charges on sales of accounts receivable for the year ended December 31, 2020.

Recent Trends and Market Conditions

There is inherent uncertainty in the continuation of the trends discussed below. In addition, there may be other factors or trends that can have an effect on our business. Our business and operating results are affected by the relative strength of:

General economic conditions

Our OE business is directly related to automotive vehicle production by our customers. Automotive production levels depend on a number of factors, including global and regional economic conditions, and policies. Demand for aftermarket products is driven by four primary factors: the number of vehicles in operation; the average age of vehicles; vehicle usage trends (primarily miles driven); and component failure and wear rates.

In late 2019, a novel strain of coronavirus, COVID-19, was first detected in Wuhan, China. In March 2020, the World Health Organization declared COVID-19 a global pandemic and governmental authorities around the world have implemented measures to reduce the spread of COVID-19. COVID-19 has resulted in suspension or reduction of operations, supply chain disruptions, restrictions on domestic and international travel, and a decrease in consumer traffic. These measures have adversely affected workforces, customers, economies, and financial markets, and, along with decreased consumer spending, reductions in revenue, and delays in payments from customers and partners, have led to an economic downturn in many of our markets.

The decline in value-add revenue for the year ended December 31, 2020 was \$2,399 million which is largely attributable to the effects of COVID-19. We expect the effects of the COVID-19 global pandemic will likely continue during 2021, the extent of which will depend on a number of factors, including the duration and severity. Therefore, there are many uncertainties that remain related to COVID-19 that could negatively affect our results of operations, financial position, and cash flows. As customer demand increases, we expect to face periods where payments will become due to suppliers for our existing and additional inventories to support renewed production before we have generated new receivables from customers from that renewed production. It is our intent to maintain a consistent balance between our payables and receivables during this time.

Cost reductions and other responses to COVID-19

We have implemented a range of actions aimed at temporarily reducing costs and preserving liquidity in response to the effects and anticipated effects to our business resulting from COVID-19 as described under “Liquidity and Capital Resources - Liquidity and Financing Arrangements”. The Company will continue to evaluate further ways to manage costs in line with reduced revenue.

Global vehicle production levels

Light vehicle production (According to IHS Markit, February 2021)

For the year ended December 31, 2020, global light vehicle production was down across all major markets in which we operate and down 16% overall compared to 2019. Light vehicle production was down 20% in North America, 22% in Europe, 32% in South America, 4% in China and 23% in India.

Global light vehicle production in 2021 is expected to improve across all major markets in which we operate and an improvement of 13% overall compared to 2020. Current projections show a 24% improvement in North America, 14% improvement in Europe, 33% improvement in South America, 6% improvement in China, and 23% improvement in India.

Commercial truck production (According to IHS Markit, February 2021)

Global commercial truck production decreased by 6% for the year ended December 31, 2020 compared to 2019. North America commercial truck production declined 31%, Brazil was down 24%, Europe declined 18%, and India fell 59%. Commercial truck production in China grew 27% in 2020 when compared to 2019.

Global commercial truck production is expected to improve in most major markets in which we operate during 2021, however production overall is projected to be down 8% compared to 2020 as the expected decline in China production more than offsets the projected improvements in other regions. Current 2021 projections show North America up 28%, Brazil up 20%, Europe up 11%, India up 63%, and China down 30% over 2020.

Fuel efficiency, powertrain evolution, and vehicle electrification

Various jurisdictions around the world have announced plans to limit the production of new diesel and gasoline powered vehicles in the future. Major vehicle manufacturers have announced their intention to reduce and phase out production of diesel and gasoline powered vehicles during the next two decades. However, for the foreseeable future, it is expected that the majority of the powertrains for light and commercial vehicles will be gasoline and diesel engines (including hybrids, which combine a battery electric drive with a combustion engine). While we see similar electrification trends for light vehicle and commercial vehicle, we expect light vehicles will experience those trends in advance of commercial vehicles. We expect to monitor those trends and adopt our business strategy accordingly.

RESULTS OF OPERATIONS

This section discusses our consolidated results of operations and results of operations by segment for the year ended December 31, 2020 compared to December 31, 2019. A detailed discussion of our consolidated results of operations and results of operations by segment for the year ended December 31, 2019 compared to December 31, 2018 can be found under Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in our Annual Report on Form 10-K for the year ended December 31, 2019, which was filed with the Securities and Exchange Commission on March 2, 2020.

Year Ended December 31, 2020 Compared to Year Ended December 31, 2019 Consolidated Results of Operations

	Year Ended December 31		Favorable (Unfavorable)	
	2020	2019	\$ Change	% Change ^(a)
(millions except percent, share, and per share amounts)				
Revenues				
Net sales and operating revenues	\$ 15,379	\$ 17,450	\$ (2,071)	(12)%
Costs and expenses				
Cost of sales (exclusive of depreciation and amortization)	13,402	14,912	1,510	10 %
Selling, general, and administrative	889	1,138	249	22 %
Depreciation and amortization	639	673	34	5 %
Engineering, research, and development	273	324	51	16 %
Restructuring charges, net and asset impairments	622	126	(496)	n/m
Goodwill and intangible impairment charges	383	241	(142)	(59)%
	16,208	17,414	1,206	7 %
Other income (expense)				
Non-service pension and postretirement benefit (costs) credits	18	(11)	29	n/m
Equity in earnings (losses) of nonconsolidated affiliates, net of tax	47	43	4	9 %
Gain (loss) on extinguishment of debt	2	—	2	— %
Other income (expense), net	38	53	(15)	(28)%
	105	85	20	24 %
Earnings (loss) before interest expense, income taxes, and noncontrolling interests				
	(724)	121	(845)	n/m
Interest expense	(277)	(322)	45	14 %
Earnings (loss) before income taxes and noncontrolling interests				
	(1,001)	(201)	(800)	n/m
Income tax (expense) benefit	(459)	(19)	(440)	n/m
Net income (loss)	(1,460)	(220)	(1,240)	n/m
Less: Net income (loss) attributable to noncontrolling interests	61	114	53	46 %
Net income (loss) attributable to Tenneco Inc.	\$ (1,521)	\$ (334)	\$ (1,187)	n/m
Earnings (loss) per share				
Basic earnings (loss) per share:				
Earnings (loss) per share	\$ (18.69)	\$ (4.12)		
Weighted average shares outstanding	81,378,474	80,904,060		
Diluted earnings (loss) per share:				
Earnings (loss) per share	\$ (18.69)	\$ (4.12)		
Weighted average shares outstanding	81,378,474	80,904,060		

^(a) Percentages above denoted as “n/m” are not meaningful to present in the table.

Revenues

Revenues decreased by \$2,071 million, or 12%, as compared to the year ended December 31, 2019. The primary driver of the decrease is lower sales volume and unfavorable mix of \$1,810 million, largely attributable to the effects of COVID-19. The remaining decrease is attributable to a decrease in revenues of \$106 million, or less than 1%, related to the net effects of acquisitions and divestitures, the unfavorable effects of foreign currency exchange of \$89 million, and the net unfavorable effects of other of \$66 million.

The following table lists the primary drivers behind the change in revenues (amounts in millions):

Year Ended December 31, 2019	\$ 17,450
Acquisitions and divestitures, net	(106)
Drivers in the change of organic revenues:	
Volume and mix	(1,810)
Currency exchange rates	(89)
Others	(66)
Year Ended December 31, 2020	<u>\$ 15,379</u>

Cost of sales

Cost of sales decreased by \$1,510 million, or 10%, as compared to the year ended December 31, 2019. The primary driver of the decrease is from lower sales volume of \$1,212 million, largely attributable to the effects of COVID-19. The remaining decrease is attributable to a decrease in cost of sales of \$96 million, or less than 1%, related to the net effects of acquisitions and divestitures, the favorable effects of materials sourcing of \$87 million, the favorable effects of foreign currency exchange of \$60 million, and the net favorable effects of other costs of \$137 million. This was partially offset by a non-cash charge of \$82 million related to the write-down of inventory in the Motorparts segment in connection with its initiative to rationalize its supply chain and distribution network. Included in other costs of \$137 million, is \$9 million of margin on discontinued product that was previously written-down.

The following table lists the primary drivers behind the change in cost of sales (amounts in millions):

Year Ended December 31, 2019	\$ 14,912
Acquisitions and divestitures, net	(96)
Drivers in the change of organic cost of sales:	
Volume and mix	(1,212)
Materials sourcing	(87)
Currency exchange rates	(60)
Inventory write-down	82
Others	(137)
Year Ended December 31, 2020	<u>\$ 13,402</u>

Selling, general, and administrative (SG&A)

SG&A decreased by \$249 million to \$889 million compared to \$1,138 million in the year ended December 31, 2019. The decrease was primarily due to \$88 million in lower acquisition and expected separation costs, and the favorable effects of cost reduction initiatives implemented in response to the effects of COVID-19, including unpaid furloughs, net pay decreases, temporary support programs, and other compensation related expenses during the year ended December 31, 2020. In addition, SG&A includes a reduction of \$9 million recognized for a non-income tax refund received in the year ended December 31, 2020.

Depreciation and amortization

Depreciation and amortization expense decreased by \$34 million to \$639 million compared to \$673 million for the year ended December 31, 2019, primarily attributable to the effects of the impairments on property, plant, and equipment recognized in the first quarter of 2020.

Engineering, research, and development

Engineering, research, and development decreased by \$51 million to \$273 million as compared to \$324 million for the year ended December 31, 2019. The decrease was due primarily to the effects of COVID-19 and the favorable effects of cost reduction initiatives.

Restructuring charges, net and asset impairments

Restructuring charges, net and asset impairments increased by \$496 million to \$622 million as compared to \$126 million for the year ended December 31, 2019. The increase is primarily attributable to non-cash property, plant, and equipment asset impairments in the Ride Performance segment of \$455 million; non-cash asset impairment charges in the Motorparts segment of \$25 million related to its initiative to rationalize its supply chain and distribution network; and a non-cash asset impairment charge of \$17 million for operating lease right-of-use assets in the corporate component during the year ended December 31, 2020. In addition, there was an increase of \$6 million for cash severance costs expected to be paid as part of global headcount and cost reduction actions across all segments and regions, including plant closures, which was more than offset by a decrease of \$6 million in impairments related to assets held for sale and a decrease in other asset impairments of \$1 million for the year ended December 31, 2020 as compared to the year ended December 31, 2019.

Goodwill and intangible impairment charges

Goodwill and intangible impairment charges increased by \$142 million to \$383 million as compared to \$241 million for the year ended December 31, 2019. The increase is primarily attributable to \$267 million of non-cash goodwill impairment charges, \$65 million of non-cash definite-lived intangible asset impairments, and \$51 million of non-cash indefinite-lived intangible asset impairments during the year ended December 31, 2020, which was the result of the effects of COVID-19 on the projected financial information during the first quarter of 2020. This compared to \$108 million of goodwill impairment charges recognized for three of our reporting units for the year ended December 31, 2019. These non-cash goodwill impairment charges included \$69 million in the Ride Performance segment as a result of our reporting unit reorganization and a \$21 million impairment charge in the Motorparts segment, and an \$18 million impairment charge in the Powertrain segment as a result of our goodwill impairment assessment in the fourth quarter of 2019. In addition, as a result of our indefinite-lived intangible asset impairment assessment in the fourth quarter of 2019, non-cash intangible asset impairment charges of \$133 million were recorded for two reporting units in the Motorparts segment.

Non-service pension and postretirement benefit (costs) credits

Non-service pension and postretirement benefit (costs) credits increased by \$29 million to a net credit of \$18 million as compared to a net cost of \$11 million for the year ended December 31, 2019. This was primarily attributable to the elimination of certain health care benefits in retirement for participants in one of our union agreements that resulted in a non-cash curtailment gain of \$21 million for the year ended December 31, 2020 as compared to a curtailment gain of \$7 million for the year ended December 31, 2019 resulting from the plan amendments approved during 2019 to eliminate postretirement benefits for certain nonunion employees. The remaining change was primarily attributable to a decrease in the discount rate, which was partially offset by a higher amortization and a lower expected return on plan assets due to a lower long-term rate of return.

Equity in earnings (losses) of nonconsolidated affiliates, net of tax

Equity in earnings (losses) of nonconsolidated affiliates, net of tax increased by \$4 million to \$47 million as compared to \$43 million in the year ended December 31, 2019. In the year ended December 31, 2019, a non-cash reduction of \$12 million was recognized as a result of finalizing purchase accounting for the Federal-Mogul Acquisition, and completing the purchase price allocation for certain equity method investments, which represents amounts to recognize the basis difference between the fair value and book value of certain assets, including inventory, property, plant and equipment, and intangible assets. After the purchase accounting adjustments in the prior year, equity earnings (losses) decreased year over year primarily due to the effects of COVID-19 on the equity in earnings (losses) of our nonconsolidated affiliates located in Turkey, China, Korea, and the U.S. for the year ended December 31, 2020 as compared to the year ended December 31, 2019.

Gain (loss) on extinguishment of debt

A non-cash gain on extinguishment of debt of \$2 million was recognized for the year ended December 31, 2020 related to the redemption of the 4.875% euro denominated senior secured notes during the fourth quarter of 2020.

Other income (expense), net

Other income (expense), net decreased by \$15 million as compared to the year ended December 31, 2019. The decrease was primarily attributable to a recovery of value-added tax in a foreign jurisdiction for the year ended December 31, 2019.

Interest expense

Interest expense decreased by \$45 million to \$277 million (substantially all in our U.S. operations), net of interest capitalized of \$3 million, for the year ended December 31, 2020 as compared to \$322 million (substantially all in our U.S. operations), net of interest capitalized of \$5 million, for the year ended December 31, 2019. The \$45 million decrease was primarily due to lower interest rates on our variable rate debt, partially offset by higher interest expense on higher average outstanding borrowings on the revolver during the year ended December 31, 2020 as compared to the year ended December 31, 2019. Interest expense also included losses on sales of accounts receivables, which was \$20 million in the year ended December 31, 2020 compared to \$31 million in the year ended December 31, 2019. For more detailed explanations on our debt structure and senior credit facility refer to “Liquidity and Capital Resources” later in this Management’s Discussion and Analysis.

Income tax expense (benefit)

Income tax expense increased by \$440 million to \$459 million on loss before income taxes and noncontrolling interests of \$1,001 million for the year ended December 31, 2020 compared to income tax expense of \$19 million on loss before income taxes and noncontrolling interests of \$201 million for the year ended December 31, 2019. The increase is primarily the result of the \$507 million in non-cash charges to tax expense relating to the full valuation allowances established for the U.S. deferred taxes for the year ended December 31, 2020 and \$98 million in non-cash charges to tax expense for changes in valuation allowance for deferred taxes relating to non-U.S. jurisdictions. This is partially offset by the federal and state tax benefits and foreign rate differential on the change of the loss before income taxes and noncontrolling interests of \$186 million for the year ended December 31, 2020.

Net income (loss)

Net loss increased by \$1,240 million to \$1,460 million for the year ended December 31, 2020 as compared to \$220 million for the year ended December 31, 2019 as a result of the aforementioned items.

Earnings (loss) before interest expense, income taxes, noncontrolling interests, and depreciation and amortization (“EBITDA including noncontrolling interests”)

The following table presents the reconciliation from EBITDA including noncontrolling interests to net income (loss) for the years ended December 31, 2020 and 2019 (amounts in millions):

	Year Ended December 31	
	2020	2019
EBITDA including noncontrolling interests:		
Clean Air	\$ 440	\$ 582
Powertrain	130	363
Ride Performance	(595)	8
Motorparts	155	184
Corporate	(215)	(343)
Depreciation and amortization	(639)	(673)
Earnings (loss) before interest expense, income taxes, and noncontrolling interests	(724)	121
Interest expense	(277)	(322)
Income tax (expense) benefit	(459)	(19)
Net income (loss)	<u>\$ (1,460)</u>	<u>\$ (220)</u>

See “Segment Results of Operations” for further information on EBITDA including noncontrolling interests.

Segment Results of Operations

Overview of Net Sales and Operating Revenues

Our Clean Air segment has substrate sales. Substrates are porous ceramic filters coated with a catalyst - typically, precious metals such as platinum, palladium and rhodium. We do not manufacture substrates, they are supplied to us by Tier 2 suppliers generally directed by our OE customers. We generally earn a small margin on these components of the system. These substrate components have been increasing as a percentage of our revenue as the need for more sophisticated emission control solutions increases to meet more stringent environmental regulations, and as we capture more diesel aftertreatment business. While these substrates dilute our gross margin percentage, they are a necessary component of an emission control system.

Our value-add content in an emission control system includes designing the system to meet environmental regulations through integration of the substrates into the system, maximizing use of thermal energy to heat up the catalyst quickly, efficiently managing airflow to reduce back pressure as the exhaust stream moves past the catalyst, managing the expansion and contraction of the emission control system components due to temperature extremes experienced by an emission control system, using advanced acoustic engineering tools to design the desired exhaust sound, minimizing the opportunity for the fragile components of the substrate to be damaged when we integrate it into the emission control system and reducing unwanted noise, vibration, and harshness transmitted through the emission control system.

We disclose substrate sales amounts because we believe investors utilize this information to understand the effect of this portion of our revenues on our overall business and because it removes the effect of potentially volatile precious metals pricing from our revenues. While our OE customers generally assume the risk of precious metals pricing volatility, it affects our reported revenues.

The table below reflects the main drivers for changes in our segment revenues for the years ended December 31, 2020 and 2019 (amounts in millions):

	Segment Revenue						
	Clean Air			Powertrain	Ride Performance	Motorparts	Total
	Value-add Revenues	Substrate Sales	Total				
Year Ended December 31, 2019	\$ 4,094	\$ 3,027	\$ 7,121	\$ 4,408	\$ 2,754	\$ 3,167	\$ 17,450
Acquisitions and divestitures, net	—	—	—	(7)	(23)	(76)	(106)
Drivers in the change of organic revenues:							
Volume and mix	(662)	337	(325)	(624)	(505)	(356)	(1,810)
Currency exchange rates	(4)	(9)	(13)	(15)	(6)	(55)	(89)
Others	(62)	—	(62)	(36)	(13)	45	(66)
Year Ended December 31, 2020	\$ 3,366	\$ 3,355	\$ 6,721	\$ 3,726	\$ 2,207	\$ 2,725	\$ 15,379

Segment Revenue

Clean Air

Clean Air revenue decreased \$400 million, or 6%, as compared to the year ended December 31, 2019. The decrease was primarily due to the decrease in value-add revenue of \$728 million, partially offset by the increase in substrate sales of \$328 million. Overall for the Clean Air segment, lower light vehicle and off-highway and other revenues were the main drivers of the value-add revenue decline while commercial truck improved when compared to the prior year. In addition, foreign currency exchange had a \$4 million unfavorable effect on Clean Air value-add revenue while other unfavorable effects decreased value-add revenue by \$62 million.

Powertrain

Powertrain revenue decreased \$682 million, or 15%, as compared to the year ended December 31, 2019. Lower light vehicle, commercial truck, industrial, and off-highway and other vehicle revenue contributed \$624 million to the decrease, as well as a decrease in revenues from divestitures of \$7 million. Foreign currency exchange had a \$15 million unfavorable effect on Powertrain revenue, while other unfavorable effects decreased revenue by \$36 million.

Ride Performance

Ride Performance revenue decreased \$547 million, or 20%, as compared to the year ended December 31, 2019. Lower light vehicle, commercial truck, off-highway, and other vehicle revenues contributed \$505 million to the decrease, as well as a decrease in revenues from divestitures of \$23 million. Foreign currency exchange had a \$6 million unfavorable effect on Ride Performance revenue, while other unfavorable effects decreased revenue by \$13 million.

Motorparts

Motorparts revenue decreased \$442 million, or 14%, as compared to the year ended December 31, 2019. Lower sales across all regions in which we operate contributed \$356 million to the decrease, as well as a decrease in revenues from divestitures of \$76 million, and foreign currency exchange had a \$55 million unfavorable effect on Motorparts revenues. The unfavorable effects were partially offset by other net favorable effects of \$45 million.

EBITDA including noncontrolling interests

The following table presents the EBITDA including noncontrolling interests by segment for the years ended December 31, 2020 and 2019 (amounts in millions):

	Year Ended December 31		2020 vs 2019 Change
	2020	2019	
EBITDA including noncontrolling interests by Segment:			
Clean Air	\$ 440	\$ 582	\$ (142)
Powertrain	\$ 130	\$ 363	\$ (233)
Ride Performance	\$ (595)	\$ 8	\$ (603)
Motorparts	\$ 155	\$ 184	\$ (29)

Clean Air

Clean Air EBITDA including noncontrolling interests decreased \$142 million as compared to the year ended December 31, 2019. The decrease is primarily attributable to lower sales volume and unfavorable mix, partially offset by favorable operating performance and lower SG&A costs during the year ended December 31, 2020 as compared to the year ended December 31, 2019.

Powertrain

Powertrain EBITDA including noncontrolling interests decreased \$233 million as compared to the year ended December 31, 2019. The decrease is primarily attributable to lower sales volume and unfavorable mix, an increase in cash severance charges expected to be paid of \$19 million, and an increase in goodwill impairment charge of \$142 million during the year ended December 31, 2020 as compared to the year ended December 31, 2019. These unfavorable factors were partially offset by favorable operating performance and lower SG&A and engineering, research, and development costs. Included in the lower SG&A costs is a reduction of \$9 million for a non-income tax refund received in the year ended December 31, 2020.

Ride Performance

Ride Performance EBITDA including noncontrolling interests decreased \$603 million as compared to the year ended December 31, 2019. The decrease is primarily attributable to asset impairment charges of \$455 million and goodwill and intangible impairment charges of \$113 million recognized during the year ended December 31, 2020 as compared to a goodwill impairment charge of \$69 million recognized during the year ended December 31, 2019. Also contributing to the decrease is lower sales volume and unfavorable mix, partially offset by lower SG&A and engineering, research, and development costs.

Motorparts

Motorparts EBITDA including noncontrolling interests decreased \$29 million as compared to the year ended December 31, 2019. The decrease is primarily attributable to lower sales volumes and unfavorable mix, an increase in goodwill impairment charge of \$49 million and a non-cash charge to cost of sales of \$82 million related to the write-down of inventory recognized in connection with its initiative to rationalize its supply chain and distribution network as compared to the year ended December 31, 2019. These unfavorable factors were partially offset by favorable operating performance, lower SG&A costs and a decrease in indefinite-lived intangible asset impairment charges of \$93 million as compared to the year ended December 31, 2019.

The EBITDA including noncontrolling interests results shown in the preceding table include the following items, certain of which may have an effect on the comparability of EBITDA including noncontrolling interests results between periods (amounts in millions):

	Reportable Segments						
	Clean Air	Powertrain	Ride Performance	Motorparts	Total	Corporate	Total
Year Ended December 31, 2020							
Restructuring charges, net	\$ 22	\$ 50	\$ 25	\$ 17	\$ 114	\$ 5	\$ 119
Restructuring related costs	—	1	43	3	47	3	50
Inventory write-down ⁽¹⁾	—	—	—	73	73	—	73
Asset impairments restructuring related	—	3	—	26	29	—	29
Other non-restructuring asset impairments	—	1	455	1	457	17	474
Acquisition and expected separation costs	—	—	(2)	—	(2)	40	38
OPEB curtailment ⁽²⁾	—	—	—	—	—	(21)	(21)
Antitrust reserve change in estimate	(11)	—	—	—	(11)	—	(11)
Gain on extinguishment of debt	—	—	—	—	—	(2)	(2)
Gain/Loss on sale of assets	—	—	(3)	—	(3)	1	(2)
Goodwill and intangibles impairment charges	—	160	113	110	383	—	383
Total adjustments	\$ 11	\$ 215	\$ 631	\$ 230	\$ 1,087	\$ 43	\$ 1,130

⁽¹⁾ Non-cash charge of \$82 million to write-down inventory in the Motorparts segment in connection with its initiative to rationalize its supply chain and distribution network, partially offset by \$9 million margin on discontinued product that was previously written-down.

⁽²⁾ OPEB curtailment as a result of an amended union agreement that eliminates healthcare benefits for future retirees.

	Reportable Segments						
	Clean Air	Powertrain	Ride Performance	Motorparts	Total	Corporate	Total
Year Ended December 31, 2019							
Restructuring charges, net:							
Restructuring related to synergy initiatives ⁽¹⁾	\$ 6	\$ 1	\$ 2	\$ 11	\$ 20	\$ 2	\$ 22
Other restructuring charges and costs	23	30	26	3	82	9	91
Total restructuring charges, net	29	31	28	14	102	11	113
Restructuring related costs	—	—	42	—	42	—	42
Asset impairments related to restructuring	—	—	3	—	3	—	3
Other non-restructuring asset impairments	1	—	—	9	10	—	10
Other costs to achieve synergies ⁽¹⁾	—	1	—	—	1	6	7
Cost reduction initiatives ⁽²⁾	—	—	—	—	—	15	15
Acquisition and expected separation costs ⁽³⁾	—	—	—	1	1	126	127
Purchase accounting adjustments ⁽⁴⁾	—	12	4	41	57	—	57
Brazil tax credit ⁽⁵⁾	(9)	—	(6)	(7)	(22)	—	(22)
Antitrust reserve change in estimate	(9)	—	—	—	(9)	—	(9)
Out of period adjustment ⁽⁶⁾	—	—	5	—	5	—	5
Process harmonization ⁽⁷⁾	13	—	4	9	26	—	26
Warranty charge ⁽⁸⁾	—	—	—	8	8	—	8
Pension settlement ⁽⁹⁾	—	—	—	—	—	(2)	(2)
Goodwill and intangibles impairment charges	—	18	69	154	241	—	241
Total adjustments	\$ 25	\$ 62	\$ 149	\$ 229	\$ 465	\$ 156	\$ 621

⁽¹⁾ Cost to achieve synergies related to the Acquisitions.

⁽²⁾ Costs related to cost reduction initiatives.

⁽³⁾ Costs related to acquisitions and costs related to expected separation.

⁽⁴⁾ This primarily relates to a non-cash charge to cost of goods sold for the amortization of the inventory fair value step-up recorded as part of the acquisitions.

⁽⁵⁾ Recovery of value-added tax in a foreign jurisdiction.

⁽⁶⁾ Inventory losses attributable to prior periods.

⁽⁷⁾ Charge due to process harmonization.

⁽⁸⁾ Charge related to warranty. Although we regularly incur warranty costs, this specific charge is of an unusual nature in the period incurred.

⁽⁹⁾ Charges related to settlements of our pension benefit plans in connection with our derisking activities.

LIQUIDITY AND CAPITAL RESOURCES

Liquidity and Financing Arrangements

The COVID-19 global pandemic has negatively affected the global economy, disrupted global supply chains, and created extreme volatility and disruptions to capital and credit markets in the global financial markets. We expect the effects of the COVID-19 global pandemic will likely continue during 2021, the extent of which will depend on a number of factors, including the duration and severity. We believe our liquidity position continues to be adequate. However, with the recent economic downturn related to COVID-19, we expect to see lower revenue and lower earnings as part of the global recovery. As customer demand increases, we expect to face periods where payments will become due to our suppliers for our existing and additional inventories needed to support renewed production before we have generated new receivables from customers from that renewed production. It is our intent to maintain a consistent balance between our payables and receivables during this time.

We have implemented a range of actions aimed at temporarily reducing costs and preserving liquidity in response to the effects and anticipated effects to our business resulting from COVID-19. These measures include:

- Temporarily suspending or reducing operations;
- As discussed in more detail in Note 11, “Debt and Other Financing Arrangements” and below, we entered into an amendment to our senior credit facility to increase the maximum leverage ratio and decrease the minimum interest coverage ratio;
- At December 31, 2020, we had liquidity of \$2.3 billion comprised of \$803 million of cash and \$1.5 billion undrawn on our revolving credit facility;
- During 2020, overall salary costs were reduced at least 25% during the second quarter and 10% during the third quarter through a combination of unpaid furloughs, net pay decreases, and available temporary support programs in all regions Tenneco does business. Additionally, the executive leadership team (the CEO and direct staff) had reduced their salaries by 50% in the second quarter and 20% in the third quarter. Employee salaries were restored to their prior levels effective October 1, 2020;
- We reduced our headcount globally, and plan further reductions subject to negotiation with works councils in certain jurisdictions, beginning in the second quarter of 2020 and expect these actions to be completed during 2021;
- Capital expenditures in 2020 amounted to \$394 million. This is a reduction from 2019 expenditures of \$744 million;
- Utilizing applicable and appropriate provisions under the Coronavirus Aid, Relief, and Economic Security Act (“CARES Act”) including deferral of our portion of the 2020 FICA payroll taxes which will be repaid in 2021 and 2022, and payroll tax credits; and
- The Tenneco Board of Directors annual retainer fees were reduced by 25% effective for the third and fourth quarters of 2020.

On May 5, 2020, we entered into a third amendment to our credit agreement to increase the maximum leverage ratio and decrease the minimum interest coverage ratio. At December 31, 2020, we are in compliance with all financial covenants under the credit agreement. There are many uncertainties related to COVID-19 that could negatively affect our results of operations, financial position, and cash flows. We believe we will comply with these financial covenants, as required by our amended credit agreement. The amendment is discussed in more detail below.

We believe cash flows from operations, combined with our cash on hand and committed and undrawn capacity under our \$1.5 billion revolving credit facility, will be sufficient to meet our future capital requirements, including debt amortization, capital expenditures, pension contributions, and other operational requirements, for the following year based on our current estimates and forecasts. We believe we will maintain compliance with the new financial ratios set forth in the amended credit agreement. However, our ability to meet the financial covenants depends upon a number of operational and economic factors, including the effects of COVID-19, many of which are beyond our control. In the event we are unable to meet these financial covenants, we would consider several options to meet our cash flow needs. Such actions include additional restructuring initiatives and other cost reductions, sales of assets, reductions to working capital and capital spending, issuance of equity, and other alternatives to enhance our financial and operating position. We also continue to actively monitor credit market conditions for the right opportunity to replace and extend maturity.

Credit Facilities

The table below shows our borrowing capacity on committed credit facilities at December 31, 2020 (amounts in billions):

	Committed Credit Facilities at December 31, 2020	
	Term	Available ^(b)
Tenneco Inc. revolving credit facility ^(a)	2023	\$ 1.5
Tenneco Inc. Term Loan A	2023	—
Tenneco Inc. Term Loan B	2025	—
Subsidiaries' credit agreements	2021-2028	—
		<u>\$ 1.5</u>

^(a) We are required to pay commitment fees under the revolving credit facility on the unused portion of the total commitment.

^(b) Letters of credit reduce the available borrowings under the revolving credit facility.

At December 31, 2020, the Company had \$28 million of outstanding letters of credit under the revolving credit facility, which reduces our senior credit facility borrowing availability. In addition, the Company had \$75 million of outstanding letters of credit under uncommitted facilities at December 31, 2020.

At December 31, 2020, we had liquidity of \$2.3 billion comprised of \$803 million of cash and \$1.5 billion undrawn on our revolving credit facility. We had no outstanding borrowings on our revolving credit facility at December 31, 2020.

Term Loans

We entered into a new credit agreement with JPMorgan Chase Bank, N.A., as administrative agent and other lenders (the "New Credit Facility") in connection with the Federal-Mogul Acquisition, which has been amended by the first amendment, dated February 14, 2020 (the "First Amendment"), by the second amendment, dated February 14, 2020 (the "Second Amendment"), and by the third amendment, dated May 5, 2020 (the "Third Amendment"). The New Credit Facility consists of \$4.9 billion of total debt financing, consisting of a five-year \$1.5 billion revolving credit facility, a five-year \$1.7 billion term loan A facility ("Term Loan A") and a seven-year \$1.7 billion term loan B facility ("Term Loan B"). We paid \$8 million in one-time fees in connection with the First Amendment and the Second Amendment, and \$10 million in one-time fees in connection with the Third Amendment.

New Credit Facility — Interest Rates and Fees

At December 31, 2020, prior to giving effect to the Third Amendment, the interest rate on borrowings under the revolving credit facility and the Term Loan A facility was LIBOR plus 2.50% and will remain at LIBOR plus 2.50% for each relevant period for which the Company's consolidated net leverage ratio (as defined in the New Credit Facility) is equal to or greater than 6.0 to 1. The interest rate on borrowings under the revolving credit facility and the Term Loan A facility are subject to step down as follows:

Consolidated net leverage ratio	Interest rate
greater than 3.0 to 1	LIBOR plus 2.00%
less than 3.0 to 1 and greater than 2.5 to 1	LIBOR plus 1.75%
less than 2.5 to 1 and greater than 1.5 to 1	LIBOR plus 1.50%
less than 1.5 to 1	LIBOR plus 1.25%

The Third Amendment provides for an increase to the margin applicable to borrowings under the revolving credit facility and the Term Loan A facility at certain leverage levels as set forth below as one of several conditions for obtaining less restrictive financial maintenance covenants described below under *New Credit Facility — Other Terms and Conditions*:

Consolidated net leverage ratio	Interest rate
greater than 6.0 to 1	LIBOR plus 2.50%
less than 6.0 to 1 and greater than 4.5 to 1	LIBOR plus 2.25%

Initially, and so long as the Company's corporate family rating is Ba3 (with a stable outlook) or higher from Moody's Investors Service, Inc. ("Moody's") and BB- (with a stable outlook) or higher from Standard & Poor's Financial Services LLC ("S&P"), the interest rate on borrowings under the Term Loan B facility will be LIBOR plus 2.75%; at any time the foregoing conditions are not satisfied, the interest rate on the Term Loan B facility will be LIBOR plus 3.00%. When the Term Loan B facility is no longer outstanding and the Company and its subsidiaries have no other secured indebtedness (with certain exceptions set forth in the New Credit Facility), and upon the Company achieving and maintaining two or more corporate credit and/or corporate family ratings higher than or equal to BBB- from S&P, BBB- from Fitch Ratings Inc. ("Fitch") and/or Baa3 from Moody's (in each case, with a stable or positive outlook), the collateral under the New Credit Facility may be released. On June 3, 2019, Moody's lowered our corporate family rating to B1 and the interest rate on borrowings under the term loan B was raised to LIBOR plus 3.00%.

New Credit Facility — Other Terms and Conditions

The New Credit Facility contains representations and warranties, and covenants which are customary for debt facilities of this type. The Third Amendment provided relief from the financial maintenance covenants for the revolving credit facility and Term Loan A facility subject to the non-occurrence of certain covenant reset triggers ("Covenant Reset Triggers") that limit certain of our activities by implementing more restrictive affirmative and negative covenants, as more fully described below. After giving effect to the Third Amendment, the financial maintenance covenants for the revolving credit facility and the Term Loan A facility include (i) a requirement to have a senior secured leverage ratio (as defined in the New Credit Facility), with step-downs, as detailed in the table below; (ii) a requirement to have a consolidated net leverage ratio (as defined in the New Credit Facility), with step-downs, as follows:

(i) Senior secured net leverage ratio	(ii) Consolidated net leverage ratio
not greater than 6.75 to 1 at June 30, 2020	not greater than 4.50 to 1 at March 31, 2020
not greater than 9.50 to 1 at September 30, 2020	not greater than 5.25 to 1 at March 31, 2022
not greater than 8.75 to 1 at December 31, 2020	not greater than 4.75 to 1 at June 30, 2022
not greater than 8.25 to 1 at March 31, 2021	not greater than 4.25 to 1 at September 30, 2022
not greater than 4.50 to 1 at June 30, 2021	not greater than 3.75 to 1 thereafter
not greater than 4.25 to 1 at September 30, 2021	
not greater than 4.00 to 1 at December 31, 2021	

and (iii) a requirement to maintain a consolidated interest coverage ratio (as defined in the New Credit Facility) for any period of four consecutive fiscal quarters of not less than 2.75 to 1 as of March 31, 2020, 2.00 to 1 as of June 30, 2020, 1.50 to 1 through March 31, 2021, and 2.75 to 1 thereafter.

If a Covenant Reset Trigger occurs, the financial maintenance covenants for the revolving credit facility and the Term Loan A facility revert back to the previous financial maintenance covenants in effect immediately prior to the Third Amendment (the "Prior Financial Covenants"), including (i) a requirement to have a consolidated net leverage ratio (as defined in the New Credit Facility), at the end of each fiscal quarter, with step-downs, as follows:

(i) Consolidated net leverage ratio
not greater than 4.50 to 1 through March 31, 2021
not greater than 4.25 to 1 through September 30, 2021
not greater than 4.00 to 1 through March 31, 2022
not greater than 3.75 to 1 through September 30, 2022
not greater than 3.50 to 1 thereafter

and (ii) a requirement to maintain a consolidated interest coverage ratio (as defined in the New Credit Facility) for any period of four consecutive fiscal quarters of not less than 2.75 to 1.

In addition, we may make a one-time election to revert back to the Prior Financial Covenants and terminate the applicability of the Covenant Reset Triggers upon delivery of a covenant reset certificate to the administrative agent under the New Credit Facility that attests to compliance with the Prior Financial Covenants as of the end of the relevant fiscal period ("Covenant Reset Certificate"). Refer to Note 11, "Debt and Other Financing Arrangements" included in Part II, Item 8, "Financial Statements and Supplementary Data" for additional details.

The Covenant Reset Triggers include certain limitations on our ability and the ability of our restricted subsidiaries to, among other things, (a) incur additional indebtedness, (b) enter into additional sales and leasebacks, (c) create additional liens over their assets, (d) pay dividends or distributions to Tenneco's stockholders, (e) prepay certain unsecured indebtedness of us or our restricted subsidiaries (as more fully described below), (f) make additional investments, (g) dispose of material intellectual property, and (h) reinvest the proceeds of certain asset sales in the business in lieu of repaying indebtedness, each as more specifically described in the Third Amendment. These limitations are in addition to other affirmative and negative covenants (with customary exceptions, materiality qualifiers and limitations) in the New Credit Facility, including with respect to: financial reporting; payment of taxes; maintenance of existence; compliance with law and material contractual obligations; maintenance of property and insurance; inspection of property, books and records; notices of certain events; compliance with environmental laws; provision and maintenance of collateral perfection; satisfaction of the financial maintenance covenants described above; incurrence of indebtedness; permitting liens over assets; mergers, consolidations, dispositions or other fundamental transactions; dispositions and asset sales; restricted payments; investments; compliance with limitations on certain transactions with nonconsolidated affiliates; sale and leaseback transactions; changes in fiscal periods; negative pledge clauses in certain contracts; changes to lines of business; prepayments and modifications of certain subordinated indebtedness (as more fully described below); use of proceeds; transactions involving special purpose finance subsidiaries; and transactions related to effectuating a spin-off (as defined in the New Credit Facility), each as more specifically described in the New Credit Facility.

The Covenant Reset Triggers in the Third Amendment generally prohibit us from repaying the Senior Unsecured Notes. After giving effect to the Third Amendment, so long as no default exists under its New Credit Facility, we would be permitted to (i) make regularly scheduled interest and principal payments as and when due in respect of the Senior Unsecured Notes, (ii) refinance the Senior Unsecured Notes with the net cash proceeds of permitted refinancing indebtedness (as defined in the New Credit Facility); (iii) make payments in respect of the Senior Unsecured Notes in an amount equal to the net cash proceeds of qualified capital stock (as defined in the New Credit Facility) issued after May 5, 2020; (iv) convert any Senior Unsecured Notes into qualified capital stock issued after May 5, 2020; and (v) make additional payments of the Senior Unsecured Notes provided that after giving effect to such additional payments the consolidated leverage ratio would be equal to or less than 2.00 to 1 after giving effect to such additional payments. The foregoing limitations regarding repayment and refinancing of the Senior Unsecured Notes apply from the effectiveness of the Third Amendment until delivery of a Covenant Reset Certificate.

