WESTLAKE CHEMICAL CORP
Form 10-K
February 20, 2019
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Form 10-K

ý ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the Fiscal Year Ended December 31, 2018
or
¨ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the Transition Period from to
Commission File No. 001-32260

Westlake Chemical Corporation
(Exact name of registrant as specified in its charter)

Delaware	76-0346924
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

2801 Post Oak Boulevard, Suite 600
Houston, Texas 77056
(Address of principal executive offices, including zip code)
(713) 960-9111
(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Common Stock, $0.01 par value	New York Stock Exchange, Inc.

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 ý No ¨
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes ¨ No ý
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 ý 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 ý No ¨
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ý

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

Large accelerated filer	x	Accelerated filer	¨
Non-accelerated filer	¨	Smaller reporting company	¨
		Emerging growth company	¨

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

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

The aggregate market value of the registrant's voting stock held by non-affiliates of the registrant on June 30, 2018, the end of the registrant's most recently completed second fiscal quarter, based on a closing price on June 29, 2018 of $107.63 on the New York Stock Exchange was approximately $4.0 billion.

There were 128,474,346 shares of the registrant's common stock outstanding as of February 13, 2019.

DOCUMENTS INCORPORATED BY REFERENCE:

Certain information required by Part II and Part III of this Form 10-K is incorporated by reference from the registrant's definitive Proxy Statement to be filed pursuant to Regulation 14A with respect to the registrant's 2019 Annual Meeting of Stockholders to be held on May 17, 2019.

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Explanatory Note

References in this Annual Report on Form 10-K (this "report") to "we," "our," "us" or like terms refer to Westlake Chemical Corporation ("Westlake" or the "Company").

Cautionary Statements about Forward-Looking Statements

The Private Securities Litigation Reform Act of 1995 provides safe harbor provisions for forward-looking information. Certain of the statements contained in this Form 10-K are forward-looking statements. All statements, other than statements of historical facts, included in this Form 10-K that address activities, events or developments that we expect, project, believe or anticipate will or may occur in the future are forward-looking statements. Forward-looking statements can be identified by the use of words such as "believes," "intends," "may," "should," "could," "anticipates," "expected" or comparable terminology, or by discussions of strategies or trends. Although we believe that the expectations reflected in such forward-looking statements are reasonable, we cannot give any assurances that these expectations will prove to be correct. Forward-looking statements relate to matters such as:

- future operating rates, margins, cash flows and demand for our products;
- industry market outlook, including the price of crude oil;
- production capacities;
- currency devaluation;
- our ability to borrow additional funds under our credit agreement;
- our ability to meet our liquidity needs;
- our ability to meet debt obligations under our debt instruments;
- our intended quarterly dividends;
- future capacity additions and expansions in the industries in which we compete;
- results of acquisitions, including our acquisition of NAKAN™;
- timing, funding and results of capital projects, such as the construction of the LACC plant and associated facilities;
- pension plan obligations, funding requirements and investment policies;
- compliance with present and future environmental regulations and costs associated with environmentally related penalties, capital expenditures, remedial actions and proceedings, including any new laws, regulations or treaties that may come into force to limit or control carbon dioxide and other GHG emissions or to address other issues of climate change;
- effects of pending legal proceedings; and
- timing of and amount of capital expenditures.

We have based these statements on assumptions and analyses in light of our experience and perception of historical trends, current conditions, expected future developments and other factors we believe were appropriate in the circumstances when the statements were made. Forward-looking statements by their nature involve substantial risks and uncertainties that could significantly impact expected results, and actual future results could differ materially from those described in such statements. While it is not possible to identify all factors, we continue to face many risks and uncertainties. Among the factors that could cause actual future results to differ materially are the risks and uncertainties discussed under "Risk Factors" and those described from time to time in our other filings with the SEC including, but not limited to, the following:

- general economic and business conditions;
- the cyclical nature of the chemical and building products industries;
- the availability, cost and volatility of raw materials and energy;
- uncertainties associated with the United States, European and worldwide economies, including those due to political tensions and unrest in the Middle East and elsewhere;
- current and potential governmental regulatory actions in the United States and other countries and political unrest in other areas;
- industry production capacity and operating rates;

• the supply/demand balance for our products;

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- competitive products and pricing pressures;
- instability in the credit and financial markets;
- access to capital markets;
- terrorist acts;
- operating interruptions (including leaks, explosions, fires, weather-related incidents, mechanical failure, unscheduled downtime, labor difficulties, transportation interruptions, spills and releases and other environmental risks);
- changes in laws or regulations, including trade policies;
- technological developments;
- foreign currency exchange risks;
- our ability to implement our business strategies; and
- creditworthiness of our customers.

Many of such factors are beyond our ability to control or predict. Any of the factors, or a combination of these factors, could materially affect our future results of operations and the ultimate accuracy of the forward-looking statements. These forward-looking statements are not guarantees of our future performance, and our actual results and future developments may differ materially from those projected in the forward-looking statements. Management cautions against putting undue reliance on forward-looking statements or projecting any future results based on such statements or present or prior earnings levels. Every forward-looking statement speaks only as of the date of the particular statement, and we undertake no obligation to publicly update or revise any forward-looking statements.