The covenants in the New Credit Facility generally prohibit us from repaying certain subordinated indebtedness. So long as no default exists, we would, under our New Credit Facility, be permitted to repay or refinance our subordinated indebtedness (i) with the net cash proceeds of permitted refinancing indebtedness (as defined in the New Credit Facility); (ii) in an amount equal to the net cash proceeds of qualified capital stock (as defined in the New Credit Facility) issued after October 1, 2018; (iii) in exchange for qualified capital stock issued after October 1, 2018; and (iv) with additional payments provided that such additional payments are capped based on a pro forma consolidated leverage ratio after giving effect to such additional payments.

Such additional payments on subordinated indebtedness (x) will not be permitted at any time the pro forma consolidated leverage ratio is greater than 2.00 to 1 after giving effect to such additional payments and (y) will be permitted in an unlimited amount at any time the pro forma consolidated leverage ratio is equal to or less than 2.00 to 1 after giving effect to such additional payments.

The New Credit Facility contains customary representations and warranties, including, as a condition to future revolver borrowings, that all such representations and warranties are true and correct, in all material respects, on the date of borrowing, including representations (with customary exceptions, materiality qualifiers and limitations) as to: existence; compliance with law; power, authority and enforceability; no violation of law or material contracts; material litigation; no default under the New Credit Facility and related documents; ownership of property, including material intellectual property; payment of material taxes; compliance with margin stock regulations; labor matters; ERISA; Investment Company Act matters; subsidiaries; use of loan proceeds; environmental matters; accuracy of information; security documents; solvency; anti-corruption laws and sanctions; and that since December 31, 2017 there has been no development or event that has had a material adverse effect on the business or financial condition of the Company and its subsidiaries, each as more specifically described in the New Credit Facility.

The New Credit Facility includes customary events of default and other provisions that could require all amounts due thereunder to become immediately due and payable, either automatically or at the option of the lenders, if we fail to comply with the terms of the New Credit Facility or if other customary events occur. These events of default (with customary exceptions, materiality qualifiers, limitations and grace periods) include: (i) failure to pay obligations under the New Credit Facility when due; (ii) material inaccuracy of representations and warranties; (iii) failure to comply with the covenants in the New Credit Facility and related documents (as summarized above); (iv) cross-default to material indebtedness; (v) commencement of bankruptcy or insolvency proceedings; (vi) ERISA events; (vii) certain material judgments; (viii) invalidity or unenforceability of security and guarantee documents; and (ix) change of control, each as more specifically described in the New Credit Facility.

The financial ratios required under the New Credit Facility and the actual ratios we calculated as of December 31, 2020 are as follows: senior secured net leverage ratio of 3.02 actual versus 8.75 (maximum required under the Third Amendment); and interest coverage ratio of 5.04 actual versus 2.75 (minimum required under the Third Amendment). The financial ratios required under the New Credit Facility and the actual ratios we calculated as of December 31, 2019 are as follows: consolidated net leverage ratio of 3.46 actual versus 4.00 (maximum without giving effect to the First Amendment, the Second Amendment or the Third Amendment); and interest coverage ratio of 5.38 actual versus 2.75 (minimum without giving effect to the First Amendment, the Second Amendment or the Third Amendment).

Senior Notes

A summary of our senior unsecured and secured notes at December 31, 2020 are as follows:

	2020		
	Principal	Carrying Amount ^(a) (millions)	Effective Interest Rate
Senior Unsecured Notes			
\$225 million of 5.375% Senior Notes due 2024	\$ 225	\$ 223	5.61 %
\$500 million of 5.000% Senior Notes due 2026	\$ 500	\$ 494	5.22 %
Senior Secured Notes			
€300 million of Euribor plus 4.875% Euro Floating Rate Notes due 2024	\$ 366	\$ 370	4.62 %
€350 million of 5.000% Euro Fixed Rate Notes due 2024	\$ 428	\$ 445	3.82 %
\$500 million of 7.875% Senior Secured Notes due 2029	\$ 500	\$ 489	8.21 %

^(a) Carrying amount is net of unamortized debt issuance costs and debt discounts or premiums. Total unamortized debt issuance costs were \$82 million as of December 31, 2020. Total unamortized debt (premium) discount, net was \$(20) million as of December 31, 2020.

At December 31, 2020, we have outstanding 5.375% senior unsecured notes due December 15, 2024 (“2024 Senior Notes”) and 5.000% senior unsecured notes due July 15, 2026 (“2026 Senior Notes” and together with the 2024 Senior Notes, the “Senior Unsecured Notes”). We also have outstanding 5.000% euro denominated senior secured notes due July 15, 2024 (“5.000% Euro Fixed Rate Notes”) and floating rate notes due April 15, 2024 (“Euro Floating Rate Notes”). On November 30, 2020, we issued \$500 million aggregate principal amount of 7.875% senior secured notes due January 15, 2029 (the “7.875% Senior Secured Notes”). We used the net proceeds from the issuance of the 7.875% Senior Secured Notes, together with cash on hand, to redeem all of the outstanding 4.875% euro denominated senior secured notes on December 14, 2020. The 5.000% Euro Fixed Rate Notes, the Euro Floating Rate Notes and the 7.875% Senior Secured Notes (collectively, the “Senior Secured Notes”) were outstanding at December 31, 2020.

Under the indentures covering the Senior Unsecured Notes, we are permitted to redeem some or all of the outstanding Senior Unsecured Notes, at specified redemption prices that decline to par over a specified period, at any time (a) on or after December 15, 2019, in the case of the 2024 Senior Notes and (b) on or after July 15, 2021, in the case of the 2026 Senior Notes. In addition, the Senior Unsecured Notes may also be redeemed at any time at a redemption price generally equal to 100% of the principal amount thereof plus a "make-whole premium" as set forth in the indentures. We did not redeem any of the Senior Unsecured Notes during the year ended December 31, 2020. We are permitted to redeem some or all of the outstanding Senior Secured Notes at specified redemption prices that decline to par over a specified period, at any time (a) on or after July 15, 2020, in the case of the 5.000% Euro Fixed Rate Notes, (b) on or after April 15, 2018, in the case of the Euro Floating Rate Notes and (c) on or after January 15, 2024, in the case of the 7.875% Senior Secured Notes. Prior to July 15, 2020, we may also redeem the 5.00% Euro Fixed Rate Notes at any time at a redemption price equal to 100% of the principal amount thereof plus a "make-whole premium" as set forth in the indenture. Prior to January 15, 2024, we may also redeem the 7.875% Senior Secured Notes at any time at a redemption price equal to 100% of the principal amount thereof plus a "make-whole premium" as set forth in the indenture. Further, we may also redeem up to 40% of the 5.000% Euro Fixed Rate Notes with the proceeds of certain equity offerings at any time prior to July 15, 2020 at a redemption price of 105.0% of the principal amount thereto, and we may redeem up to 40% of the 7.875% Senior Secured Notes with the proceeds of certain equity offerings at any time prior to January 15, 2024 at a redemption price of 107.875% of the principal amount thereto.

If we experience specified kinds of changes in control, we must offer to repurchase each of the Senior Unsecured Notes and the Senior Secured Notes at 101% of the principal amount thereof plus accrued and unpaid interest. In addition, if we sell certain of our assets and do not apply the proceeds from the sale in a certain manner within 365 days of the sale, we must use such unapplied proceeds to make an offer to repurchase each of the 2024 Senior Notes and the Senior Secured Notes at 100% of the principal amount thereof plus accrued and unpaid interest.

Senior Unsecured Notes and Senior Secured Notes — Other Terms and Conditions

The Senior Unsecured Notes and Senior Secured Notes contain covenants that will, among other things, limit our and our subsidiaries' ability to create liens and enter into sale and leaseback transactions. In addition, the indentures governing the Senior Secured Notes and 2024 Senior Notes also require that, as a condition precedent to incurring certain types of indebtedness not otherwise permitted, our consolidated fixed charge coverage ratio, as calculated on a pro forma basis, be greater than 2.00, as well as containing restrictions on our operations, including limitations on: (i) incurring additional indebtedness; (ii) paying dividends; (iii) distributions and stock repurchases; (iv) investments; (v) asset sales; (vi) entering into transactions with our affiliates; and (vii) mergers and consolidations.

Subject to limited exceptions, all of our existing and future material, domestic wholly owned subsidiaries fully and unconditionally guarantee our Senior Unsecured Notes and Senior Secured Notes on a joint and several basis. There are no significant restrictions on the ability of the subsidiaries that have guaranteed our Senior Unsecured Notes and Senior Secured Notes to make distributions to us.

Factoring Arrangements

We have securitization programs for some of our accounts receivable, with limited recourse provisions. Borrowings on these securitization programs, which are recorded in short-term debt, at December 31, 2020 and 2019 are as follows (amounts in millions):

	December 31	
	2020	2019
Borrowings on securitization programs	\$ 5	\$ 4

We have accounts receivable factoring programs in the U.S. with commercial banks. Under these programs we sell receivables from certain of our U.S. OE customers at a rate that is favorable versus our senior credit facility. These arrangements are uncommitted and provide for cancellation with no less than 30 days prior written notice. In addition, we have other receivable factoring programs in the U.S. with commercial banks under which we sell receivables from certain of our aftermarket customers to whom we have extended payments. These arrangements are uncommitted and may be terminated with 10 days to 30 days prior notice.

We also have subsidiaries in several countries in Europe that are parties to accounts receivable factoring facilities. The commitments for these arrangements are generally for one year, but some may be canceled with notice 90 days prior to renewal. In some instances, the arrangement provides for cancellation by the applicable financial institution at any time upon notification.

Certain of these programs have deferred purchase price arrangements with the banks. These programs provide us with access to cash at costs that are generally favorable to alternative sources of financing.

In the U.S and Canada, we participate in supply chain financing programs with certain of our aftermarket customers to whom we have extended payment terms whereby the accounts receivable are satisfied through the early receipt of negotiable financial instruments that are payable at a later date when payments from our customers are due. We sell these financial instruments before their maturity date to various financial institutions at a discount.

The accounts receivables under the programs described above are transferred in their entirety to the acquiring entities and are accounted for as a sale. The fair value of assets received as proceeds in exchange for the transfer of accounts receivable under these factoring programs approximates the fair value of such receivables. We are the servicer of the receivables under some of these arrangements and are responsible for performing all accounts receivable administration functions. Where we receive a fee to service and monitor these transferred accounts receivables, such fees are sufficient to offset the costs and as such, a servicing asset or liability is not recorded as a result of such activities.

The amount of accounts receivable outstanding and derecognized for these factoring and drafting arrangements was \$1.0 billion and \$1.0 billion at December 31, 2020 and 2019, of which \$0.4 billion and \$0.5 billion as of December 31, 2020 and 2019 relate to accounts receivable where we have continuing involvement. In addition, the deferred purchase price receivable was \$51 million and \$33 million as of December 31, 2020 and 2019.

Proceeds from the factoring of accounts receivable qualifying as sales and drafting programs was \$4.1 billion and \$5.0 billion for the years ended December 31, 2020 and 2019, of which \$3.3 billion and \$4.2 billion were received on accounts receivable where we have continuing involvement for the years ended December 31, 2020 and 2019.

Financing charges associated with the factoring of receivables are as follows (amounts in millions):

	<u>Year Ended December 31</u>	
	<u>2020</u>	<u>2019</u>
Loss on sale of receivables ^(a)	\$ 20	\$ 31

(a) Amount is included in "Interest expense" in the consolidated statements of income (loss).

If we were not able to factor receivables or sell drafts under these programs, our borrowings under our revolving credit agreement might increase. These programs provide us with access to cash at costs that are generally favorable to alternative sources of financing and allow us to reduce borrowings under our revolving credit agreement.

Supply Chain Financing

Certain of our suppliers participate in supply chain financing programs under which they securitize their accounts receivables from us. Financial institutions participate in the supply chain financing program on an uncommitted basis and can cease purchasing receivables or drafts from our suppliers at any time. We began to wind down these programs in 2019 and ended them in the third quarter of 2020.

Cash Flows

Operating Activities

Operating activities for the years ended December 31, 2020 and 2019 were as follows (amounts in millions):

	Year Ended December 31	
	2020	2019
Operational cash flow before changes in operating assets and liabilities	\$ 245	\$ 532
Changes in operating assets and liabilities:		
Receivables	(182)	(225)
Inventories	279	284
Payables and accrued expenses	308	(66)
Accrued interest and accrued income taxes	(12)	3
Other assets and liabilities	(9)	(84)
Total change in operating assets and liabilities	384	(88)
Net cash (used) provided by operating activities	\$ 629	\$ 444

Net cash provided by operating activities for the year ended December 31, 2020 was \$629 million, an increase of \$185 million compared to the year ended December 31, 2019. The activity was the result of:

- a net increase of \$472 million in net cash provided by operating activities due to favorable changes in working capital items; and
- a decrease in net cash provided by operating activities before changes in working capital of \$287 million.

The favorable working capital changes can be attributed primarily to inventory efficiency gains reflecting higher inventory turns and lower days of inventory on hand. Net cash provided by operating activities was also benefited by renegotiated payment terms with our suppliers and the deferral of payroll taxes under the CARES Act. Our cash flows had a one-time benefit from these items in 2020. We anticipate the 2021 effect of these items to be partially offset by other improvements to cash flow during 2021.

Investing Activities

Investing activities for the years ended December 31, 2020 and 2019 were as follows (amounts in millions):

	Year Ended December 31	
	2020	2019
Acquisitions, net of cash acquired	\$ —	\$ (158)
Proceeds from sale of assets	45	20
Net proceeds from sale of business	9	22
Proceeds from sale of investment in nonconsolidated affiliates	—	2
Cash payments for property, plant and equipment	(394)	(744)
Proceeds from deferred purchase price of factored receivables	283	250
Other	—	2
Net cash (used) provided by investing activities	\$ (57)	\$ (606)

Net cash used by investing activities for the year ended December 31, 2020 decreased primarily due to a decrease in cash payments for property, plant and equipment of \$350 million, a decrease in acquisitions, net of cash acquired of \$158 million due to no cash payments for acquisitions for the year ended December 31, 2020 and an increase in proceeds from deferred purchase price of factored receivables of \$33 million.

Cash payments for property, plant and equipment were \$394 million and \$744 million for the years ended December 31, 2020 and 2019.

Financing Activities

Financing activities for the years ended December 31, 2020 and 2019 were as follows (amounts in millions):

	Year Ended December 31	
	2020	2019
Proceeds from term loans and notes	\$ 654	\$ 200
Repayments of term loans and notes	(765)	(341)
Borrowings on revolving lines of credit	6,120	9,120
Payments on revolving lines of credit	(6,337)	(8,884)
Repurchase of common shares	(1)	(2)
Cash dividends	—	(20)
Debt issuance costs of long-term debt	(25)	—
Net decrease in bank overdrafts	(2)	(13)
Acquisition of additional ownership interest in consolidated affiliates	—	(10)
Distributions to noncontrolling interest partners	(42)	(43)
Other	40	(4)
Net cash (used) provided by financing activities	<u>\$ (358)</u>	<u>\$ 3</u>

Net cash used by financing activities was \$358 million for the year ended December 31, 2020. This included net repayments of term loans of \$111 million and net repayments under revolving lines of credit of \$217 million.

Net cash provided by financing activities was \$3 million for the year ended December 31, 2019. This included net repayments on term loans of \$141 million and net borrowings under revolving lines of credit of \$236 million.

Dividends on Common Stock

We did not pay dividends for the year ended December 31, 2020 as compared to \$20 million of cash dividends paid during the year ended December 31, 2019, due to the suspension of the dividend program in the second quarter of 2019.

Contractual Obligations

Our remaining required debt principal amortization and payment obligations under lease and certain other financial commitments as of December 31, 2020 are shown in the following table (amounts in millions):

	Payments due by period:				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Revolver borrowings	\$ —	\$ —	\$ —	\$ —	\$ —
Senior term loans	3,196	145	1,437	1,614	—
Senior notes	2,019	—	—	1,019	1,000
Other subsidiary debt and finance lease obligations	24	5	8	10	1
Short-term debt (including bank overdrafts)	157	157	—	—	—
Total debt obligations	<u>5,396</u>	<u>307</u>	<u>1,445</u>	<u>2,643</u>	<u>1,001</u>
Pension obligations	1,064	95	223	192	554
Operating leases	336	106	141	65	24
Purchase obligations ^(a)	160	160	—	—	—
Interest payments	1,029	213	413	269	134
Capital commitments	37	37	—	—	—
Total payments	<u>\$ 8,022</u>	<u>\$ 918</u>	<u>\$ 2,222</u>	<u>\$ 3,169</u>	<u>\$ 1,713</u>

(a) Short-term, ordinary course payment obligations have been excluded.

If we do not maintain compliance with the terms of our New Credit Facility or senior notes indentures described above, all amounts under those arrangements could, automatically or at the option of the lenders or other debt holders, become due. Additionally, each of those facilities contains provisions that certain events of default under one facility will constitute a default under the other facility, allowing the acceleration of all amounts due. We currently expect to maintain compliance with the terms of all of our various credit agreements for the foreseeable future.

Included in our contractual obligations is the amount of interest to be paid on our long-term debt. As our debt structure contains both fixed and variable rate obligations, we have made assumptions in calculating the amount of future interest payments. Interest on our Senior Unsecured Notes is calculated using the fixed rates of 5.375% and 5.000%, and interest on our fixed rate Senior Secured Notes is calculated using the fixed rates of 5.000% and 7.875%. Interest on our variable rate debt is calculated as LIBOR plus the applicable margin in effect at December 31, 2020 for our term loans, and Euribor plus the applicable margin in effect at December 31, 2020 for our floating rate euro notes. We have assumed that both LIBOR and the Euribor rates will remain unchanged for the outlying years.

We have also included an estimate of expenditures required after December 31, 2020 to complete the projects authorized at December 31, 2020, in which we have made substantial commitments in connection with purchasing property, plant and equipment for our operations. For 2021, we expect our capital expenditures to be between \$450 million and \$500 million.

We have included an estimate of the expenditures necessary after December 31, 2020 to satisfy purchase requirements pursuant to certain ordinary course supply agreements that we have entered into. With respect to our other supply agreements, they generally do not specify the volumes we are required to purchase. In many cases, if any commitment is provided, the agreements state only the minimum percentage of our purchase requirements we must buy from the supplier. As a result, these purchase obligations fluctuate from year-to-year and we are not able to quantify the amount of our future obligations.

We have not included material cash requirements for unrecognized tax benefits or taxes. It is difficult to estimate taxes to be paid as changes in where we generate income can have a significant effect on our future tax payments. We have also not included cash requirements for funding pension and postretirement benefit costs. Based upon current estimates, we believe we will be required to make contributions of approximately \$95 million to those plans in 2021. Pension and postretirement contributions beyond 2021 will be required but those amounts will vary based upon many factors, including the performance of its pension fund investments during 2021 and future discount rate changes. For additional information relating to the funding of our pension and other postretirement plans, refer to Note 13, "Pension Plans, Postretirement and Other Employee Benefits", in our consolidated financial statements included in Item 8 for additional information. In addition, we have not included cash requirements for environmental remediation. Based upon current estimates, we believe we will be required to spend approximately \$31 million over the next 30 years. However, due to possible modifications in remediation processes and other factors, it is difficult to determine the actual timing of the payments. Refer to Note 15, "Commitments and Contingencies", in our consolidated financial statements included in Item 8 for additional information.

We occasionally provide guarantees that could require it to make future payments in the event that the third-party primary obligor does not make its required payments. The Company is not required to record a liability for any of these guarantees.

Additionally, we have from time to time issued guarantees for the performance of obligations by some of our subsidiaries, and some of our subsidiaries have guaranteed our debt. All of our existing and future material domestic subsidiaries fully and unconditionally guarantee our New Credit Facility and our senior notes on a joint and several basis. The New Credit Facility is also secured by first-priority liens on substantially all our domestic assets and pledges of up to 66% of the stock of certain first-tier foreign subsidiaries. As described above, certain of our senior notes are secured by pledges of stock and assets.

Supplemental Guarantor Financial Information

Basis of Presentation

Substantially all of the Company's existing and future material domestic 100% owned subsidiaries (which are referred to as the "Guarantor Subsidiaries") fully and unconditionally guarantee its senior notes on a joint and several basis. However, a subsidiary's guarantee may be released in certain customary circumstances such as a sale of the subsidiary or all or substantially all of its assets in accordance with the indenture applicable to the notes. The Guarantor Subsidiaries are combined in the presentation below.

Summarized Financial Information

The following tables present summarized financial information for the Parent and the Guarantors on a combined basis after the elimination of (a) intercompany transactions and balances among the Parent and the Guarantors and (b) the equity in earnings from and investments in any subsidiary that is a Nonguarantor (amounts in millions):

Income Statements

	Year Ended December 31	
	2020	2019
Net sales and operating revenues	\$ 6,181	\$ 7,299
Operating expenses	\$ 6,896	\$ 7,662
Net income (loss)	\$ (1,221)	\$ (498)
Net income (loss) attributable to Tenneco Inc.	\$ (1,221)	\$ (498)

Balance Sheets

	December 31	
	2020	2019
ASSETS		
Current assets	\$ 1,150	\$ 1,947
Non-current assets	\$ 2,022	\$ 3,089
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities	\$ 1,463	\$ 1,347
Non-current liabilities	\$ 5,834	\$ 6,102
Intercompany due to (due from)	\$ 100	\$ 107

CRITICAL ACCOUNTING ESTIMATES

We prepare our consolidated financial statements in accordance with accounting principles generally accepted in the United States of America (“U.S. GAAP”), which requires us to make estimates and assumptions that affect the reported amounts and disclosures in our consolidated financial statements. These estimates are subject to an inherent degree of uncertainty and actual results could differ from our estimates. Our significant accounting policies have been disclosed in Note 2, “Summary of Significant Accounting Policies”. The following paragraphs include a discussion of some critical areas where estimates are required.

Goodwill and Other Indefinite-Lived Intangible Assets

We evaluate goodwill for impairment during the fourth quarter of each year, or more frequently if events or circumstances indicate goodwill might be impaired. We perform assessments at the reporting unit level by comparing the estimated fair value of our reporting units with goodwill to the carrying value of the reporting unit to determine if a goodwill impairment exists. If the carrying value of our reporting units exceeds the fair value, the goodwill is considered impaired. Our assessment of fair value utilizes a combination of the income approach, market approach, and, in instances where a reporting unit's free cash flows do not support the value of the underlying assets, an asset approach. In our assessment, for reporting units where the free cash flows support the value of the underlying assets, we apply a 75% weighting to the income approach and a 25% weighting to the market approach. The most significant inputs in estimating the fair value of our reporting units under the income approach are (i) projected operating margins, (ii) the revenue growth rate, and (iii) the discount rate, which is risk-adjusted based on the aforementioned inputs.

Similar to goodwill, we evaluate our indefinite-lived trade names and trademarks for impairment during the fourth quarter of each year, or more frequently if events or circumstances indicated the assets might be impaired. We perform a quantitative assessment of estimating fair values based upon the prospective stream of hypothetical after-tax royalty cost savings discounted at rates that reflect the rates of return appropriate for these intangible assets. The primary, and most sensitive, inputs utilized in determining fair values of our trade names and trademarks are (i) our projected branded product sales, (ii) the revenue growth rate, (iii) the royalty rate, and (iv) the discount rate, which is risk-adjusted based on our projected branded sales.

The basis of the goodwill impairment and indefinite-lived intangible asset impairment analyses is our annual budget and three-year strategic plan. This includes a projection of future cash flows based on new products, awarded business, customer commitments, and independent market data, which requires us to make significant assumptions and estimates about the extent and timing of future cash flows and revenue growth rates. The key factors that affect our estimates are (i) future production estimates; (ii) customer preferences and decisions; (iii) product pricing; (iv) manufacturing and material cost estimates; and (v) product life / business retention. These estimates and assumptions are subject to a high degree of uncertainty.

While we believe the assumptions and estimates used to determine the estimated fair values are reasonable, due to the many variables inherent in estimating fair value and the relative size of the goodwill and indefinite-lived intangible assets, differences in assumptions could have a material effect on the results of our analysis. Refer to Note 7, “Goodwill and Other Intangible Assets”, in our consolidated financial statements included in Item 8 for additional information regarding our goodwill and indefinite-lived intangible assets.

Impairment of Long-Lived Assets and Definite-Lived Intangible Assets

We monitor our long-lived and definite-lived intangible assets for impairment indicators on an on-going basis. If an impairment indicator exists, we test the long-lived asset group for recoverability by comparing the undiscounted cash flows expected to be generated from the long-lived asset group to its net carrying value. If the net carrying value of the asset group exceeds the undiscounted cash flows, the asset group is written down to its fair value and an impairment loss is recognized. Even if an impairment charge is not recognized, a reassessment of the useful lives over which depreciation or amortization is being recognized may be appropriate based on our assessment of the recoverability of these assets.

The basis of the recoverability test is our annual budget and three-year strategic plan. This includes a projection of future cash flows based on new products, awarded business, customer commitments, and independent market data, which requires us to make significant assumptions and estimates about the extent and timing of future cash flows and revenue growth rates. The key factors that affect our estimates are (i) future production estimates; (ii) customer preferences and decisions; (iii) product pricing; (iv) manufacturing and material cost estimates; and (v) product life / business retention. These estimates and assumptions are subject to a high degree of uncertainty.

While we believe the projections of anticipated future cash flows and related assumptions are reasonable, differences in assumptions could have a material effect on the results of our analysis.

Pension and Other Postretirement Benefits

We sponsor defined benefit pension and postretirement benefit plans for certain employees and retirees around the world. Our defined benefit plans are accounted for on an actuarial basis, which requires the selection of various assumptions, including an expected long-term rate of return, discount rate, mortality rates of participants, expected rates of mortality improvement, and health care cost trend rates.

The approach to establishing the discount rate assumption for both our domestic and international plans is based on high-quality corporate bonds. The weighted-average discount rates used to calculate net periodic benefit cost for 2020 and year-end obligations as of December 31, 2020 were as follows:

	Pension Benefits		Other Postretirement Benefits
	U.S. Plans	Non-U.S. Plans	
Used to calculate net periodic benefit cost	3.2 %	1.7 %	3.2 %
Used to calculate benefit obligations	2.3 %	1.5 %	2.5 %

Our approach to determining the assumption for the expected return on plan assets evaluates both historical returns as well as estimates of future returns. It is further adjusted for any expected changes in the long-term outlook for the equity and fixed income markets and for changes in the composition of pension plan assets. As a result, our estimate of the weighted average long-term rate of return on plan assets for all of our pension plans decreased to 5.1% in 2020 from 5.4% in 2019.

Our pension plans generally do not require employee contributions. Our policy is to fund these pension plans in accordance with applicable domestic and international government regulations. At December 31, 2020, all legal funding requirements had been met.

The following table illustrates the sensitivity to a change in certain assumptions for our pension and postretirement benefit plan obligations. The changes in these assumptions have no effect on our funding requirements.

	Pension Benefits				Other Postretirement Benefits	
	U.S. Plans		Non-U.S. Plans		Change in 2021 pension expense	Change in PBO
	Change in 2021 pension expense	Change in PBO	Change in 2021 pension expense	Change in PBO		
25 basis point (“bp”) decrease in discount rate	\$ —	\$ 36	\$ 2	\$ 42	\$ —	\$ 6
25 bp increase in discount rate	\$ —	\$ (34)	\$ (1)	\$ (41)	\$ —	\$ (5)
25 bp decrease in return on assets rate	\$ (3)	n/a	\$ (1)	n/a	n/a	n/a
25 bp increase in return on assets rate	\$ 3	n/a	\$ (1)	n/a	n/a	n/a

The assumed health care trend rate affects the amounts reported for our postretirement benefit plan obligations. The following table illustrates the sensitivity to a change in the assumed health care trend rate:

	Total service and interest cost	APBO
100 bp increase in health care cost trend rate	\$ 1	\$ 15
100 bp decrease in health care cost trend rate	\$ (1)	\$ (13)

Refer to Note 13, “Pension Plans, Postretirement and Other Employee Benefits”, in our consolidated financial statements included in Item 8 for additional information regarding our pension and other postretirement employee benefit costs and assumptions.

Warranty Reserves

We provide warranties on some, but not all, of our products. The warranty terms vary but range from one year up to limited lifetime warranties on some of our premium aftermarket products. Provisions for estimated expenses related to product warranty are made at the time products are sold or when specific warranty issues are identified on OE products. These estimates are established using historical information about the nature, frequency, and average cost of warranty claims and upon specific warranty issues as they arise. While we have not experienced any material differences between these estimates and our actual costs, it is reasonably possible that future warranty issues could arise that could have a material effect on our consolidated financial statements.

Income Taxes

We recognize deferred tax assets and liabilities which reflect the temporary differences between the financial statement carrying value of assets and liabilities and the tax reporting values. Future tax benefits of net operating losses (“NOL”) and tax credit carryforwards are also recognized as deferred tax assets on a taxing jurisdiction basis. We measure deferred tax assets and liabilities using enacted tax rates that will apply in the years in which we expect the temporary differences to be recovered or paid. Changes in tax laws or accounting standards and methods may affect recorded deferred taxes in future periods.

Valuation allowances are recorded to reduce our deferred tax assets to an amount that is more likely than not to be realized. The ability to realize deferred tax assets depends on our ability to generate sufficient taxable income within the carryforward periods provided for in the tax law for each tax jurisdiction. In the event our operating performance deteriorates in a filing jurisdiction or entity, future assessments could conclude that a larger valuation allowance will be needed to further reduce the deferred tax assets. However, due to the complexity of some of these uncertainties, the ultimate resolution may be materially different from the current estimate. Refer to Note 14, “Income Taxes”, in our consolidated financial statements included in Item 8, “Financial Statements and Supplementary Data” for additional information.

In addition, the calculation of our tax benefits and liabilities includes uncertainties in the application of complex tax regulations in a multitude of jurisdictions across our global operations. We recognize tax benefits and liabilities based on our estimate of whether, and the extent to which, additional taxes will be due. We adjust these liabilities based on changing facts and circumstances; however, due to complexity of some of these uncertainties and the effect of any tax audits, the ultimate resolutions may be materially different from our estimated liabilities.

MARKET RISK SENSITIVITY

We are exposed to certain global market risks, including foreign currency exchange risk, commodity price risk, interest rate risk associated with our debt, and equity price risk associated with our share-based compensation awards.

Foreign Currency Exchange Rate Risk

We manufacture and sell our products in North America, South America, Asia, Europe, and Africa. As a result, our financial results could be significantly affected by factors such as changes in foreign currency exchange rates or weak economic conditions in the foreign markets in which we manufacture and sell our products. We generally try to use natural hedges within our foreign currency activities, including the matching of revenues and costs, to minimize foreign currency risk. Where natural hedges are not in place, we consider managing certain aspects of our foreign currency activities and larger transactions through the use of foreign currency options or forward contracts. Principal currencies hedged have historically included the U.S. dollar, euro, British pound, Polish zloty, Singapore dollar, Thailand bhat, South African rand, Mexican peso, and Canadian dollar.

Foreign Currency Forward Contracts

We enter into foreign currency forward purchase and sale contracts to mitigate our exposure to changes in exchange rates on certain intercompany and third-party trade receivables and payables. In managing our foreign currency exposures, we identify and aggregate existing offsetting positions and then hedge residual exposures through third-party derivative contracts. The gains or losses on these contracts are recognized as foreign currency gains (losses) within “Cost of sales (exclusive of depreciation and amortization)” in the consolidated statements of income (loss). The fair value of foreign currency forward contracts is recognized in “Prepayments and other current assets” or “Accrued expenses and other current liabilities” in the consolidated balance sheets. The fair value of these derivative instruments is not considered material to the consolidated financial statements.

The following table summarizes by position the notional amounts for foreign currency forward contracts at December 31, 2020, all of which mature in the next twelve months (amounts in millions):

	Notional Amount
Long positions	\$ 180
Short positions	\$ (176)

A hypothetical 10% adverse change in the U.S. relative to all other currencies would not materially affect our consolidated financial position, results of operations or cash flows with regard to changes in the fair values of foreign currency forward contracts.

We are exposed to foreign currency risk due to translation of the results of certain international operations into U.S. dollars as part of the consolidation process. Fluctuations in foreign currency exchange rates can therefore create volatility in the results of operations and may adversely affect our financial condition.

The following table summarizes the amounts of foreign currency translation and transaction losses:

	Year Ended December 31	
	2020	2019
	(millions)	
Translation gains (losses) recorded in accumulated other comprehensive income (loss)	\$ (12)	\$ 16
Transaction gains (losses) recorded in earnings	\$ (17)	\$ (11)

Senior Secured Notes — We have foreign currency denominated debt, €344 million of which was designated as a net investment hedge in certain foreign subsidiaries and affiliates of ours. As such, an adverse change in foreign currency exchange rates will have no effect on earnings. For the portion not designated as a net investment hedge, we have other natural hedges in place that will offset any adverse change in foreign currency exchange rates.

A hypothetical 10% adverse change in foreign exchange rates between the euro and U.S. dollar would increase the amount of cash required to settle these notes by approximately \$91 million as of December 31, 2020.

Commodity Price Risk

Our production processes are dependent upon the supply of certain raw materials that are exposed to price fluctuations on the open market. Commodity rate price forward contracts are executed to offset a portion of our exposure to the potential change in prices for raw materials, principal raw materials hedged include copper, nickel, tin, zinc, and aluminum. The primary purpose of our commodity price forward contract activity is to manage the volatility associated with forecasted purchases for up to 18 months in the future. We monitor our commodity price risk exposures regularly to maximize the overall effectiveness of its commodity forward contracts. In certain instances, within this program, foreign currency forwards may be used in order to match critical terms for commodity exposure. The fair value of our commodity price forward contracts was a net asset position of \$3 million on an equivalent notional amount of \$10 million as of December 31, 2020. A hypothetical 10% adverse change in commodity prices would not materially affect our consolidated financial position, results of operations or cash flows with regard to changes in the fair values of commodity forward contracts.

Interest Rate Risk

Our financial instruments that are sensitive to market risk for changes in interest rates are primarily our debt securities. We use our revolving credit facility to finance our short-term and long-term capital requirements. We pay a current market rate of interest on these borrowings. Our long-term capital requirements have been financed with long-term debt with original maturity dates ranging from five to ten years. At December 31, 2020, we had \$1.7 billion par value of fixed rate debt and \$3.5 billion par value of floating rate debt. Of the fixed rate debt, \$653 million is fixed through 2024, \$500 million is fixed through 2026, and \$500 million is fixed through 2029. For more detailed explanations on our debt structure and senior credit facility, refer to “Liquidity and Capital Resources — Liquidity and Financing Arrangements” earlier in this Management’s Discussion and Analysis.

We estimate the fair value of our long-term debt at December 31, 2020 was about 99% of its book value. A one percentage point increase or decrease in interest rates related to our variable interest rate debt would increase or decrease the annual interest expense we recognize in the consolidated statements of income (loss) and the cash we pay for interest expense by approximately \$37 million.

Equity Price Risk

We selectively use swaps to reduce market risk associated with our deferred compensation liabilities, which increase as our stock price increases and decrease as our stock price decreases. We have entered into a cash-settled share swap agreement which moves in the opposite direction of these liabilities, allowing us to fix a portion of the liabilities at a stated amount. At December 31, 2020, we hedged our deferred compensation liability related to approximately 1,700,000 common share equivalents. We also have an S&P 500 index fund ETF swap agreement to further reduce our market risk, which will act as a natural hedge offsetting an equivalent amount of indexed investments in our deferred compensation plans. The fair value of these swap agreements is recorded in “Prepayments and other current assets” or “Accrued expenses and other current liabilities” in the consolidated balance sheets. The fair value of these derivative instruments is not considered material to the consolidated financial statements.

ENVIRONMENTAL MATTERS, LEGAL PROCEEDINGS AND PRODUCT WARRANTIES

Note 15, “Commitments and Contingencies” of the consolidated financial statements included in Item 8, “Financial Statements and Supplemental Data” is incorporated herein by reference.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK.

Information required by Item 7A is included in Note 2, “Summary of Significant Accounting Policies”; Note 9, “Derivatives and Hedging Activities”; and Note 10, “Fair Value of Financial Instruments” of the consolidated financial statements and notes included in Item 8. Other information required by Item 7A is included in Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations”.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA.

**INDEX TO FINANCIAL STATEMENTS OF TENNECO INC.
AND CONSOLIDATED SUBSIDIARIES**

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MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management of Tenneco Inc. is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) and Rule 15d-15(f) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")). Our 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. 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.

Management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2020. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in *Internal Control-Integrated Framework* (2013).

Based on this assessment, management concluded that the Company's internal control over financial reporting was effective as of December 31, 2020.

The effectiveness of our internal control over financial reporting as of December 31, 2020 has been audited by PricewaterhouseCoopers LLP, our independent registered public accounting firm, as stated in their report, which is included herein.

February 24, 2021

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Tenneco Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Tenneco Inc. and its subsidiaries (the “Company”) as of December 31, 2020 and 2019, and the related consolidated statements of income (loss), of comprehensive income (loss), of changes in shareholders' equity and of cash flows for each of the three years in the period ended December 31, 2020, including the related notes and financial statement schedule listed in the index appearing under Item 15 (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of December 31, 2020, 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, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020 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, 2020, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 16 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

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

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

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

Definition and Limitations of Internal Control over Financial Reporting

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

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

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Interim Goodwill Impairment Assessment – Certain Reporting Units

As described in Notes 2 and 7 to the consolidated financial statements, the Company's consolidated goodwill balance was \$508 million as of December 31, 2020. Management evaluates goodwill for impairment annually during the fourth quarter, or more frequently if events or circumstances indicate that goodwill might be impaired. As a result of the effects of the COVID-19 global pandemic on the Company's projected financial information, management concluded that it was more likely than not the fair values of four reporting units, including a reporting unit within the Motorparts segment and a reporting unit within the Powertrain segment, had declined below their carrying values during the three months ended March 31, 2020. An impairment indicator exists when a reporting unit's carrying value exceeds its fair value. Fair value of a reporting unit is estimated using a combination of the income approach and market approach. Assumptions used in the income approach that have the most significant effect on the estimated fair value of the Company's reporting units are the discount rate, revenue growth rate and projected operating margins. As a result of the impairment indicator discussed above, the Company recorded goodwill impairments of \$267 million during the year ended December 31, 2020, including partial impairments of a certain reporting unit within each of the Motorparts and Powertrain segments.

The principal considerations for our determination that performing procedures relating to the goodwill impairment assessment of certain reporting units is a critical audit matter are (i) the significant judgment by management when developing the fair value measurement of the reporting units; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's significant assumptions related to the discount rate, revenue growth rate and projected operating margins; and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's goodwill impairment assessment, including controls over the valuation of reporting units. These procedures also included, among others (i) testing management's process for developing the fair value estimates; (ii) evaluating the appropriateness of the income approach and market approach methods; (iii) testing the completeness and accuracy of underlying data used in the estimates; and (iv) evaluating the reasonableness of significant assumptions used by management, including the discount rate, the revenue growth rate and projected operating margins. Evaluating management's assumptions related to the revenue growth rate and projected operating margins involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the reporting units, (ii) the consistency with external market and industry data; and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the Company's income approach and market approach methods, and the discount rate assumptions.