Industry and Market Data

Industry and market data used throughout this Form 10-K were obtained through internal company research, surveys and studies conducted by unrelated third parties and publicly available industry and general publications, including information from IHS Markit ("IHS"). We have not independently verified market and industry data from external sources. While we believe internal company estimates are reliable and market definitions are appropriate, neither such estimates nor these definitions have been verified by any independent sources.

Production Capacity

Unless we state otherwise, annual production capacity estimates used throughout this Form 10-K represent rated capacity of the facilities at December 31, 2018. We calculated rated capacity by estimating the number of days in a typical year that a production unit of a plant is expected to operate, after allowing for downtime for regular maintenance, and multiplying that number by an amount equal to the unit's optimal daily output based on the design feedstock mix. Because the rated capacity of a production unit is an estimated amount, actual production volumes may be more or less than the rated capacity.

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PART I

Item 1. Business

General

We are a vertically integrated global manufacturer and marketer of basic chemicals, vinyls, polymers and building products. Our products include some of the most widely used chemicals in the world, which are fundamental to many diverse consumer and industrial markets, including flexible and rigid packaging, automotive products, coatings, water treatment, refrigerants, residential and commercial construction as well as other durable and non-durable goods. We operate in two principal operating segments, Olefins and Vinyls. We are highly integrated along our olefins product chain with significant downstream integration into polyethylene and styrene monomer. We are also an integrated global producer of vinyls with substantial downstream integration into polyvinyl chloride ("PVC") building products.

We began operations in 1986 after our first polyethylene plant, an Olefins segment business, near Lake Charles, Louisiana was acquired from Occidental Petroleum Corporation. We began our vinyls operations in 1990 with the acquisition of a vinyl chloride monomer ("VCM") plant in Calvert City, Kentucky from Goodrich Corporation. In 1992, we commenced our Vinyls segment's building products operations after acquiring three PVC pipe plants. Since 1986, we have grown rapidly into an integrated global producer of petrochemicals, vinyls, polymers and building products. We achieved this growth by acquiring existing plants or constructing new plants and completing numerous capacity or production line expansions. We regularly consider acquisitions and other internal and external growth opportunities that would be consistent with, or complementary to, our overall business strategy.

In 2014, we formed Westlake Chemical Partners LP ("Westlake Partners") to operate, acquire and develop ethylene production facilities and related assets. Also in 2014, Westlake Partners completed an initial public offering of 12,937,500 common units (the "Westlake Partners IPO"). On September 29, 2017, Westlake Partners completed a secondary offering of 5,175,000 common units at a price of $22.00 per unit and purchased an additional 5.0% newly-issued limited partner interest in Westlake Chemical OpCo LP ("OpCo") for approximately $229 million resulting in an aggregate 18.3% limited partner interest in OpCo effective July 1, 2017. As of February 13, 2019, Westlake Partners' assets consist of an 18.3% limited partner interest in OpCo, as well as the general partner interest in OpCo. Prior to the Westlake Partners IPO, OpCo's assets were wholly-owned by us. OpCo's assets include two ethylene production facilities at our olefins facility at our Lake Charles site, one ethylene production facility at our Calvert City site and a 200-mile common carrier ethylene pipeline that runs from Mont Belvieu, Texas to the Longview, Texas site, which includes our Longview polyethylene production facility. We retain an 81.7% limited partner interest in OpCo, a 43.8% limited partner interest in Westlake Partners (consisting of 14,122,230 common units), a general partner interest in Westlake Partners and incentive distribution rights. The operations of Westlake Partners are consolidated in our financial statements. We are party to certain agreements with Westlake Partners and OpCo whereby, among other things, OpCo sells us 95% of the ethylene it produces on a cost-plus basis that is expected to generate a fixed margin per pound of $0.10. We use this ethylene in the production processes of both our Olefins and Vinyls segments. For more information, see "—Olefins Business" and "—Vinyls Business" below.

On August 31, 2016, we completed the acquisition of Axiall Corporation ("Axiall") for $33.00 per share in an all-cash transaction (the "Axiall Merger"). Axiall was a manufacturer and international marketer of chemicals and building products, with manufacturing sites in North America. After the Axiall Merger, we are the third-largest global chlor-alkali producer and the third-largest PVC producer in the world.

On January 2, 2019, we completed the acquisition of NAKAN™, a global compounding solutions business. NAKAN's products are used in a wide-variety of applications, including in the automotive, building and construction, and medical industries. With this acquisition, our compounding business now has facilities worldwide in China, France, Germany, Italy, Japan, Mexico, Spain, the United States and Vietnam, as well as a world-class research facility in France and several application laboratories.

We benefit from highly integrated production facilities that allow us to process raw materials into higher value-added chemicals and building products. As of February 13, 2019, we (directly and through OpCo and our 95%- and 60%-owned joint ventures in China and Taiwan, respectively) had approximately 42.1 billion pounds per year of aggregate production capacity at numerous manufacturing sites in North America, Europe and Asia.

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Olefins Business

Products

Olefins are the basic building blocks used to create a wide variety of petrochemical products. We manufacture ethylene (through OpCo), polyethylene, styrene and associated co-products at our manufacturing facility in Lake Charles and polyethylene at our Longview facility. We have two ethylene plants, which are owned by OpCo, two polyethylene plants and one styrene monomer plant at our olefins facility at our Lake Charles site. We have three polyethylene plants and a specialty polyethylene wax plant at our Longview site.

The following table illustrates our production capacities at February 13, 2019 by principal product and the primary end uses of these materials:

Product	Annual Capacity (Millions of pounds)	End Uses
Ethylene [(1)]	2,990	Polyethylene, ethylene dichloride ("EDC"), styrene, ethylene oxide/ethylene glycol
Low-Density Polyethylene ("LDPE")	1,500	High clarity packaging and bags, shrink films, food packaging, coated paper board, cup stock, paper folding cartons, lids, closures and general purpose molding
Linear Low-Density Polyethylene ("LLDPE")	1,070	Heavy-duty films and bags, general purpose liners
Styrene	570	Consumer disposables, packaging material, appliances, paints and coatings, resins and building materials

(1) Production capacity owned by OpCo.

Ethylene. Ethylene is the world's most widely used petrochemical in terms of volume. It is the key building block used to produce a large number of higher value-added chemicals including polyethylene, EDC, VCM and styrene. OpCo has the capacity to produce approximately 3.0 billion pounds of ethylene per year at our olefins facility at our Lake Charles site, and we have the capability to consume all of OpCo's production that we purchase at Lake Charles to produce polyethylene and styrene monomer in our Olefins business and to produce VCM and EDC in our Vinyls business. OpCo also produces ethylene for our Vinyls segment at our Calvert City site, and substantially all of the ethylene we purchase from OpCo at Calvert City is used internally in the production of VCM. For OpCo's annual ethylene production that is purchased by us for our Vinyls business, see "Business—Vinyls Business." In addition, we (through OpCo) produce ethylene co-products including chemical grade propylene, crude butadiene, pyrolysis gasoline and hydrogen. We (through OpCo) sell our entire output of these co-products to external customers. OpCo completed an upgrade and capacity expansion of its Petro 1 ethylene unit at our Lake Charles site in 2016 which increased OpCo's ethylene capacity by approximately 250 million pounds annually.

Polyethylene. Polyethylene, the world's most widely consumed polymer, is used in the manufacture of a wide variety of film, coatings and molded product applications primarily used in packaging. Polyethylene is generally classified as either LDPE, LLDPE or high-density polyethylene ("HDPE"). The density correlates to the relative stiffness of the end-use products. The difference between LDPE and LLDPE is molecular, and products produced from LLDPE, in general, have higher strength properties than products produced from LDPE. LDPE exhibits better clarity and other physical properties and is used in end products such as bread bags, dry cleaning bags, food wraps, milk carton coatings and food packaging. LLDPE is used for higher film strength applications such as stretch film and heavy duty sacks. HDPE is used to manufacture products such as grocery, merchandise and trash bags, rigid plastic containers, plastic closures and pipe.

We are the leading producer of LDPE by capacity in North America and predominantly use the autoclave technology (versus tubular technology), which is capable of producing higher margin specialty polyethylene products. In 2018, our annual capacity of approximately 1.5 billion pounds was available in numerous formulations to meet the needs of our diverse customer base. We also have the capacity to produce approximately 1.1 billion pounds of LLDPE per year in various formulations. We produce LDPE and LLDPE at both the Lake Charles and Longview facilities. Our Lake

Charles and Longview facilities also have the capability to produce HDPE. We sell polyethylene to external customers as a final product in pellet form.

Styrene. Styrene is used to produce derivatives such as polystyrene, acrylonitrile butadiene styrene, unsaturated polyester and synthetic rubber. These derivatives are used in a number of applications including consumer disposables, food packaging, housewares, paints and coatings, building materials, tires and toys. We produce styrene at our Lake Charles plant, where we have the capacity to produce approximately 570 million pounds of styrene per year, all of which is sold to external customers.

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Feedstocks

We are highly integrated along our olefins product chain. We (through OpCo) produce most of the ethylene required to produce our polyethylene and styrene. Ethylene can be produced from either petroleum liquid feedstocks, such as naphtha, condensates and gas oils, or from natural gas liquid feedstocks, such as ethane, propane and butane. Both of OpCo's Lake Charles ethylene plants use ethane as the primary feedstock. Pursuant to a feedstock supply agreement between us and OpCo, OpCo receives ethane feedstock at the olefins facility at our Lake Charles site through several pipelines from a variety of suppliers in Texas and Louisiana. We own a 50% interest in a 104-mile natural gas liquids pipeline from Mont Belvieu to our Lake Charles site. OpCo owns a 200-mile ethylene pipeline that runs from Mont Belvieu to our Longview site.

In addition to ethylene supplied by OpCo, we also acquire ethylene from third parties in order to supply a portion of our ethylene requirements. We acquire butene and hexene to manufacture polyethylene and benzene to manufacture styrene. We receive butene and hexene at the Lake Charles site and hexene at the Longview site via rail car from several suppliers. We receive benzene via barges, ships and pipeline pursuant to short-term arrangements. We purchase butene and hexene pursuant to multi-year contracts, some of which are renewable for an additional term subject to either party to the contract notifying the other party that it does not wish to renew the contract. We purchase electricity for our Lake Charles facility under long-term industrial contracts.

Marketing, Sales and Distribution

We have an internal sales force that sells our products directly to our customers. Our polyethylene customers are some of the nation's largest producers of film and flexible packaging.