Interim Indefinite-lived Intangible Asset Impairment Assessment – Certain Trade Names and Trademarks

As described in Notes 2 and 7 to the consolidated financial statements, the Company's consolidated indefinite-lived intangible asset balance was \$237 million as of December 31, 2020. Indefinite-lived intangible assets include trade names and trademarks. Management conducts an impairment analysis annually during the fourth quarter, or more frequently if events or circumstances indicate that the assets might be impaired. As a result of the effects of the COVID-19 global pandemic on the Company's projected financial information, management concluded that it was more likely than not the fair values of trade names and trademarks, including trade names and trademarks within the Motorparts segment and trade names and trademarks within the Ride Performance segment, had declined below their carrying values during the three months ended March 31, 2020. An impairment exists when the trade names and trademarks' carrying value exceeds its fair value. The fair values of these assets are based upon the prospective stream of hypothetical after-tax royalty cost savings discounted at rates that reflect the rates of return appropriate for these intangible assets. Assumptions used in the impairment assessment of the trade names and trademarks that have the most significant effect on the estimated fair value are projected branded product sales, the revenue growth rate, the royalty rate and the discount rate. As a result of the impairment indicator discussed above, the Company

recorded indefinite-lived intangible asset impairments of \$51 million during the year ended December 31, 2020, including partial impairments of trade names and trademarks within each of the Motorparts and Ride Performance segments.

The principal considerations for our determination that performing procedures relating to the certain trade names and trademarks impairment assessment of a certain asset within the Motorparts segment and a certain asset within the Ride Performance segment is a critical audit matter are (i) the significant judgment by management when developing the fair value measurement of the trade names and trademarks; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's significant assumptions related to the projected branded product sales, the revenue growth rates, the royalty rates and the discount rates; and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's indefinite-lived intangible asset impairment assessment, including controls over the valuation of the Company's trade names and trademarks. These procedures also included, among others (i) testing management's process for developing the fair value estimates; (ii) evaluating the appropriateness of the valuation model; (iii) testing the completeness and accuracy of underlying data used in the model; and (iv) evaluating the reasonableness of significant assumptions used by management, including the projected branded product sales, the revenue growth rate, the royalty rate and the discount rate. Evaluating management's assumptions related to projected branded product sales and the revenue growth rate involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of branded products; (ii) the consistency with external market and industry data; and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of management's valuation model and the royalty rate and discount rate assumptions.

/s/ PricewaterhouseCoopers LLP
Milwaukee, Wisconsin
February 24, 2021

We have served as the Company's auditor since 2010.

TENNECO INC.
CONSOLIDATED STATEMENTS OF INCOME (LOSS)
(in millions, except share and per share amounts)

	Year Ended December 31		
	2020	2019	2018
Revenues			
Net sales and operating revenues	\$ 15,379	\$ 17,450	\$ 11,763
Costs and expenses			
Cost of sales (exclusive of depreciation and amortization)	13,402	14,912	10,002
Selling, general, and administrative	889	1,138	752
Depreciation and amortization	639	673	345
Engineering, research, and development	273	324	200
Restructuring charges, net and asset impairments	622	126	117
Goodwill and intangible impairment charges	383	241	3
	<u>16,208</u>	<u>17,414</u>	<u>11,419</u>
Other income (expense)			
Non-service pension and postretirement benefit (costs) credits	18	(11)	(20)
Equity in earnings (losses) of nonconsolidated affiliates, net of tax	47	43	18
Gain (loss) on extinguishment of debt	2	—	(10)
Other income (expense), net	38	53	(10)
	<u>105</u>	<u>85</u>	<u>(22)</u>
Earnings (loss) before interest expense, income taxes, and noncontrolling interests	(724)	121	322
Interest expense	(277)	(322)	(148)
Earnings (loss) before income taxes and noncontrolling interests	(1,001)	(201)	174
Income tax (expense) benefit	(459)	(19)	(63)
Net income (loss)	(1,460)	(220)	111
Less: Net income (loss) attributable to noncontrolling interests	61	114	56
Net income (loss) attributable to Tenneco Inc.	<u>\$ (1,521)</u>	<u>\$ (334)</u>	<u>\$ 55</u>
Earnings (loss) per share			
Basic earnings (loss) per share:			
Earnings (loss) per share	\$ (18.69)	\$ (4.12)	\$ 0.93
Weighted average shares outstanding	81,378,474	80,904,060	58,625,087
Diluted earnings (loss) per share:			
Earnings (loss) per share	\$ (18.69)	\$ (4.12)	\$ 0.93
Weighted average shares outstanding	81,378,474	80,904,060	58,758,732

The accompanying notes to the consolidated financial statements are an integral part of these consolidated statements of income (loss).

TENNECO INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(in millions)

	Year Ended December 31		
	2020	2019	2018
Net income (loss)	\$ (1,460)	\$ (220)	\$ 111
Other comprehensive income (loss)—net of tax			
Foreign currency translation adjustments	(12)	16	(134)
Cash flow hedges	4	—	—
Defined benefit plans	(11)	(45)	(22)
	(19)	(29)	(156)
Comprehensive income (loss)	(1,479)	(249)	(45)
Less: Comprehensive income (loss) attributable to noncontrolling interests	75	104	54
Comprehensive income (loss) attributable to common shareholders	\$ (1,554)	\$ (353)	\$ (99)

The accompanying notes to the consolidated financial statements are an integral part of these consolidated statements of comprehensive income (loss).

TENNECO INC.
CONSOLIDATED BALANCE SHEETS
(in millions, except shares)

	December 31	
	2020	2019
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 798	\$ 564
Restricted cash	5	2
Receivables:		
Customer notes and accounts, net	2,423	2,438
Other	105	100
Inventories	1,743	1,999
Prepayments and other current assets	619	632
Total current assets	<u>5,693</u>	<u>5,735</u>
Property, plant and equipment, net	3,057	3,627
Long-term receivables, net	8	10
Goodwill	508	775
Intangibles, net	1,194	1,422
Investments in nonconsolidated affiliates	581	518
Deferred income taxes	285	607
Other assets	526	532
Total assets	<u>\$ 11,852</u>	<u>\$ 13,226</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current liabilities:		
Short-term debt, including current maturities of long-term debt	\$ 162	\$ 185
Accounts payable	2,917	2,647
Accrued compensation and employee benefits	365	325
Accrued income taxes	54	72
Accrued expenses and other current liabilities	1,188	1,070
Total current liabilities	<u>4,686</u>	<u>4,299</u>
Long-term debt	5,171	5,371
Deferred income taxes	89	106
Pension and postretirement benefits	1,101	1,145
Deferred credits and other liabilities	546	490
Commitments and contingencies (Note 15)		
Total liabilities	<u>11,593</u>	<u>11,411</u>
Redeemable noncontrolling interests	78	196
Tenneco Inc. shareholders' equity:		
Preferred stock - \$0.01 par value; none issued	—	—
Class A voting common stock - \$0.01 par value; shares issued: (2020 - 75,714,163; 2019 - 71,727,061)	1	1
Class B non-voting convertible common stock - \$0.01 par value; shares issued: (2020 - 20,308,454; 2019 - 23,793,669)	—	—
Additional paid-in capital	4,442	4,432
Accumulated other comprehensive loss	(744)	(711)
Accumulated deficit	(2,888)	(1,367)
	811	2,355
Shares held as treasury stock - at cost: (2020 and 2019 - 14,592,888 shares)	(930)	(930)
Total Tenneco Inc. shareholders' equity (deficit)	<u>(119)</u>	<u>1,425</u>
Noncontrolling interests	300	194
Total equity	<u>181</u>	<u>1,619</u>
Total liabilities, redeemable noncontrolling interests, and equity	<u>\$ 11,852</u>	<u>\$ 13,226</u>

The accompanying notes to the consolidated financial statements are an integral part of these consolidated balance sheets.

TENNECO INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in millions)

	Year Ended December 31		
	2020	2019	2018
Operating Activities			
Net income (loss)	\$ (1,460)	\$ (220)	\$ 111
Adjustments to reconcile net income (loss) to cash (used) provided by operating activities:			
Goodwill and intangible impairment charges	383	241	3
Depreciation and amortization	639	673	345
Deferred income taxes	301	(151)	(65)
Stock-based compensation	18	25	14
Restructuring charges and asset impairments, net of cash paid	500	11	49
Change in pension and postretirement benefit plans	(94)	(57)	(8)
Equity in earnings of nonconsolidated affiliates	(47)	(43)	(18)
Cash dividends received from nonconsolidated affiliates	23	53	2
Loss (gain) on sale of assets and other	(18)	—	—
Changes in operating assets and liabilities:			
Receivables	(182)	(225)	(174)
Inventories	279	284	27
Payables and accrued expenses	308	(66)	291
Accrued interest and accrued income taxes	(12)	3	(19)
Other assets and liabilities	(9)	(84)	(119)
Net cash (used) provided by operating activities	<u>629</u>	<u>444</u>	<u>439</u>
Investing Activities			
Acquisitions, net of cash acquired	—	(158)	(2,194)
Proceeds from sale of assets	45	20	9
Net proceeds from sale of business	9	22	—
Proceeds from sale of investment in nonconsolidated affiliates	—	2	—
Cash payments for property, plant and equipment	(394)	(744)	(507)
Proceeds from deferred purchase price of factored receivables	283	250	174
Other	—	2	4
Net cash (used) provided by investing activities	<u>(57)</u>	<u>(606)</u>	<u>(2,514)</u>
Financing Activities			
Proceeds from term loans and notes	654	200	3,426
Repayments of term loans and notes	(765)	(341)	(453)
Borrowings on revolving lines of credit	6,120	9,120	5,149
Payments on revolving lines of credit	(6,337)	(8,884)	(5,405)
Repurchase of common shares	(1)	(2)	(1)
Cash dividends	—	(20)	(59)
Debt issuance costs of long-term debt	(25)	—	(95)
Net decrease in bank overdrafts	(2)	(13)	(5)
Acquisition of additional ownership interest in consolidated affiliates	—	(10)	—
Distributions to noncontrolling interest partners	(42)	(43)	(51)
Other	40	(4)	(30)
Net cash (used) provided by financing activities	<u>(358)</u>	<u>3</u>	<u>2,476</u>
Effect of foreign exchange rate changes on cash, cash equivalents, and restricted cash	<u>23</u>	<u>23</u>	<u>(17)</u>
Increase (decrease) in cash, cash equivalents, and restricted cash	<u>237</u>	<u>(136)</u>	<u>384</u>
Cash, cash equivalents, and restricted cash, beginning of period	<u>566</u>	<u>702</u>	<u>318</u>
Cash, cash equivalents, and restricted cash, end of period	<u>\$ 803</u>	<u>\$ 566</u>	<u>\$ 702</u>
Supplemental Cash Flow Information			
Cash paid during the year for interest	\$ 246	\$ 284	\$ 143
Cash paid during the year for income taxes, net of refunds	\$ 154	\$ 177	\$ 113
Non-cash inventory charge due to aftermarket product line exit	\$ 73	\$ —	\$ —
Non-cash Investing Activities			
Period end balance of trade payables for property, plant and equipment	\$ 113	\$ 134	\$ 135
Deferred purchase price of receivables factored in the period in investing	\$ 299	\$ 253	\$ 154
Stock issued for acquisition of Federal-Mogul	\$ —	\$ —	\$ (1,236)
Stock transferred for acquisition of Federal-Mogul	\$ —	\$ —	\$ 1,236
Increase (decrease) in assets from redeemable noncontrolling interest transaction with owner	\$ (53)	\$ 53	\$ —

The accompanying notes to the consolidated financial statements are an integral part of these consolidated statements of cash flows.

TENNECO INC.
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY
(in millions)

	Tenneco Inc. Shareholders' Equity (Deficit)							
	\$0.01 Par Value Common Stock	Additional Paid-In Capital	Accumulated Other Comprehensive Loss	Accumulated Deficit	Treasury Stock	Total Tenneco Inc. Shareholders' Equity (Deficit)	Noncontrolling Interests	Total Equity
Balance as of December 31, 2017	\$ 1	\$ 3,112	\$ (538)	\$ (1,009)	\$ (930)	\$ 636	\$ 46	\$ 682
Net income (loss)	—	—	—	55	—	55	27	82
Other comprehensive income (loss)— net of tax:								
Foreign currency translation adjustments	—	—	(132)	—	—	(132)	—	(132)
Defined benefit plans	—	—	(22)	—	—	(22)	—	(22)
Comprehensive income (loss)						(99)	27	(72)
Adjustments to adopt new accounting standards ^(a)	—	—	—	—	—	—	—	—
Common stock issued	—	1,236	—	—	—	1,236	—	1,236
Acquisitions	—	—	—	—	—	—	143	143
Stock-based compensation, net	—	12	—	—	—	12	—	12
Cash dividends (\$1.00 per share)	—	—	—	(59)	—	(59)	—	(59)
Distributions declared to noncontrolling interests	—	—	—	—	—	—	(26)	(26)
Balance as of December 31, 2018	1	4,360	(692)	(1,013)	(930)	1,726	190	1,916
Net income (loss)	—	—	—	(334)	—	(334)	29	(305)
Other comprehensive income (loss)— net of tax:								
Foreign currency translation adjustments	—	—	26	—	—	26	—	26
Defined benefit plans	—	—	(45)	—	—	(45)	—	(45)
Comprehensive income (loss)						(353)	29	(324)
Acquisition of additional ownership interest in consolidated affiliates	—	(4)	—	—	—	(4)	(6)	(10)
Stock-based compensation, net	—	23	—	—	—	23	—	23
Purchase accounting measurement period adjustment	—	—	—	—	—	—	(2)	(2)
Cash dividends (\$0.25 per share)	—	—	—	(20)	—	(20)	—	(20)
Distributions declared to noncontrolling interests	—	—	—	—	—	—	(17)	(17)
Redeemable noncontrolling interest transaction with owner	—	53	—	—	—	53	—	53
Balance as of December 31, 2019	1	4,432	(711)	(1,367)	(930)	1,425	194	1,619
Net income (loss)	—	—	—	(1,521)	—	(1,521)	29	(1,492)
Other comprehensive income (loss)— net of tax:								
Foreign currency translation adjustments	—	—	(26)	—	—	(26)	11	(15)
Cash flow hedges	—	—	4	—	—	4	—	4
Defined benefit plans	—	—	(11)	—	—	(11)	—	(11)
Comprehensive income (loss)						(1,554)	40	(1,514)
Stock-based compensation, net	—	17	—	—	—	17	—	17
Distributions declared to noncontrolling interests	—	—	—	—	—	—	(16)	(16)
Reclassification of redeemable noncontrolling interest to permanent equity	—	—	—	—	—	—	82	82
Redeemable noncontrolling interest transaction with owner	—	(7)	—	—	—	(7)	—	(7)
Balance as of December 31, 2020	\$ 1	\$ 4,442	\$ (744)	\$ (2,888)	\$ (930)	\$ (119)	\$ 300	\$ 181

(a) The cumulative effect of the adoption of ASU 2016-16 was an increase to accumulated deficit of \$1 million, and the cumulative effect of the adoption of ASC 606 was a decrease to accumulated deficit of \$1 million.

The accompanying notes to the consolidated financial statements are an integral part of these statements of changes in shareholders' equity.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(in millions, except share and per share amounts, or as otherwise noted)

1. Description of Business

Tenneco Inc. (“Tenneco” or “the Company”) was formed under the laws of Delaware in 1996. The Company designs, manufactures, markets, and distributes products and services for light vehicle, commercial truck, off-highway, industrial, motorsport, and aftermarket customers. The Company manufactures innovative clean air, powertrain and ride performance products and systems, and serves both original equipment (“OE”) manufacturers and the repair and replacement markets worldwide.

On January 10, 2019, the Company completed the acquisition of a 90.5% ownership interest in Öhlins Intressenter AB (“Öhlins”, the “Öhlins Acquisition”), a Swedish technology company that develops premium suspension systems and components for the automotive and motorsport industries.

Effective October 1, 2018, the Company completed the acquisition of Federal-Mogul LLC (“Federal-Mogul”) (the “Federal-Mogul Acquisition”), a global supplier of technology and innovation in vehicle and industrial products for fuel economy, emissions reductions, and safety systems. Federal-Mogul served the world’s foremost OE manufacturers of light vehicle, commercial truck, off-highway, and industrial equipment, as well as the worldwide aftermarket.

The Company has previously announced its review of a full range of strategic options to enhance shareholder value creation, including a potential separation of the Company into an Aftermarket and Ride Performance company and a new Powertrain Technology company. In light of current market conditions and other factors, the Company’s current efforts to optimize shareholder value creation are also focused on operational improvements, reducing structural costs, lowering capital intensity, reducing debt, and growth in targeted business lines.

2. Summary of Significant Accounting Policies

Basis of Presentation

The consolidated financial statements of the Company have been prepared in accordance with accounting principles generally accepted in the United States (“U.S. GAAP”).

Summary of Significant Accounting Policies

Principles of Consolidation: The Company consolidates into its financial statements the accounts of the Company, all wholly owned subsidiaries, and any partially owned subsidiary it has the ability to control. Control generally equates to ownership percentage, whereby investments more than 50% owned are consolidated, investments in affiliates of 50% or less but greater than 20% are accounted for using the equity method, and investments in affiliates of 20% or less are accounted for using the cost method. Refer to Note 8, “Investment in Nonconsolidated Affiliates”.

The Company does not have any entities that it consolidates based solely on the power to direct the activities and significant participation in the entity’s expected results that would not otherwise be consolidated based on control through voting interests. Further, its affiliates are businesses established and maintained in connection with its operating strategy and are not special purpose entities. All intercompany transactions and balances have been eliminated.

Use of Estimates: The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the amounts reported therein. Due to the inherent uncertainty involved in making estimates, actual results reported in future periods may be based upon amounts that differ from these estimates.

At December 31, 2020, the effects of the COVID-19 global pandemic continued, the extent of which will depend on a number of factors, including the duration and severity. Therefore, there are many uncertainties that remain related to COVID-19 that could negatively affect the Company’s results of operations, financial position, and cash flows.

Liquidity Matters: In response to the expected economic effects of COVID-19, the Company implemented various cost reduction initiatives, including, but not limited to reductions to salary costs and unpaid furloughs; the restructuring actions as discussed in Note 4, “Restructuring Charges, Net and Asset Impairments”; and the deferral of the Company’s portion of its 2020 employer paid payroll taxes under the Coronavirus Aid, Relief, and Economic Security Act.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

On May 5, 2020, the Company entered into a third amendment to its credit agreement to increase the maximum leverage ratio and decrease the minimum interest coverage ratio. At December 31, 2020, the Company was in compliance with all financial covenants under its credit agreement.

On November 30, 2020, the Company completed a private offering of \$500 million aggregate principal amount of 7.875% Senior Secured Notes due 2029. The Company used the net proceeds, together with cash on hand, to redeem all of its outstanding 4.875% Senior Secured Notes due 2022 and to pay related transaction costs, expenses, and premiums on December 14, 2020. The amendment and debt issuance are discussed in more detail in Note 11, "Debt and Other Financing Arrangements".

Cash and Cash Equivalents: The Company considers all highly liquid investments with maturities of 90 days or less from the date of original issuance to be cash equivalents. The carrying value of cash and cash equivalents approximate fair value.

Restricted Cash: The Company is required to provide cash collateral in connection with certain contractual arrangements and statutory requirements. The Company has \$5 million and \$2 million of restricted cash at December 31, 2020 and 2019 in support of these arrangements and requirements.

Notes and Accounts Receivable: Notes and accounts receivable are stated at net realizable value, which approximates fair value. Receivables are reduced by an allowance for amounts that may become uncollectible in the future. The allowance is an estimate based on expected losses, current economic and market conditions, and a review of the current status of each customer's trade accounts or notes receivable. A receivable is past due if payments have not been received within the agreed-upon invoice terms. Account balances are charged-off against the allowance when management determines the receivable will not be recovered.

The allowance for doubtful accounts on short-term and long-term accounts receivable was \$32 million and \$28 million at December 31, 2020 and 2019. The allowance for doubtful accounts on short-term and long-term notes receivable was zero at both December 31, 2020 and 2019.

Inventories: Inventories are stated at the lower of cost or net realizable value using the first-in, first-out ("FIFO") or average cost methods. Work in process includes purchased parts such as substrates coated with precious metals. Cost of inventory includes direct materials, labor, and applicable manufacturing overhead costs. The value of inventories is reduced for excess and obsolescence based on management's review of on-hand inventories compared to historical and estimated future sales and usage.

Redeemable Noncontrolling Interests: The Company has noncontrolling interests with redemption features. These redemption features could require the Company to make an offer to purchase the noncontrolling interests in the event of a change in control of Tenneco Inc. or certain of its subsidiaries.

At December 31, 2020 and 2019, the Company holds redeemable noncontrolling interests of \$45 million and \$44 million which are not currently redeemable, or probable of becoming redeemable. The redemption of these noncontrolling interests is not solely within the Company's control, therefore, they are presented in the temporary equity section of the Company's consolidated balance sheets. The Company does not believe it is probable the redemption features related to these noncontrolling interest securities will be triggered, as a change in control event is generally not probable until it occurs. As such, these noncontrolling interests have not been remeasured to redemption value.

In addition, at December 31, 2020 and 2019, the Company holds redeemable noncontrolling interests of \$33 million and \$152 million which are currently redeemable, or probable of becoming redeemable. These noncontrolling interests are also presented in the temporary equity section of the Company's consolidated balance sheets and have been remeasured to redemption value. The Company immediately recognizes changes to redemption value as a component of "Net income (loss) attributable to noncontrolling interests" in the consolidated statements of income (loss). These redeemable noncontrolling interests include the following:

- In connection with the Federal-Mogul Acquisition and in accordance with local regulations, the Company was required to make a tender offer of the shares it did not own for an acquired subsidiary in India. As a result of completing the tender offer during the first quarter of 2020, the redeemable noncontrolling interest was no longer redeemable or probable of becoming redeemable and its carrying value of \$82 million was reclassified to permanent equity during the year ended December 31, 2020. As of December 31, 2019, the Company recognized a change in the carrying value related to this redeemable noncontrolling interest and recorded an adjustment of \$53 million to reflect its redemption value of \$131 million. Refer to Note 22, "Related Party Transactions", for additional information related to the tender offer of this noncontrolling interest; and

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

- A 9.5% ownership interest in Öhlins Intressenter AB (the “KÖ Interest”) was retained by K Öhlin Holding AB (“Köhlin”), as a result of the Öhlins acquisition on January 10, 2019. Köhlin has an irrevocable right at any time after the third anniversary of the Öhlins acquisition to sell the KÖ Interest to the Company. Since it is probable the KÖ Interest will become redeemable, the Company recognized the change in carrying value and recorded an adjustment of \$10 million and \$5 million to reflect its redemption value as of December 31, 2020 and 2019.

The following is a rollforward of the activity in the redeemable noncontrolling interests for the years ended December 31, 2020, 2019 and 2018:

	December 31		
	2020	2019	2018
Balance at beginning of period	\$ 196	\$ 138	\$ 42
Net income attributable to redeemable noncontrolling interests	22	27	29
Other comprehensive (loss) income	3	(10)	(2)
Acquisition and other	—	17	96
Noncontrolling interest tender offer redemption	(46)	—	—
Redemption value remeasurement adjustments	10	58	—
Purchase accounting measurement period adjustments	—	(8)	—
Reclassification of noncontrolling interest to permanent equity	(82)	—	—
Contributions received	—	—	6
Dividends declared to noncontrolling interests	(25)	(26)	(33)
Balance at end of period	<u>\$ 78</u>	<u>\$ 196</u>	<u>\$ 138</u>

Long-Lived Assets: Long-lived assets, such as property, plant, and equipment and definite-lived intangible assets are recorded at cost or fair value established at acquisition. Definite-lived intangible assets include customer relationships and platforms, patented and unpatented technology, and licensing agreements. Long-lived asset groups are evaluated for impairment when impairment indicators exist. If the carrying value of a long-lived asset group is impaired, an impairment charge is recorded for the amount by which the carrying value of the long-lived asset group exceeds its fair value. Depreciation and amortization are computed principally on a straight-line basis over the estimated useful lives of the assets for financial reporting purposes. Expenditures for maintenance and repairs are expensed as incurred.

Goodwill: Goodwill is determined as the excess of fair value over amounts attributable to specific tangible and intangible assets. Goodwill is evaluated for impairment during the fourth quarter of each year, or more frequently, if impairment indicators exist. An impairment indicator exists when a reporting unit's carrying value exceeds its fair value. When performing the goodwill impairment testing, a reporting unit's fair value is based on valuation techniques using the best available information. The assessment of fair value utilizes a combination of the income approach and market approach. The impairment charge is the excess of the goodwill carrying value over the implied fair value of goodwill using a one-step quantitative approach.

Trade Names and Trademarks: Trade names and trademarks are stated at fair value established at acquisition or cost. These indefinite-lived intangible assets are evaluated for impairment during the fourth quarter of each year, or more frequently, if impairment indicators exist. An impairment exists when a trade name and trademarks' carrying value exceeds its fair value. The fair values of these assets are based upon the prospective stream of hypothetical after-tax royalty cost savings discounted at rates that reflect the rates of return appropriate for these intangible assets. The impairment charge is the excess of the assets carrying value over its fair value.

Pre-production Design and Development and Tooling Assets: The Company expenses pre-production design and development costs as incurred unless there is a contractual guarantee for reimbursement from the original equipment (“OE”) customer. Costs for molds, dies, and other tools used to make products sold on long-term supply arrangements for which the Company has title to the assets are capitalized in property, plant, and equipment and amortized to cost of sales over the shorter of the term of the arrangement or over the estimated useful lives of the assets. Costs for molds, dies, and other tools used to make products sold on long-term supply arrangements for which the Company has a contractual guarantee for reimbursement or has the non-cancelable right to use the assets during the term of the supply arrangement from the customer are capitalized.

“Prepayments and other current assets” in the consolidated balance sheets included \$143 million and \$162 million at December 31, 2020 and 2019 for in-process tools and dies being built for OE customers and unbilled pre-production design and development costs.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Internal Use Software Assets: Certain costs related to the purchase and development of software used in the business operations are capitalized. Costs attributable to these software systems are amortized over their estimated useful lives based on various factors such as the effects of obsolescence, technology, and other economic factors. Additions to capitalized software development costs, including payroll and payroll-related costs for those employees directly associated with developing and obtaining the internal use software, are classified as investing activities in the consolidated statements of cash flows.

Income Taxes: Deferred tax assets and liabilities are recognized on the basis of the future tax consequences attributable to temporary differences that exist between the financial statement carrying value of assets and liabilities and the respective tax values, and net operating losses (“NOL”) and tax credit carryforwards on a taxing jurisdiction basis. Deferred tax assets and liabilities are measured using enacted tax rates that will apply in the years in which the temporary differences are expected to be recovered or paid. The effect on deferred tax assets and liabilities of a change in tax rates is recorded in the results of operations in the period that includes the enactment date under the law.

Deferred income tax assets are evaluated quarterly to determine if valuation allowances are required or should be adjusted. Valuation allowances are established in certain jurisdictions based on a more likely than not standard. The ability to realize deferred tax assets depends on the Company's ability to generate sufficient taxable income within the carryback or carryforward periods provided for in the tax law for each tax jurisdiction. The Company considers the various possible sources of taxable income when assessing the realization of its deferred tax assets. The valuation allowances recorded against deferred tax assets generated by taxable losses in certain jurisdictions will affect the provision for income taxes until the valuation allowances are released. The Company's provision for income taxes will include no tax benefit for losses incurred and no tax expense with respect to income generated in these jurisdictions until the respective valuation allowance is eliminated.

The Company records uncertain tax positions on the basis of a two-step process whereby it is determined whether it is more likely than not that the tax positions will be sustained based on the technical merits of the position, and for those tax positions that meet the more likely than not criteria, the largest amount of tax benefit that is greater than 50% likely to be realized upon ultimate settlement with the related tax authority is recognized.

The Company elected to account for Global Intangible Low-Taxed Income (“GILTI”) as a current-period expense when incurred.

Pension and Other Postretirement Benefit Plan Obligations: Pensions and other postretirement employee benefit costs and related liabilities and assets are dependent upon assumptions used in calculating such amounts. These assumptions include discount rates, long term rate of return on plan assets, health care cost trends, compensation, and other factors. Actual results that differ from the assumptions used are accumulated and amortized over future periods, and accordingly, generally affect recognized expense in future periods. The cost of benefits provided by defined benefit pension and other postretirement plans is recorded in the period employees provide service. Future pension expense for certain significant funded benefit plans is calculated using an expected return on plan asset methodology.

Investments with registered investment companies, common and preferred stocks, and certain government debt securities are valued at the closing price reported on the active market on which the securities are traded. Corporate debt securities are valued by third-party pricing sources using the multi-dimensional relational model using instruments with similar characteristics. Hedge funds and the collective trusts are valued at net asset value (“NAV”) per share which are provided by the respective investment sponsors or investment advisers.

Revenue Recognition: The Company accounts for a contract with a customer when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance, and collectability of consideration is probable.

Revenue is recognized for sales to OE and aftermarket customers when transfer of control of the related good or service has occurred. Revenue from most OE and aftermarket goods and services is transferred to customers at a point in time. The customer is invoiced once transfer of control has occurred and the Company has a right to payment. Typical payment terms vary based on the customer and the type of goods and services in the contract. The period of time between invoicing and when payment is due is not significant. Amounts billed and due from customers are classified as “Customer notes and accounts, net” in the consolidated balance sheets. Standard payment terms are less than one year and the Company applies the practical expedient to not assess whether a contract has a significant financing component if the payment terms are less than one year.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Performance Obligations: The majority of the Company's customer contracts with OE and aftermarket customers are long-term supply arrangements. The performance obligations are established by the enforceable contract, which is generally considered to be the purchase order but, in some cases could be the delivery release schedule. The purchase order, or related delivery release schedule, is of a duration of less than one year. As such, the Company does not disclose information about remaining performance obligations that have original expected durations of one year or less, for which work has not yet been performed.

Rebates: The Company accrues for rebates pursuant to specific arrangements primarily with aftermarket customers. Rebates generally provide for payments to customers based upon the achievement of specified purchase volumes and are recorded as a reduction of sales as earned by such customers.

Product Returns: Certain aftermarket contracts with customers include terms and conditions that result in a customer right of return that is accounted for on a gross basis. For these contracts the Company has recorded a refund liability within other accrued liabilities and a return asset within "Prepayments and other current assets" in the consolidated balance sheets.

Shipping and Handling Costs: Shipping and handling costs associated with outbound freight after control of a product has transferred to a customer are accounted for as a fulfillment cost and are included in "Cost of sales (exclusive of depreciation and amortization)" in the consolidated statements of income (loss).

Sales and Sales Related Taxes: The Company collects and remits taxes assessed by various governmental authorities that are both imposed on and concurrent with revenue-producing transactions with its customers. These taxes may include, but are not limited to, sales, use, value-added, and some excise taxes. The collection and remittance of these taxes is reported on a net basis.

Contract Balances: Contract assets primarily relate to the Company's rights to consideration for work completed but not billed at the reporting date on contracts with customers. The contract assets are transferred to accounts receivable when the rights become unconditional. Contract liabilities primarily relate to contracts where advance payments or deposits have been received, but performance obligations have not yet been met, and therefore, revenue has not been recognized. There have been no impairment losses recognized related to any accounts receivable or contract assets arising from the Company's contracts with customers.

Engineering, Research, and Development: The Company records engineering, research, and development costs ("R&D") net of customer reimbursements as they are considered a recovery of cost.

Advertising and Promotion Expenses: The Company expenses advertising and promotional expenses as incurred and these expenses were \$24 million, \$45 million, and \$36 million for the years ended December 31, 2020, 2019, and 2018.

Other Income (Expense): Other income (expense) for the year ended December 31, 2019 primarily includes a \$22 million recovery of value-added tax in a foreign jurisdiction.

Foreign Currency Translation: Exchange adjustments related to foreign currency transactions and remeasurement adjustments for foreign subsidiaries whose functional currency is the U.S. dollar are reflected in the consolidated statements of income (loss). Translation adjustments of foreign subsidiaries for which local currency is the functional currency are reflected in the consolidated balance sheets as a component of "Accumulated other comprehensive loss". Transaction gains and losses arising from fluctuations in currency exchange rates on transactions denominated in currencies other than the functional currency are recognized in earnings as incurred, except for those intercompany balances for which settlement is not planned or anticipated in the foreseeable future. The amounts recorded in "Cost of sales (exclusive of depreciation and amortization)" in the consolidated statements of income (loss) for foreign currency transactions included \$17 million of losses, \$11 million of losses, and \$15 million of gains for the years ended December 31, 2020, 2019, and 2018.

Asset Retirement Obligations: The Company records asset retirement obligations ("ARO") when liabilities are probable and amounts can be reasonably estimated. The Company's primary ARO activities relate to the removal of hazardous building materials at its facilities.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Derivative Financial Instruments: For derivative instruments to qualify as hedging instruments, they must be designated as a fair value hedge, cash flow hedge or a hedge of a net investment in a foreign operation. Gains and losses related to a hedge are either recognized in income immediately to offset the gain or loss on the hedged item or are deferred and reported as a component of accumulated other comprehensive income (loss) and subsequently recognized in earnings when the hedged item affects earnings. The change in fair value of the ineffective portion of a derivative financial instrument, determined using the hypothetical derivative method, is recognized in earnings immediately. The gain or loss related to derivative financial instruments not designated as hedges are recognized immediately in earnings. Cash flows related to hedging activities are included in the operating section of the consolidated statements of cash flows.

New Accounting Pronouncements

Adoption of New Accounting Standards

Income Taxes: In December 2019, the Financial Accounting Standard Board (“FASB”) issued Accounting Standard Update (“ASU”) 2019-12: Simplifying the Accounting for Income Taxes (Topic 740), which removes certain exceptions to the general principles in Topic 740 and improves consistent application of and simplifies U.S. GAAP for other areas of Topic 740 by clarifying and amending existing guidance. The ASU allows certain simplifications in the annual effective tax rate computations, which did not have material effect on the consolidated financial statements. The Company early adopted this ASU on a prospective basis beginning January 1, 2020.

Intangibles: On January 1, 2020, the Company adopted ASU 2018-15, Intangibles – Goodwill and Other – Internal Use Software (Subtopic 350-40): Customer’s Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract, which includes amendments to align the accounting for costs incurred to implement a cloud computing arrangement that is a service contract with the guidance on capitalizing costs associated with developing or obtaining internal-use software. The Company adopted this ASU on a prospective basis beginning January 1, 2020 and the effects of the adoption were not material on the consolidated financial statements.

Fair Value Measurements: In August 2018, the FASB issued ASU 2018-13, Fair Value Measurement (Topic 820). The new guidance modifies disclosure requirements related to fair value measurement. The amendments in this ASU are effective for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019. Implementation on a prospective or retrospective basis varies by specific disclosure requirement. The standard also allows for early adoption of any removed or modified disclosures upon issuance of this ASU while delaying adoption of the additional disclosures until their effective date. The Company adopted this ASU on a prospective basis beginning January 1, 2020 and the effects of the adoption were not material on the consolidated financial statements.

Retirement Benefits: In August 2018, the FASB issued ASU 2018-14, Compensation-Retirement Benefits-Defined Benefit Plans-General (Subtopic 715-20). The new standard (i) requires the removal of disclosures that are no longer considered cost beneficial; (ii) clarifies specific requirements of certain disclosures; and (iii) adds new disclosure requirements, including reasons for significant gains and losses related to changes in the benefit obligation. The amendments in this update are effective for fiscal years ending after December 15, 2020. The Company adopted the enhanced disclosures in the consolidated financial statements for the year ended December 31, 2020 and the effects of the adoption were not material on the consolidated financial statements.

3. Acquisitions and Divestitures

Öhlins Intressenter AB Acquisition

On January 10, 2019, the Company completed the acquisition of a 90.5% ownership interest in Öhlins for a purchase price of \$162 million (including \$4 million of cash acquired). The remaining 9.5% ownership interest in Öhlins was retained by Köhlin. Köhlin has an irrevocable right at any time after the third anniversary of the Öhlins Acquisition to sell the KÖ Interest to the Company. Refer to Note 2, “Summary of Significant Accounting Policies”, for further information on the KÖ Interest. During the year ended December 31, 2019, the Company adjusted the initial allocation of the total purchase consideration, which resulted in a \$14 million increase to goodwill.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The following table summarizes the final fair values of assets acquired and liabilities assumed as of the acquisition date and the measurement period adjustments made during the year ended December 31, 2019:

	Initial Allocation	Adjustments	Final Allocation
Cash, cash equivalents, and restricted cash	\$ 4	\$ —	\$ 4
Customer notes and accounts receivable	19	—	19
Inventories	31	—	31
Prepayments and other current assets	2	—	2
Property, plant, and equipment	8	—	8
Goodwill	28	14	42
Intangibles	135	(2)	133
Other assets	9	—	9
Total assets acquired	236	12	248
Short-term debt, including current maturities of long-term debt	10	—	10
Accounts payable	11	—	11
Accrued compensation and employee benefits	12	—	12
Deferred income taxes	18	12	30
Deferred credits and other liabilities	6	—	6
Total liabilities assumed	57	12	69
Redeemable noncontrolling interest	17	—	17
Net assets acquired	\$ 162	\$ —	\$ 162

Goodwill of \$42 million was recognized as part of the acquisition and is reflected in the Ride Performance segment. The goodwill consists of the Company's expected future economic benefits that will result from the acquisition of Öhlins' technology, which will allow the Company to more rapidly grow its product offerings for current and future customers, as well as assist the Company in obtaining a larger share of business in developing mobility markets. None of the goodwill is deductible for tax purposes.

Other intangible assets acquired include the following:

	Estimated Fair Value	Weighted-Average Useful Lives
Definite-lived intangible assets:		
Customer platforms and relationships	\$ 37	10 years
Technology rights	41	10 years
Total definite-lived intangible assets	78	
Indefinite-lived intangible assets:		
Trade names and trademarks	55	
Total	\$ 133	

The Company recorded a \$5 million step-up of inventory to its fair value as of the acquisition date and recognized \$5 million as a non-cash charge to cost of goods sold during the year ended December 31, 2019 related to the amortization of this step-up, as the acquired inventory was sold.

Pro Forma Results

Pro forma results of operations have not been presented because the effects of the Öhlins Acquisition were not material to the Company's consolidated results of operations.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Acquisition of Federal-Mogul

On October 1, 2018, the Company closed on the acquisition of all of the interests in Federal-Mogul pursuant to the Membership Interest Purchase Agreement, dated as of April 10, 2018 (the “Purchase Agreement”), by and among the Company, Federal-Mogul, American Entertainment Properties Corporation (“AEP” and, together with certain affiliated entities, the “Sellers”) and Icahn Enterprises L.P. (“IEP”). Total consideration was approximately \$3.7 billion. Following the completion of the Federal-Mogul Acquisition, Federal-Mogul was merged with and into the Company, with the Company continuing as the surviving company.

At the effective date of the Federal-Mogul Acquisition, the Company's certificate of incorporation was amended and restated (the “Amended and Restated Certificate of Incorporation”) in order to create a new class of non-voting convertible common stock of the Company called “Class B Non-Voting Common Stock” (“Class B Common Stock”) with 25,000,000 shares authorized, and to reclassify the Company's existing common stock as “Class A Voting Common Stock” (“Class A Common Stock” and, together with the Class B Common Stock, the “common stock”). Refer to Note 18, “Shareholders' Equity” for additional information on the conversion features of the Class B Common Stock. On the same date, the Company also entered into a new credit facility in connection with the Federal-Mogul Acquisition. The new credit facility includes \$4.9 billion of total debt financing, consisting of a five-year \$1.5 billion revolving credit facility, a five-year \$1.7 billion term loan A facility and a seven-year \$1.7 billion term loan B facility. Refer to Note 11, “Debt and Other Financing Arrangements”, for additional information.

Under the Amended and Restated Certificate of Incorporation, the authorized number of shares was increased from 185,000,000 shares, divided into 135,000,000 shares of common stock, par value \$0.01, and 50,000,000 shares of preferred stock, par value \$0.01, to 250,000,000 shares, divided into 175,000,000 shares of Class A Common Stock, 25,000,000 shares of Class B Common Stock and 50,000,000 shares of preferred stock, par value \$0.01.

The Company (i) paid to AEP an aggregate amount in cash equal to \$800 million (the “Cash Consideration”) and (ii) issued and delivered to AEP an aggregate of 29,444,846 shares of common stock at \$41.99 per share (the “Stock Consideration”). The \$1.2 billion of common stock was comprised of: (a) 5,651,177 shares of Class A Common Stock, par value \$0.01 equal to 9.9 percent of the aggregate number of shares of Class A Common Stock issued and outstanding immediately following the closing, and (b) 23,793,669 shares of newly created Class B Common Stock, par value \$0.01. The remaining consideration of approximately \$1.7 billion was comprised primarily of the repayments of certain Federal-Mogul debt obligations.

Advisory costs associated with the Federal-Mogul Acquisition were \$68 million for the year ended December 31, 2018 and were recognized as a component of “Selling, general, and administrative” expenses in the consolidated statements of income (loss).

The following table summarizes the purchase price (in millions, except for share data):

Tenneco shares issued for purchase of Federal-Mogul	29,444,846
Tenneco share price at October 1, 2018	\$ 41.99
Fair value of the Stock Consideration	1,236
Cash Consideration ^(a)	811
Repayment of Federal-Mogul debt and accrued interest ^(b)	1,660
Total consideration	<u>\$ 3,707</u>

^(a) Cash consideration also included \$11 million in advisory fees paid to a third-party.

^(b) Portion of the proceeds from the issuance of the \$4.9 billion new credit facility that was used to repay Federal-Mogul's term loan and revolver loan of \$1,455 million and \$200 million, and the related accrued interest of \$5 million.

Goodwill of \$803 million was recognized as part of the Federal-Mogul Acquisition, of which \$343 million was allocated to the Powertrain segment, \$395 million was allocated to the Motorparts segment, and \$65 million was allocated to the Ride Performance segment. The goodwill consists of the Company's expected future economic benefits that will arise from expected future product sales and synergies from combining Federal-Mogul with its existing portfolio of products. None of the goodwill is deductible for tax purposes. Refer to Note 7, “Goodwill and Other Intangible Assets” for additional information on goodwill impairment charges incurred.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The Company recorded a \$149 million step-up of inventory to its fair value as of the acquisition date. The Company recognized non-cash charges to cost of goods sold of \$44 million and \$105 million for the years ended December 31, 2019 and 2018.

Refer to Note 8, “Investment in Nonconsolidated Affiliates” for additional information related to non-cash charges as a result of finalizing the purchase accounting of the Federal-Mogul Acquisition.

The Company's consolidated statements of income (loss) included net sales and operating revenues of \$1,886 million, and a net loss of \$69 million for the year ended December 31, 2018 associated with the operating results of Federal-Mogul.

Pro Forma Results

The following table summarizes, on a pro forma basis, the combined results of operations of the Company and Federal-Mogul business as though the Acquisition and the related financing had occurred as of January 1, 2017. The pro forma results are not necessarily indicative of either the actual consolidated results had the acquisition of Federal-Mogul occurred on January 1, 2017 or of future consolidated operating results. Actual operating results for the year ended December 31, 2020 and 2019 have been included in the table below for comparative purposes.

	Actual		Pro Forma (Unaudited)
	Year Ended December 31		
	2020	2019	2018
Net sales and operating revenues	\$ 15,379	\$ 17,450	\$ 17,860
Earnings (loss) before income taxes and noncontrolling interests	\$ (1,001)	\$ (201)	\$ 488
Net income (loss) attributable to Tenneco Inc.	\$ (1,521)	\$ (334)	\$ 275
Basic earnings (loss) per share of common stock	\$ (18.69)	\$ (4.12)	\$ 3.41
Diluted earnings (loss) per share of common stock	\$ (18.69)	\$ (4.12)	\$ 3.40

These pro forma amounts have been calculated after applying the Company's accounting policies and the results presented above primarily reflect: (i) depreciation adjustments relating to fair value adjustments to property, plant, and equipment; (ii) amortization adjustments relating to fair value estimates of intangible assets; (iii) incremental interest expense, net on assumed indebtedness, the new credit facility, debt issuance costs, and fair value adjustments to debt; (iv) adjustment for loss to income available to common shareholders from noncontrolling interest tender offer; and (v) cost of goods sold adjustments relating to fair value adjustments to inventory. Pro forma adjustments described above have been tax affected using the Company's effective rate during the respective periods.

Other Matters Related to the Federal-Mogul Acquisition

On March 3, 2017, and May 1, 2017, certain purported former stockholders of Federal-Mogul Holdings Corporation (“FMHC”) filed a petition in the Delaware Court of Chancery seeking an appraisal of the value of common stock they claim to have held at the time of the January 23, 2017 merger of IEH FM Holdings, LLC into FMHC. IEH FM Holdings, LLC was a wholly owned subsidiary of AEP and a subsidiary of IEP. The two cases were consolidated on May 10, 2017 into: “In re Appraisal of Federal-Mogul Holdings LLC, C.A. No. 2017-0158-AGB.”

Federal-Mogul received a capital contribution of \$56 million on June 29, 2018 from its then-parent, IEP, in connection with this matter. At October 1, 2018, Federal-Mogul’s litigation reserve was \$55 million, along with accrued interest of \$6 million, which was assumed as part of the Federal-Mogul Acquisition. On October 19, 2018, the Company reached an agreement with the plaintiffs to settle their claims for \$12.01 per share, inclusive of interest payable, or an aggregate of approximately \$61 million. The Company paid this settlement in the fourth quarter of 2018.

Assets Held for Sale

The Company classifies assets and liabilities as held for sale (“disposal group”) when management, having the authority to approve the action, commits to a plan to sell the disposal group, the sale is probable within one year, and the disposal group is available for immediate sale in its present condition. The Company also considers whether an active program to locate a buyer has been initiated, whether the disposal group is marketed actively for sale at a price that is reasonable in relation to its current fair value, and whether actions required to complete the plan indicate it is unlikely significant changes to the plan will be made or the plan will be withdrawn.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

As of December 31, 2020, the Company had approximately \$15 million of property, plant, and equipment, primarily land and buildings, and non-core machinery and equipment across multiple segments that are expected to be sold in the next twelve months. The Company recognized a non-cash impairment charge of \$1 million during the year ended December 31, 2020 resulting from recognizing the related assets as held for sale.

At December 31, 2019, the Company classified a non-core business in the Motorparts segment as held for sale. As of December 31, 2019, assets held for sale were \$28 million and liabilities held for sale were \$6 million. These related assets and liabilities were sold during the year ended December 31, 2020. See Divestitures below for additional information.

The related assets and liabilities classified as held for sale as of December 31, 2020 and 2019 were as follows:

	December 31	
	2020	2019
Assets:		
Receivables	\$ —	\$ 5
Inventories	—	8
Other current assets	—	1
Long-lived assets	15	18
Goodwill	—	4
Impairment on carrying value	—	(8)
Total assets held for sale	\$ 15	\$ 28
Liabilities:		
Accounts payable	\$ —	\$ 4
Accrued expenses and other current liabilities	—	2
Total liabilities held for sale	\$ —	\$ 6

The assets and liabilities held for sale are recorded in “Prepayments and other current assets” and “Accrued expenses and other current liabilities” in the consolidated balance sheets as of December 31, 2020 and 2019.

Divestitures

In the fourth quarter of 2020, the Company closed on the sale of a non-core business and its related assets for \$15 million. The Company received \$6 million of the purchase price at closing with the remaining to be received in installment payments through the fourth quarter of 2023. The Company recognized a non-cash impairment charge on the related assets of \$1 million for the year ended December 31, 2020.

On March 1, 2019, in accordance with a stock and asset purchase agreement, the Company sold certain assets and liabilities related to a non-core business and received proceeds of \$22 million, subject to customary working capital adjustments. During the year ended December 31, 2020, the Company received \$3 million of proceeds due to the finalization of working capital adjustments.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

4. Restructuring Charges, Net and Asset Impairments

The Company's restructuring charges consist primarily of employee costs (principally severance and/or termination benefits), and facility closure and exit costs.

For the years ended December 31, 2020, 2019, and 2018, restructuring charges, net and asset impairments by segment are as follows:

	Year to Date December 31, 2020					
	Clean Air	Powertrain	Ride Performance	Motorparts	Corporate	Total
Severance and other charges, net	\$ 22	\$ 50	\$ 25	\$ 17	\$ 5	\$ 119
Asset impairments related to restructuring actions	—	3	—	26	—	29
Other non-restructuring asset impairments	—	—	455	—	17	472
Impairment of assets held for sale	—	1	—	1	—	2
Total asset impairment charges	—	4	455	27	17	503
Total restructuring charges, asset impairments, and other	<u>\$ 22</u>	<u>\$ 54</u>	<u>\$ 480</u>	<u>\$ 44</u>	<u>\$ 22</u>	<u>\$ 622</u>
	Year Ended December 31, 2019					
	Clean Air	Powertrain	Ride Performance	Motorparts	Corporate	Total
Severance and other charges, net	\$ 29	\$ 31	\$ 28	\$ 14	\$ 11	\$ 113
Asset impairments related to restructuring actions	—	—	3	—	—	3
Other non-restructuring asset impairments	1	—	—	1	—	2
Impairment of assets held for sale	—	—	—	8	—	8
Total asset impairment charges	1	—	3	9	—	13
Total restructuring charges, asset impairments, and other	<u>\$ 30</u>	<u>\$ 31</u>	<u>\$ 31</u>	<u>\$ 23</u>	<u>\$ 11</u>	<u>\$ 126</u>
	Year Ended December 31, 2018					
	Clean Air	Powertrain	Ride Performance	Motorparts	Corporate	Total
Severance and other charges, net	\$ 14	\$ (2)	\$ 53	\$ 42	\$ 5	\$ 112
Asset impairments related to restructuring actions	—	—	3	—	—	3
Other non-restructuring asset impairments	—	—	—	—	2	2
Total asset impairment charges	—	—	3	—	2	5
Total restructuring charges, asset impairments, and other	<u>\$ 14</u>	<u>\$ (2)</u>	<u>\$ 56</u>	<u>\$ 42</u>	<u>\$ 7</u>	<u>\$ 117</u>

In conjunction with the Company's previously announced Project Accelerate, and in response to the COVID-19 global pandemic, the Company executed global headcount reductions. The Company began implementing these actions during the second quarter of 2020 and expects to complete them during 2021. The Company recognized charges of \$26 million in connection with the cash severance costs expected to be paid in connection with these actions for the year ended December 31, 2020.

In addition to the actions above, the Company initiated several other cost reduction initiatives across all segments and regions aimed at optimizing the Company's cost structure. The Company recognized cash severance charges of \$65 million expected to be paid under these programs for the year ended December 31, 2020.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Restructuring activities are also undertaken as necessary to execute management's strategy and streamline operations, consolidate and take advantage of available capacity and resources, and ultimately achieve net cost reductions. Restructuring activities include efforts to integrate and rationalize the Company's business and to relocate operations to best cost locations. The Company recognized severance and other charges of \$28 million and \$4 million in asset impairment charges related to plant consolidations, relocations, and closures for the year ended December 31, 2020.

Clean Air recognized severance and other charges, and revisions to estimates for the year ended December 31, 2020 as follows:

- \$9 million in severance and other charges in connection with Project Accelerate;
- \$16 million in severance and other charges, along with a reduction of \$2 million in revisions to estimates, in connection with the other cost reduction initiatives primarily in Europe; and
- \$5 million in severance and other charges, along with a reduction of \$6 million in revisions to estimates, for plant consolidations and closures primarily in Europe and Asia Pacific.

Powertrain recognized severance and other charges, revisions to estimates, and asset impairments related to restructuring actions for the year ended December 31, 2020 as follows:

- \$8 million in severance and other charges in connection with Project Accelerate;
- \$23 million in severance and other charges, along with a reduction of \$1 million in revisions to estimates, in connection with the other cost reduction initiatives primarily in Europe;
- \$17 million in severance and other charges, along with a reduction of \$5 million in revisions to estimates, and \$3 million in asset impairment charges related to plant consolidations, relocations, and closures, primarily in Europe and North America; and
- On June 30, 2020, the Company approved a voluntary termination program within the Powertrain segment at one of its European bearings plants aimed at reducing headcount, as negotiated with the works council and union. The Company began implementing headcount reductions during 2020 and the program will continue into 2021 through a voluntary early retirement program and a voluntary special termination program. During the year ended December 31, 2020, restructuring costs incurred related to this program were \$8 million. Restructuring and related charges expected to be incurred in 2021 aggregate to approximately \$31 million. The charges are expected to be comprised of approximately \$10 million for postemployment benefits, including an early retirement program, and \$21 million of special termination benefits. In addition, the Company expects to incur additional costs of approximately \$2 million for customer validation, equipment transfer, and related expenditures.

Ride Performance recognized severance and other charges, and revisions to estimates for the year ended December 31, 2020 as follows:

- \$3 million in severance and other charges in connection with Project Accelerate;
- \$11 million in severance and other charges, along with a reduction of \$3 million in revisions to estimates, in connection with the other cost reduction initiatives primarily in Europe; and
- \$15 million in severance and other charges, along with a reduction of \$1 million in revisions to estimates, in connection with previously announced plant consolidations, relocations, and closures, primarily in North America.

Motorparts recognized severance and other charges, revisions to estimates, and asset impairments related to restructuring actions for the year ended December 31, 2020 as follows:

- \$5 million in severance and other charges in connection with Project Accelerate;
- \$7 million in severance and other charges, along with a reduction of \$2 million in revisions to estimates, in connection with the other cost reduction initiatives primarily in Europe;
- \$4 million in severance and other charges, along with a reduction of \$1 million in revisions to estimates, and \$1 million in asset impairment charges related to plant consolidations, relocations, and closures primarily in Europe; and
- In the second quarter of 2020, the Motorparts segment initiated a rationalization of its supply chain and distribution network to achieve supply chain efficiencies and improve throughput to its customers. In connection with this action, the Motorparts segment recognized \$4 million in restructuring charges related to cash severance expected to be paid. Additionally, asset impairment charges of \$25 million were recognized which included \$16 million related to the write-down of property, plant, and equipment to its fair value, and \$9 million of impairment charge to its operating lease right-of-use assets.

The Company also incurred \$4 million in cash severance costs for the elimination of certain redundant positions and \$1 million in cash severance costs in connection with Project Accelerate within its corporate component for the year ended December 31, 2020.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

In the year ended December 31, 2019, the Company incurred charges for the following items:

- The Company incurred \$12 million in restructuring and related costs and decreased previously recorded estimates by \$3 million related to a restructuring plan designed to achieve a portion of the synergies the Company anticipated achieving in connection with the Federal-Mogul Acquisition. Pursuant to the plan, the Company reduced its headcount globally across all segments. The Company began implementing headcount reductions in January 2019. The Federal-Mogul Acquisition is discussed further in Note 3, “Acquisitions and Divestitures”.
- The Company incurred \$20 million in restructuring and other costs and decreased previously reported estimates by \$6 million, related to several actions in Europe within its Clean Air segment. These actions included a plant closure, plant consolidation actions, and headcount reduction initiatives. Clean Air also incurred \$14 million in restructuring and other costs in Asia related to the wind-down of one of its consolidated joint ventures, a plant closure, plant consolidation, and a headcount reduction initiative.
- The Company incurred \$22 million in restructuring and other costs related to a global cost reduction program within Powertrain segment and \$5 million in costs related to a plant closure.
- The Company incurred \$19 million in restructuring and other costs related to plant relocation and closures within its Ride Performance segment. The Company completed these actions in the second quarter of 2020.
- The Company incurred \$10 million in restructuring and other costs primarily related to head count reduction initiatives within its Motorparts segment.
- The Company incurred \$9 million in restructuring for the elimination of certain redundant positions within the executive management team recognized in corporate.

In the year ended December 31, 2018, the Company incurred charges for the following items:

- The Company incurred \$25 million in restructuring and related costs, related to the accelerated move of the Beijing Ride Performance plant. This move was completed in 2019.
- The Company incurred \$10 million in restructuring charges related to headcount reductions at a Clean Air manufacturing plant in Germany.
- In October 2018, the Company announced a plan to close its ride performance plants in Owen Sound, Ontario and Hartwell, Georgia as part of an initiative to realign its manufacturing footprint to enhance operational efficiency and respond to changing market conditions and capacity requirements. The Company recorded charges of \$21 million in 2018, including asset write-downs of \$3 million. The charges included severance payments to employees, the cost of decommissioning equipment, and other costs associated with this action.
- The Company incurred a \$45 million charge related to a restructuring plan designed to achieve a portion of the synergies the Company anticipates achieving in connection with the acquisition of Federal-Mogul. Pursuant to the plan, the Company will reduce its headcount globally across all segments. The Company began implementing headcount reductions in January 2019 and actions continued through the end of 2019. The Federal-Mogul Acquisition is discussed further in Note 3, Acquisitions and Divestitures.
- The Company incurred an additional \$16 million in restructuring and related costs, including asset write-downs of \$2 million, for cost improvement initiatives at various other operations around the world.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Restructuring Reserve Rollforward

The following table is a rollforward of amounts related to activities that were charged to restructuring reserves by reportable segments for the years ended December 31, 2020, 2019, and 2018:

	Clean Air	Powertrain	Ride Performance	Motorparts	Total Reportable Segments	Corporate	Total
Balance at December 31, 2017	\$ 14	\$ —	\$ 7	\$ 4	\$ 25	\$ —	\$ 25
Federal-Mogul Acquisition	—	22	1	14	37	—	37
Provisions	14	1	53	42	110	5	115
Held for sale	—	—	—	(2)	(2)	—	(2)
Revisions to estimates	—	(3)	—	—	(3)	—	(3)
Payments	(10)	(5)	(36)	(15)	(66)	(2)	(68)
Foreign currency	(1)	—	—	—	(1)	—	(1)
Balance at December 31, 2018	17	15	25	43	100	3	103
Provisions	35	31	29	19	114	11	125
Revisions to estimates	(6)	—	(1)	(5)	(12)	—	(12)
Payments	(23)	(16)	(30)	(41)	(110)	(5)	(115)
Balance at December 31, 2019	23	30	23	16	92	9	101
Provisions	30	56	29	20	135	5	140
Revisions to estimates	(8)	(6)	(4)	(3)	(21)	—	(21)
Payments	(22)	(38)	(30)	(19)	(109)	(13)	(122)
Foreign currency	2	—	—	—	2	—	2
Balance at December 31, 2020	\$ 25	\$ 42	\$ 18	\$ 14	\$ 99	\$ 1	\$ 100

The following table provides a summary of the Company's consolidated restructuring liabilities and related activity for each type of exit costs for the years ended December 31, 2020, 2019, and 2018:

	Employee Costs	Facility Closure and Other Costs	Total
Balance at December 31, 2017	\$ 19	\$ 6	\$ 25
Federal-Mogul Acquisition	37	—	37
Provisions	90	25	115
Held for sale	(2)	—	(2)
Revisions to estimates	(4)	1	(3)
Payments	(41)	(27)	(68)
Foreign currency	(1)	—	(1)
Balance at December 31, 2018	98	5	103
Provisions	103	22	125
Revisions to estimates	(12)	—	(12)
Payments	(92)	(23)	(115)
Balance at December 31, 2019	97	4	101
Provisions	124	16	140
Revisions to estimates	(18)	(3)	(21)
Payments	(106)	(16)	(122)
Foreign currency	2	—	2
Balance at December 31, 2020	\$ 99	\$ 1	\$ 100

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Other non-restructuring asset impairments

The Company evaluates its long-lived assets for impairment whenever events or circumstances indicate the value of these long-lived asset groups are not recoverable. During the first quarter of 2020, the Company concluded impairment triggers had occurred for certain long-lived asset groups in the Ride Performance segment as a result of the effects of the COVID-19 global pandemic on the Company's projected financial information. Accordingly, the Company tested these long-lived asset groups for recoverability by performing undiscounted cash flow analyses. Based on these analyses, the net carrying values of these asset groups exceeded their undiscounted future cash flows. As such, the Company estimated the fair values of these asset groups at March 31, 2020 and compared them to their carrying values. As the net carrying values of these long-lived asset groups exceeded their fair values, the Company recorded long-lived asset impairment charges for property, plant, and equipment of \$455 million during the year ended December 31, 2020. Refer to Note 10, "Fair Value of Financial Instruments" for additional information on the fair value estimates used in these analyses.

As a result of changes in the business, during the first quarter of 2020, the Company assessed and concluded an impairment trigger had occurred for certain long-lived asset groups in its corporate component. Accordingly, the Company tested these long-lived asset groups for recoverability. The Company estimated the fair value of these asset groups and compared it to the carrying value. As the net carrying value exceeded fair value, the Company recorded long-lived asset impairment charges of \$17 million for the year ended December 31, 2020. Included in the asset impairment charges are \$11 million related to property, plant, and equipment and \$6 million related to operating lease right-of-use assets.

There are many uncertainties regarding the COVID-19 global pandemic that could negatively affect the Company's results of operations, financial position, and cash flows. As a result, if there is an adverse change to the Company's projected financial information, due to business performance or market conditions, this may be indicative the value of its long-lived assets are not recoverable, which may result in additional non-cash long-lived asset impairment charges in a future period.

Impairment of assets held for sale

Refer to Note 3, "Acquisitions and Divestitures", for additional information on impairments of assets held for sale.

5. Inventories

At December 31, 2020 and 2019, inventory by major classification was as follows:

	December 31	
	2020	2019
Finished goods	\$ 758	\$ 1,027
Work in process	449	460
Raw materials	441	408
Materials and supplies	95	104
Total inventories	<u>\$ 1,743</u>	<u>\$ 1,999</u>

In the second quarter of 2020, the Motorparts segment initiated a rationalization of its supply chain and distribution network to achieve supply chain efficiencies and improve throughput to its customers. As a result, it was determined certain assets, including inventory, would no longer be utilized. As such, during the year ended December 31, 2020, the Motorparts segment recognized an \$82 million non-cash charge to write-down inventory to its net realizable value.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

6. Property, Plant and Equipment, Net

The components of property, plant and equipment—net were as follows:

	December 31		Useful Life
	2020	2019	
Land	\$ 261	\$ 270	—
Buildings and improvements	1,086	1,058	10 to 50 years
Machinery, equipment and tooling	3,885	4,503	3 to 25 years
Capitalized software	265	397	3 to 12 years
Other, including construction in progress	374	570	—
Property, plant and equipment, cost	5,871	6,798	
Less: Accumulated depreciation and amortization	(2,814)	(3,171)	
Property, plant and equipment, net	<u>\$ 3,057</u>	<u>\$ 3,627</u>	

For the years ended December 31, 2020, 2019, and 2018, depreciation and amortization related to property, plant and equipment was \$509 million, \$535 million, and \$313 million.

7. Goodwill and Other Intangible Assets

The Company performs an annual quantitative goodwill and indefinite-lived asset impairment analysis during the fourth quarter. The basis of the goodwill impairment and indefinite-lived intangible asset analyses is the Company's annual budget and three-year strategic plan. This includes a projection of future cash flows, which requires the Company to make significant assumptions and estimates about the extent and timing of future cash flows and revenue growth rates. These represent Company-specific inputs and assumptions about the use of the assets, as observable inputs are not available. These estimates and assumptions are subject to a high degree of uncertainty. Due to the many variables inherent in estimating fair value and the relative size of the goodwill and indefinite-lived intangible assets, differences in assumptions could have a material effect on the results of the analyses. There are many uncertainties regarding the COVID-19 global pandemic that could negatively affect the Company's results of operations, financial position, and cash flows. As a result, if there is an adverse change to the Company's projected financial information, due to business performance or market conditions, this may be indicative that the fair value of its reporting units and indefinite-lived intangible assets have declined below their carrying values, which may result in non-cash goodwill or intangible asset impairment charges in a future period.

In the goodwill impairment analysis, for reporting units with goodwill, fair values are estimated using a combination of the income approach and market approach. The Company applies a 75% weighting to the income approach and a 25% weighting to the market approach. The most significant inputs in estimating the fair value of the Company's reporting units under the income approach are (i) projected operating margins, (ii) the revenue growth rate, and (iii) the discount rate, which is risk-adjusted based on the aforementioned inputs.

For the indefinite-lived asset impairment analysis, the fair value is based upon the prospective stream of hypothetical after-tax royalty cost savings discounted at rates that reflect the rates of return appropriate for these intangible assets. The primary, and most sensitive, inputs utilized in determining fair values of trade names and trademarks are (i) projected branded product sales, (ii) the revenue growth rate, (iii) the royalty rate, and (iv) the discount rate, which is risk-adjusted based on the projected branded sales.

Impairment charges for goodwill and intangible assets recognized by segment during the years ended December 31, 2020 and 2019 consist of the following:

	Year Ended December 31, 2020			
	Powertrain	Ride Performance	Motorparts	Total
Goodwill impairment charges	\$ 160	\$ 37	\$ 70	\$ 267
Trade names and trademarks intangible asset impairment charges	—	11	40	51
Definite-lived intangible asset impairment charges	—	65	—	65
	<u>\$ 160</u>	<u>\$ 113</u>	<u>\$ 110</u>	<u>\$ 383</u>

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

	Year Ended December 31, 2019			
	Powertrain	Ride Performance	Motorparts	Total
Goodwill impairment charges	\$ 18	\$ 69	\$ 21	\$ 108
Trade names and trademarks intangible asset impairment charges	—	—	133	133
	<u>\$ 18</u>	<u>\$ 69</u>	<u>\$ 154</u>	<u>\$ 241</u>

At December 31, 2020 and 2019, goodwill consisted of the following:

	December 31, 2020				
	Clean Air	Powertrain	Ride Performance	Motorparts	Total
Gross carrying amount at beginning of period	\$ 22	\$ 343	\$ 259	\$ 620	\$ 1,244
Reclassification from assets held for sale	—	—	—	2	2
Foreign exchange	1	—	6	1	8
Gross carrying amount at end of period	<u>23</u>	<u>343</u>	<u>265</u>	<u>623</u>	<u>1,254</u>
Accumulated impairment loss at beginning of period	—	(18)	(212)	(239)	(469)
Impairment	—	(160)	(37)	(70)	(267)
Foreign exchange	—	—	(9)	(1)	(10)
Accumulated impairment loss at end of period	<u>—</u>	<u>(178)</u>	<u>(258)</u>	<u>(310)</u>	<u>(746)</u>
Net carrying value at end of period	<u>\$ 23</u>	<u>\$ 165</u>	<u>\$ 7</u>	<u>\$ 313</u>	<u>\$ 508</u>

	December 31, 2019				
	Clean Air	Powertrain	Ride Performance	Motorparts	Total
Gross carrying amount at beginning of period	\$ 22	\$ 388	\$ 210	\$ 611	\$ 1,231
Measurement period adjustments	—	(45)	24	13	(8)
Acquisitions	—	—	28	—	28
Reclassification to assets held for sale	—	—	—	(4)	(4)
Foreign exchange	—	—	(3)	—	(3)
Gross carrying amount at end of period	<u>22</u>	<u>343</u>	<u>259</u>	<u>620</u>	<u>1,244</u>
Accumulated impairment loss at beginning of period	—	—	(143)	(219)	(362)
Impairment	—	(18)	(69)	(21)	(108)
Foreign exchange	—	—	—	1	1
Accumulated impairment loss at end of period	<u>—</u>	<u>(18)</u>	<u>(212)</u>	<u>(239)</u>	<u>(469)</u>
Net carrying value at end of period	<u>\$ 22</u>	<u>\$ 325</u>	<u>\$ 47</u>	<u>\$ 381</u>	<u>\$ 775</u>

During the first quarter of 2020, the Company concluded it was more likely than not that the fair values of certain of its reporting units and its indefinite-lived intangible assets had declined below their carrying values as a result of the effects of the COVID-19 global pandemic on the Company's projected financial information. The Company completed a goodwill impairment analysis for four of its reporting units with goodwill in the Powertrain, Motorparts, and Ride Performance segments. The difference between the reporting units' carrying values and fair values were recognized as impairment charges. The Company recognized \$267 million in non-cash impairment charges related to its goodwill during the year ended December 31, 2020, which represented full impairments of the goodwill in one reporting unit in the Powertrain segment and one reporting unit in the Ride Performance segment, and partial impairments of goodwill in one reporting unit in the Powertrain segment and one reporting unit in the Motorparts segment.

For the annual impairment test performed in the fourth quarter of 2020, the estimated fair value of all reporting units with goodwill exceeded their carrying values. Additionally, the estimated fair value of all indefinite-lived assets exceeded their carrying values. No additional impairment expense was recognized in the fourth quarter of 2020.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The following table shows a summary of the number of reporting units with goodwill in each segment and whether or not the reporting unit's fair value exceeded its carrying value by more or less than 25%:

	Segments			
	Clean Air	Powertrain	Ride Performance	Motorparts
Number of reporting units with goodwill	3	1	1	1
Number of reporting units where fair value exceeds carrying value:				
Greater than 25%	3	—	1	1
Less than 25%	—	1	—	—
Goodwill for reporting units where fair value exceeds carrying value:				
Greater than 25%	\$ 23	\$ —	\$ 7	\$ 313
Less than 25%	—	165	—	—
	<u>\$ 23</u>	<u>\$ 165</u>	<u>\$ 7</u>	<u>\$ 313</u>

The one reporting unit above where fair value is not in excess of carrying value by 25% or more is a reporting unit acquired as part of the Federal-Mogul Acquisition.

The Öhlins Acquisition in 2019 resulted in \$42 million of goodwill which was included in the Ride Performance segment. During the year ended December 31, 2019, the Company made the following adjustments to goodwill in the measurement period to the preliminary purchase price allocation for the Acquisitions:

- an increase of \$14 million for the Öhlins Acquisition; and
- a net decrease of \$22 million for the Federal-Mogul Acquisition.

The Company recognized goodwill impairment charges of \$108 million for the year ended December 31, 2019, which consisted of the following:

- During the first quarter of 2019, the Company reorganized the reporting structure of its Aftermarket, Ride Performance, and Motorparts segments and the underlying reporting units within those segments. The Company reassigned assets and liabilities (excluding goodwill) to the reporting units affected. Goodwill was then reassigned to the reporting units using a relative fair value approach based on the fair value of the elements transferred and the fair value of the elements remaining within the original reporting units. The Company tested goodwill for impairment on a pre-reorganization basis and determined there was no impairment for the affected reporting units. The Company also performed an impairment analysis on a post-reorganization basis and determined \$60 million of goodwill was impaired for two reporting units within its Ride Performance segment, one of which was a full impairment of the goodwill. As a result, this non-cash charge was recorded in the first quarter of 2019. Goodwill allocated to other reporting units was supported by the valuation performed at that time;
- During the third quarter of 2019, the Company finalized purchase accounting for the Federal-Mogul Acquisition. As a result, the final goodwill allocation was reassigned to the reorganized segments and reporting unit structure that occurred in the first quarter of 2019 using a relative fair value approach and the Company determined an incremental \$9 million of goodwill was impaired for one reporting unit in its Ride Performance segment, which continued to represent a full impairment of goodwill in that reporting unit. This non-cash charge was recorded in the third quarter of 2019; and
- As a result of the annual goodwill impairment analysis performed in the fourth quarter of 2019, the estimated fair value of one of the reporting units in the Motorparts segment was lower than its carrying value and an impairment charge of \$21 million was recognized, which was a full impairment of the goodwill in that reporting unit. Additionally, the estimated fair value of one of the reporting units in the Powertrain segment was determined to be lower than the carrying value, and a partial goodwill impairment charge of \$18 million was recognized. At December 31, 2019, this reporting unit has \$40 million of goodwill after recognizing the impairment. This non-cash charge was recorded in the fourth quarter of 2019.

As a result of the goodwill impairment analysis in the fourth quarter of 2018, the estimated fair value for one reporting unit in the Ride Performance segment was lower than its carrying value and an impairment charge of \$3 million was recognized for the year ended December 31, 2018.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

At December 31, 2020 and 2019, intangible assets consisted of the following:

	Useful Lives	December 31, 2020			December 31, 2019		
		Gross Carrying Value	Accumulated Amortization	Net Carrying Value	Gross Carrying Value	Accumulated Amortization	Net Carrying Value
Definite-lived intangible assets:							
Customer relationships and platforms	10 years	\$ 995	\$ (282)	\$ 713	\$ 988	\$ (123)	\$ 865
Customer contract	10 years	8	(6)	2	8	(6)	2
Patents	10 to 17 years	1	(1)	—	1	(1)	—
Technology rights	10 to 30 years	139	(51)	88	133	(37)	96
Packaged kits know-how	10 years	54	(12)	42	54	(7)	47
Catalogs	10 years	47	(11)	36	47	(6)	41
Licensing agreements	3 to 5 years	66	(35)	31	63	(18)	45
Land use rights	28 to 46 years	49	(4)	45	47	(3)	44
		<u>\$ 1,359</u>	<u>\$ (402)</u>	<u>957</u>	<u>\$ 1,341</u>	<u>\$ (201)</u>	<u>1,140</u>
Indefinite-lived intangible assets:							
Trade names and trademarks				237			282
Total				<u>\$ 1,194</u>			<u>\$ 1,422</u>

The amortization expense associated with definite-lived intangible assets for the year ended December 31, 2020, 2019, and 2018 was \$130 million, \$138 million, and \$32 million and is included in “Depreciation and amortization” within the consolidated statements of income (loss).

During the first quarter of 2020, the Company also completed an analysis to determine the fair value of its trade names and trademarks for its reporting units in the Ride Performance and Motorparts segments. It was determined their carrying values exceeded their fair values and the Company recognized \$51 million in non-cash impairment charges related to these indefinite-lived intangible assets during the year ended December 31, 2020, which represented a full impairment of certain trade names and trademarks in the Motorparts segment, and a partial impairment of certain trade names and trademarks in the Ride Performance and Motorparts segments.

As discussed in more details in Note 4, “Restructuring Charges, Net and Asset Impairments”, the Company concluded impairment triggers had occurred during the first quarter of 2020 for certain long-lived asset groups within the Ride Performance segment. As a result, the Company recorded non-cash impairment charges of \$65 million related to its definite-lived intangible assets during the year ended December 31, 2020, which represented full impairments of the definite-lived intangible assets in these two reporting units.

As a result of the annual indefinite-lived intangible asset analysis performed in the fourth quarter of 2019, the estimated fair value of certain trademarks and trade names within the Motorparts segment were less than their carrying values. Accordingly, non-cash impairment charges of \$133 million were recognized, both of which were partial impairments. As a result, the carrying value equals fair value at December 31, 2019.

The expected future amortization expense for the Company's definite-lived intangible assets is as follows:

	2021	2022	2023	2024	2025	2026 and thereafter	Total
Expected amortization expense	\$ 130	\$ 125	\$ 122	\$ 115	\$ 115	\$ 350	\$ 957

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

8. Investment in Nonconsolidated Affiliates

The Company's ownership interest in affiliates accounted for under the equity method is as follows:

	At December 31	
	2020	2019
Anqing TP Goetze Piston Ring Company Limited (China)	35.7 %	35.7 %
Anqing TP Powder Metallurgy Co., Ltd (China)	20.0 %	20.0 %
Dongsuh Federal-Mogul Industrial Co. Ltd. (Korea)	50.0 %	50.0 %
Farloc Argentina SAIC Y F (Argentina)	23.9 %	23.9 %
Federal-Mogul Powertrain Otomotiv A.S. (Turkey)	50.0 %	50.0 %
Federal-Mogul TP Liner Europe Otomotiv Ltd. Sti. (Turkey)	25.0 %	25.0 %
Federal-Mogul TP Liners, Inc. (USA)	46.0 %	46.0 %
Frenos Hidraulicos Automotrices, S.A. de C.V. (Mexico)	49.0 %	49.0 %
JURID do Brasil Sistemas Automotivos Ltda. (Brazil)	19.9 %	19.9 %
KB Autosys Co., Ltd. (Korea)	33.6 %	33.6 %
Montagewerk Abgastechnik Emden GmbH (Germany)	50.0 %	50.0 %

The Company's investments in its nonconsolidated affiliates were as follows:

	At December 31	
	2020	2019
Investments in nonconsolidated affiliates	\$ 581	\$ 518

The carrying amount of the Company's investments in nonconsolidated affiliates accounted for under the equity method exceeded its share of the underlying net assets by \$287 million and \$251 million at December 31, 2020 and 2019.