We and OpCo sell ethylene and ethylene co-products to external customers. OpCo's primary ethylene co-products are chemical grade propylene, crude butadiene, pyrolysis gasoline and hydrogen.

We have storage agreements and exchange agreements that allow us and OpCo access to customers who are not directly connected to the pipeline system that we own. OpCo ships crude butadiene and pyrolysis gasoline by rail or truck. Additionally, we transport our polyethylene and styrene by rail or truck. Further, styrene can be transported by barge or ship.

No single customer accounted for 10% or more of net sales for the Olefins segment in 2018.

Competition

The markets in which our Olefins business operates are highly competitive. We compete on the basis of customer service, product deliverability, quality, consistency, performance and price. Our competitors in the ethylene, polyethylene and styrene markets are some of the world's largest chemical companies, including Chevron Phillips Chemical Company, DowDuPont Inc., ExxonMobil Chemical Company, Formosa Plastics Corporation, LyondellBasell Industries, N.V. and NOVA Chemicals Corporation.

Vinyls Business

Products

Principal products in our integrated Vinyls segment include PVC, VCM, EDC, chlor-alkali (chlorine and caustic soda) and chlorinated derivative products and, through OpCo, ethylene. We also manufacture and sell PVC compounds and building products fabricated from PVC, including siding, pipe, fittings, profiles, trim, mouldings, fence and decking products, window and door components and film and sheet products. We manage our integrated Vinyls production chain, from the basic chemicals to finished building products, to optimize product margins and capacity utilization. Our primary North American chemical manufacturing facilities are located in our Calvert City, Kentucky and Lake Charles, Plaquemine and Geismar, Louisiana sites. Our Calvert City site includes an ethylene plant, which is owned by OpCo, a chlor-alkali plant, a VCM plant and a PVC plant. Our Lake Charles site includes three chlor-alkali plants, two VCM plants, a chlorinated derivative products plant and cogeneration assets. Our Plaquemine site includes a chlor-alkali plant, a VCM plant, a PVC plant and cogeneration assets. Our Geismar site includes a chlor-alkali plant, a VCM plant and a PVC plant. We also produce chlorine, caustic soda, hydrogen and chlorinated derivative products at our Natrium, West Virginia; Longview, Washington and Beauharnois, Quebec facilities and PVC resin facility in Mississippi. Our European chemical manufacturing facilities are located in Germany and the United Kingdom and include two chlor-alkali plants, two VCM plants and six PVC plants. Our Asian manufacturing facilities are located near Shanghai, in China, and in Kaohsiung, Taiwan, through our 95% and 60% owned joint ventures, respectively, and include a PVC plant, a PVC film and sheet plant, a chlor-alkali plant and a chlorinated derivative products plant. As of February 13, 2019, we owned 36 building product and PVC compound facilities in North America, Europe and Asia.

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The following table illustrates our production capacities at February 13, 2019 by principal product and the end uses of these products:

Product [1]	Annual Capacity [2]	End Uses
	(Millions of pounds)	
Specialty PVC	1,100	Automotive sealants, cable sheathing, medical applications and other applications
Commodity PVC	6,030	Construction materials including pipe, siding, profiles for windows and doors, film and sheet for packaging and other applications
VCM	7,480	PVC, PVC Compounds
Chlorine	7,140	VCM, organic/inorganic chemicals, bleach
Caustic Soda	7,860	Pulp and paper, organic/inorganic chemicals, neutralization, alumina
Chlorinated Derivative Products	2,290	Coatings, flavorants, films, refrigerants, water treatment applications, chemicals and pharmaceutical production
Ethylene [3]	730	VCM
Building Products and PVC Compounds [4]	3,350	Pipe: water and sewer, plumbing, irrigation, conduit; fittings; profiles and foundation building products; window and door components; fence and deck components; siding, trim and mouldings; film and sheet Automotive interior, automotive exterior, stabilizers, medical applications, windows and door profiles, moldings, electrical products, casing and packaging

(1) EDC, a VCM intermediate product, is not included in the table.
(2) Includes capacity related to our 95% and 60% owned Asian joint ventures.
(3) Production capacity owned by OpCo.
(4) Includes production capacity of NAKAN, which we acquired on January 2, 2019.

PVC. PVC, the world's third most widely used plastic, is an attractive alternative to traditional materials such as glass, metal, wood, concrete and other plastic materials because of its versatility, durability and cost-competitiveness. PVC is produced from VCM, which is, in turn, made from chlorine and ethylene. PVC compounds are highly customized formulations that offer specific end-use properties based on customer-determined manufacturing specifications. PVC compounds are made by combining PVC resin with various additives in order to make either rigid and impact-resistant or soft and flexible compounds. The various compounds are then fabricated into end-products through extrusion, calendering, injection-molding or blow-molding.

We are the third-largest PVC producer in the world. We have the capacity to produce approximately 6.0 billion pounds and 1.1 billion pounds of commodity and specialty PVC per year, respectively, at our various facilities globally. We use some of our PVC internally in the production of our building products and PVC compounds. The remainder of our PVC is sold to downstream fabricators and the international markets.

VCM. VCM is used to produce PVC, solvents and PVC-related products. We use ethylene and chlorine to produce VCM. We have the capacity to produce approximately 6.0 billion pounds and 1.5 billion pounds of VCM per year at our North American and European facilities, respectively. The majority of our VCM is used internally in our PVC operations. VCM not used internally is sold to other vinyl resins producers in domestic and international markets.