The following table represents the activity from the Company's investments in its nonconsolidated affiliates:

	Year Ended December 31		
	2020	2019	2018
Equity in earnings (losses) of nonconsolidated affiliates, net of tax	\$ 47	\$ 43	\$ 18
Cash dividends received from nonconsolidated affiliates	\$ 23	\$ 53	\$ 2

As a result of finalizing purchase accounting for the Federal-Mogul Acquisition, and completing a purchase price allocation for certain equity method investments, equity earnings (losses) for the year ended December 31, 2019 includes a non-cash reduction of \$12 million, which represents amounts to recognize the basis difference between the fair value and book value of certain assets, including inventory, property, plant and equipment, and intangible assets. The purchase price allocation for the Federal-Mogul Acquisition was finalized in the third quarter of 2019. Refer to Note 3, "Acquisitions and Divestitures", for additional information.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The following tables present summarized aggregated financial information of the Company's nonconsolidated affiliates as of and for the year ended December 31, 2020:

Statements of Income	Year Ended December 31, 2020			
	Otomotiv A.S.	Anqing TP Goetze	Other	Total
Sales	\$ 285	\$ 162	\$ 393	\$ 840
Gross profit	\$ 84	\$ 40	\$ 75	\$ 199
Income from continuing operations	\$ 71	\$ 43	\$ 31	\$ 145
Net income	\$ 65	\$ 38	\$ 27	\$ 130

Balance Sheets	December 31, 2020			
	Otomotiv A.S.	Anqing TP Goetze	Other	Total
Current assets	\$ 167	\$ 212	\$ 266	\$ 645
Noncurrent assets	\$ 141	\$ 136	\$ 185	\$ 462
Current liabilities	\$ 29	\$ 57	\$ 132	\$ 218
Noncurrent liabilities	\$ 108	\$ 2	\$ 13	\$ 123

The following tables present summarized aggregated financial information of the Company's nonconsolidated affiliates as of and for the year ended December 31, 2019:

Statements of Income	Year Ended December 31, 2019			
	Otomotiv A.S.	Anqing TP Goetze	Other	Total
Sales	\$ 305	\$ 151	\$ 479	\$ 935
Gross profit	\$ 79	\$ 44	\$ 89	\$ 212
Income from continuing operations	\$ 63	\$ 38	\$ 47	\$ 148
Net income	\$ 60	\$ 35	\$ 41	\$ 136

Balance Sheets	December 31, 2019			
	Otomotiv A.S.	Anqing TP Goetze	Other	Total
Current assets	\$ 102	\$ 151	\$ 244	\$ 497
Noncurrent assets	\$ 106	\$ 139	\$ 186	\$ 431
Current liabilities	\$ 30	\$ 45	\$ 112	\$ 187
Noncurrent liabilities	\$ 69	\$ —	\$ 16	\$ 85

The following tables present summarized aggregated financial information of the Company's nonconsolidated affiliates for the year ended December 31, 2018:

Statements of Income	Year Ended December 31, 2018			
	Otomotiv A.S.	Anqing TP Goetze	Other	Total
Sales	\$ 92	\$ 41	\$ 137	\$ 270
Gross profit	\$ 23	\$ 13	\$ 33	\$ 69
Income from continuing operations	\$ 26	\$ 13	\$ 10	\$ 49
Net income	\$ 22	\$ 12	\$ 8	\$ 42

Refer to Note 22, "Related Party Transactions" for additional information on balances and transactions with equity method investments.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

9. Derivatives and Hedging Activities

The Company is exposed to market risk, such as fluctuations in foreign currency exchange rates, commodity prices, equity compensation liabilities, and changes in interest rates, which may result in cash flow risks. For exposures not offset within its operations, the Company may enter into various derivative transactions pursuant to its risk management policies, which prohibit holding or issuing derivative financial instruments for speculative purposes. Designation of derivative instruments is performed on a transaction basis to support hedge accounting. The changes in fair value of these hedging instruments are offset in part or in whole by corresponding changes in the fair value or cash flows of the underlying exposures being hedged. The Company assesses the initial and ongoing effectiveness of its hedging relationships in accordance with its documented policy.

Market Risks

Foreign Currency Exchange Rate Risk

The Company manufactures and sells its products in North America, South America, Asia, Europe, and Africa. As a result, the Company's financial results could be significantly affected by factors such as changes in foreign currency exchange rates or weak economic conditions in foreign markets in which the Company manufactures and sells its products. The Company generally tries to use natural hedges within its foreign currency activities, including the matching of revenues and costs, to minimize foreign currency risk. Where natural hedges are not in place, the Company considers managing certain aspects of its foreign currency activities and larger transactions through the use of foreign currency options or forward contracts. Principal currencies hedged have historically included the U.S. dollar, euro, British pound, Polish zloty, Singapore dollar, Thailand bhat, South African rand, Mexican peso, and Canadian dollar.

Concentrations of Credit Risk

Financial instruments including cash equivalents and derivative contracts expose the Company to counterparty credit risk for non-performance. The Company's counterparties for cash equivalents and derivative contracts are banks and financial institutions that meet the Company's requirement of high credit standing. The Company's counterparties for derivative contracts are substantial investment and commercial banks with significant experience using such derivatives. The Company manages its credit risk through policies requiring minimum credit standing and limiting credit exposure to any one counterparty and through monitoring counterparty credit risks. The Company's concentration of credit risk related to derivative contracts at December 31, 2020 and 2019 is not material.

Other

The Company presents its derivative positions and any related material collateral under master netting agreements on a net basis. For derivatives designated as cash flow hedges, changes in the time value are excluded from the assessment of hedge effectiveness. Unrealized gains and losses associated with ineffective hedges, determined using the hypothetical derivative method, are recognized in "Cost of sales (exclusive of depreciation and amortization)" in the consolidated statements of income (loss). Derivative gains and losses included in "Accumulated other comprehensive income (loss)" for effective hedges are reclassified into operations upon recognition of the hedged transaction. Derivative gains and losses associated with undesignated hedges are recognized in "Cost of sales (exclusive of depreciation and amortization)" in the consolidated statements of income (loss).

Derivative Instruments

Foreign currency forward contracts

The Company enters into foreign currency forward purchase and sale contracts to mitigate its exposure to changes in exchange rates on certain intercompany and third-party trade receivables and payables. In managing its foreign currency exposures, the Company identifies and aggregates existing offsetting positions and then hedges residual exposures through third-party derivative contracts. The gains or losses on these contracts are recognized as foreign currency gains (losses) in "Cost of sales (exclusive of depreciation and amortization)" in the consolidated statements of income (loss). The fair value of foreign currency forward contracts is recognized in "Prepayments and other current assets" or "Accrued expenses and other current liabilities" in the consolidated balance sheets. The fair value of these derivative instruments is not considered material to the consolidated financial statements, refer to Note 10, "Fair Value of Financial Instruments" for additional information.

The following table summarizes by position the notional amounts for foreign currency forward contracts at December 31, 2020, all of which mature in the next twelve months (amounts in millions):

	Notional Amount
Long positions	\$ 180
Short positions	\$ (176)

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Cash-settled Share and Index Swap Transactions

The Company selectively uses swaps to reduce market risk associated with its deferred compensation liabilities, which increase as the Company's stock price increases and decrease as the Company's stock price decreases. The Company has entered into a cash-settled share swap agreement that moves in the opposite direction of these liabilities, allowing us to fix a portion of the liabilities at a stated amount. At December 31, 2020, the Company hedged its deferred compensation liability related to approximately 1,700,000 common share equivalents, an increase of 1,100,000 common share equivalents from December 31, 2019. In the first quarter of 2020, the Company entered into an S&P 500 index fund ETF swap agreement to further reduce its market risk, which will act as a natural hedge offsetting an equivalent amount of indexed investments in the Company's deferred compensation plans. The fair value of these swap agreements is recorded in "Prepayments and other current assets" or "Accrued expenses and other current liabilities" in the consolidated balance sheets. The fair value of these derivative instruments is not considered material to the consolidated financial statements, refer to Note 10, "Fair Value of Financial Instruments" for additional information.

Hedging Instruments

Cash Flow Hedges—Commodity Price Risk

The Company's production processes are dependent upon the supply of certain raw materials that are exposed to price fluctuations on the open market. Commodity price forward contracts are executed to offset a portion of the exposure to potential change in prices for raw materials. Commodities hedged include copper, nickel, tin, zinc, and aluminum. The primary purpose of the Company's commodity price forward contract activity is to manage the volatility associated with forecasted purchases for up to 18 months in the future. The Company monitors its commodity price risk exposures regularly to maximize the overall effectiveness of its commodity forward contracts. In certain instances, within this program, foreign currency forwards may be used in order to match critical terms for commodity exposure.

The Company has designated these contracts as cash flow hedging instruments. The Company records unrecognized gains and losses in other comprehensive income (loss) ("OCI or OCL") and makes regular reclassifying adjustments into "Cost of sales (exclusive of depreciation and amortization)" within the consolidated statements of income (loss) when the underlying hedged transaction is recognized in earnings. The Company had commodity derivatives outstanding with an equivalent notional amount of \$10 million and \$19 million at December 31, 2020 and 2019. Substantially all of the commodity price hedge contracts mature within one year.

Net Investment Hedge – Foreign Currency Borrowings

The Company has foreign currency denominated debt, €344 million of which was designated as a net investment hedge in certain foreign subsidiaries and affiliates of the Company. Changes to its carrying value are included in the consolidated statements of changes in shareholders' equity in the foreign currency translation component of OCL and offset against the translation adjustments on the underlying net assets of those foreign subsidiaries and affiliates, which are also recorded in OCL. The Company's debt instruments are discussed further in Note 11, "Debt and Other Financing Arrangements".

The following table is a summary of the carrying value of derivative and non-derivative instruments designated as hedges at December 31, 2020 and 2019:

	Balance sheets classification	December 31	
		2020	2019
Commodity price hedge contracts designated as cash flow hedges	Prepayments and other current assets	\$ 3	\$ —
Foreign currency borrowings designated as net investment hedges	Long-term debt	\$ 420	\$ 850

The following table represents the amount of gain (loss) recognized in accumulated other comprehensive income (loss) before any reclassifications into net income (loss) of derivative and non-derivative instruments designated as hedges for the years ended December 31, 2020, 2019 and 2018:

	Year Ended December 31		
	2020	2019	2018
Commodity price hedge contracts designated as cash flow hedges	\$ 4	\$ 1	\$ —
Foreign currency borrowings designated as net investment hedges	\$ (74)	\$ 20	\$ (3)

The Company estimates approximately \$4 million included in OCI or OCL at December 31, 2020 will be reclassified into net income (loss) within the following twelve months. Refer to Note 19, "Changes in Accumulated Other Comprehensive Income (Loss) by Component" for further information.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

10. Fair Value of Financial Instruments

A three-level valuation hierarchy, based upon 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. A financial instrument's categorization within the hierarchy is based on the lowest level of input that is significant to the fair value measurement. The fair value hierarchy definition prioritizes the inputs used in measuring fair value into the following levels:

Level 1	—	Quoted prices in active markets for identical assets or liabilities.
Level 2	—	Inputs, other than quoted prices in active markets, that are observable either directly or indirectly.
Level 3	—	Unobservable inputs based on the Company's own assumptions.

Assets and Liabilities Measured at Fair Value on a Recurring Basis

The following table presents assets and liabilities included in the Company's consolidated balance sheets as of December 31, 2020 and 2019 that are recognized at fair value on a recurring basis, and indicate the fair value hierarchy utilized to determine such fair value:

	Fair value hierarchy	December 31, 2020		December 31, 2019	
		Carrying Amount	Fair Value	Carrying Amount	Fair Value
Derivative asset (liability) instruments:					
Swap agreements ^(a)	Level 2	\$ 1	\$ 1	\$ (1)	\$ (1)
Commodity contracts	Level 2	\$ 3	\$ 3	\$ —	\$ —

^(a) Cash collateral amounts were \$7 million and \$3 million at December 31, 2020 and 2019, which are included in "Prepayments and other current assets" in the consolidated balance sheets.

Asset and Liability Instruments

The carrying value of cash and cash equivalents, restricted cash, short and long-term receivables, accounts payable, and short-term debt approximates fair value.

Cash-Settled Share and Index Swap Agreements

The Company's stock price is used as an observable input in determining the fair value of the cash-settled share swap agreement. The S&P 500 index ETF price is used as an observable input in determining the fair value of this swap agreement.

Commodity Contracts and Foreign Currency Contracts

The Company calculates the fair value of its commodity contracts and foreign currency contracts using commodity forward rates and currency forward rates, to calculate forward values, and then discounts the forward values. The discount rates for all derivative contracts are based on bank deposit rates. The fair value of the Company's foreign currency forward contracts was a net asset position of \$3 million at December 31, 2020 and less than \$1 million at December 31, 2019.

Assets and Liabilities Measured at Fair Value on a Nonrecurring Basis

In addition to items measured at fair value on a recurring basis, assets may be measured at fair value on a nonrecurring basis. These assets include long-lived assets and intangible assets which may be written down to fair value as a result of impairment.

Long-Lived Assets

The Company evaluates its long-lived assets for impairment whenever events or circumstances indicate the value of these long-lived asset groups are not recoverable. During the first quarter of 2020, the Company concluded certain impairment triggers had occurred for certain long-lived asset groups as a result of the effects of the COVID-19 global pandemic on the Company's projected financial information. After failing the undiscounted cash flow recoverability test, the Company estimated the fair values of these long-lived asset groups and compared them to their net carrying values. The fair value measurements related to these long-lived asset groups rely primarily on Company-specific inputs and the Company's assumptions about the use of the assets, as observable inputs are not available (level 3). To determine the fair value of the long-lived asset groups, the Company utilized an asset-based approach. The Company believes the assumptions and estimates used to determine the estimated fair values of the long-lived asset groups are reasonable; however, these estimates and assumptions are subject to a high degree of uncertainty. Due to the many variables inherent in estimating fair value, differences in assumptions could have a material effect on the results of the analyses.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

As the net carrying values of the long-lived asset groups exceeded their fair values, the Company recorded long-lived asset impairment charges consisting of \$65 million of definite-lived intangible assets and \$455 million of property, plant, and equipment, during the year ended December 31, 2020. Refer to Note 4, “Restructuring Charges, Net and Asset Impairments” for additional information on asset impairments and refer to Note 7, “Goodwill and Other Intangible Assets” for additional information on the definite-lived intangible asset impairments.

Goodwill and Indefinite-Lived Intangible Assets

The Company evaluates the carrying value of its goodwill and indefinite-lived intangible assets for impairment annually in the fourth quarter of each year, or more frequently if events or circumstances indicate these assets might be impaired. During the first quarter of 2020, the Company concluded it was more likely than not that the fair values of certain of its reporting units and its indefinite-lived intangible assets had declined to below their carrying values as a result of the effects of the COVID-19 global pandemic on the Company's projected financial information. The Company completed analyses to estimate the fair values of these reporting units and its trade names and trademarks. These fair value measurements require the Company to make significant assumptions and estimates that are Company specific, as observable inputs are not available (level 3). The Company believes the assumptions and estimates used to determine the estimated fair value are reasonable; however, these estimates and assumptions are subject to a high degree of uncertainty. Due to the many variables inherent in estimating fair value, differences in assumptions could have a material effect on the results of the analyses. Refer to Note 7, “Goodwill and Other Intangible Assets” for additional information on the most significant inputs to the fair value estimates of reporting units and indefinite-lived intangible assets.

During the first quarter of 2020, it was determined the carrying values of certain reporting units, and the Company's trade names and trademarks exceeded their fair values. As a result, the Company recognized \$267 million in non-cash impairment charges related to its goodwill and \$51 million in non-cash impairment charges related to its indefinite-lived intangible assets during the year ended December 31, 2020.

The Company also recorded goodwill and other indefinite lived asset impairment charges during the years ended December 31, 2019 and 2018 of \$241 million and \$3 million.

Financial Instruments Not Carried at Fair Value

Estimated fair value of the Company's outstanding debt is as follows:

	Fair value hierarchy	December 31, 2020		December 31, 2019	
		Carrying Amount	Fair Value	Carrying Amount	Fair Value
Long-term debt (including current maturities):					
Term loans and senior notes	Level 2	\$ 5,153	\$ 5,138	\$ 5,179	\$ 5,113

The fair value of the Company's public senior notes and private borrowings under its senior credit facility is based on observable inputs, and its borrowings on the revolving credit facility approximate fair value. The Company also had \$180 million and \$192 million at December 31, 2020 and 2019 in other debt whose carrying value approximates fair value, which consists primarily of foreign debt with maturities of one year or less.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

11. Debt and Other Financing Arrangements

Long-Term Debt

A summary of the Company's long-term debt obligations at December 31, 2020 and 2019 is set forth in the following table:

	December 31, 2020			December 31, 2019		
	Principal	Carrying Amount ^(a)	Effective Interest Rate	Principal	Carrying Amount ^(a)	Effective Interest Rate
Credit Facilities						
<i>Revolver Borrowings</i>						
Due 2023	\$ —	\$ —	— %	\$ 183	\$ 183	3.374 %
<i>Term Loans</i>						
LIBOR plus 2.50% Term Loan A due 2019 through 2023 ^(b) ..	1,530	1,520	2.876 %	1,615	1,608	3.665 %
LIBOR plus 3.00% Term Loan B due 2019 through 2025 ^(c) ..	1,666	1,612	3.955 %	1,683	1,623	5.557 %
Senior Unsecured Notes						
\$225 million of 5.375% Senior Notes due 2024 ^(d)	225	223	5.609 %	225	222	5.609 %
\$500 million of 5.000% Senior Notes due 2026 ^(e)	500	494	5.219 %	500	494	5.219 %
Senior Secured Notes⁽ⁱ⁾						
€415 million of 4.875% Euro Fixed Rate Notes due 2022 ^(f)	—	—	— %	465	479	3.599 %
€300 million of Euribor plus 4.875% Euro Floating Rate Notes due 2024 ^(g)	366	370	4.620 %	336	340	4.620 %
€350 million of 5.000% Euro Fixed Rate Notes due 2024 ^(h)	428	445	3.823 %	392	413	3.823 %
\$500 million of 7.875% Senior Secured Notes due 2029 ⁽ⁱ⁾	500	489	8.212 %	—	—	— %
Other debt, primarily foreign instruments^(k)	24	23		14	13	
		<u>5,176</u>			<u>5,375</u>	
Less - maturities classified as current ^(k)		5			4	
Total long-term debt		<u>\$ 5,171</u>			<u>\$ 5,371</u>	

^(a) Carrying amount is net of unamortized debt issuance costs and debt discounts or premiums. Total unamortized debt issuance costs were \$82 million and \$76 million as of December 31, 2020 and 2019. Total unamortized debt (premium) discount, net was \$(20) million and \$(37) million as of December 31, 2020 and 2019.

^(b) Principal and interest payable in 19 consecutive quarterly installments beginning March 31, 2019. As of December 31, 2020, principal and interest is payable in 11 remaining quarterly installments with \$32 million being paid quarterly for the next four quarters followed by \$43 million in the subsequent seven quarters and the remainder at maturity. The interest rate on Term Loan A at December 31, 2019 was LIBOR plus 1.75%.

^(c) Principal and interest payable in 27 consecutive quarterly installments of \$4 million beginning March 31, 2019 and the remainder at maturity.

^(d) Interest payable semiannually beginning on June 30, 2015 with principal due at maturity.

^(e) Interest payable semiannually beginning on January 31, 2017 with principal due at maturity.

^(f) The Company redeemed all of its 4.875% Euro Fixed Rate Notes on December 14, 2020.

^(g) Interest accrues at the three-month EURIBOR rate (with 0% floor) plus 4.875% per annum and payable quarterly on January 15, April 15, July 15 and October 15.

^(h) Interest payable semiannually on January 15 and July 15 of each year beginning on July 17, 2017 with principal due at maturity.

⁽ⁱ⁾ On November 30, 2020, the Company issued \$500 million aggregate principal amount of 7.875% senior secured notes due January 15, 2029. Interest payable semiannually on January 15 and July 15 of each year beginning on July 15, 2021 with principal due at maturity.

^(j) Rank equally in right of payment to all indebtedness under the New Credit Facility (as subsequently defined).

^(k) Finance lease obligations included in other debt were \$8 million and \$2 million as of December 31, 2020 and 2019. The maturities classified as current included the current portion of the finance lease obligations of \$3 million and \$1 million as of December 31, 2020 and 2019. Refer to Note 16, "Leases" for additional information.

The Company has excluded the required payments, due within the next twelve months, under the Term Loan A and Term Loan B facilities totaling \$128 million and \$17 million from current liabilities as of December 31, 2020, because the Company has the intent and ability to refinance the obligations on a long-term basis by using its revolving credit facility.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The aggregate maturities applicable to the long-term debt outstanding at December 31, 2020:

	Aggregate Maturities
2021	\$ 150
2022	\$ 192
2023	\$ 1,253
2024	\$ 1,039
2025	\$ 1,605

Short-Term Debt

The Company's short-term debt as of December 31, 2020 and 2019 is as follows:

	At December 31	
	2020	2019
Maturities classified as current	\$ 5	\$ 4
Short-term borrowings ^(a)	157	179
Bank overdrafts	—	2
Total short-term debt	<u>\$ 162</u>	<u>\$ 185</u>
Weighted average interest rate on outstanding short-term borrowings at end of year	3.6 %	4.3 %

^(a) Includes borrowings under both committed credit facilities and uncommitted lines of credit and similar arrangements.

Amortization of debt issuance costs and original issue discounts (premiums)

Interest expense associated with the amortization of the debt issuance costs and original issue discounts (premiums) recognized in the Company's consolidated statements of income (loss) consists of the following:

	Year Ended December 31		
	2020	2019	2018
Amortization of debt issuance fees	\$ 21	\$ 18	\$ 8
Accretion of debt premium	\$ (11)	\$ (13)	\$ (3)

Included in the table above is the amortization of debt issuance costs on the revolver of \$6 million, \$5 million and \$1 million during the years ended December 31, 2020, 2019 and 2018. The unamortized debt issuance costs related to the revolver of \$17 million at December 31, 2020 and 2019 are included in "Prepayments and other current assets" in the consolidated balance sheets.

Credit Facilities

Financing Arrangements

The table below shows the Company's borrowing capacity on committed credit facilities at December 31, 2020 (in billions):

	Committed Credit Facilities at December 31, 2020	
	Term	Available ^(b)
Tenneco Inc. revolving credit facility ^(a)	2023	\$ 1.5
Tenneco Inc. Term Loan A	2023	—
Tenneco Inc. Term Loan B	2025	—
Subsidiaries' credit agreements	2021-2028	—
		<u>\$ 1.5</u>

^(a) The Company is required to pay commitment fees under the revolving credit facility on the unused portion of the total commitment.

^(b) Letters of credit reduce the available borrowings under the revolving credit facility.

At December 31, 2020, the Company had \$28 million of outstanding letters of credit under the revolving credit facility, which reduces our senior credit facility borrowing availability. In addition, the Company had \$75 million of outstanding letters of credit under uncommitted facilities at December 31, 2020.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

At December 31, 2020, the Company had liquidity of \$2.3 billion comprised of \$803 million of cash and \$1.5 billion undrawn on its revolving credit facility. We had no outstanding borrowings on our revolving credit facility as of December 31, 2020.

Term Loans

On October 1, 2018, the Company entered into a new credit agreement with JPMorgan Chase Bank, N.A., as administrative agent and other lenders (the “New Credit Facility”) in connection with the Federal-Mogul Acquisition, which has been amended by the first amendment, dated February 14, 2020 (the “First Amendment”), by the second amendment, dated February 14, 2020 (the “Second Amendment”), and by the third amendment, dated May 5, 2020 (the “Third Amendment”). The New Credit Facility provides \$4.9 billion of total debt financing, consisting of a five-year \$1.5 billion revolving credit facility, a five-year \$1.7 billion term loan A facility (“Term Loan A”) and a seven-year \$1.7 billion term loan B facility (“Term Loan B”). The Company paid \$8 million in one-time fees in connection with the First Amendment and the Second Amendment, and \$10 million in one-time fees in connection with the Third Amendment.

Proceeds from the New Credit Facility were used to finance the cash consideration portion of the Federal-Mogul Acquisition purchase price, to refinance the Company’s then existing senior credit facilities inclusive of the revolver and the tranche A term loan then outstanding (the “Old Credit Facility”), certain senior credit facilities of Federal-Mogul, and to pay fees and expenses related to the acquisition and the financing thereof. The remainder, including future borrowings under the revolving credit facility, will be used for general corporate purposes.

The Company and Tenneco Automotive Operating Company Inc., a wholly-owned subsidiary, are borrowers under the New Credit Facility, and the Company is the sole borrower under the Term Loan A and Term Loan B facilities. The New Credit Facility is guaranteed on a senior basis by certain material domestic subsidiaries of the Company. Drawings under the revolving credit facility may be in U.S. dollars, British pounds or euros.

The New Credit Facility is secured by substantially all domestic assets of the Company, the subsidiary guarantors, and by pledges of up to 66% of the stock of certain first-tier foreign subsidiaries. The security for the New Credit Facility is pari passu with the security for the outstanding senior secured notes of Federal-Mogul that were assumed by the Company in connection with the acquisition and the senior secured notes the Company issued on November 30, 2020. If any foreign subsidiary of the Company is added to the revolving credit facility as a borrower, the obligations of such foreign borrower will be secured by the assets of such foreign borrower, and also will be secured by the assets of, and guaranteed by, the domestic borrowers and domestic guarantors as well as certain foreign subsidiaries of the Company in the chain of ownership of such foreign borrower.

As a result of the refinancing of the revolving credit loan and tranche A term loan under the Old Credit Facility, the Company recorded a loss on extinguishment of debt of \$10 million for the year ended December 31, 2018, primarily consisting of debt issuance costs incurred at the transaction date and write-off of deferred debt issuance costs related to the refinanced revolving credit loan and tranche A term loan.

New Credit Facility — Interest Rates and Fees

At December 31, 2020, after giving effect to the Third Amendment, the interest rate on borrowings under the revolving credit facility and the Term Loan A facility was LIBOR plus 2.50% and will remain at LIBOR plus 2.50% for each relevant period for which the Company's consolidated net leverage ratio (as defined in the New Credit Facility) is equal to or greater than 6.0 to 1. The interest rate on borrowings under the revolving credit facility and the Term Loan A facility are subject to step down as follows:

Consolidated net leverage ratio	Interest rate
greater than 3.0 to 1	LIBOR plus 2.00%
less than 3.0 to 1 and greater than 2.5 to 1	LIBOR plus 1.75%
less than 2.5 to 1 and greater than 1.5 to 1	LIBOR plus 1.50%
less than 1.5 to 1	LIBOR plus 1.25%

The Third Amendment provides for an increase to the margin applicable to borrowings under the revolving credit facility and the Term Loan A facility at certain leverage levels as set forth below as one of several conditions for obtaining less restrictive financial maintenance covenants described below under *New Credit Facility — Other Terms and Conditions*:

Consolidated net leverage ratio	Interest rate
greater than 6.0 to 1	LIBOR plus 2.50%
less than 6.0 to 1 and greater than 4.5 to 1	LIBOR plus 2.25%

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Initially, and so long as the Company's corporate family rating is Ba3 (with a stable outlook) or higher from Moody's Investors Service, Inc. ("Moody's") and BB- (with a stable outlook) or higher from Standard & Poor's Financial Services LLC ("S&P"), the interest rate on borrowings under the Term Loan B facility will be LIBOR plus 2.75%; at any time the foregoing conditions are not satisfied, the interest rate on the Term Loan B facility will be LIBOR plus 3.00%. When the Term Loan B facility is no longer outstanding and the Company and its subsidiaries have no other secured indebtedness (with certain exceptions set forth in the New Credit Facility), and upon the Company achieving and maintaining two or more corporate credit and/or corporate family ratings higher than or equal to BBB- from S&P, BBB- from Fitch Ratings Inc. ("Fitch") and/or Baa3 from Moody's (in each case, with a stable or positive outlook), the collateral under the New Credit Facility may be released. On June 3, 2019, Moody's lowered our corporate family rating to B1 and the interest rate on borrowings under the term loan B was raised to LIBOR plus 3.00%.

New Credit Facility — Other Terms and Conditions

The New Credit Facility contains representations and warranties, and covenants which are customary for debt facilities of this type. The Third Amendment provided relief from the financial maintenance covenants for the revolving credit facility and Term Loan A facility subject to the non-occurrence of certain covenant reset triggers ("Covenant Reset Triggers") that limit certain activities of the Company by implementing more restrictive affirmative and negative covenants, as more fully described below. After giving effect to the Third Amendment, the financial maintenance covenants for the revolving credit facility and the Term Loan A facility include (i) a requirement to have a senior secured leverage ratio (as defined in the New Credit Facility), with step-downs, as detailed in the table below; (ii) a requirement to have a consolidated net leverage ratio (as defined in the New Credit Facility), with step-downs, as follows:

(i) Senior secured net leverage ratio	(ii) Consolidated net leverage ratio
not greater than 6.75 to 1 at June 30, 2020	not greater than 4.50 to 1 at March 31, 2020
not greater than 9.50 to 1 at September 30, 2020	not greater than 5.25 to 1 at March 31, 2022
not greater than 8.75 to 1 at December 31, 2020	not greater than 4.75 to 1 at June 30, 2022
not greater than 8.25 to 1 at March 31, 2021	not greater than 4.25 to 1 at September 30, 2022
not greater than 4.50 to 1 at June 30, 2021	not greater than 3.75 to 1 thereafter
not greater than 4.25 to 1 at September 30, 2021	
not greater than 4.00 to 1 at December 31, 2021	

and (iii) a requirement to maintain a consolidated interest coverage ratio (as defined in the New Credit Facility) for any period of four consecutive fiscal quarters of not less than 2.75 to 1 as of March 31, 2020, 2.00 to 1 as of June 30, 2020, 1.50 to 1 through March 31, 2021, and 2.75 to 1 thereafter.

If a Covenant Reset Trigger occurs, the financial maintenance covenants for the revolving credit facility and the Term Loan A facility revert back to the previous financial maintenance covenants in effect immediately prior to the Third Amendment (the "Prior Financial Covenants"), including (i) a requirement to have a consolidated net leverage ratio (as defined in the New Credit Facility), at the end of each fiscal quarter, with step-downs, as follows:

(i) Consolidated net leverage ratio
not greater than 4.50 to 1 through March 31, 2021
not greater than 4.25 to 1 through September 30, 2021
not greater than 4.00 to 1 through March 31, 2022
not greater than 3.75 to 1 through September 30, 2022
not greater than 3.50 to 1 thereafter

and (ii) a requirement to maintain a consolidated interest coverage ratio (as defined in the New Credit Facility) for any period of four consecutive fiscal quarters of not less than 2.75 to 1.

In addition, the Company may make a one-time election to revert back to the Prior Financial Covenants and terminate the applicability of the Covenant Reset Triggers upon delivery of a covenant reset certificate to the administrative agent under the New Credit Facility that attests to compliance with the Prior Financial Covenants as of the end of the relevant fiscal period ("Covenant Reset Certificate").

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The Covenant Reset Triggers include certain limitations on the ability of the Company and its restricted subsidiaries to, among other things, (a) incur additional indebtedness, (b) enter into additional sales and leasebacks, (c) create additional liens over their assets, (d) pay dividends or distributions to Tenneco's stockholders, (e) prepay certain unsecured indebtedness of the Company or its restricted subsidiaries (as more fully described below), (f) make additional investments, (g) dispose of material intellectual property, and (h) reinvest the proceeds of certain asset sales in the business in lieu of repaying indebtedness, each as more specifically described in the Third Amendment. These limitations are in addition to other affirmative and negative covenants (with customary exceptions, materiality qualifiers and limitations) in the New Credit Facility, including with respect to: financial reporting; payment of taxes; maintenance of existence; compliance with law and material contractual obligations; maintenance of property and insurance; inspection of property, books and records; notices of certain events; compliance with environmental laws; provision and maintenance of collateral perfection; satisfaction of the financial maintenance covenants described above; incurrence of indebtedness; permitting liens over assets; mergers, consolidations, dispositions or other fundamental transactions; dispositions and asset sales; restricted payments; investments; compliance with limitations on certain transactions with nonconsolidated affiliates; sale and leaseback transactions; changes in fiscal periods; negative pledge clauses in certain contracts; changes to lines of business; prepayments and modifications of certain subordinated indebtedness (as more fully described below); use of proceeds; transactions involving special purpose finance subsidiaries; and transactions related to effectuating a spin-off (as defined in the New Credit Facility), each as more specifically described in the New Credit Facility.

The Covenant Reset Triggers in the Third Amendment generally prohibit the Company from repaying the Senior Unsecured Notes. After giving effect to the Third Amendment, so long as no default exists under its New Credit Facility, the Company would be permitted to (i) make regularly scheduled interest and principal payments as and when due in respect of the Senior Unsecured Notes, (ii) refinance the Senior Unsecured Notes with the net cash proceeds of permitted refinancing indebtedness (as defined in the New Credit Facility); (iii) make payments in respect of the Senior Unsecured Notes in an amount equal to the net cash proceeds of qualified capital stock (as defined in the New Credit Facility) issued after May 5, 2020; (iv) convert any Senior Unsecured Notes into qualified capital stock issued after May 5, 2020; and (v) make additional payments of the Senior Unsecured Notes provided that after giving effect to such additional payments the consolidated leverage ratio would be equal to or less than 2.00 to 1 after giving effect to such additional payments. The foregoing limitations regarding repayment and refinancing of the Senior Unsecured Notes apply from the effectiveness of the Third Amendment until delivery of a Covenant Reset Certificate.

The covenants in the New Credit Facility generally prohibit the Company from repaying certain subordinated indebtedness. So long as no default exists, the Company would, under its New Credit Facility, be permitted to repay or refinance its subordinated indebtedness (i) with the net cash proceeds of permitted refinancing indebtedness (as defined in the New Credit Facility); (ii) in an amount equal to the net cash proceeds of qualified capital stock (as defined in the New Credit Facility) issued after October 1, 2018; (iii) in exchange for qualified capital stock issued after October 1, 2018; and (iv) with additional payments provided that such additional payments are capped based on a pro forma consolidated leverage ratio after giving effect to such additional payments.

Such additional payments on subordinated indebtedness (x) will not be permitted at any time the pro forma consolidated leverage ratio is greater than 2.00 to 1 after giving effect to such additional payments and (y) will be permitted in an unlimited amount at any time the pro forma consolidated leverage ratio is equal to or less than 2.00 to 1 after giving effect to such additional payments.

The New Credit Facility contains customary representations and warranties, including, as a condition to future revolver borrowings, that all such representations and warranties are true and correct, in all material respects, on the date of borrowing, including representations (with customary exceptions, materiality qualifiers and limitations) as to: existence; compliance with law; power, authority and enforceability; no violation of law or material contracts; material litigation; no default under the New Credit Facility and related documents; ownership of property, including material intellectual property; payment of material taxes; compliance with margin stock regulations; labor matters; ERISA; Investment Company Act matters; subsidiaries; use of loan proceeds; environmental matters; accuracy of information; security documents; solvency; anti-corruption laws and sanctions; and that since December 31, 2017 there has been no development or event that has had a material adverse effect on the business or financial condition of the Company and its subsidiaries, each as more specifically described in the New Credit Facility.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The New Credit Facility includes customary events of default and other provisions that could require all amounts due thereunder to become immediately due and payable, either automatically or at the option of the lenders, if the Company fails to comply with the terms of the New Credit Facility or if other customary events occur. These events of default (with customary exceptions, materiality qualifiers, limitations and grace periods) include (i) failure to pay obligations under the New Credit Facility when due; (ii) material inaccuracy of representations and warranties; (iii) failure to comply with the covenants in the New Credit Facility and related documents (as summarized above); (iv) cross-default to material indebtedness; (v) commencement of bankruptcy or insolvency proceedings; (vi) ERISA events; (vii) certain material judgments; (viii) invalidity or unenforceability of security and guarantee documents; and (ix) change of control, each as more specifically described in the New Credit Facility.

At December 31, 2020, the Company was in compliance with all the financial covenants of the New Credit Facility.

Senior Notes

At December 31, 2020, the Company has outstanding 5.375% senior unsecured notes due December 15, 2024 (“2024 Senior Notes”) and 5.000% senior unsecured notes due July 15, 2026 (“2026 Senior Notes” and together with the 2024 Senior Notes, the “Senior Unsecured Notes”). The Company also has outstanding 5.000% euro denominated senior secured notes due July 15, 2024 (“5.000% Euro Fixed Rate Notes”) and floating rate notes due April 15, 2024 (“Euro Floating Rate Notes”). On November 30, 2020, the Company issued \$500 million aggregate principal amount of 7.875% senior secured notes due January 15, 2029 (the “7.875% Senior Secured Notes”). The 5.000% Euro Fixed Rate Notes, the Euro Floating Rate Notes and the 7.875% Senior Secured Notes (collectively, the “Senior Secured Notes”) were outstanding at December 31, 2020.

On December 14, 2020, the Company used the net proceeds, together with cash on hand, to redeem all of the outstanding 4.875% euro denominated senior secured notes due 2022. As a result of the redemption of the 4.875% euro denominated senior secured notes, the Company recorded a gain on extinguishment of debt of \$2 million for the year ended December 31, 2020.

Under the indentures covering the Senior Unsecured Notes, the Company is permitted to redeem some or all of the outstanding Senior Unsecured Notes, at specified redemption prices that decline to par over a specified period, at any time (a) on or after December 15, 2019, in the case of the 2024 Senior Notes and (b) on or after July 15, 2021, in the case of the 2026 Senior Notes. In addition, the Senior Unsecured Notes may also be redeemed at any time at a redemption price generally equal to 100% of the principal amount thereof plus a “make-whole premium” as set forth in the indentures. The Company did not redeem any of the Senior Unsecured Notes during the year ended December 31, 2020.

If the Company experiences specified kinds of changes in control, the Company must offer to repurchase the Senior Unsecured Notes at 101% of the principal amount thereof plus accrued and unpaid interest. In addition, if the Company sells certain of its assets and does not apply the proceeds from the sale in a certain manner within 365 days of the sale, the Company must use such unapplied sales proceeds to make an offer to repurchase the 2024 Senior Notes at 100% of the principal amount thereof plus accrued and unpaid interest.

The Senior Secured Notes are secured equally and ratably by a pledge of substantially all the Company's subsidiaries' domestic assets and by pledges of up to 66% of the stock of certain first-tier foreign subsidiaries. The security for the Senior Secured Notes is pari passu with the security for the New Credit Facility.

The Company is permitted to redeem some or all of the outstanding Senior Secured Notes at specified redemption prices that decline to par over a specified period, at any time (a) on or after July 15, 2020, in the case of the 5.000% Euro Fixed Rate Notes, (b) on or after April 15, 2018, in the case of the Euro Floating Rate Notes and (c) on or after January 15, 2024, in the case of the 7.875% Senior Secured Notes. Prior to July 15, 2020, the Company could have redeemed the 5.000% Euro Fixed Rate Notes at any time at a redemption price equal to 100% of the principal amount thereof plus a “make-whole premium” as set forth in the indenture. Prior to January 15, 2024, the Company may also redeem the 7.875% Senior Secured Notes at any time at a redemption price equal to 100% of the principal amount thereof plus a “make-whole premium” as set forth in the indenture. Further, the Company may also redeem up to 40% of the 5.000% Euro Fixed Rate Notes with the proceeds of certain equity offerings at any time prior to July 15, 2020 at a redemption price of 105.0% of the principal amount thereto, and the Company may redeem up to 40% of the 7.875% Senior Secured Notes with the proceeds of certain equity offerings at any time prior to January 15, 2024 at a redemption price of 107.875% of the principal amount thereto.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

If the Company experiences specified kinds of changes in control, the Company must offer to repurchase the Senior Secured Notes at 101% of the principal amount thereof plus accrued and unpaid interest. In addition, if the Company sells certain of its assets and does not apply the proceeds from the sale in a certain manner within 365 days of the sale, the Company must use such unapplied proceeds to make an offer to repurchase the Senior Secured Notes at 100% of the principal amount thereof plus accrued and unpaid interest.

The Company has designated a portion of the Senior Secured Notes as a net investment hedge of its European operations. As such, the fluctuations in foreign currency exchange rates on the value of the designated Senior Secured Notes is recorded to cumulative translation adjustment. Refer to Note 9, "Derivatives and Hedging Activities" for further details.

Senior Unsecured Notes and Senior Secured Notes - Other Terms and Conditions

The Senior Unsecured Notes and Senior Secured Notes contain covenants that will, among other things, limit the Company's ability to create liens and its subsidiaries to create liens on their assets and enter into sale and leaseback transactions. In addition, the indentures governing the Senior Secured Notes and 2024 Senior Notes also require that, as a condition to incurring certain types of indebtedness not otherwise permitted, the Company's consolidated fixed charge coverage ratio, as calculated on a pro forma basis, be greater than 2.00, as well as containing restrictions on the Company's operations, including limitations on: (i) incurring additional indebtedness; (ii) paying dividends; (iii) distributions and stock repurchases; (iv) investments; (v) asset sales; (vi) entering into transactions with the Company's affiliates; and (vii) undertaking mergers and consolidations.

Subject to limited exceptions, all of the Company's existing and future material domestic wholly owned subsidiaries fully and unconditionally guarantee its Senior Unsecured Notes and Senior Secured Notes on a joint and several basis. There are no significant restrictions on the ability of the subsidiaries that have guaranteed the Company's Senior Unsecured Notes and Senior Secured Notes to make distributions to the Company.

At December 31, 2020, the Company was in compliance with all of its financial covenants.

Other Debt

Other debt consists primarily of subsidiary debt.

Factoring Arrangements

The Company has securitization programs for some of its accounts receivable, with limited recourse provisions. Borrowings on these securitization programs, which are recorded in short-term debt, at December 31, 2020 and 2019 are as follows:

	At December 31	
	2020	2019
Borrowings on securitization programs	\$ 5	\$ 4

In the Company's European and U.S. accounts receivable factoring programs, accounts receivables are transferred in their entirety to the acquiring entities and are accounted for as a sale. The fair value of assets received as proceeds in exchange for the transfer of accounts receivable under these factoring programs approximates the fair value of such receivables. Some of these programs have deferred purchase price arrangements with the banks.

The Company is the servicer of the receivables under some of these arrangements and is responsible for performing all accounts receivable administration functions. Where the Company receives a fee to service and monitor these transferred accounts receivables, such fees are sufficient to offset the costs and as such, a servicing asset or liability is not recorded as a result of such activities.

In the U.S and Canada, the Company participates in supply chain financing programs with certain of the Company's aftermarket customers through drafting programs.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The amount of accounts receivable outstanding and derecognized for these factoring and drafting arrangements was \$1.0 billion and \$1.0 billion as of December 31, 2020 and 2019, of which \$0.4 billion and \$0.5 billion as of December 31, 2020 and 2019 relate to accounts receivable where the Company has continuing involvement. In addition, the deferred purchase price receivable was \$51 million and \$33 million as of December 31, 2020 and 2019.

Proceeds from the factoring of accounts receivable qualifying as sales and drafting programs was \$4.1 billion, \$5.0 billion, and \$3.4 billion for the years ended December 31, 2020, 2019, and 2018, of which \$3.3 billion, \$4.2 billion, and \$3.0 billion were received on accounts receivable where the Company has continuing involvement for the years ended December 31, 2020, 2019 and 2018 .

The following table represents the Company's expenses associated with these arrangements for the years ended December 31, 2020, 2019, and 2018 are as follows:

	Year Ended December 31		
	2020	2019	2018
Loss on sale of receivables ^(a)	\$ 20	\$ 31	\$ 16

^(a) Amount is included in "Interest expense" in the consolidated statements of income (loss).

If the Company were not able to factor receivables or sell drafts under either of these programs, its borrowings under its revolving credit agreement might increase. These programs provide the Company with access to cash at costs that are generally favorable to alternative sources of financing and allow the Company to reduce borrowings under its revolving credit agreement.

12. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities at December 31, 2020 and 2019 included the following:

	December 31	
	2020	2019
Accrued rebates	\$ 191	\$ 190
Non-income tax payable	128	73
Restructuring liabilities	95	97
Operating lease liability	95	96
Product return reserves	75	83
Accrued freight	70	52
Accrued warranty	52	43
Accrued professional services	46	32
Pension and postretirement benefits liability	43	46
Accrued interest	29	29
Legal reserves	10	38
Environmental reserve	8	8
Liabilities held for sale	—	6
Other	346	277
	<u>\$ 1,188</u>	<u>\$ 1,070</u>

13. Pension Plans, Postretirement and Other Employee Benefits

Defined Contribution Plans

The Company sponsors defined contribution plans that provide Company matching contributions for eligible U.S. salaried and hourly employees. Contributions are also made to certain non-U.S. defined contribution plans. The Company recorded expense for these defined contribution plans of approximately \$77 million, \$76 million, and \$43 million for the years ended December 31, 2020, 2019 and 2018.

Defined Benefit Plans

The Company sponsors defined benefit pension plans and health care and life insurance benefits for certain employees and retirees around the world. There are also unfunded nonqualified pension plans primarily covering U.S. executives, which are frozen with respect to future benefit accruals. The funding policy for defined benefit pension plans is to contribute the minimum required by applicable laws and regulations or to directly pay benefit payments where appropriate. At December 31, 2020, all legal funding requirements had been met. The Company expects to contribute \$23 million to its U.S. pension plans, \$49 million to its non-U.S. pension plans, and \$23 million to its other postretirement plans in 2021.

Other Benefits

The Company also provides benefits to former or inactive employees paid after employment but before retirement. The liabilities for these postemployment benefits were \$81 million and \$73 million at December 31, 2020 and 2019.

Significant Events

In December 2020, the Company recognized amendments to one of its U.S. postretirement health care benefit plans for certain retirees who will receive a fixed subsidy payment to purchase health care benefits on a marketplace exchange in lieu of the original plan's medical benefits during 2021. The amendments to the plan resulted in a negative plan amendment, which reduced the Company's obligation by \$57 million with a corresponding decrease of \$57 million in accumulated other comprehensive loss (net of taxes of \$0 million) as of December 31, 2020. The \$57 million is being amortized on a straight-line basis as a reduction to net periodic postretirement benefit cost over participants' average remaining life expectancy.

In September 2020, the Company renegotiated one of its collective bargaining agreements in the U.S. which eliminated health care benefits in retirement if benefits are not commenced by September 24, 2021 for participants covered by the union agreement. This amendment resulted in a non-cash curtailment gain of \$21 million for the year ended December 31, 2020.

During the year ended December 31, 2020, the Company paid lump sums out of certain pension plans in connection with a previously announced plant closure. These lump sums were paid out of the pension plan assets and resulted in a non-cash settlement charge of \$6 million for the year ended December 31, 2020.

In December 2019, the Company approved an amendment for one of its U.S. postretirement benefit plans that eliminated health care and life insurance benefits in retirement for active salaried and nonunion hourly employees if benefits are not commenced by the earlier of (i) one-year from the date of separation, or (ii) July 1, 2021. In addition, the Company approved an amendment for another of its U.S. postretirement benefit plans to eliminate health care benefits for certain retirees. These actions reduced the Company's obligations by \$17 million with a corresponding decrease of \$13 million to accumulated other comprehensive loss (net of taxes of \$4 million) at December 31, 2019 and a non-cash curtailment gain of \$7 million for the year ended December 31, 2019. The \$17 million is being amortized on a straight-line basis as a reduction to net periodic postretirement benefit cost over participants' average remaining service periods or remaining life expectancy.

During 2019, the Company also offered a voluntary lump sum window for one of its U.S. defined benefit pension plans to terminated vested participants that met certain eligibility criteria. These benefits were paid in December 2019 out of the pension plan assets and resulted in a non-cash settlement charge of \$5 million for the year ended December 31, 2019.

In December 2018, the Company approved an amendment for one of its U.S. postretirement health care benefit plans. Beginning June 1, 2019, eligible retirees that opt to receive benefits will receive a fixed subsidy payment to purchase health care benefits on a marketplace exchange in lieu of the original plan's medical benefits. The amendments to the plan resulted in a plan remeasurement and recognition of a negative plan amendment, which reduced the Company's obligation by \$66 million with a corresponding decrease of \$50 million in accumulated other comprehensive loss (net of taxes of \$16 million) as of December 31, 2018. The \$66 million is being amortized on a straight-line basis as a reduction to net periodic postretirement benefit cost over participants' average remaining service periods or remaining life expectancy.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The measurement date for all defined benefit plans is December 31. The following provides a reconciliation of the plans' benefit obligations, plan assets, and funded status as of December 31, 2020 and 2019:

	Pension Plans				Other Postretirement Benefits Plans	
	U.S.		Non-U.S.		2020	2019
	2020	2019	2020	2019		
Change in benefit obligation:						
Benefit obligation, beginning of year	\$ 1,320	\$ 1,302	\$ 1,048	\$ 946	\$ 300	\$ 322
Service cost	1	2	25	24	—	1
Interest cost	41	53	18	24	9	13
Settlement	—	(67)	(17)	(5)	—	—
Administrative expenses/taxes paid	—	—	(5)	(4)	—	—
Plan amendments	1	—	—	—	(59)	(17)
Actuarial (gain)/loss	114	105	28	105	5	6
Other	—	—	2	—	—	—
Benefits paid	(94)	(75)	(44)	(44)	(18)	(26)
Participants' contributions	—	—	1	1	—	1
Currency rate conversion and other	—	—	66	1	—	—
Benefit obligation, end of year	<u>1,383</u>	<u>1,320</u>	<u>1,122</u>	<u>1,048</u>	<u>237</u>	<u>300</u>
Change in plan assets:						
Fair value of plan assets, beginning of year	1,062	995	523	466	—	—
Settlement	—	(67)	(17)	(5)	—	—
Actual return on plan assets	126	183	47	55	—	—
Administrative expenses/taxes paid	—	—	(5)	(4)	—	—
Employer contributions	51	26	42	42	18	25
Participants' contributions	—	—	1	1	—	1
Benefits paid	(94)	(75)	(44)	(44)	(18)	(26)
Other	—	—	2	—	—	—
Currency rate conversion and other	—	—	22	12	—	—
Fair value of plan assets, end of year	<u>1,145</u>	<u>1,062</u>	<u>571</u>	<u>523</u>	<u>—</u>	<u>—</u>
Funded status of the plans	<u>\$ (238)</u>	<u>\$ (258)</u>	<u>\$ (551)</u>	<u>\$ (525)</u>	<u>\$ (237)</u>	<u>\$ (300)</u>

The actuarial loss arising during the years ended December 31, 2020 and 2019 is primarily due to a decrease in discount rates during the period, partially offset by asset returns exceeding our expected return on assets.

Amounts recognized on the consolidated balance sheets consist of the following at December 31, 2020 and 2019:

	Pension Plans				Other Postretirement Benefits Plans	
	U.S.		Non-U.S.		2020	2019
	2020	2019	2020	2019		
Noncurrent assets	\$ —	\$ —	\$ 37	\$ 35	\$ —	\$ —
Current liabilities	(2)	(4)	(18)	(17)	(23)	(25)
Noncurrent liabilities ^(a)	(236)	(254)	(570)	(543)	(214)	(275)
	<u>\$ (238)</u>	<u>\$ (258)</u>	<u>\$ (551)</u>	<u>\$ (525)</u>	<u>\$ (237)</u>	<u>\$ (300)</u>

^(a) Included in "Pension and postretirement benefits" within in the consolidated balance sheets is postemployment benefits of \$81 million and \$73 million at December 31, 2020 and 2019 which are not included in the tables above.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Amounts recognized in accumulated other comprehensive loss for pension and postretirement benefits, inclusive of tax effects, consist of the following components at December 31, 2020 and 2019:

	Pension Plans				Other Postretirement Benefits Plans	
	U.S.		Non-U.S.		2020	2019
	2020	2019	2020	2019		
Actuarial loss	\$ 275	\$ 230	\$ 136	\$ 145	\$ 29	\$ 34
Prior service cost/(credit)	1	—	3	3	(91)	(70)
Total	\$ 276	\$ 230	\$ 139	\$ 148	\$ (62)	\$ (36)

Information for defined benefit plans with projected benefit obligations in excess of plan assets:

	Pension Plans				Other Postretirement Benefits Plans	
	2020		2019		2020	2019
	U.S.	Non-U.S.	U.S.	Non-U.S.		
Projected benefit obligation	\$ 1,383	\$ 743	\$ 1,320	\$ 712	\$ 237	\$ 300
Fair value of plan assets	\$ 1,145	\$ 155	\$ 1,062	\$ 151	\$ —	\$ —

Information for pension plans with accumulated benefit obligations in excess of plan assets:

	December 31, 2020				December 31, 2019	
	U.S.		Non-U.S.		U.S.	Non-U.S.
	2020	2019	2020	2019	2020	2019
Projected benefit obligation	\$ 1,383	\$ 696	\$ 1,320	\$ 682	\$ 1,320	\$ 682
Accumulated benefit obligation	\$ 1,383	\$ 654	\$ 1,320	\$ 637	\$ 1,320	\$ 637
Fair value of plan assets	\$ 1,145	\$ 118	\$ 1,062	\$ 126	\$ 1,062	\$ 126

The accumulated benefit obligation for all pension plans is \$2,446 million and \$2,315 million at December 31, 2020 and 2019.

Net periodic pension and postretirement benefits costs for the years ended December 31, 2020, 2019 and 2018, consist of the following components:

	Pension Plans						Other Postretirement Benefits Plans		
	U.S.			Non-U.S.			2020	2019	2018
	2020	2019	2018	2020	2019	2018			
Service cost	\$ 1	\$ 2	\$ 1	\$ 25	\$ 24	\$ 14	\$ —	\$ 1	\$ —
Interest cost	41	53	21	18	24	15	9	13	8
Expected return on plan assets	(64)	(67)	(28)	(17)	(19)	(18)	—	—	—
Curtailement loss (gain)	—	—	—	—	—	—	(21)	(7)	1
Settlement loss	1	6	1	6	1	3	—	—	—
Net amortization:									
Actuarial loss	6	5	5	8	5	6	2	4	5
Prior service cost (credit)	—	—	—	—	1	1	(7)	(8)	—
Net periodic costs	\$ (15)	\$ (1)	\$ —	\$ 40	\$ 36	\$ 21	\$ (17)	\$ 3	\$ 14

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The following assumptions were used in the accounting for the pension and other postretirement benefits plans for the years ended December 31, 2020, 2019, and 2018:

	Pension Plans						Other Postretirement Benefits Plans		
	U.S.			Non-U.S.			2020	2019	2018
	2020	2019	2018	2020	2019	2018			
Weighted-average assumptions used to determine benefit obligations:									
Discount rate	2.3 %	3.2 %	4.2 %	1.5 %	1.7 %	2.6 %	2.5 %	3.2 %	4.3 %
Rate of compensation increase	n/a	n/a	n/a	1.8 %	2.0 %	3.0 %	n/a	n/a	n/a
Interest crediting rate	4.2 %	4.2 %	4.2 %	1.8 %	1.8 %	1.8 %	n/a	n/a	n/a

Weighted-average assumptions used to determine net periodic benefit cost:

Discount rate	3.2 %	4.2 %	4.1 %	1.7 %	2.6 %	2.4 %	3.2 %	4.3 %	4.2 %
Expected long-term return on plan assets	6.3 %	6.3 %	6.0 %	3.5 %	4.0 %	4.2 %	n/a	n/a	n/a
Rate of compensation increase	n/a	n/a	n/a	2.0 %	2.0 %	2.9 %	n/a	n/a	n/a
Interest crediting rate	4.2 %	4.2 %	4.2 %	1.8 %	1.8 %	1.8 %	n/a	n/a	n/a

Estimated future benefit payments are as follows:

Year	Pension Plans		Other Postretirement Benefits Plans
	U.S.	Non-U.S.	
2021	\$ 96	\$ 48	\$ 23
2022	\$ 97	\$ 49	\$ 19
2023	\$ 99	\$ 51	\$ 18
2024	\$ 95	\$ 50	\$ 18
2025	\$ 93	\$ 49	\$ 17
2026-2030	\$ 398	\$ 268	\$ 72

Health Care Trend

The weighted-average assumed health care cost trend rate used in determining next year's postretirement health care benefits are as follows:

	Other Postretirement Benefits Plans		
	2020	2019	2018
Initial health care cost trend rate	6.3 %	6.6 %	6.9 %
Ultimate health care cost trend rate	4.9 %	4.9 %	4.9 %
Year ultimate health care cost trend rate reached	2027	2027	2027

Long-term Rate of Return

The Company's expected return on assets is established annually through analysis of anticipated future long-term investment performance for the plan based upon the asset allocation strategy and is primarily a long-term prospective rate. An analysis was performed in December 2020 resulting in changes to the expected long-term rate of return on assets. The weighted-average long-term rate of return on assets for the U.S. pension plans decreased from 6.3% at December 31, 2019 to 6.2% at December 31, 2020. The expected long-term rate of return on plan assets used in determining pension expense for non-U.S. plans is determined in a similar manner to the U.S. plans and decreased from 3.5% at December 31, 2019 to 2.9% at December 31, 2020.

Plan Assets

Certain pension plans sponsored by the Company invest in a diversified portfolio consisting of an array of asset classes that attempts to maximize returns while minimizing volatility. These asset classes include developed market equities, emerging market equities, private equity, global high quality and high yield fixed income, real estate, and absolute return strategies.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

U.S. Plans: The U.S. investment strategy mitigates risk by incorporating diversification across appropriate asset classes to meet the plans' objectives. It is intended to reduce risk, provide long-term financial stability for the plan, and maintain funded levels that meet long-term plan obligations while preserving sufficient liquidity for near-term benefit payments. Risk assumed is considered appropriate for the return anticipated and consistent with the diversification of plan assets. Approximately 53% of the U.S. plan assets were invested in actively managed investment funds. The Company's investment strategy includes a target asset allocation of 65% equity investments, 25% fixed income investments, 5% debt securities, and 5% in other investment types including hedge funds.

Non-U.S. Plans: The Company's non-U.S. plans are individually managed to different target levels depending on the investing environment in each country and the funded status of each plan, with a reduction in the allocation of assets to equity and fixed income securities at higher funded ratios. The insurance contracts guarantee a minimum rate of return. The Company has no input into the investment strategy of the assets underlying the contracts, but they are typically heavily invested in active bond markets and are highly regulated by local law.

Pension plan assets were invested in the following classes of securities:

	Percentage of Fair Market Value	
	December 31, 2020	
	U.S.	Non-U.S.
Equity securities	66 %	26 %
Fixed income securities	12 %	2 %
Debt securities	12 %	46 %
Insurance contracts	— %	20 %
Other	10 %	6 %

The assets of some of the Company's pension plans are invested in trusts that permit commingling of the assets of more than one employee benefit plan for investment and administrative purposes. Each of the plans participating in the trust has interests in the net assets of the underlying investment pools.

The following table presents the Company's defined benefit plan assets measured at fair value by asset class:

Asset Category	Fair Value Level as of December 31, 2020							
	U.S.				Non-U.S.			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Investments with registered investment companies:								
Equity securities	\$ 374	\$ —	\$ —	\$ 374	\$ 1	\$ —	\$ —	\$ 1
Fixed income securities	140	—	—	140	12	—	—	12
Real estate and other	21	—	—	21	—	—	—	—
Equity securities	242	—	—	242	21	42	—	63
Debt securities:								
Corporate and other	—	13	—	13	10	—	—	10
Government	25	39	—	64	14	189	—	203
Real Estate and other	—	—	—	—	1	30	—	31
Insurance contracts	—	—	—	—	—	—	113	113
Hedge funds	—	—	17	17	—	—	—	—
Cash and equivalents	80	—	—	80	5	—	—	5
Total	\$ 882	\$ 52	\$ 17	\$ 951	\$ 64	\$ 261	\$ 113	\$ 438
Plan assets measured at net asset value								
Equity securities				\$ 137				\$ 84
Government debt securities				—				36
Corporate and other debt securities				57				13
Total plan assets measured at net asset value				194				133
Net plan assets				\$ 1,145				\$ 571

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Asset Category	Fair Value Level as of December 31, 2019							
	U.S.				Non-U.S.			
	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Investments with registered investment companies:								
Equity securities	\$ 337	\$ —	\$ —	\$ 337	\$ 1	\$ —	\$ —	\$ 1
Fixed income securities	158	—	—	158	23	—	—	23
Real estate and other	38	—	—	38	—	—	—	—
Equity securities	238	—	—	238	18	58	—	76
Debt securities:								
Corporate and other	—	21	—	21	6	—	—	6
Government	12	21	—	33	5	166	—	171
Real Estate and other	—	—	—	—	3	10	—	13
Insurance contracts	—	—	—	—	—	—	80	80
Hedge funds	—	—	21	21	—	—	—	—
Cash and equivalents	34	—	—	34	14	—	—	14
Total	\$ 817	\$ 42	\$ 21	\$ 880	\$ 70	\$ 234	\$ 80	\$ 384
Plan assets measured at net asset value								
Equity securities				\$ 128				\$ 92
Government debt securities				—				33
Corporate and other debt securities				54				14
Total plan assets measured at net asset value				182				139
Net plan assets				\$ 1,062				\$ 523

The Company's level 1 assets were valued using market prices based on daily NAV or prices available daily through a public stock exchange. Its level 2 assets were valued primarily using market prices, sometimes net of estimated realization expenses, and based on broker/dealer markets or in commingled funds where NAV is not available daily or publicly. For insurance contracts, the estimated surrender value of the policy was used to estimate fair market value.

The activity attributable to U.S. and non-U.S. Level 3 defined benefit pension plan investments was not significant in the years ended December 31, 2020 and 2019.

The following table contains information about significant concentrations of risk, including all individual assets that make up more than 5% of the total assets and any direct investments in Tenneco stock:

Asset Category	Fair Value Level	Fair Value	Percentage of Total Assets
2020:			
Tenneco stock	1	\$ 4	0.2 %
2019:			
Tenneco stock	1	\$ 5	0.3 %

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

14. Income Taxes

The domestic and foreign components of the Company's earnings (loss) before income taxes and noncontrolling interests are as follows:

	Year Ended December 31		
	2020	2019	2018
U.S. earnings (loss) before income taxes	\$ (884)	\$ (599)	\$ (138)
Foreign earnings (loss) before income taxes	(117)	398	312
Earnings (loss) before income taxes and noncontrolling interests	<u>\$ (1,001)</u>	<u>\$ (201)</u>	<u>\$ 174</u>

The following table is a comparative analysis of the components of income tax expense (benefit):

	Year Ended December 31		
	2020	2019	2018
Current —			
U.S. federal	\$ (11)	\$ 8	\$ 8
State and local	1	1	1
Foreign	168	161	119
	<u>158</u>	<u>170</u>	<u>128</u>
Deferred —			
U.S. federal	336	(101)	(35)
State and local	35	(13)	(5)
Foreign	(70)	(37)	(25)
	<u>301</u>	<u>(151)</u>	<u>(65)</u>
Income tax expense (benefit)	<u>\$ 459</u>	<u>\$ 19</u>	<u>\$ 63</u>

The following table is a reconciliation of income taxes computed at the statutory U.S. federal income tax rate (21% for 2020, 2019 and 2018) to the income tax expense (benefit) reflected in the consolidated statements of income (loss):

	Year Ended December 31		
	2020	2019	2018
Income tax expense (benefit) computed at the statutory U.S. federal income tax rate	\$ (210)	\$ (42)	\$ 37
Increases (reductions) in income tax expense resulting from:			
Foreign income taxed at different rates	2	8	19
Transition tax under Tax Cuts and Jobs Act ("TCJA")	—	—	11
State and local taxes on income, net of U.S. federal income tax benefit	(26)	(14)	(6)
Changes in valuation allowance for tax loss carryforwards and credits	605	36	—
Investment and R&D tax credits	(15)	(19)	(12)
Foreign earnings subject to U.S. federal income tax	18	12	13
Non-deductible expenses	15	16	3
Goodwill impairment and other non-deductible impairment	65	22	—
Tax contingencies	2	(7)	1
Gains on transfers of subsidiaries	—	21	—
Nonconsolidated affiliates	(10)	(8)	(4)
Other	13	(6)	1
Income tax expense (benefit)	<u>\$ 459</u>	<u>\$ 19</u>	<u>\$ 63</u>

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The Company reported income tax expense of \$459 million, \$19 million, and \$63 million for the years ended December 31, 2020, 2019, and 2018. The tax expense recorded for the year ended December 31, 2020 included a \$507 million tax expense relating to the full valuation allowance established for the U.S. deferred tax assets. The remaining \$98 million of tax expense for changes in valuation allowances for deferred taxes relates to non-U.S. jurisdictions for which a reserve had been established in a previous year. During the first quarter of 2020, the Company concluded it was more likely than not that the fair values of certain of its indefinite-lived intangible assets had declined to below their carrying values as a result of the effects of the COVID-19 global pandemic and completed a goodwill impairment analysis. As a result, the Company recorded \$65 million of tax effect relating to goodwill and indefinite-lived intangible impairment. The tax expense recorded for the year ended December 31, 2019 included tax benefits of \$33 million relating to a valuation allowance release for an entity in Spain, \$22 million of tax expense relating to a goodwill impairment and \$21 million of tax expense relating to gains on transfers of subsidiaries for entities in China and Luxembourg. The tax expense recorded for the year ended December 31, 2018 included tax benefits of \$10 million primarily relating to a valuation allowance release for entities in Australia and \$11 million of tax expense for changes in the toll tax.

The components of the Company's net deferred tax assets were as follows:

	December 31	
	2020	2019
Deferred tax assets —		
Tax loss carryforwards:		
State	\$ 34	\$ 18
Foreign	630	559
Tax credits	276	179
Postretirement benefits other than pensions	19	20
Pensions	148	158
Payroll accruals	31	23
Book over tax depreciation	244	91
Research expense capitalized for tax	102	72
Other accruals	216	225
Valuation allowance	(1,428)	(762)
Total deferred tax assets	<u>272</u>	<u>583</u>
Deferred tax liabilities —		
Amortization of intangibles	11	24
Other liabilities	65	58
Total deferred tax liabilities	<u>76</u>	<u>82</u>
Net deferred tax assets	<u>\$ 196</u>	<u>\$ 501</u>

State tax loss carryforwards have been presented net of uncertain tax positions that, if realized, would reduce tax loss carryforwards in 2020 and 2019 by \$3 million and \$2 million. Additionally, foreign tax loss carryforwards, have been presented net of uncertain tax positions that, if realized, would reduce tax loss carryforwards in 2020 and 2019 by \$43 million and \$30 million.

The following table is a reconciliation of deferred taxes to the deferred taxes included in the consolidated balance sheets:

	At December 31	
	2020	2019
Consolidated Balance Sheets:		
Non-current portion — deferred tax asset	\$ 285	\$ 607
Non-current portion — deferred tax liability	(89)	(106)
Net deferred tax assets	<u>\$ 196</u>	<u>\$ 501</u>

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The Company evaluates its deferred income taxes quarterly to determine if valuation allowances are required or should be adjusted. This assessment considers, among other matters, the nature, frequency and amount of recent losses, the duration of statutory carryforward periods, and tax planning strategies. In making such judgments, significant weight is given to evidence that can be objectively verified. Due to the sudden and sharp decline in industry demand, and the temporary suspension of production at the Company's U.S. manufacturing facilities as a result of the COVID-19 global pandemic, it incurred a significant U.S. pre-tax loss. Based on the third quarter analysis, the results did not provide enough positive evidence of profitability of the U.S. operations, therefore, the realizability of the U.S. deferred tax assets was assessed. While the disruption to the Company's business is expected to be temporary, there is considerable uncertainty around the extent and duration of that disruption. Combined with restructuring, impairment and integration expenses incurred in the most recent three-years, the Company has a cumulative loss for the three-year period ended December 31, 2020. The Company concluded that it is more likely than not that it will not be able to utilize the U.S. deferred tax assets. Therefore, the Company established a full valuation allowance against the deferred tax assets in the U.S. during 2020. Under the current tax laws, the valuation allowance will not limit the Company's ability to utilize U.S. deferred tax assets provided it can generate sufficient future taxable income in the U.S. The Company anticipates it will continue to record a valuation allowance against the losses until such time as they are able to determine it is "more-likely-than-not" the deferred tax asset will be realized. This position is dependent on whether there will be sufficient future taxable income to realize such deferred tax assets.

The Company believes that if operational declines continue in certain entities located in China and Mexico, there may be sufficient negative evidence for \$19 million of valuation allowance to be recorded in the next twelve months.

As a result of the valuation allowances recorded for \$1,428 million and \$762 million at December 31, 2020 and 2019, the Company has potential tax assets that were not recognized on its consolidated balance sheets. These unrecognized tax assets resulted primarily from foreign tax loss carryforwards, foreign investment tax credits, foreign research and development credits, U.S. federal tax credit carryforwards and U.S. state net operating losses ("NOLs") that are available to reduce future tax liabilities.

The Company's state NOLs expire in various tax years through 2041 or have unlimited carryforward potential. The Company's non-U.S. NOLs expire in various tax years through 2040 or have unlimited carryforward potential.

The Company does not provide for U.S. income taxes on unremitted earnings of foreign subsidiaries, except for the earnings of three of its China operations, two of its Korea operations, two of its India operations, and one of its Spain operations as its present intention is to reinvest the unremitted earnings in the Company's foreign operations. Unremitted earnings of foreign subsidiaries were approximately \$2.3 billion at December 31, 2020 and the Company estimated the amount of U.S. and foreign income taxes that would be accrued or paid upon remittance of the assets that represent those unremitted earnings was \$101 million.

A tax benefit from an uncertain tax position may be recognized when it is "more likely than not" that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes, based on the technical merits.

A reconciliation of the Company's uncertain tax positions is as follows:

	2020	2019	2018
Uncertain tax positions —			
Balance at beginning of period	\$ 215	\$ 224	\$ 112
Gross increases in tax positions due to acquisition	—	—	110
Gross increases in tax positions in current period	4	12	8
Gross increases in tax positions in prior period	14	4	7
Gross decreases in tax positions in prior period	(7)	(5)	(1)
Gross decreases — settlements	—	(12)	(2)
Gross decreases — statute of limitations expired	(18)	(8)	(10)
Balance at end of period	<u>\$ 208</u>	<u>\$ 215</u>	<u>\$ 224</u>

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Included in the balance of uncertain tax positions recognized were the following:

	Year Ended December 31		
	2020	2019	2018
Tax benefits, that if recognized, would affect the effective tax rate	\$ 70	\$ 141	\$ 134
Income tax expense for accrued interest	\$ 2	\$ 1	\$ 2

The Company's liability for penalties and interest were as follows:

	At December 31	
	2020	2019
Accrued liability for penalties on uncertain tax positions	\$ 4	\$ 4
Accrued liability for interest on uncertain tax positions	\$ 14	\$ 12

The Company's uncertain tax position at December 31, 2020 and 2019 included exposures relating to the disallowance of deductions, global transfer pricing, and various other issues. The Company believes it is reasonably possible that a decrease of up to \$93 million in unrecognized tax benefits related to the expiration of U.S. and foreign statute of limitations and the conclusion of income tax examinations may occur within the next twelve months. Due to the valuation allowance position in the U.S., the Company estimates that only \$39 million of the amounts above will affect the consolidated statements of income (loss).

The Company is subject to taxation in the U.S. and various state and foreign jurisdictions. As of December 31, 2020, the Company's tax years open to examination in primary jurisdictions are as follows:

	Open To Tax Year
United States	2003
Belgium	2018
Brazil	2014
China	2011
France	2015
Germany	2010
India	2001
Italy	2016
Mexico	2015
Poland	2013
Spain	2000
United Kingdom	2016

15. Commitments and Contingencies

Capital Commitments

The Company estimates expenditures aggregating to approximately \$37 million will be required after December 31, 2020 to complete facilities and projects authorized at such date, and it has made substantial commitments in connection with these facilities and projects.

Environmental Matters

The Company is subject to a variety of environmental and pollution control laws and regulations in all jurisdictions in which it operates. The Company has been notified by the U.S. Environmental Protection Agency, other national environmental agencies, and various provincial and state agencies it may be a potentially responsible party ("PRP") under such laws for the cost of remediating hazardous substances pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") and other national and state or provincial environmental laws. PRP designation typically requires the funding of site investigations and subsequent remedial activities. Many of the sites that are likely to be the costliest to remediate are often current or former commercial waste disposal facilities to which numerous companies sent wastes. Despite the potential joint and several liability which might be imposed on the Company under CERCLA, and some of the other laws pertaining to these sites, its share of the total waste sent to these sites generally has been small. The Company believes its exposure for liability at these sites is not material.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

On a global basis, the Company has also identified certain other present and former properties at which it may be responsible for cleaning up or addressing environmental contamination, in some cases, as a result of contractual commitments and/or federal or state environmental laws. The Company is actively seeking to resolve these actual and potential statutory, regulatory, and contractual obligations.

The Company expenses or capitalizes, as appropriate, expenditures for ongoing compliance with environmental regulations. As of December 31, 2020, the Company has an obligation to remediate or contribute towards the remediation of certain sites, including the sites discussed above at which it may be a PRP.

The Company's estimated share of environmental remediation costs for all these sites is recognized in the consolidated balance sheets on a discounted basis and the amounts at December 31, 2020 and 2019 are as follows:

	December 31	
	2020	2019
Accrued expenses and other current liabilities	\$ 8	\$ 8
Deferred credits and other liabilities	26	28
	<u>\$ 34</u>	<u>\$ 36</u>

For those locations where the liability was discounted, the weighted average discount rate used was 0.73% and 1.30% at December 31, 2020 and 2019.

The Company's expected payments of environmental remediation costs for non-indemnified locations are estimated to be approximately:

	2021	2022	2023	2024	2025	2026 and thereafter
Expected payments	\$ 8	\$ 3	\$ 2	\$ 2	\$ 2	\$ 14

In addition to amounts described above, the Company estimates it will make expenditures for property, plant and equipment for environmental matters of approximately \$18 million in 2021 and \$7 million in 2022.

Based on information known to the Company from site investigations and the professional judgment of consultants, the Company has established reserves it believes are adequate for these costs. Although the Company believes these estimates of remediation costs are reasonable and are based on the latest available information, the costs are estimates, difficult to quantify based on the complexity of the issues, and are subject to revision as more information becomes available about the extent of remediation required. At some sites, the Company expects other parties will contribute to the remediation costs. In addition, certain environmental statutes provide the Company's liability could be joint and several, meaning the Company could be required to pay amounts in excess of its share of remediation costs. The financial strength of the other PRPs at these sites has been considered, where appropriate, in the determination of the estimated liability. The Company does not believe any potential costs associated with its current status as a PRP, or as a liable party at the other locations referenced herein, will be material to its annual consolidated financial position, results of operations, or liquidity.

Antitrust Investigations and Litigation

The Company has been subject to antitrust investigation and litigation since 2014. With the administrative closure of the European Commission's antitrust inquiry on April 27, 2017, settlements on civil putative claims in the United States and Canada, and the granting of unconditional leniency from the Department of Justice in October 2020, the Company does not expect to incur any additional material costs for investigations by competition agencies or civil lawsuits related to possible violations of antitrust laws relating to products supplied by the Company and its subsidiaries, including Federal-Mogul.

The Company established a reserve of \$132 million in its second quarter 2017 financial results for settlement costs that were probable, reasonably estimable, and expected to be necessary to resolve its antitrust matters globally, which primarily involves the resolution of civil suits and related claims. Of the \$132 million reserve that was established, \$112 million and \$79 million was paid through December 31, 2020 and 2019. In connection with the resolution of certain claims, \$11 million and \$9 million was released from the reserve as a change in estimate during the years ended December 31, 2020 and 2019. Less than \$1 million remains at December 31, 2020 and was recorded in "Accrued expenses and other current liabilities" in the consolidated balance sheets. There are no further material updates on these matters.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Other Legal Proceedings, Claims and Investigations

For many years the Company has been and continues to be subject to lawsuits initiated by claimants alleging health problems as a result of exposure to asbestos. The Company's current docket of active and inactive cases is less than 500 cases in the U.S. and less than 50 in Europe.

With respect to the claims filed in the U.S., the substantial majority of the claims are related to alleged exposure to asbestos in the Company's line of Walker® exhaust automotive products although a significant number of those claims appear also to involve occupational exposures sustained in industries other than automotive. A small number of claims have been asserted against one of the Company's subsidiaries by railroad workers alleging exposure to asbestos products in railroad cars. The Company believes, based on scientific and other evidence, it is unlikely that U.S. claimants were exposed to asbestos by the Company's former products and that, in any event, they would not be at increased risk of asbestos-related disease based on their work with these products. Further, many of these cases involve numerous defendants. Additionally, in many cases the plaintiffs either do not specify any, or specify the jurisdictional minimum, dollar amount for damages.

With respect to the claims filed in Europe, the substantial majority relate to occupational exposure claims brought by current and former employees of Federal-Mogul facilities in France and amounts paid out were not material. A small number of occupational exposure claims have also been asserted against Federal-Mogul entities in Italy and Spain.

As major asbestos manufacturers and/or users continue to go out of business or file for bankruptcy, the Company may experience an increased number of these claims. The Company vigorously defends itself against these claims as part of its ordinary course of business. In future periods, the Company could be subject to cash costs or charges to earnings if any of these matters are resolved unfavorably to the Company. To date, with respect to claims that have proceeded sufficiently through the judicial process, the Company has regularly achieved favorable resolutions. Accordingly, the Company presently believes that these asbestos-related claims will not have a material adverse effect on the Company's annual consolidated financial position, results of operations or liquidity.

The Company is also from time to time involved in other legal proceedings, claims or investigations. Some of these matters involve allegations of damages against the Company relating to environmental liabilities (including toxic tort, property damage and remediation), intellectual property matters (including patent, trademark and copyright infringement, and licensing disputes), personal injury claims (including injuries due to product failure, design or warning issues, and other product liability related matters), taxes, unclaimed property, employment matters, and commercial or contractual disputes, sometimes related to acquisitions or divestitures. Additionally, some of these matters involve allegations relating to legal compliance.

While the Company vigorously defends itself against all of these legal proceedings, claims, and investigations and takes other actions to minimize its potential exposure, in future periods, the Company could be subject to cash costs or charges to earnings if any of these matters are resolved on unfavorable terms. Although the ultimate outcome of any legal matter cannot be predicted with certainty, based on current information, including the Company's assessment of the merits of the particular claim, the Company does not expect these legal proceedings, claims or investigations currently pending against it will have any material adverse effect on its annual consolidated financial position, results of operations or liquidity.

Asset Retirement Obligations

The Company's primary Asset Retirement Obligation ("ARO") activities relate to the removal of hazardous building materials at its facilities. The Company records an ARO at fair value upon initial recognition when the amount is probable and can be reasonably estimated. ARO fair values are determined based on the Company's determination of what a third party would charge to perform the remediation activities, generally using a present value technique.

The Company maintains ARO liabilities in the consolidated balance sheets as follows:

	December 31	
	2020	2019
Accrued expenses and other current liabilities	\$ 2	\$ 3
Deferred credits and other liabilities	12	13
	<u>\$ 14</u>	<u>\$ 16</u>

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Warranty Matters

The Company provides warranties on some of its products. The warranty terms vary but range from one year up to limited lifetime warranties on some of its premium aftermarket products. Provisions for estimated expenses related to product warranty are made at the time products are sold or when specific warranty issues are identified with the Company's products. These estimates are established using historical information about the nature, frequency, and average cost of warranty claims. The Company believes the warranty reserve is appropriate; however, actual claims incurred could differ from the original estimates, requiring adjustments to the reserve. The reserve is included in both current and long-term liabilities on the consolidated balance sheets.