Chlorine and Caustic Soda. We combine salt and electricity to produce chlorine and caustic soda, commonly referred to as chlor-alkali, at our Lake Charles, Plaquemine, Natrium, Calvert City, Geismar, Beauharnois, Longview, Gendorf, and Knapsack, Germany and Kaohsiung facilities. We are the third-largest chlor-alkali producer in the world. We use our chlorine production in our VCM and chlorinated derivative products plants. We currently have the capacity to supply all of our chlorine requirements internally. Any remaining chlorine is sold into the merchant chlorine market. Our caustic soda is sold to external customers who use it for, among other things, the production of pulp and paper, organic and inorganic chemicals and alumina.

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Chlorinated Derivative Products. Our chlorinated derivative products include ethyl chloride, perchloroethylene, trichloroethylene, tri-ethane® solvents, VersaTRANS® solvents, calcium hypochlorite, hydrochloric acid ("HCL") and pelletized caustic soda ("PELS"). We have the capacity to produce approximately 2.3 billion pounds of chlorinated derivative products per year, primarily at our Lake Charles, Natrium, Beauharnois and Longview facilities. The majority of our chlorinated derivative products are sold to external customers who use these products for, among other things, refrigerants, water treatment applications, chemicals and pharmaceutical production, food processing, steel pickling, solvent and cleaning chemicals and natural gas and oil production.

Ethylene. We use the ethylene we purchase that is produced by OpCo at Calvert City to produce VCM. OpCo's Calvert City ethylene plant has the capacity to partially supply the ethylene required for our total VCM production. We obtain the remainder of the ethylene we need for our Vinyls business from OpCo's Lake Charles plants and from third party purchases. OpCo's Calvert City ethylene plant utilizes ethane feedstock and enables us, through OpCo, to enhance our vinyl chain integration. In 2017, OpCo completed an expansion project to increase the ethylene capacity of its ethylene plant at our Calvert City facility. The expansion along with other initiatives, increased ethylene capacity by approximately 100 million pounds annually.

Building Products and PVC Compounds. Products made from PVC are used in construction materials ranging from water and sewer systems to home and commercial applications for siding, trim, mouldings, fence, deck, window and door systems. Our building products consist of two primary product groups: (i) exterior products, which includes siding, trim, mouldings, window profiles, fence and decking products; and (ii) PVC pipe, specialty PVC pipe and fittings. We manufacture and market exterior products under the Royal Building Products®, Celect Cellular Exteriors by Royal®, Zuri Premium Decking by Royal®, Royal S4S Trim Board® and Exterior Portfolio® brand names. We manufacture and market specialty pipe and fittings, water, sewer, irrigation and conduit pipe products under the North American Pipe® and Royal Building Products® brand names. We manufacture film and sheet at our Shanghai facility for both Asian and global markets. Flexible PVC compounds are used for wire and cable insulation, medical films and packaging, flooring, wall coverings, automotive interior and exterior trims and packaging. Rigid extrusion PVC compounds are commonly used in window and door profiles, vertical blinds and construction products, including pipe and siding. Injection-molding PVC compounds are used in specialty products such as computer housings and keyboards, appliance parts and bottles. Powder compounds are primarily used in window and door profiles and pipe and fittings. All of our building products and PVC compounds are sold to external customers. The combined capacity of our 36 building products and PVC compounds plants is approximately 3.4 billion pounds per year.

Feedstocks

We are highly integrated along our vinyls production chain. We produce most of the ethylene required by our Calvert City and Geismar facilities (through OpCo). Ethylene produced at OpCo's Calvert City facility utilizes ethane feedstock. We purchase the remainder of the ethylene required for our other North American and European facilities from a number of sources under various contracts. We are party to a joint venture, LACC, LLC ("LACC"), with Lotte Chemical USA Corporation to build an ethylene facility, that will have 2.2 billion pounds per year of ethylene production capacity. The LACC ethylene facility is located adjacent to our vinyls facility in Lake Charles. Pursuant to an agreement with LACC, we will receive 50% of the ethylene produced at LACC starting from 2019 based on the anticipated start-up of the facility in the first half of 2019. We have access to, and partially own, an ethylene pipeline in Germany. The salt requirements for several of our larger chlor-alkali plants are supplied internally from salt domes we either own or lease and is transported by pipelines we own. We purchase the salt required for our other chlor-alkali plants pursuant to long-term contracts. Electricity and steam for one of our Lake Charles facilities are produced by both on-site cogeneration units and through a toll arrangement with RS Cogen, LLC ("RS Cogen"), a joint venture in which we own a 50% interest. RS Cogen operates a process steam, natural gas-fired cogeneration facility adjacent to the site. Electricity and steam for the Plaquemine facility is supplied internally by our on-site cogeneration unit. A portion of our Natrium facility's electricity requirements is produced by our on-site generation unit, and the remainder is purchased. We purchase electricity for our remaining facilities under long-term contracts. We purchase VCM for our Asian PVC plant on a contract and spot basis.

Our North American and Asian PVC facilities supply predominantly all of the PVC required for our building products plants. PVC required for the PVC compounds plants is either internally sourced or externally purchased at market prices based on the location of the plants. The remaining feedstocks include pigments, fillers, stabilizers and other ingredients, which we purchase under short-term contracts based on prevailing market prices.

Marketing, Sales and Distribution

We have a dedicated sales force for our business, organized by product line and region. In addition, we rely on distributors to market products to smaller customers. We use some of our PVC internally in the production of our building products and PVC compounds. The remainder of our PVC is sold to downstream fabricators and the international markets. We have the capacity to use a majority of our chlorine internally to produce VCM and EDC, most of which, in turn, is used to produce PVC. We also use our chlorine internally to produce chlorinated derivative products. We sell the remainder of our chlorine and substantially all of our caustic soda production to external customers. The majority of our products are shipped from production facilities directly to the customer via pipeline, truck, rail, barge and/or ship. The remaining products are shipped from production facilities to third party chemical terminals and warehouses until being sold to customers.

We are the second largest manufacturer of PVC pipe by capacity in the United States. We sell a majority of our siding, trim and mouldings products, PVC pipe, specialty PVC pipe and fittings, and film and sheet products through a combination of our internal sales force and manufacturer's representatives. In Canada, we operate 19 company-owned distribution branches that sell our vinyl siding and accessories and trim and mouldings products, as well as pipe and fittings. We also engage in advertising programs primarily directed at trade professionals that are intended to develop awareness and interest in our products. In addition, we display our building products at trade shows.

No single customer accounted for 10% or more of net sales for the Vinyls segment in 2018.

Competition

The markets in which our Vinyls business operates are highly competitive. Competition in the vinyls market is based on product availability, product performance, customer service and price. We compete in the vinyls market with other producers including Formosa Plastics Corporation, Oxy Chem, LP, Shintech, Inc., Olin Corporation, PolyOne Corp., Teknor Apex Company, Inc., Mexichem, S.A.B. de C.V., INOVYN ChlorVinyls Limited, VYNOVA Group and Kem One Group SAS.

Competition in the building products market is based on on-time delivery, product quality, product innovation, customer service, product consistency and price. We compete in the building products market with other producers and fabricators including Diamond Plastics Corporation, JM Eagle Inc., Ply Gem Holdings, Inc., CertainTeed Corporation, IPEX Inc., Associated Materials LLC and the Azek Company.

Environmental

As is common in our industry, we are subject to environmental laws and regulations related to the use, storage, handling, generation, transportation, emission, discharge, disposal and remediation of, and exposure to, hazardous and non-hazardous substances and wastes in all of the countries in which we do business. National, state or provincial and local standards regulating air, water and land quality affect substantially all of our manufacturing locations around the world. Compliance with such laws and regulations has required and will continue to require capital expenditures and increase operating costs.

It is our policy to comply with all environmental, health and safety requirements and to provide safe and environmentally sound workplaces for our employees. In some cases, compliance can be achieved only by incurring capital expenditures. In 2018, we made capital expenditures of $23 million related to environmental compliance. We estimate that we will make capital expenditures of approximately $47 million in 2019 and $45 million in 2020, respectively, related to environmental compliance. The expected 2019 and 2020 capital expenditures are relatively higher than the amounts we have spent related to environmental compliance in recent years in large part due to capital expenditures related to Environmental Protection Agency (the "EPA") regulations. The remainder of the 2019 and 2020 estimated expenditures are related to equipment replacement and upgrades. We anticipate that stringent environmental regulations will continue to be imposed on us and the industry in general. Although we cannot predict with certainty future expenditures, management believes that our current spending trends will continue.

From time to time, we receive notices or inquiries from government entities regarding alleged violations of environmental laws and regulations pertaining to, among other things, the disposal, emission and storage of chemical substances, including hazardous wastes. Item 103 of the SEC's Regulation S-K requires disclosure of certain environmental matters when a governmental authority is a party to the proceedings and the proceedings involve potential monetary sanctions, unless we reasonably believe such sanctions would not exceed $100,000.

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- In May 2013, an amendment to an existing consent order agreed to by the West Virginia Department of Environmental Protection and a predecessor of Axiall required that it, among other things, pay a penalty in the amount of $449,000 and continue certain corrective actions associated with discharges of hexachlorocyclohexane (commonly referred to as BHC) from the Natrium facility's effluent discharge outfalls. The penalty was paid and corrective actions required are on-going per a December 2018 agreement to extend the compliance date under the amended consent order. The amended consent order also imposes stipulated penalties for exceedances of the facility's interim effluent discharge limits, which penalties we believe may, in the aggregate, reach or exceed $100,000.
- During September 2010, our vinyls facilities in Lake Charles and Plaquemine each received a Consolidated Compliance Order and Notice of Potential Penalty, alleging violations of various requirements of those facilities' air permits, based largely on self-reported permit deviations related to record-keeping violations. We have been negotiating a possible global settlement of these and several other matters with the Louisiana Department of Environmental Quality ("LDEQ"). In May 2018, we reached an agreement in principal with the LDEQ to resolve these consolidated enforcement matters for a penalty of $162,500. The settlement agreement is being prepared and when finalized will be subject to public comment and approval by the Louisiana Attorney General.
- For several years, the EPA has been conducting an enforcement initiative against petroleum refineries and petrochemical plants with respect to emissions from flares. On April 21, 2014, we received a Clean Air Act Section 114 Information Request from the EPA which sought information regarding flares at the Calvert City facility and certain Lake Charles facilities. The EPA has informed us that the information provided leads the EPA to believe that some of the flares are out of compliance with applicable standards. The EPA has indicated that it is seeking a consent decree that would obligate us to take corrective actions relating to the alleged noncompliance. We believe the resolution of these matters may require the payment of a monetary sanction in excess of $100,000.
- Regional offices of the EPA have investigated, and in some cases inspected, our compliance with Risk Management Program requirements under the Clean Air Act at our Natrium and Geismar facilities. We believe the resolution of these matters may require the payment of a monetary sanction in excess of $100,000.
- On November 24, 2014, we entered into an agreed order with the Kentucky Energy and Environmental Cabinet ("KEEC") regarding our Kentucky Pollutant Discharge Elimination System permit limits for hexachlorobenzene and mercury at our Calvert City facility. On July 9, 2018, we and the KEEC entered into a new agreed order under which we will be subject to new interim discharge limits for hexachlorobenzene in addition to accompanying stipulated penalties for exceedances of those interim discharge limits, which penalties we believe may, in the aggregate, reach or exceed $100,000.