The following represents the changes in the Company's warranty accrual accounts for the years ended December 31, 2020, 2019, and 2018:

	Year Ended December 31		
	2020	2019	2018
Balance at beginning of period	\$ 54	\$ 45	\$ 32
Acquisitions	—	—	17
Accruals related to product warranties	28	32	14
Reductions for payments made	(21)	(23)	(18)
Foreign currency	1	—	—
Balance at end of period	<u>\$ 62</u>	<u>\$ 54</u>	<u>\$ 45</u>

16. Leases

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842). This update supersedes the lease requirements in Topic 840, Leases. The objective of Topic 842 is to establish the principles that lessees and lessors shall apply to report useful information to users of financial statements about the amount, timing, and uncertainty of cash flow arising from a lease. The Company adopted this update on January 1, 2019 using the modified retrospective method without the recasting of comparative periods' financial information, as permitted by the transition guidance.

The Company has operating and finance leases for real estate and equipment. Generally, the leases have remaining terms of one month to ten years. Leases with an initial term of 12 months or less, which do not include an option to purchase the underlying asset that the Company is reasonably certain to exercise, are not recorded on the balance sheet. The Company recognizes lease expense for these leases on a straight-line basis over the lease term.

In addition, some leases include options to terminate the lease. The Company generally negotiates these termination clauses in anticipation of any changes in market conditions; however, because a termination option requires approval from management, the Company assumes the majority of its termination options will not be exercised when determining the lease term.

The Company has elected the practical expedient to not separate non-lease components from the lease components to which they relate, and instead account for each separate lease and non-lease component associated with that lease component as a single lease component for all underlying asset classes. Accordingly, all costs associated with a lease contract are accounted for as lease cost. Lease expense is recorded in operating expenses in the results of operations.

Some leasing arrangements require variable payments that are dependent on usage, output, or may vary for other reasons, such as insurance and tax payments. The variable portion of lease payments is not included in the computation of the right of use assets or lease liabilities. Rather, variable payments, other than those dependent upon a market index or rate, are expensed when the obligation for those payments is incurred and are included in "Cost of sales (exclusive of depreciation and amortization)" and "Selling, general, and administrative" within the consolidated statements of income (loss).

The Company does not include significant restrictions or covenants in its lease agreements, and residual value guarantees are generally not included within its operating leases.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The components of lease expense were as follows:

	Year Ended December 31	
	2020	2019
Operating lease expense	\$ 122	\$ 131
Finance lease expense		
Amortization of right-of-use assets	2	1
Short-term lease expense	6	13
Variable lease expense	24	26
Sublease income	(1)	(1)
Total lease expense	\$ 153	\$ 170

Total rental expense (under ASC 840) for the year ended December 31, 2018 was \$111 million.

Other information related to leases was as follows:

	Year Ended December 31	
	2020	2019
Cash paid for amounts included in the measurement of lease liabilities:		
Operating cash flows from operating leases	\$ 143	\$ 160
Financing cash flows from finance leases	\$ 2	\$ 1
Right-of-use assets obtained in exchange for lease obligations:		
Operating leases	\$ 98	\$ 170
Finance leases	\$ 7	\$ —

Supplemental balance sheet information related to leases was as follows:

	December 31	
	2020	2019
Operating leases		
Operating lease right-of-use assets ^(a)	\$ 328	\$ 331
Accrued expenses and other current liabilities	\$ 95	\$ 96
Deferred credits and other liabilities	241	234
Total operating lease liabilities	\$ 336	\$ 330
Finance leases		
Property, plant and equipment, gross	\$ 13	\$ 2
Accumulated depreciation	(6)	(1)
Total finance lease right-of-use assets	\$ 7	\$ 1
Short-term debt, including current maturities of long-term debt	\$ 3	\$ 1
Long-term debt	5	1
Total finance lease liabilities	\$ 8	\$ 2

(a) Included in "Other assets" in the consolidated balance sheets.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

	Year Ended December 31			
	2020		2019	
	Weighted average remaining lease term	Weighted average discount rate	Weighted average remaining lease term	Weighted average discount rate
Operating leases	5.38	3.63 %	4.82	4.24 %
Finance leases	3.97	3.07 %	3.18	4.02 %

Maturities of lease liabilities under non-cancellable leases as of December 31, 2020 were as follows:

Year ending December 31	Operating leases	Finance leases
2021	\$ 106	\$ 3
2022	81	2
2023	60	2
2024	39	1
2025	26	—
Thereafter	60	—
Total future undiscounted lease payments	372	8
Less imputed interest	(36)	—
Total reported lease liability	<u>\$ 336</u>	<u>\$ 8</u>

17. Share-Based Compensation

The Company's current long-term incentive compensation plan, which was originally adopted in 2006 and amended in 2009, 2013, 2018 and 2020, is known as the Tenneco Inc. 2006 Long-Term Incentive Plan ("2006 LTIP"). The types of awards that may be granted under the 2006 LTIP are stock-options (both incentive and non-qualified stock options), stock appreciation rights ("SARs"), Full Value Awards (including bonus stock, stock units, restricted stock, restricted stock units ("RSUs"), deferred stock units, performance stock, and performance stock units ("PSUs")), and cash incentive awards (including long-term performance units ("LTPUs")).

On September 12, 2018, the stockholders of the Company approved an amendment to the 2006 LTIP to increase the shares of common stock available thereunder to 3.0 million. On May 12, 2020, the stockholders approved another amendment to the 2006 LTIP to increase the shares of common stock available thereunder to 7.15 million. Under the plan each share underlying a full value award subsequently issued counts as 1.49 shares against total plan availability and share-settled awards are settled through the issuance of new shares of Class A Common Stock. As of December 31, 2020, up to 3,131,649 shares of our common stock remain authorized for delivery under the 2006 LTIP.

In 2018, the Company prospectively changed its vesting policy regarding retirement eligibility and now require a retirement eligible employee (or an employee who becomes retirement eligible) to provide at least one year of service from the grant date in order for the award to vest. If an employee becomes retirement eligible after the first year of vesting but before completion of the three-year term, the Company amortizes the expense for the share-based awards over a period starting at the grant date to the date an employee becomes retirement eligible. Prior to 2018, for employees eligible to retire at grant date, the Company immediately expensed the granted awards.

Director restricted stock awards generally vest on the date of grant. Stock options, RSUs (both cash-settled and share-settled) and restricted stock are time-based service awards and generally vest according to a three-year graded vesting schedule. One-third of the award will vest on the first anniversary of the grant date, one-third of the award will vest on the second anniversary, and one-third of the award will vest on the third anniversary.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

LTPU and PSU awards generally have a three-year performance period and cliff vest at the end of the period based upon achievement of performance targets. For the 2018 and 2019 PSUs, 50% of the award is based on a performance target and 50% is based on a market target. The market target for 2018 and 2019 PSUs is total shareholder return (TSR) percentile ranking among peer companies, with TSR defined as change in stock price plus dividends paid divided by beginning stock price. Additionally, the 2019 PSUs have a performance target of Cumulative free cash flow, and the 2018 PSUs have a performance target of Cumulative economic value added, which are defined in each award. In the first quarter of 2020, cash-settled LTPUs, with the value of each award based on cash targets, were granted. In the fourth quarter of 2020, the LTPUs were amended whereby the LTPUs were converted to PSUs and are now share-based, cash-settled awards. The performance targets for the related modification were approved on February 3, 2021, with the grant date of the modified LTPUs (now PSUs) being the same date.

RSUs (cash-settled and share-settled) will participate in any dividends during the vesting period, which are subject to the same vesting terms of the award. The dividends are generally paid in cash on the settlement date of the award.

The fair values of restricted stock and RSUs (cash-settled and share-settled) are determined using the average of the high and low trading price of the Company's common stock on the date of measurement. The fair value of PSUs is determined using the probability weighted factors for performance conditions combined with Monte Carlo simulation model for market conditions. The Monte Carlo model utilizes multiple input variables that determine the probability of satisfying the market condition stipulated in the award and calculated the fair value of the award. The starting stock price is based on the trailing 20-day closing stock price as of the beginning of the performance period and the closing stock price on the valuation date, as well as the respective stock prices for component companies. The risk-free rate is based on yields observed on the U.S. Treasury constant maturity notes with a term equal to the remaining term of the award being measured. Expected volatilities utilized in the model are based on historical volatility of the Company and the companies in the S&P 500 index using daily stock price returns prior to the valuation date, commensurate with the remaining performance period at the measurement date. The cross correlation among stock price returns of the Company and each of the component companies in the S&P 500 with the S&P 500 Index are calculated based on daily returns over the trailing period commensurate with the remainder of the performance period at the valuation date.

Cash-Settled Awards

The Company has granted RSUs to certain key employees that are payable in cash. These awards are classified as liabilities and are valued based on the fair value of the award at the grant date and are remeasured at each reporting date until settlement with compensation expense being recognized in proportion to the completed requisite period up until date of settlement.

Total share-based compensation expense (net of taxes) for the cash-settled awards was an expense of \$2 million, an expense of \$3 million, and a benefit of \$1 million for the years ended December 31, 2020, 2019, and 2018. Share-based compensation expense is included in "Selling, general, and administrative" expenses in the consolidated statements of income (loss). As of December 31, 2020, \$17 million in unrecognized costs on the cash-settled awards is expected to be recognized over a weighted-average period of approximately three years.

Share-Settled Awards

The Company has granted restricted stock and stock options to its directors and certain key employees. In addition, beginning in 2018, the Company has granted RSUs and PSUs that are payable in common stock to certain key employees. These awards are settled in shares upon vesting with compensation expense being recognized based on the grant date fair value recognized ratably over the requisite service period if it is probable the performance target related to the PSUs will be achieved and subsequently adjusted if the probability assessment changes.

Total share-based compensation expense (net of taxes) for the share-settled awards was \$13 million, \$19 million, and \$11 million for the years ended December 31, 2020, 2019, and 2018. Share-based compensation expense is included in "Selling, general, and administrative" expenses in the consolidated statements of income (loss).

Stock Options

The Company's nonqualified stock options generally have seven-year terms. There have been no stock options granted since 2014 and all options are currently vested. There was no unrecognized compensation cost related to the Company's stock option awards as of December 31, 2020.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The following table reflects the status and activity for all options to purchase common stock for the period indicated:

	Year Ended December 31, 2020			
	Shares Under Option	Weighted Avg. Exercise Prices	Weighted Avg. Remaining Life in Years	Aggregate Intrinsic Value
				(Millions)
Options outstanding at beginning of period	272,870	\$ 47.41	0.5	\$ —
Granted	—	—		
Exercised	—	—		
Forfeited/expired	(165,840)	38.98		
Options outstanding at end of period	<u>107,030</u>	\$ 56.26	0.04	\$ —

There were no stock options exercised for the year ended December 31, 2020. There was no cash received from stock options exercised in 2020. Cash received from stock option exercises was less than \$1 million, and \$1 million for the years ended December 31, 2019, and 2018. There was no tax impact for options exercised for the year ended December 31, 2020. Stock options exercised generated a tax shortfall of less than \$1 million for the years ended December 31, 2019, and 2018.

As of December 31, 2020, all outstanding options are exercisable. There was no intrinsic value to stock options exercised during the year ended December 31, 2020. The total intrinsic value of options exercised during both years ended December 31, 2019, and 2018 was less than \$1 million. No options vested in 2020, 2019 or 2018.

Restricted Stock, Share-Settled RSUs and PSUs

The following table reflects the status for all nonvested restricted stock, share-settled RSUs, and PSUs for the period indicated:

	Restricted Stock		Share-Settled RSUs		PSUs	
	Shares	Weighted Avg. Grant Date Fair Value	Units	Weighted Avg. Grant Date Fair Value	Units	Weighted Avg. Grant Date Fair Value
Nonvested balance at beginning of period	35,630	\$ 63.27	1,125,346	\$ 37.91	806,233	\$ 34.12
Granted	174,347	9.10	1,897,780	7.66	6,654	12.26
Vested	(208,196)	41.50	(448,974)	41.37	—	—
Forfeited	(1,781)	58.01	(455,547)	32.54	(285,782)	28.98
Nonvested balance at end of period	<u>—</u>	\$ —	<u>2,118,605</u>	\$ 26.00	<u>527,105</u>	\$ 36.37

At December 31, 2020, the PSUs outstanding represent a three-year grant for 2018-2020 payable in the first quarter of 2021, and a three-year grant for 2019-2021 payable in the first quarter of 2022.

The total fair value of restricted stock vested was \$4 million, \$8 million, and \$11 million for the years ended December 31, 2020, 2019, and 2018. The total fair value of share-settled RSUs was \$11 million, \$5 million, and less than \$1 million at December 31, 2020, 2019, and 2018.

At December 31, 2020, approximately \$19 million of total unrecognized compensation costs is expected to be recognized on the share-settled awards over a weighted-average period of approximately two years.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

18. Shareholders' Equity

Common Stock

Common Stock Outstanding

The Company has authorized 175,000,000 shares (\$0.01 par value) of Class A Common Stock at December 31, 2020 and 2019. The Company has authorized 25,000,000 shares (\$0.01 par value) of Class B Common Stock at December 31, 2020 and 2019.

Pursuant to the Amended and Restated Certificate of Incorporation, in connection with the Federal-Mogul Acquisition, Class B Common Stock was created, and the Company's then existing common stock was reclassified as Class A Common Stock during the year ended December 31, 2018.

Total common stock outstanding and changes in common stock issued are as follows:

	Class A Common Stock			Class B Common Stock		
	Year Ended December 31			Year Ended December 31		
	2020	2019	2018	2020	2019	2018
Shares issued at beginning of period	71,727,061	71,675,379	66,033,509	23,793,669	23,793,669	—
Share issuances ^(a)	—	—	5,651,177	—	—	23,793,669
Issuance (repurchased) pursuant to benefit plans	640,112	113,916	19,919	—	—	—
Restricted stock forfeited and withheld for taxes	(138,225)	(70,672)	(51,049)	—	—	—
Stock options exercised	—	8,438	21,823	—	—	—
Class B common stock converted to Class A common stock	3,485,215	—	—	(3,485,215)	—	—
Shares issued at end of period	75,714,163	71,727,061	71,675,379	20,308,454	23,793,669	23,793,669
Treasury stock	14,592,888	14,592,888	14,592,888	—	—	—
Total shares outstanding	<u>61,121,275</u>	<u>57,134,173</u>	<u>57,082,491</u>	<u>20,308,454</u>	<u>23,793,669</u>	<u>23,793,669</u>

^(a) Represents an aggregate of 29,444,846 shares of Common Stock delivered to AEP in 2018 as the Stock Consideration related to Federal-Mogul Acquisition. Refer to Note 3, "Acquisitions and Divestitures" for additional information.

The rights of the Class A Common Stock and Class B Common Stock are the same, except with respect to voting and conversion. Holders of Class A Common Stock are entitled to one vote per share and holders of Class B Common Stock are not entitled to vote unless a proposed action would diminish their rights, powers or privileges, in which case such action must be unanimously approved by the holders of the Class B Common Stock. Holders of Class A Common Stock have no right to convert their shares into other securities. Each share of Class B Common Stock will automatically convert into a share of Class A Common Stock upon transfer, with limited exceptions. In addition, because the proposed spin-off of the Company's aftermarket and ride performance business (the "Spin-Off") did not occur by April 1, 2020, each holder of Class B Common Stock may convert its shares into an equal number of shares of Class A Common Stock, provided that the initial Class B holders would not own, in the aggregate, more than 15 percent of the Class A Common Stock following such conversion.

Class B Common Stock Conversion

Effective April 1, 2020, IEP and its affiliates exercised their right to convert 3,485,215 shares of the Company's Class B Common Stock into 3,485,215 shares of the Company's Class A Common Stock.

Subsequent to year-end, IEP and its affiliates converted an additional 5,055,091 shares of the Company's Class B Common Stock into 5,055,091 shares of Class A Common Stock. As of February 16, 2021, IEP and its affiliates hold 9,958,628 shares, or approximately 14.99%, of the Company's outstanding Class A Common Stock and 15,253,363 shares of the Company's outstanding Class B Common Stock.

Shareholder Agreement

In connection with the closing of the Federal-Mogul Acquisition, on October 1, 2018, the Company, AEP, IEP, and Icahn Enterprises Holdings L.P. entered into a Shareholders Agreement (the "Shareholders Agreement"). IEP's representative to the Board under the Shareholders Agreement submitted his resignation effective June 10, 2020.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

The Shareholders Agreement contains certain standstill and voting obligations applicable to IEP and its affiliates, which expired on April 1, 2020. In addition, IEP and its affiliates are prohibited from acquiring, offering to acquire, or agreeing to acquire, directly or indirectly, any shares of Class A Common Stock or other securities until April 1, 2021.

Until the later of (i) the expiration of the standstill restrictions referenced above and (ii) the time when IEP and its affiliates cease to own at least 10% of the outstanding shares, IEP and its affiliates may not transfer any shares (a) to certain specified types of investors and (b) in an amount equal to 5% or more of the Class A Common Stock issued and outstanding at the time of such transfer (subject to certain exceptions).

For so long as IEP and its affiliates own at least 10% of the outstanding shares, if the Company proposes to issue any equity securities (other than in an excluded issuance), IEP and its affiliates have certain preemptive rights. The Shareholders Agreement also includes registration rights for IEP.

Share Repurchase Program

We presently have no share repurchase program in place.

During 2015, the Company's Board of Directors approved a share repurchase program, authorizing it to repurchase up to \$550 million of its then outstanding Class A Common Stock over a three-year period ("2015 Program"). In February 2017, the Company's Board of Directors authorized the repurchase of up to \$400 million of its then outstanding Class A Common Stock over the next three years ("2017 Program"). The 2017 Program included \$112 million that remained authorized under the 2015 Program. The Company generally acquires the shares through open market or privately negotiated transactions, and has historically utilized cash from operations. The repurchase program does not obligate the Company to repurchase shares within any specific time or situations. The remaining \$231 million authorized for share repurchases under the 2017 Program expired at December 31, 2019. During the years ended December 31, 2019 and 2018, no shares were repurchased under the 2017 Program.

Preferred Stock

The Company had 50,000,000 shares of preferred stock (\$0.01 par value) authorized at both December 31, 2020 and 2019. No shares of preferred stock were issued or outstanding at those dates.

Shareholder Rights Plan

On April 15, 2020, the Company's Board of Directors approved a Section 382 Rights Plan, which will expire on the earliest to occur of (i) the close of business on the day following the certification of the voting results of the Company's 2021 annual meeting of stockholders, if at such stockholder meeting or any other meeting of stockholders of the Company duly held prior to such meeting, a proposal to ratify the Section 382 Rights Plan has not been passed by the requisite vote of the Company's stockholders; (ii) the date on which the Board of Directors determines in its sole discretion that (x) the Section 382 Rights Plan is no longer necessary for the preservation of material valuable tax attributes or (y) the tax attributes have been fully utilized and may no longer be carried forward; and (iii) the close of business on October 2, 2021.

Pursuant to the Section 382 Rights Plan, our Board of Directors declared a dividend of (i) one preferred share purchase right (a "Class A Right"), payable on April 27, 2020, for each share of Class A Voting Common Stock and (ii) one preferred share purchase right (a "Class B Right" and, together with the Class A Rights, the "Rights"), payable on April 27, 2020, for each share of Class B Non-Voting Common Stock, in each case, outstanding on April 27, 2020 to the stockholders of record on that date. Each Right, which is exercisable only in the event that any person or group acquires 4.9% or more of the Company's outstanding shares of Class A Voting Common Stock (with certain limited exceptions), would entitle any holder other than the person or group whose ownership position has exceeded the ownership limit to purchase common stock having a value equal to twice the exercise price of the Right, or, at the election of the Board of Directors, to exchange each Right for one share of Class A Common Stock per Class A Right or one share of Class B Non-Voting Common Stock per Class B Right.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

19. Changes in Accumulated Other Comprehensive Income (Loss) by Component

The following represents the Company's changes in accumulated other comprehensive income (loss) by component for the years ended December 31, 2020, 2019, and 2018:

	Year Ended December 31		
	2020	2019	2018
Foreign currency translation adjustment:			
Balance at beginning of period	\$ (369)	\$ (395)	\$ (263)
Other comprehensive income (loss) before reclassifications	(26)	23	(134)
Income tax benefit (provision)	—	3	2
Other comprehensive income (loss), net of tax	(26)	26	(132)
Balance at end of period	(395)	(369)	(395)
Pension and postretirement benefits:			
Balance at beginning of period	(342)	(297)	(275)
Other comprehensive income (loss) before reclassifications	(8)	(46)	(47)
Reclassification from other comprehensive income (loss)	(5)	7	22
Other comprehensive income (loss)	(13)	(39)	(25)
Income tax benefit (provision)	2	(6)	3
Other comprehensive income (loss), net of tax	(11)	(45)	(22)
Balance at end of period	(353)	(342)	(297)
Cash flow hedging instruments:			
Balance at beginning of period	—	—	—
Other comprehensive income (loss) before reclassifications	4	1	—
Reclassification from other comprehensive income (loss)	—	(1)	—
Other comprehensive income (loss)	4	—	—
Balance at end of period	4	—	—
Accumulated other comprehensive loss at end of year	\$ (744)	\$ (711)	\$ (692)
Other comprehensive income (loss) attributable to noncontrolling interests, net of tax	\$ 14	\$ (10)	\$ (2)

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

20. Earnings (Loss) per Share

The Company computes basic earnings (loss) per share by dividing income available to common shareholders by the weighted average number of common shares outstanding. The computation of diluted earnings (loss) per share is similar to the computation of basic earnings (loss) per share, except that the Company adjusts the weighted average number of shares outstanding to include estimates of additional shares that would be issued if potentially dilutive common shares had been issued. In addition, the Company adjusts income (loss) available to common shareholders to include any changes in income or loss that would result from the assumed issuance of the dilutive common shares.

Earnings (loss) per share of common stock outstanding were computed as follows:

	Year Ended December 31		
	2020	2019	2018
Net income (loss) attributable to Tenneco Inc.	\$ (1,521)	\$ (334)	\$ 55
Basic earnings (loss) per share —			
Average shares of common stock outstanding	81,378,474	80,904,060	58,625,087
Earnings (loss) per average share of common stock	\$ (18.69)	\$ (4.12)	\$ 0.93
Diluted earnings (loss) per share —			
Average shares of common stock outstanding	81,378,474	80,904,060	58,625,087
Effect of dilutive securities:			
Restricted stock, RSUs and PSUs	—	—	93,546
Stock options	—	—	40,099
Average shares of common stock outstanding including dilutive securities	81,378,474	80,904,060	58,758,732
Earnings (loss) per average share of common stock	\$ (18.69)	\$ (4.12)	\$ 0.93

For the years ended December 31, 2020, 2019, and 2018, the weighted average number of anti-dilutive potential common shares excluded from the calculation above totaled 2,346,904 shares, 1,868,274 shares, and 257,567 shares.

21. Segment and Geographic Area Information

Tenneco consists of four operating segments, Clean Air, Powertrain, Ride Performance, and Motorparts:

- The Clean Air segment designs, manufactures, and distributes a variety of products and systems designed to reduce pollution and optimize engine performance, acoustic tuning, and weight on a vehicle for light vehicle, commercial truck, and off-highway OE customers;
- The Powertrain segment designs, manufactures, and distributes a variety of original equipment powertrain products for light vehicle, commercial truck, off-highway, and industrial applications to OE customers for use in new vehicle production and original equipment service (“OES”) parts to support their service and distribution channels;
- The Ride Performance segment designs, manufactures, markets, and distributes a variety of ride performance solutions and systems to a global OE customer base, including noise, vibration, and harshness performance materials, advanced suspension technologies, ride control, and braking; and
- The Motorparts segment designs, manufactures, sources, markets and distributes a broad portfolio of leading brand-name products in the global vehicle aftermarket while also servicing the OES market. Motorparts products are organized into categories, including shocks and struts, steering and suspension, braking, sealing, emissions control, engine, and maintenance.

Costs related to other business activities, primarily corporate headquarter functions, are disclosed separately from the four operating segments as “Corporate.”

Management uses EBITDA including noncontrolling interests as the key performance measure of segment profitability and uses the measure in its financial and operational decision-making processes, for internal reporting, and for planning and forecasting purposes to effectively allocate resources. EBITDA including noncontrolling interests is defined as earnings before interest expense, income taxes, noncontrolling interests, and depreciation and amortization. Segment assets are not presented as it is not a measure reviewed by the Chief Operating Decision Maker in allocating resources and assessing performance.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

EBITDA including noncontrolling interests should not be considered a substitute for results prepared in accordance with U.S. GAAP and should not be considered an alternative to net income, which is the most directly comparable financial measure to EBITDA including noncontrolling interests that is in accordance with U.S. GAAP. EBITDA including noncontrolling interests, as determined and measured by the Company, should not be compared to similarly titled measures reported by other companies.

Segment results for the year ended December 31, 2020, 2019, and 2018 are as follows:

	Reportable Segments						Reclass & Elims	Total
	Clean Air	Powertrain	Ride Performance	Motorparts	Total Reportable Segments			
For the Year Ended December 31, 2020								
Revenues from external customers	\$ 6,721	\$ 3,726	\$ 2,207	\$ 2,725	\$ 15,379	\$ —	\$ 15,379	
Intersegment revenues	\$ 21	\$ 141	\$ 105	\$ 31	\$ 298	\$ (298)	\$ —	
Equity in earnings of nonconsolidated affiliates, net of tax	\$ —	\$ 37	\$ 1	\$ 9	\$ 47	\$ —	\$ 47	
For the Year Ended December 31, 2019								
Revenues from external customers	\$ 7,121	\$ 4,408	\$ 2,754	\$ 3,167	\$ 17,450	\$ —	\$ 17,450	
Intersegment revenues	\$ —	\$ 160	\$ 158	\$ 40	\$ 358	\$ (358)	\$ —	
Equity in earnings of nonconsolidated affiliates, net of tax	\$ —	\$ 32	\$ 4	\$ 7	\$ 43	\$ —	\$ 43	
For the Year Ended December 31, 2018								
Revenues from external customers	\$ 6,707	\$ 1,112	\$ 2,164	\$ 1,780	\$ 11,763	\$ —	\$ 11,763	
Intersegment revenues	\$ —	\$ 40	\$ 64	\$ 10	\$ 114	\$ (114)	\$ —	
Equity in earnings of nonconsolidated affiliates, net of tax	\$ —	\$ 14	\$ —	\$ 4	\$ 18	\$ —	\$ 18	

Segment EBITDA including noncontrolling interests and the reconciliation to earnings (loss) before interest expense, income taxes, and noncontrolling interests are as follows:

	Year Ended December 31		
	2020	2019	2018
EBITDA including noncontrolling interests by Segments:			
Clean Air	\$ 440	\$ 582	\$ 599
Powertrain	130	363	93
Ride Performance	(595)	8	69
Motorparts	155	184	161
Total Reportable Segments	130	1,137	922
Corporate	(215)	(343)	(255)
Depreciation and amortization	(639)	(673)	(345)
Earnings (loss) before interest expense, income taxes, and noncontrolling interests	(724)	121	322
Interest expense	(277)	(322)	(148)
Income tax (expense) benefit	(459)	(19)	(63)
Net income (loss)	<u>\$ (1,460)</u>	<u>\$ (220)</u>	<u>\$ 111</u>

The following customers accounted for 10% or more of the Company's net sales in the last three years. The net sales to both customers were across all segments.

Customer	2020	2019	2018
General Motors Company	11 %	11 %	12 %
Ford Motor Company	10 %	10 %	12 %

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

	Revenues from external customers ^(b)			Long-lived assets ^(c)	
	Year Ended December 31			December 31	
	2020	2019	2018	2020	2019
United States	\$ 5,151	\$ 6,203	\$ 4,488	\$ 1,061	\$ 1,363
China	2,817	2,377	1,553	713	768
Germany	1,793	2,227	1,212	532	539
Poland	822	925	731	335	331
United Kingdom	361	568	499	114	130
Mexico	900	959	543	247	277
India	414	475	316	160	182
Other Foreign ^(a)	3,121	3,716	2,421	1,010	1,097
Consolidated	<u>\$ 15,379</u>	<u>\$ 17,450</u>	<u>\$ 11,763</u>	<u>\$ 4,172</u>	<u>\$ 4,687</u>

- (a) Revenues from external customers and long-lived assets for individual foreign countries other than China, Germany, Poland, United Kingdom, Mexico, and India are not individually material.
- (b) Revenues are attributed to countries based on location of the shipper.
- (c) Long-lived assets include all long-term assets except goodwill, intangibles, and deferred tax assets.

Disaggregation of revenue

Original Equipment

Value Added Sales

OE revenue is generated from providing original equipment manufacturers and servicers with products for automotive, heavy duty, and industrial applications. Supply relationships typically extend over the life of the related vehicle, subject to interim design and technical specification revisions, and do not require the customer to purchase a minimum quantity.

Substrate/Passthrough Sales

Generally, in connection with the sale of exhaust systems to certain OE manufacturers, the Company purchases catalytic converters and diesel particulate filters or components thereof including precious metals (“substrates”) on behalf of its customers which are used in the assembled system. These substrates are included in inventory and are “passed through” to the customer at cost, plus a small margin. Since the Company takes title to the substrate inventory and has responsibility for both the delivery and quality of the finished product including the substrates, the revenues and related expenses are recorded at gross amounts.

Aftermarket

Aftermarket revenue is generated from providing products for the global vehicle aftermarket to a wide range of warehouse distributors, retail parts stores, and mass merchants that distribute these products to customers ranging from professional service providers to “do-it-yourself” consumers.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

Revenue from contracts with customers is disaggregated by customer type and geography, as it depicts the nature and amount of the Company's revenue that is aligned with the Company's key growth strategies. Certain amounts in the prior period for the Ride Performance segment have been reclassified from OE - Value add to Aftermarket to conform with the current year presentation. In the following table, revenue is disaggregated accordingly:

<i>By Customer Type</i>	Reportable Segments				
	Clean Air	Powertrain	Ride Performance	Motorparts	Total
Year Ended December 31, 2020					
OE - Substrate	\$ 3,355	\$ —	\$ —	\$ —	\$ 3,355
OE - Value add	3,366	3,726	2,151	—	9,243
Aftermarket	—	—	56	2,725	2,781
Total	\$ 6,721	\$ 3,726	\$ 2,207	\$ 2,725	\$ 15,379
Year Ended December 31, 2019					
OE - Substrate	\$ 3,027	\$ —	\$ —	\$ —	\$ 3,027
OE - Value add	4,094	4,408	2,701	—	11,203
Aftermarket	—	—	53	3,167	3,220
Total	\$ 7,121	\$ 4,408	\$ 2,754	\$ 3,167	\$ 17,450
Year Ended December 31, 2018					
OE - Substrate	\$ 2,500	\$ —	\$ —	\$ —	\$ 2,500
OE - Value add	4,207	1,112	2,164	—	7,483
Aftermarket	—	—	—	1,780	1,780
Total	\$ 6,707	\$ 1,112	\$ 2,164	\$ 1,780	\$ 11,763

<i>By Geography</i>	Reportable Segments				
	Clean Air	Powertrain	Ride Performance	Motorparts	Total
Year Ended December 31, 2020					
North America	\$ 2,639	\$ 1,180	\$ 666	\$ 1,798	\$ 6,283
Europe, Middle East, Africa and South America	1,976	1,752	1,041	749	5,518
Asia Pacific	2,106	794	500	178	3,578
Total	\$ 6,721	\$ 3,726	\$ 2,207	\$ 2,725	\$ 15,379
Year Ended December 31, 2019					
North America	\$ 3,031	\$ 1,503	\$ 873	\$ 2,018	\$ 7,425
Europe, Middle East, Africa and South America	2,388	2,106	1,338	932	6,764
Asia Pacific	1,702	799	543	217	3,261
Total	\$ 7,121	\$ 4,408	\$ 2,754	\$ 3,167	\$ 17,450
Year Ended December 31, 2018					
North America	\$ 2,981	\$ 386	\$ 770	\$ 1,117	\$ 5,254
Europe, Middle East, Africa and South America	2,415	498	933	558	4,404
Asia Pacific	1,311	228	461	105	2,105
Total	\$ 6,707	\$ 1,112	\$ 2,164	\$ 1,780	\$ 11,763

The following table shows cash payments for property, plant and equipment by reportable segment:

	Year Ended December 31		
	2020	2019	2018
Cash payments for property, plant and equipment			
Clean Air	\$109	\$208	\$197
Powertrain	169	265	58
Ride Performance	79	184	160
Motorparts	23	61	36
Other unallocated assets	14	26	56
Total	\$394	\$744	\$507

The Other unallocated assets are comprised of software additions not included in segment information.

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

22. Related Party Transactions

The parties presented in the tables below, other than Montagewerk Abgastechnik Emden GmbH, became related parties of the Company as a result of the Federal-Mogul Acquisition discussed in Note 3, “Acquisitions and Divestitures”, with net sales, purchases, and royalty and other income presented being reflective of activity post acquisition date. Amounts presented as Icahn Automotive Group LLC represent the Company's activity with Auto Plus and Pep Boys. Refer to Note 8, “Investment in Nonconsolidated Affiliates”, for further information on companies within the tables below that represent equity method investments.

As part of the Federal-Mogul Acquisition, the Company acquired a redeemable noncontrolling interest related to a subsidiary in India. In accordance with local regulations, the Company initiated a process to make a tender offer of the shares it did not own due to the change in control triggered by the Federal-Mogul Acquisition. The Company entered into separate agreements with IEP, subsequent to the purchase agreement, whereby IEP agreed to fund and execute the tender offer for the shares on behalf of the Company. As a result of finalizing the redemption value, the Company recorded a \$53 million loss to income available to common shareholders concurrently with marking the related redeemable noncontrolling interest to its redemption value in the year ended December 31, 2019. During the first quarter of 2020, the tender offer for the shares was completed. Since the transaction was funded and executed by IEP, the completion of the tender offer resulted in an adjustment to additional paid-in capital during the first quarter of 2020. Immediately following the completion of the tender offer, the shares of this noncontrolling interest not owned by the Company were no longer redeemable, or probable of becoming redeemable; therefore, the noncontrolling interest was reclassified from temporary equity to permanent equity during the first quarter of 2020. Refer to Note 2, “Summary of Significant Accounting Policies” or further information on this redeemable noncontrolling interest.

The following table is a summary of net sales, purchases, and royalty and other income (expense), net to the Company's related parties for the year ended December 31, 2020, 2019, and 2018:

	Year Ended December 31, 2020		
	Net Sales	Purchases	Royalty and Other Income(Expense)
Anqing TP Goetze Piston Ring Company Limited	\$ 13	\$ 57	\$ 3
Anqing TP Powder Metallurgy Company Limited	4	3	1
Dongsuh Federal-Mogul Industrial Co., Ltd.	2	9	—
Federal-Mogul Powertrain Otomotiv A.S.	46	207	3
Federal-Mogul TP Liner Europe Otomotiv Ltd. Sti.	—	3	—
Federal-Mogul TP Liners, Inc.	15	40	1
Frenos Hidraulicos Auto	—	1	—
Icahn Automotive Group LLC	144	—	4
Montagewerk Abgastechnik Emden GmbH	9	—	—
PSC Metals, Inc.	—	—	1
	Year Ended December 31, 2019		
	Net Sales	Purchases	Royalty and Other Income(Expense)
Anqing TP Goetze Piston Ring Company Limited	\$ 7	\$ 59	\$ 3
Anqing TP Powder Metallurgy Company Limited	1	3	1
Dongsuh Federal-Mogul Industrial Co., Ltd.	4	11	—
Federal-Mogul Powertrain Otomotiv A.S.	69	257	4
Federal-Mogul TP Liner Europe Otomotiv Ltd. Sti.	—	7	—
Federal-Mogul TP Liners, Inc.	16	54	2
Frenos Hidraulicos Auto	—	1	—
Icahn Automotive Group LLC	180	—	5
Montagewerk Abgastechnik Emden GmbH	7	—	—
PSC Metals, Inc.	—	—	2

TENNECO INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS - (Continued)

	Year Ended December 31, 2018		
	Net Sales	Purchases	Royalty and Other Income(Expense)
Anqing TP Goetze Piston Ring Company Limited	\$ —	\$ 16	\$ —
Anqing TP Powder Metallurgy Company Limited	1	1	—
Dongsuh Federal-Mogul Industrial Co., Ltd.	1	2	—
Federal-Mogul Powertrain Otomotiv A.S.	11	53	4
Federal-Mogul TP Liner Europe Otomotiv Ltd. Sti.	—	13	—
Federal-Mogul TP Liners, Inc.	2	14	4
Icahn Automotive Group LLC	52	—	1
Montagewerk Abgastechnik Emden GmbH	1	—	—

The following table is a summary of amounts due to and from the Company's related parties as of December 31, 2020 and 2019:

	December 31, 2020		December 31, 2019	
	Receivables	Payables and accruals	Receivables	Payables and accruals
Anqing TP Goetze Piston Ring Company Limited	\$ 3	\$ 26	\$ 1	\$ 26
Anqing TP Powder Metallurgy Company Limited	1	1	—	1
Dongsuh Federal-Mogul Industrial Co., Ltd.	—	3	—	2
Farloc Argentina SAIC	—	—	1	—
Federal-Mogul Powertrain Otomotiv A.S.	10	49	8	31
Federal-Mogul TP Liners, Inc.	2	7	2	7
Icahn Automotive Group LLC	47	9	52	10
Montagewerk Abgastechnik Emden GmbH	1	—	1	—

TENNECO INC. AND CONSOLIDATED SUBSIDIARIES
SCHEDULE II — VALUATION AND QUALIFYING ACCOUNTS

<u>Description</u>	<u>Balance at Beginning of Year</u>	<u>Additions</u>		<u>Deductions</u>	<u>Balance at End of Year</u>
		<u>Charged to Costs and Expenses</u>	<u>Charged to Other Accounts</u>		
					(Millions)
Allowance for Doubtful Accounts and Notes Receivable Deducted from Assets to Which it Applies:					
Year Ended December 31, 2020	\$ 28	3	1	—	\$ 32
Year Ended December 31, 2019	\$ 17	14	—	3	\$ 28
Year Ended December 31, 2018	\$ 16	5	—	4	\$ 17

<u>Description</u>	<u>Balance at Beginning of Year</u>	<u>Provision Charged (Credited) to Expense</u>	<u>Allowance Changes</u>	<u>Other Additions (Deductions) (a)</u>	<u>Balance at End of Year</u>
					(Millions)
Deferred Tax Assets- Valuation Allowance:					
Year Ended December 31, 2020	\$ 762	605	—	61	\$ 1,428
Year Ended December 31, 2019	\$ 554	36	—	172	\$ 762
Year Ended December 31, 2018	\$ 163	—	—	391	\$ 554

^(a) The amount for the year ended December 31, 2020 includes the currency translation adjustment and other comprehensive income movement of pension and postretirement benefits. The amount for the year ended December 31, 2019 includes \$142 million related to a local valuation adjustment due to an ownership change in a jurisdiction with a valuation allowance. The amount for the year ended December 31, 2018 includes \$368 million related to the Federal-Mogul Acquisition and \$40 million in valuation allowance remeasurements. Also included in these amounts are changes in foreign currency, primarily attributable to the euro, for the years ended December 31, 2020, 2019, and 2018.

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

An evaluation was carried out under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) and Rule 15d-15(e) under the Securities Exchange Act of 1934, as amended (the “Exchange Act”)) as of December 31, 2020.

Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that the Company’s disclosure controls and procedures were effective as of December 31, 2020 to ensure that information required to be disclosed by our Company in reports that it files or submits under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in the Securities and Exchange Commission rules and forms, and such information is accumulated and communicated to management as appropriate to allow timely decisions regarding required disclosures.