We do not believe that the resolution of any or all of these matters will have a material adverse effect on our financial condition, results of operations or cash flows.

Also see our discussion of our environmental matters contained in Item 1A, "Risk Factors" below, Item 3, "Legal Proceedings" below and Note 19 to our consolidated financial statements included in Item 8 of this Form 10-K.

Employees

As of December 31, 2018, we had approximately 8,870 employees in the following areas:

Category	Number
Olefins segment	850
Vinyls segment	7,680
Corporate and other	340

Approximately 33% of our employees are represented by labor unions, and all of these union employees are working under collective bargaining agreements that expire at various times through 2022. We have multiple collective bargaining agreements in Europe, Canada and the United States, covering different groups of our work force. There were no strikes, lockouts, or work stoppages in 2018 and we believe that our relationship with our employees and unions is open and positive.

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Technology

Historically, our technology strategy has been to selectively acquire licenses from third-parties, as well as develop our own proprietary technology. Our selection process incorporates many factors, including the cost of the technology, the ability to meet our customers' requirements, raw material and energy consumption rates, product quality, capital costs, maintenance requirements and reliability. Most of the technology licensed from third-party providers is perpetual and has been paid in full. We own an intellectual property portfolio developed from focused research in both process and product technology. After acquiring or developing a technology, we devote considerable effort to effectively employ the technology and further its development, with a focus towards continuous improvement of our competitive positions.

Conversely, we have selectively granted licenses to our patented Energx® technology for LLDPE production and for proprietary LDPE reactor mixing technology. We have also granted several licenses for EDC/VCM technology, including the direct chlorination process and catalyst, and S-PVC (Suspension PVC for thermoplastic process) process and technology.

Available Information

Our website address is www.westlake.com. Our website content is available for information purposes only. It should not be relied upon for investment purposes, nor is it incorporated by reference in this Form 10-K. We make available on this website under "Investor Relations/SEC Filings," free of charge, our proxy statements, annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those materials as soon as reasonably practicable after we electronically file those materials with, or furnish those materials to, the SEC. The SEC also maintains a website at www.sec.gov that contains reports, proxy statements and other information regarding SEC registrants, including us.

We intend to satisfy the requirement under Item 5.05 of Form 8-K to disclose any amendments to our Code of Ethics and any waiver from a provision of our Code of Ethics by posting such information on our website at www.westlake.com under "Investor Relations/Corporate Governance."

Item 1A. Risk Factors

Cyclicality in the petrochemical industry has in the past, and may in the future, result in reduced operating margins or operating losses.

Our historical operating results reflect the cyclical and volatile nature of the petrochemical industry. The industry is mature and capital intensive. Margins in this industry are sensitive to supply and demand balances both domestically and internationally, which historically have been cyclical. The cycles are generally characterized by periods of tight supply, leading to high operating rates and margins, followed by periods of oversupply primarily resulting from excess new capacity additions, leading to reduced operating rates and lower margins.

Moreover, profitability in the petrochemical industry is affected by the worldwide level of demand along with vigorous price competition which may intensify due to, among other things, new industry capacity. In general, weak economic conditions either in the United States, Europe or the rest of the world tend to reduce demand and put pressure on margins. It is not possible to predict accurately the supply and demand balances, market conditions and other factors that will affect industry operating margins in the future.

New olefins capacity additions in Asia, the Middle East and North America, a number of which have been recently completed, may lead to periods of over-supply and lower profitability. As a result, our Olefins segment operating margins may be negatively impacted.

We sell commodity products in highly competitive markets and face significant competition and price pressure.

We sell our products in highly competitive markets. Due to the commodity nature of many of our products, competition in these markets is based primarily on price and to a lesser extent on performance, product quality, product deliverability and customer service. As a result, we generally are not able to protect our market position for these products by product differentiation and may not be able to pass on cost increases to our customers. Accordingly, increases in raw material and other costs may not necessarily correlate with changes in prices for these products, either in the direction of the price change or in magnitude. Specifically, timing differences in pricing between raw material prices, which may change daily, and contract product prices, which in many cases are negotiated monthly or less often, sometimes with an additional lag in effective dates for increases, have had and may continue to have a negative effect on profitability. Significant volatility in raw material costs tends to place pressure on product margins as sales price increases could lag behind raw material cost increases. Conversely, when raw material costs decrease, customers could seek relief in the form of lower sales prices.