Management's Report on Internal Control Over Financial Reporting

See Item 8, “Financial Statements and Supplementary Data” for management’s report on internal control over financial reporting and the report of our independent registered public accounting firm thereon.

Remediation of Prior Material Weakness

As previously reported in the Company’s Annual Report on Form 10-K for the year ended December 31, 2019, the Company identified a deficiency within its North America Motorparts business that constituted a material weakness, as it did not maintain a sufficient complement of resources in the North America Motorparts business to ensure that appropriate controls were designed, maintained and executed, including controls over account reconciliations and manual journal entries, related to the integration of a previously acquired entity within the North America Motorparts business.

To address the material weakness in the North America Motorparts business, the Company implemented the previously disclosed remediation plan, that included:

- 1) Making changes and additions to the organizational structure within the North America Motorparts finance organization to ensure that there are sufficient personnel to design, maintain and execute internal controls over financial reporting;
- 2) Enhanced control activities related to account reconciliations within the North America Motorparts business to ensure all accounts on specific ledgers are reconciled and are reviewed and approved by a different individual on a timely basis; and
- 3) Enhanced control activities related to manual journal entries within the North America Motorparts business to ensure that all journal entries are reviewed and approved by different individuals on a timely basis.

During the fourth quarter of 2020, the Company completed testing the operating effectiveness of the implemented controls and found them to be effective. Based on this assessment, management concluded that the material weakness in the North America Motorparts finance organization was remediated.

Changes in Internal Control Over Financial Reporting

During the three months ended December 31, 2020, there were no changes in Tenneco’s internal control over financial reporting (as defined in Rule 13a-15(f) and Rule 15d-15(f) under the Exchange Act) that have materially affected, or are reasonably likely to materially affect, Tenneco’s internal control over financial reporting.

ITEM 9B. OTHER INFORMATION.

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE.

The sections entitled “Election of Directors” and “Corporate Governance” in our definitive Proxy Statement for the Annual Meeting of Stockholders are incorporated herein by reference. In addition, the section entitled “Information About Our Executive Officers” of this Annual Report on Form 10-K, which appears at the end of Part I, is incorporated herein by reference.

A copy of our Code of Ethical Conduct for Financial Managers, which applies to our Chief Executive Officer, Chief Financial Officer, Controller and other key financial managers, is filed as Exhibit 14 to this Form 10-K. We have posted a copy of the Code of Ethical Conduct for Financial Managers on our Internet website at www.tenneco.com. We will make a copy of this code available to any person, without charge, upon written request to Tenneco Inc., 500 North Field Drive, Lake Forest, Illinois 60045, Attn: General Counsel. We intend to satisfy the disclosure requirement under Item 5.05 of Form 8-K and applicable NYSE rules regarding amendments to or waivers of our Code of Ethical Conduct by posting this information on our Internet website at www.tenneco.com.

ITEM 11. EXECUTIVE COMPENSATION.

The sections entitled “Executive Compensation” and “Compensation Committee Report on Executive Compensation” in our definitive Proxy Statement for the Annual Meeting of Stockholders are incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS.

The sections entitled “Ownership of Common Stock” and “Securities Authorized for Issuance Under Equity Compensation Plans” in our definitive Proxy Statement for the Annual Meeting of Stockholders are incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE.

The subsections entitled “The Board of Directors and its Committees” and “Transactions with Related Persons” under the section entitled “Corporate Governance” in our definitive Proxy Statement for the Annual Meeting of Stockholders are incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES.

The sections entitled “Ratify Appointment of Independent Public Accountants — Audit, Audit-Related, Tax and All Other Fees” and “Ratify Appointment of Independent Public Accountants — Pre-Approval Policy” in our definitive Proxy Statement for the Annual Meeting of Stockholders are incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES. CONSOLIDATED FINANCIAL STATEMENTS INCLUDED IN ITEM 8

See “Index to Financial Statements of Tenneco Inc. and Consolidated Subsidiaries” set forth in Item 8, “Financial Statements and Supplementary Data” for a list of financial statements filed as part of this Report.

INDEX TO SCHEDULE INCLUDED IN ITEM 8

	<u>Page</u>
<u>Schedule of Tenneco Inc. and Consolidated Subsidiaries — Schedule II — Valuation and qualifying accounts — three years ended December 31, 2020</u>	<u>141</u>

SCHEDULES OMITTED AS NOT REQUIRED OR INAPPLICABLE

Schedule I — Condensed financial information of registrant

Schedule III — Real estate and accumulated depreciation

Schedule IV — Mortgage loans on real estate

Schedule V — Supplemental information concerning property — casualty insurance operations

EXHIBITS

The following exhibits are filed with this Annual Report on Form 10-K for the fiscal year ended December 31, 2020, or incorporated herein by reference (exhibits designated by an asterisk are filed with the report; all other exhibits are incorporated by reference):

INDEX TO EXHIBITS

<u>Exhibit Number</u>	<u>Description</u>
2.1	— Membership Interest Purchase Agreement, dated as of April 10, 2018 by and among the Company, Federal-Mogul LLC, American Entertainment Properties Corp. and Icahn Enterprises L.P. (incorporated herein by reference to Exhibit 2.1 of the registrant’s Current Report on Form 8-K filed April 10, 2018. File No. 1-12387).
3.1	— Amended and Restated Certificate of Incorporation of Tenneco Inc. (incorporated herein by reference to Exhibit 3.1 of the registrant’s Current Report on Form 8-K dated October 1 2018, File No. 1-12387).
3.2	— By-laws of the registrant, as amended and restated effective October 1, 2018 (incorporated herein by reference to Exhibit 3.2 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
3.3	— Certificate of Designations of Series A Preferred Stock of Tenneco Inc. (incorporated herein by reference to Exhibit 3.1 of the registrant’s Current Report on Form 8-K dated April 16, 2020, File No 1-12387).
4.1	— Description of Securities (incorporated herein by reference to Exhibit 10.41 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
4.1(a)	— The description of Tenneco’s common stock, \$0.01 par value, contained in Tenneco’s Registration Statement on Form 10 (File No. 1-12387) originally filed with the Securities and Exchange Commission (the “Commission”) on October 30, 1996, as amended by Tenneco’s post-effective amendment to the Registration Statement on Form 10 filed with the Commission on October 1, 2018, is incorporated herein by reference.
4.2	— Shareholders Agreement, dated as of October 1, 2018 by and among the Company, American Entertainment Properties Corp., Icahn Enterprises Holdings L.P. and Icahn Enterprises L.P. (incorporated herein by reference to Exhibit 4.1 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.3(a)	— Credit Agreement, dated as of October 1, 2018, among Tenneco Inc., Tenneco Automotive Operating Company Inc., JPMorgan Chase Bank, N.A., as Administrative Agent, and the other lenders party thereto (incorporated herein by reference to Exhibit 10.01 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.3(b)	— Guarantee Agreement, dated as of October 1, 2018, among Tenneco Inc., the Guarantors party thereto and JPMorgan Chase Bank, N.A., as Administrative Agent (incorporated herein by reference to Exhibit 10.02 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.3(c)	— Collateral Agreement, dated as of October 1, 2018, among Tenneco Inc., various subsidiaries to Tenneco, Inc. party thereto and Wilmington Trust, National Association, as Collateral Trustee (incorporated herein by reference to Exhibit 10.03 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.3(d)	— First Amendment, dated February 14, 2020, to the Credit Agreement, dated as of October 1, 2018, by and among Tenneco Inc., Tenneco Automotive Operating Company Inc., JPMorgan Chase Bank, N.A., as administrative agent, and the other lenders party thereto (incorporated herein by reference to Exhibit 10.1 of the registrant’s Current Report on Form 8-K dated February 19, 2020, File No 1-12387).
4.3(e)	— Second Amendment, dated February 14, 2020, to the Credit Agreement, dated as of October 1, 2018, by and among Tenneco Inc., Tenneco Automotive Operating Company Inc., JPMorgan Chase Bank, N.A., as administrative agent, and the other lenders party thereto (incorporated herein by reference to Exhibit 10.2 of the registrant’s Current Report on Form 8-K dated February 19, 2020, File No 1-12387).
4.3(f)	— Third Amendment, dated May 5, 2020, to the Credit Agreement, dated as of October 1, 2018, by and among Tenneco Inc., Tenneco Automotive Operating Company Inc., J.P. Morgan Chase Bank, N.A., as administrative agent, and the other lenders party thereto (incorporated herein by reference to Exhibit 10.1 of the registrant’s Current Report on Form 8-K dated May 6, 2020, File No 1-12387).
4.4	— Indenture, dated December 5, 2014, among the registrant, various subsidiaries of the registrant and U.S. Bank National Association, as trustee (incorporated herein by reference to Exhibit 4.1 of the registrant’s Current Report on Form 8-K filed December 5, 2014, File No. 1-12387).

Exhibit Number	Description
4.5	— First Supplemental Indenture, dated December 5, 2014, among the registrant, various subsidiaries of the registrant and U.S. Bank National Association, as trustee (incorporated herein by reference to Exhibit 4.2 of the registrant's Current Report on Form 8-K filed December 5, 2014, File No. 1-12387).
4.6	— Second Supplemental Indenture, dated as of June 13, 2016, among Tenneco Inc., the guarantors named therein and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 to the registrant's Current Report on Form 8-K dated June 13, 2016, File No. 1-12387).
4.7	— Third Supplemental Indenture, dated October 1, 2018, among Tenneco Inc., as issuer, the Guarantors party thereto and U.S. Bank National Association, as trustee (the "Trustee") (incorporated herein by reference to Exhibit 4.35 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.8	— Fourth Supplemental Indenture, dated October 1, 2018, among Tenneco Inc., as issuer, the Guarantors party thereto and the Trustee (incorporated herein by reference to Exhibit 4.36 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
*4.9	Fifth Supplemental Indenture, dated as of September 24, 2020, among Tenneco Inc. and DRiV Automotive Inc., and U.S. Bank National Association, as Trustee.
*4.10	Sixth Supplemental Indenture, dated as of September 24, 2020, among Tenneco Inc. and DRiV Automotive Inc., and U.S. Bank National Association, as Trustee.
4.11	— Indenture, dated as of March 30, 2017, among Federal-Mogul LLC and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, Wilmington Trust, National Association, as Trustee, The Bank of New York Mellon, London Branch, as Paying Agent, and The Bank of New York Mellon SA/NV, Luxembourg Branch (formerly, The Bank of New York Mellon (Luxembourg) S.A.), as Registrar (including the form of 4.875% Senior Secured Notes due 2022 and the form of Floating Rate Senior Secured Notes due 2024) (incorporated herein by reference to Exhibit 4.01 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.12	— First Supplemental Indenture, dated as of April 4, 2018, among Federal-Mogul LLC and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, Wilmington Trust, National Association, as Trustee, and Bank of America, N.A. and Citibank, N.A. as Co-Collateral Trustees (incorporated herein by reference to Exhibit 4.02 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.13	— Second Supplemental Indenture, dated as of July 30, 2018, among Federal-Mogul LLC and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, and Wilmington Trust, National Association, as Trustee (incorporated herein by reference to Exhibit 4.03 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.14	— Third Supplemental Indenture, dated as of September 18, 2018, among Federal-Mogul LLC and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, and Wilmington Trust, National Association, as Trustee (incorporated herein by reference to Exhibit 4.04 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.15	— Fourth Supplemental Indenture, dated as of October 1, 2018, among Tenneco Inc. (as successor by merger to Federal-Mogul LLC) and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, and Wilmington Trust, National Association, as Trustee (incorporated herein by reference to Exhibit 4.05 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
*4.16	— Fifth Supplemental Indenture, dated as of September 24, 2020, among Tenneco Inc., DRiV Automotive Inc. and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, and Wilmington Trust, National Association, as Trustee.
4.17	— Collateral Agreement, dated as of March 30, 2017, among Federal-Mogul LLC, as Company and Issuer, and certain of its subsidiaries in favor of Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.06 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.18	— Assumption Agreement, dated as of July 30, 2018, made by Federal-Mogul Products Company LLC and Federal-Mogul Ignition LLC in favor of Bank of America, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.07 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.19	— Assumption Agreement, dated as of September 18, 2018, made by Federal-Mogul New Products, Inc. and Federal-Mogul Products US LLC in favor of Bank of America, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.08 of the registrant's Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).

Exhibit Number	Description
4.20	— Assumption Agreement, dated as of October 1, 2018, made by Tenneco Inc., Tenneco Automotive Operating Company Inc., Tenneco International Holding Corp., Tenneco Global Holdings Inc., TMC Texas Inc., The Pullman Company and Clevite Industries Inc. in favor of Wilmington Trust, National Association, as Collateral Trustee (incorporated herein by reference to Exhibit 4.09 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
*4.21	— Assumption Agreement, dated as of September 24, 2020, made by DRiV Automotive Inc. in favor of Wilmington Trust, National Association as Collateral Trustee.
4.22	— Amended and Restated Collateral Trust Agreement, dated as of April 15, 2014, among Federal-Mogul Holdings Corporation, certain of its subsidiaries and Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.10 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.23	— Assumption Agreement, dated as of July 29, 2014, made by FM Motorparts TSC, Inc. (as predecessor to F-M Motorparts TSC LLC) in favor of Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.11 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.24	— Assumption Agreement, dated as of July 23, 2015, made by F-M TSC Real Estate Holdings LLC in favor of Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.12 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.25	— Assumption Agreement, dated as of July 28, 2015, made by Federal-Mogul Valve Train International LLC in favor of Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.13 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.26	— Assumption Agreement, dated as of August 12, 2015, made by Federal-Mogul Sevierville, Inc. (as predecessor to Federal-Mogul Sevierville, LLC) in favor of Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.14 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.27	— Assumption Agreement, dated as of July 14, 2016, made by Beck Arnley Holdings LLC and Federal-Mogul Filtration LLC in favor of Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.15 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.28	— Assumption Agreement, dated as of March 30, 2017, made by Federal-Mogul Financing Corporation in favor of Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.16 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.29	— Collateral Trust Joinder, dated as of March 30, 2017, by Wilmington Trust, National Associate, as Trustee, and acknowledged by Citibank, N.A, as Collateral Trustee (incorporated herein by reference to Exhibit 4.17 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.30	— Collateral Trust Joinder, dated as of June 29, 2017 by The Bank of New York Mellon, London Branch, as Trustee, and acknowledged by Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.18 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
*4.31	— Collateral Trust Joinder, dated as of November 30, 2020, by Wilmington Trust, National Associate, as Trustee, and acknowledged by Wilmington Trust, National Association, as Collateral Trustee.
4.32	— Assumption Agreement, dated as of July 30, 2018 made by Federal-Mogul Products Company LLC and Federal-Mogul Ignition LLC in favor of Bank of America, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.19 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.33	— Assumption Agreement, dated as of September 18, 2018 made by Federal-Mogul New Products, Inc. and Federal-Mogul Products US LLC in favor of Bank of America, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.20 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.34	— Assumption Agreement to Collateral Trust Agreement, dated as of October 1, 2018, made by Tenneco Inc., Tenneco Automotive Operating Company Inc., Tenneco International Holding Corp., Tenneco Global Holdings Inc., TMC Texas Inc., The Pullman Company and Clevite Industries Inc. in favor of Wilmington Trust, National Association, as Collateral Trustee (incorporated herein by reference to Exhibit 4.21 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).

Exhibit Number	Description
4.35	— Pari Passu Intercreditor Agreement, dated as of March 30, 2017, among Credit Suisse AG, Cayman Islands Branch, as Tranche C Term Administrative Agent for the applicable PP&E Credit Agreement Secured Parties, Citibank, N.A., as Collateral Trustee, and Wilmington Trust, National Association, as the Initial Other Authorized Representative (incorporated herein by reference to Exhibit 4.22 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.36	— Joinder No. 1 to Pari Passu Intercreditor Agreement, dated as of June 29, 2017, among The Bank of New York Mellon, London Branch, as Trustee, Citibank, N.A., as Collateral Trustee, Credit Suisse, AG, Cayman Islands Branch, as Tranche C Term Administrative Agent and an Authorized Representative, and Wilmington Trust National Association, as Initial Other Authorized Representative (incorporated herein by reference to Exhibit 4.32 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.37	— Joinder No. 2 to Pari Passu Intercreditor Agreement, dated as of October 1, 2018, among JPMorgan Chase Bank, N.A., as Additional Senior Class Debt Representative, Wilmington Trust, National Association, as Collateral Trustee, Wilmington Trust, National Association, as Initial Other Authorized Representative, The Bank of New York Mellon, London Branch, as an Authorized Representative (incorporated herein by reference to Exhibit 4.37 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
*4.38	— Joinder No. 3 to Pari Passu Intercreditor Agreement, dated as of November 30, 2020, among Wilmington Trust, National Association, as Collateral Trustee, Wilmington Trust National Association, as Initial Other Authorized Representative, The Bank of New York Mellon, London Branch, as an Authorized Representative, JPMorgan.
4.39	— Indenture, dated as of June 29, 2017, among Federal-Mogul LLC and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, The Bank of New York Mellon, London Branch, as Trustee and Paying Agent, and The Bank of New York Mellon SA/NV, Luxembourg Branch (formerly, The Bank of New York Mellon (Luxembourg S.A.)), as Registrar (incorporated herein by reference to Exhibit 4.23 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.40	— First Supplemental Indenture, dated as of April 4, 2018, among Federal-Mogul LLC and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, The Bank of New York Mellon, London Branch, as Trustee, and Bank of America, N.A. and Citibank, N.A., as Co-Collateral Trustees (incorporated herein by reference to Exhibit 4.24 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.41	— Second Supplemental Indenture, dated as of July 30, 2018, among Federal-Mogul LLC and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto and The Bank of New York Mellon, London Branch, as Trustee (incorporated herein by reference to Exhibit 4.25 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.42	— Third Supplemental Indenture, dated as of September 18, 2018, among Federal-Mogul LLC and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto and The Bank of New York Mellon, London Branch, as Trustee (incorporated herein by reference to Exhibit 4.26 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.43	— Fourth Supplemental Indenture, dated as of October 1, 2018, among Tenneco Inc. (as successor by merger to Federal-Mogul LLC) and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, and The Bank of New York Mellon, London Branch, as Trustee (incorporated herein by reference to Exhibit 4.27 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
*4.44	Fifth Supplemental Indenture, dated as of September 24, 2020, among Tenneco Inc., DRiV Automotive Inc. and Federal-Mogul Financing Corporation, as Issuers, the Guarantors party thereto, and Wilmington Trust, National Association, as Trustee.
4.45	— Collateral Agreement, dated as of June 29, 2017, among Federal-Mogul LLC, as Company and Issuer, and certain of its subsidiaries in favor of Citibank, N.A., as Collateral Trustee (incorporated herein by reference to Exhibit 4.28 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).

Exhibit Number	Description
4.46	— Assumption Agreement, dated as of July 30, 2018, made by Federal-Mogul Products Company LLC and Federal-Mogul Ignition LLC in favor of Bank of America, N.A. as Collateral Trustee (incorporated herein by reference to Exhibit 4.29 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.47	— Assumption Agreement, dated as of September 18, 2018, made by Federal-Mogul New Products, Inc. and Federal-Mogul Products US LLC in favor of Bank of America, N.A. as Collateral Trustee (incorporated herein by reference to Exhibit 4.30 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.48	— Assumption Agreement, dated as of October 1, 2018, made by Tenneco Inc., Tenneco Automotive Operating Company Inc., Tenneco International Holding Corp., Tenneco Global Holdings Inc., TMC Texas Inc., The Pullman Company and Clevite Industries Inc. in favor of Wilmington Trust, National Association, as Collateral Trustee (incorporated herein by reference to Exhibit 4.31 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
*4.49	— Assumption Agreement, dated as of September 24, 2020, made by DRiV Automotive Inc. in favor of Wilmington Trust, National Association, as Collateral Trustee.
4.50	— Collateral Trustee Resignation and Appointment Agreement, dated as of February 23, 2018, among Bank of America, N.A., as Co-Collateral Trustee, successor Collateral Trustee and ABL Agent, Citibank, N.A., as Co-Collateral Trustee and resigning Collateral Trustee, Credit Suisse AG, Cayman Islands Branch, as PP&E First Lien Agent, Wilmington Trust, National Association, as PP&E First Lien Agent, The Bank of New Mellon, London Branch, as PP&E First Lien Agent, Federal-Mogul LLC and the other Loan Parties party thereto (incorporated herein by reference to Exhibit 4.33 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.51	— Collateral Trustee Resignation and Appointment, Joinder, Assumption and Designation Agreement, dated as of October 1, 2018, among Wilmington Trust, National Association, as Co-Collateral Trustee, successor Collateral Trustee and PP&E First Lien Agent, Bank of America, N.A., as Co-Collateral Trustee and Retiring Collateral Trustee, the Bank of New York Mellon, London Branch, as PP&E First Lien Agent, JPMorgan Chase Bank, N.A., as Authorized Agent, Tenneco Inc. and the other Loan Parties party thereto (incorporated herein by reference to Exhibit 4.34 of the registrant’s Current Report on Form 8-K dated October 1, 2018, File No. 1-12387).
4.52	— Indenture, dated November 30, 2020, by and among Tenneco Inc., the guarantors party thereto and Wilmington Trust, National Association, as trustee (incorporated herein by reference to Exhibit 4.1 of the registrant’s Current Report on Form 8-K dated November 30, 2020, File No. 1-12387).
*4.53	— Collateral Agreement, dated as of November 30, 2020, by Tenneco Inc. and certain of its Subsidiaries in favor of Wilmington Trust, National Association, as Collateral Trustee.
4.54	— Section 382 Rights Agreement, dated as of April 15, 2020, between Tenneco Inc. and Equiniti Trust Company, as rights agent (incorporated herein by reference to Exhibit 4.1 of the registrant’s Current Report on Form 8-K dated April 16, 2020, File No 1- 12387).
4.55	— The registrant is a party to other agreements for unregistered long-term debt securities, which do not exceed 10% of the registrant’s total assets. The registrant agrees to furnish a copy of such agreements to the Commission upon request.

Exhibit Number	Description
+10.1	— Stock Ownership Plan (incorporated herein by reference to Exhibit 10.14 of the registrant’s Registration Statement on Form S-4, Reg).
+10.2	— Supplemental Executive Retirement Plan (incorporated herein by reference to Exhibit 10.13 of the registrant’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2000, File No. 1-12387).
+10.3	— Form of Indemnity Agreement entered into between the registrant and Paul Stecko (incorporated herein by reference to Exhibit 10.29 of the registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2000, File No. 1-12387).
+10.4	— Amendment No. 1 to the Supplemental Executive Retirement Plan (incorporated herein by reference to Exhibit 10.40 of the registrant’s Quarterly Report on Form 10-Q for the quarter ended June 30, 2005, File No. 1-12387).
+10.5	— Code Section 409A Amendment to Supplemental Retirement Plan (incorporated herein by reference to Exhibit 10.71 of the registrant’s Annual Report on Form 10-K for the year ended December 31, 2008, File No. 1-12387).
+10.6	— DRiV Incorporated Supplemental Retirement Plan, dated January 1, 2020 (incorporated herein by reference to Exhibit 10.5 of the registrant’s Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
+10.7	— Amended and Restated Tenneco Inc. Excess Benefit Plan, dated January 1, 2020 (incorporated herein by reference to Exhibit 10.35 of the registrant’s Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
+10.8	— DRiV Inc. Excess Benefit Plan, dated December 20, 2019 and effective January 1, 2020 (incorporated herein by reference to Exhibit 10.36 of the registrant’s Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
+10.9	— Tenneco Automotive Operating Company Inc. Severance Benefit Plan and Summary Plan Description, effective as of July 20, 2018 (incorporated herein by reference to Exhibit 10.4 of the registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, File No. 1-12387).
+10.10	— Tenneco Automotive Operating Company Inc. Severance Benefit Plan and Summary Plan Description, as amended and restated effective as of April 1, 2020 (incorporated herein by reference to Exhibit 10.8 of the registrant’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, File No. 1-12387).
+10.11	— Tenneco Inc. Change in Control Severance Benefit Plan for Key Executives, as Amended and Restated effective December 12, 2007 (incorporated herein by reference to Exhibit 10.61 of the registrant’s Annual Report on Form 10-K for the year ended December 31, 2008, File No. 1-12387).
+10.12	— First Amendment to Tenneco Inc. Change in Control Severance Benefit Plan for Key Executives, as Amended and Restated effective December 12, 2007 (incorporated herein by reference to Exhibit 10.3 of the registrant’s Quarterly Report on Form 10-Q for the quarter ended March 31, 2011, File No. 1-12387).
+10.13	— Second Amendment to Tenneco Inc. Change in Control Severance Benefit Plan for Key Executives (incorporated by reference to Exhibit 10.1 of registrant’s Current Report on form 8-K dated April 28, 2015, File No. 1.12387).
+10.14	— Tenneco Inc. Change in Control Severance Benefit Plan for Key Executives, as Amended and Restated effective November 5, 2020 (incorporated herein by reference to Exhibit 10.7 of the registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, File No. 1-12387).
+10.15	— Tenneco Inc. Annual Incentive Plan (incorporated herein by reference to Exhibit 10.1 of the registrant’s Current Report on Form 8-K filed February 9, 2018. File No. 1-12387).
*+10.16	— Tenneco Inc. Annual Incentive Plan (as amended and restated effective January 1, 2021).
+10.17	— Tenneco Inc. 2006 Long-Term Incentive Plan (as amended and restated effective March 11, 2009) (incorporated herein by reference to Appendix A of the registrant’s proxy statement on Schedule 14A, filed with the Securities and Exchange Commission on March 31, 2009, File No. 1-12387).
+10.18	— Amended and Restated Tenneco Inc. 2006 Long-Term Incentive Plan (effective March 18, 2013) (incorporated by reference to Appendix A of the Company’s Proxy Statement on Schedule 14A, filed with the Securities Exchange Commission on April 3, 2013).

Exhibit Number	Description
+10.19	— Amendment No. 1 to Tenneco Inc. 2006 Long-Term Incentive Plan, effective October 10, 2016 (incorporated herein by reference to Exhibit 10.2 to the registrant’s Quarterly Report on Form 10-Q for the quarter ended September 30, 2016, File No. 1-12387).
+10.20	— Amended and Restated Tenneco Inc. 2006 Long-Term Incentive Plan adopted September 12, 2018 (incorporated by reference to Annex D of the registrant’s definitive Proxy Statement dated August 2, 2018, File No. 1-12387).
+10.21	— Amended and Restated Tenneco Inc. 2006 Long-Term Incentive Plan (effective March 10, 2020) (incorporated by reference to Appendix A of the Company's Proxy Statement on Schedule 14A, filed with the Securities Exchange Commission on April 1, 2020).
+10.22	— Tenneco Inc. 2006 Long-Term Incentive Plan, as amended and restated effective November 5, 2020 (incorporated herein by reference to Exhibit 10.6 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, File No. 1-12387).
+10.23	— Tenneco Inc. Deferred Compensation Plan (as Amended and Restated Effective as of August 1, 2013) (incorporated by reference to Exhibit 10.6 of Tenneco Inc.'s Quarterly Report on Form 10-Q for the quarter ended June 30, 2013, File No. 1-12387).
+10.24	— Tenneco Inc. Incentive Deferral Plan (incorporated herein by reference to Exhibit 10.48 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2017, File No. 1-12387).
+10.25	— Offer Letter to Brian J. Kessler dated January 6, 2015 (incorporated herein by reference to Exhibit 10.67 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2014, File No. 1-12387).
+10.26	— Addendum, dated July 20, 2018, to Offer Letter to Brian J. Kessler dated January 6, 2015 (incorporated herein by reference to Exhibit 10.2 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, File No. 1-12387).
+10.27	— Offer Letter to Jason M. Hollar dated April 18, 2017 (incorporated herein by reference to Exhibit 10.43 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2017, File No. 1-12387).
+10.28	— Offer Letter to Rainer Jueckstock dated October 1, 2018 (incorporated herein by reference to Exhibit 10.32 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
+10.29	— Offer Letter to Roger Wood dated July 20, 2018 (incorporated herein by reference to Exhibit 10.3 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, File No. 1-12387).
+10.30	— Separation Agreement and General Release, effective as of January 7, 2020, by and between Tenneco Inc. and Roger J. Wood (incorporated herein by reference to Exhibit 10.5 of the registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, File No. 1-12387).
+10.31	— Offer Letter to Kenneth R. Trammell dated April 1, 2020 (incorporated herein by reference to Exhibit 10.6 of the registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, File No. 1-12387).
+10.32	— Restricted Stock Unit Inducement Grant Award Agreement, effective as of April 1, 2020, by and between Tenneco Inc. and Kenneth R. Trammell (incorporated herein by reference to Exhibit 10.7 of the registrant's Quarterly Report on Form 10-Q for the quarter ended March 31, 2020, File No. 1-12387).
+10.33	— Offer Letter to Kevin W. Baird dated July 6, 2020 (incorporated herein by reference to Exhibit 10.1 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, File No. 1-12387).
+10.34	— Restricted Stock Unit Inducement Grant Award Agreements, effective as of August 3, 2020, by and between Tenneco Inc. and Kevin W. Baird (2-year vesting) (incorporated herein by reference to Exhibit 10.2 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, File No. 1-12387).

Exhibit Number	Description
+10.35	— Restricted Stock Unit Inducement Grant Award Agreement, effective as of August 3, 2020, by and between Tenneco Inc. and Kevin W. Baird (3-year vesting) (incorporated herein by reference to Exhibit 10.3 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, File No. 1-12387).
+10.36	— Offer Letter to Matti Masanovich dated July 6, 2020 (incorporated herein by reference to Exhibit 10.4 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, File No. 1-12387).
+10.37	— Restricted Stock Unit Inducement Grant Award Agreements, effective as of August 10, 2020, by and between Tenneco Inc. and Matti Masanovich (incorporated herein by reference to Exhibit 10.5 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, File No. 1-12387).
+10.38	— Form of Non-Qualified Stock Option Agreement for Employees under Tenneco Inc. 2006 Long-Term Incentive Plan (incorporated herein by reference to Exhibit 10.3 of the registrant's Current Report on Form 8-K dated January 18, 2012. File No. 1-12387).
+10.39	— Form of Stock Option Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (awards after May 21, 2013 and before February 2017) (incorporated herein by reference to Exhibit 10.4 of the registrant's Current Report on Form 8-K filed May 21, 2013, File No. 1-12387).
+10.40	— Form of Restricted Stock Award for Brian J. Kessler (January 2015 replacement grant) under Tenneco Inc. 2006 Long-Term Incentive Plan (incorporated herein by reference to Exhibit 10.71 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2014, File No. 1-12387).
+10.41	— Notice to Employees of Agreement Amendments and New Options for Withholding, effective October 10, 2016 (incorporated herein by reference to Exhibit 10.5 to the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2016, File No. 1-12387).
+10.42	— Form of Restricted Stock Award Agreement for Employees under Tenneco Inc. 2006 Long-Term Incentive Plan (for awards commencing February 2017) (incorporated herein by reference to Exhibit 10.78 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2016, File No. 1-12387).
+10.43	— Form of Long-Term Performance Unit Award Agreement for Employees under Tenneco Inc. 2006 Long-Term Incentive Plan (for awards commencing February 2017) (incorporated herein by reference to Exhibit 10.79 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2016, File No. 1-12387).
+10.44	— Form of Restricted Stock Unit Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (grants after 2017) (incorporated herein by reference to Exhibit 10.2 of the registrant's Current Report on Form 8-K filed February 9, 2018. File No. 1-12387).
+10.45	— Form of Performance Share Unit Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (grants after 2017) (incorporated herein by reference to Exhibit 10.3 of the registrant's Current Report on Form 8-K filed February 9, 2018. File No. 1-12387).
+10.46	— Form of Restricted Stock Unit Agreement under Tenneco Inc. 2006 Long-Term Incentive Plan (Retention Awards) (incorporated herein by reference to Exhibit 10.6 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, File No. 1-12387).
+10.47	— Tenneco Inc. 2006 Long-Term Incentive Plan Special Restricted Stock Unit and Cash Incentive Award Agreement for Brandon Smith (incorporated herein by reference to Exhibit 10.43 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.48	— Tenneco Inc. 2006 Long-Term Incentive Plan Special Restricted Stock Unit and Cash Incentive Award Agreement for Jason Hollar (incorporated herein by reference to Exhibit 10.44 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.49	— Federal-Mogul LLC 2017 Long-Term Incentive Plan Motorparts Segment (for the period January 1, 2017 - December 31, 2019) (incorporated herein by reference to Exhibit 10.45 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.50	— Federal-Mogul LLC 2017 Long Term Incentive Plan Powertrain Segment (for the period January 1, 2017 - December 31, 2019) (incorporated herein by reference to Exhibit 10.46 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.51	— Federal-Mogul LLC 2017 Long-Term Incentive Plan Motorparts Segment LTIP Award Agreement (for the period January 1, 2017 - December 31, 2019) effective January 1, 2017 (incorporated herein by reference to Exhibit 10.47 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).

Exhibit Number	Description
+10.52	— Federal-Mogul LLC 2017 Long Term Incentive Plan Powertrain Segment LTIP Award Agreement (for the period January 1, 2017 - December 31, 2019) effective January 1, 2017 (incorporated herein by reference to Exhibit 10.48 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.53	— Federal-Mogul LLC 2018 Long-Term Incentive Plan Motorparts Segment (for the period January 1, 2018 - December 31, 2020) (incorporated herein by reference to Exhibit 10.49 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.54	— Federal-Mogul LLC 2018 Long-Term Incentive Plan Powertrain (for the period January 1, 2018 - December 31, 2020) (incorporated herein by reference to Exhibit 10.50 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.55	— Federal-Mogul LLC 2018 Long Term Incentive Plan Motorparts Segment LTIP Award Agreement (for the period January 1, 2018 - December 31, 2020) effective January 1, 2018 (incorporated herein by reference to Exhibit 10.51 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.56	— Federal-Mogul LLC 2018 Long Term Incentive Plan Powertrain Segment LTIP Award Agreement (for the period January 1, 2018 - December 31, 2020) effective January 1, 2018 (incorporated herein by reference to Exhibit 10.52 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.57	— Form of Performance Share Unit Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (grants after 2018) (incorporated herein by reference to Exhibit 10.53 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2018, File No. 1-12387).
+10.58	— Form of Cash-Settled Long-Term Performance Unit Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (for the period January 1, 2020 - December 31, 2022) (incorporated herein by reference to Exhibit 10.52 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
+10.59	— Form of Cash-Settled Restricted Stock Unit Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (for awards commencing after February 18, 2020) (incorporated herein by reference to Exhibit 10.53 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
+10.60	— Form of Restricted Stock Unit Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (for awards commencing after February 18, 2020) (incorporated herein by reference to Exhibit 10.54 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
+10.61	— Cash Retention Award Agreement, dated as of November 13, 2019, by and between Tenneco Inc. and Peng Guo (incorporated herein by reference to Exhibit 10.55 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
+10.62	— Cash Retention Award Agreement, dated as of October 28, 2019, by and between Tenneco Inc. and Jason M. Hollar (incorporated herein by reference to Exhibit 10.56 of the registrant's Annual Report on Form 10-K for the year ended December 31, 2019, File No. 1-12387).
+10.63	— Form of Amended and Restated Cash-Settled Long-Term Performance Share Unit Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (for periods commencing after January 1, 2020) (incorporated herein by reference to Exhibit 10.8 of the registrant's Quarterly Report on Form 10-Q for the quarter ended September 30, 2020, File No. 1-12387).
+10.64	— Cash-Settled Restricted Stock Unit Retention Award Agreements, effective as of August 3, 2020, by and between Tenneco Inc. and Brian J. Kessler (incorporated herein by reference to Exhibit 10.1 of the registrant's Current Report on Form 8-K filed December 9, 2020. File No. 1-12387).
*+10.65	— Form of Cash-Settled Performance Share Unit Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (for the period January 1, 2021 – December 31, 2023).
*+10.66	— Form of Restricted Stock Unit Award Agreement under the Tenneco Inc. 2006 Long-Term Incentive Plan (for the periods commencing after January 1, 2021).
10.67	— Cooperation Agreement, dated as of March 18, 2020, by and among Tenneco Inc., Protean Services LLC, and Daniel A. Ninivaggi (incorporated by reference to Exhibit 10.1 of the registrant's Current Report on Form 8-K filed March 19, 2020. File No. 1-12387).
*+10.68	— Amendment to Tenneco Inc. 2006 Long-Term Incentive Plan Special Restricted Stock Unit and Cash Incentive Award Agreement for Brandon Smith.
*+10.69	— Cash Retention Award Agreement, dated as of October 28, 2019, by and between Tenneco Inc. and Brandon B. Smith.

Exhibit Number	Description
11	— None.
13	— None.
14	— Tenneco Inc. Code of Ethical Conduct for Financial Managers (incorporated herein by reference from Exhibit 99.3 to the registrant's Annual Report on Form 10-K for the year ended December 31, 2002, File No. 1-12387).
16	— None.
18	— None.
*21	— List of Subsidiaries of Tenneco Inc.
*22	— List of Guarantor Subsidiaries.

Exhibit Number	Description
*23	— Consent of PricewaterhouseCoopers LLP.
*24	— Powers of Attorney.
*31.1	— Certification of Brian J. Kessler under Section 302 of the Sarbanes-Oxley Act of 2002.
*31.2	— Certification of Matti Masanovich under Section 302 of the Sarbanes-Oxley Act of 2002.
*32.1	— Certification of Brian J. Kessler and Matti Masanovich under Section 906 of the Sarbanes-Oxley Act of 2002.
33	— None.
34	— None.
35	— None.
99	— None.
100	— None.
101	— None.
*101.INS	— XBRL Instance Document.
*101.SCH	— XBRL Taxonomy Extension Schema Document.
*101.CAL	— XBRL Taxonomy Extension Calculation Linkbase Document.
*101.DEF	— XBRL Taxonomy Extension Definition Linkbase Document.
*101.LAB	— XBRL Taxonomy Extension Label Linkbase Document.
*101.PRE	— XBRL Taxonomy Extension Presentation Linkbase Document.

* Filed herewith.

+ Indicates a management contract or compensatory plan or arrangement.

ITEM 16. FORM 10-K SUMMARY.

Not applicable.

SIGNATURES

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

TENNECO INC.

By

/s/ BRIAN J. KESSELER

Brian J. Kessler
Chief Executive Officer

Date: February 24, 2021

Pursuant to the requirements of the Securities Exchange Act of 1934 this report has been signed by the following persons in the capacities indicated on February 24, 2021.

Signature	Title
*	Chairman and Director
Dennis J. Letham	
/s/ BRIAN J. KESSELER	Chief Executive Officer and Director (principal executive officer)
Brian J. Kessler	
/s/ MATTI MASANOVICH	Executive Vice President and Chief Financial Officer (principal financial officer)
Matti Masanovich	
/s/ JOHN S. PATOUHAS	Vice President and Chief Accounting Officer (principal accounting officer)
John S. Patouhas	
*	Director
Roy V. Armes	
*	Director
Thomas C. Freyman	
*	Director
Denise Gray	
*	Director
James S. Metcalf	
*	Director
Aleksandra A. Miziolek	
*	Director
Charles K. Stevens III	
*	Director
John S. Stroup	
*	Director
Jane L. Warner	

*BY:

/s/ MATTI MASANOVICH

Matti Masanovich
Attorney in fact