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Volatility in costs of raw materials and energy may result in increased operating expenses and adversely affect our results of operations and cash flows.

Significant variations in the costs and availability of raw materials and energy may negatively affect our results of operations. These costs have risen significantly in the past due primarily to oil and natural gas cost increases. We purchase significant amounts of ethane feedstock, natural gas, ethylene and salt to produce several basic chemicals. We also purchase significant amounts of electricity to supply the energy required in our production processes. The cost of these raw materials and energy, in the aggregate, represents a substantial portion of our operating expenses. The prices of raw materials and energy generally follow price trends of, and vary with market conditions for, crude oil and natural gas, which are highly volatile and cyclical. Changes to regulatory policies applicable to the German energy sector for industrial users have contributed to higher prices for industrial users of energy in the future. Our results of operations have been and could in the future be significantly affected by increases in these costs.

Price increases increase our working capital needs and, accordingly, can adversely affect our liquidity and cash flows. In addition, because we utilize the first-in, first-out ("FIFO") method of inventory accounting, during periods of falling raw material prices and declining sales prices, our results of operations for a particular reporting period could be negatively impacted as the lower sales prices would be reflected in operating income more quickly than the corresponding drop in feedstock costs. We use derivative instruments in an attempt to reduce price volatility risk on some feedstock commodities. In the future, we may decide not to hedge any of our raw material costs or any hedges we enter into may not have successful results. Also, our hedging activities involve credit risk associated with our hedging counterparties, and a deterioration in the financial markets could adversely affect our hedging counterparties and their abilities to fulfill their obligations to us.

Lower prices of crude oil, such as those experienced from the third quarter of 2014 through 2018 (at December 31, 2018, approximately 58% lower than their 2014 peak levels), led to a reduction in the cost advantage for natural gas liquids-based ethylene crackers in North America, such as ours, as compared to naphtha-based ethylene crackers . As a result, our margins and cash flows were negatively impacted. Lower crude oil and natural gas prices could lead to a reduction in hydraulic fracturing in the United States, which could reduce the availability of feedstock and increase prices of feedstock for our operations. Higher natural gas prices could also adversely affect our ability to export products that we produce in the United States outside of the United States. In addition to the impact that this has on our exports from the United States, reduced competitiveness of U.S. producers also has in the past increased the availability of chemicals in North America, as U.S. production that would otherwise have been sold overseas was instead offered for sale domestically, resulting in excess supply and lower prices in North America. We could also face the threat of imported products from countries that have a cost advantage. Additionally, the export of natural gas liquids from the United States or greater restrictions on hydraulic fracturing could restrict the availability of our raw materials in the United States, thereby increasing our costs.

External factors beyond our control can cause fluctuations in demand for our products and in our prices and margins, which may negatively affect our results of operations and cash flows.

External factors beyond our control can cause volatility in raw material prices, demand for our products, product prices and volumes and deterioration in operating margins. These factors can also magnify the impact of economic cycles on our business and results of operations. Examples of external factors include:

- general economic conditions, including in the United States, Europe and Asia;
- new capacity additions in North America, Europe, Asia and the Middle East;
- the level of business activity in the industries that use our products;
- competitor action;
- technological innovations;
- currency fluctuations;
- increases in interest rates;
- international events and circumstances;
- war, sabotage, terrorism and civil unrest;
- governmental regulation, including in the United States, Europe and Asia;
- severe weather and natural disasters; and

- credit worthiness of customers and vendors.

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A number of our products are highly dependent on durable goods markets, such as housing and construction, which are themselves particularly cyclical. Weakness in the U.S. residential housing market and economic weakness in Europe could have an adverse effect on demand and margins for our products. If the global economy worsens in general, or the U.S. residential housing market or the European economy worsens in particular, demand for our products and our results of operations and cash flows could be adversely affected.

We may reduce production at or idle a facility for an extended period of time or exit a business because of high raw material prices, an oversupply of a particular product and/or a lack of demand for that particular product, which makes production uneconomical. Temporary outages sometimes last for several quarters or, in certain cases, longer and cause us to incur costs, including the expenses of maintaining and restarting these facilities. Factors such as increases in raw material costs or lower demand in the future may cause us to further reduce operating rates, idle facilities or exit uncompetitive businesses.

Hostilities in the Middle East or elsewhere or the occurrence, or threat of occurrence, of terrorist attacks could adversely affect the economies of the United States, Europe and other developed countries. A lower level of economic activity could result in a decline in demand for our products, which could adversely affect our net sales and margins and limit our future growth prospects. Volatility in prices for crude oil and natural gas could also result in increased feedstock costs. Furthermore, sustained lower prices of crude oil, such as the prices experienced from the third quarter of 2014 through 2018, have led and may lead to lower margins in the United States. In addition, these risks could cause increased instability in the financial and insurance markets and could adversely affect our ability to access capital and to obtain insurance coverage that we consider adequate or is otherwise required by our contracts with third parties.

We operate internationally and are subject to related risks, including exchange rate fluctuations, exchange controls, political risk and other risks relating to international operations.

We operate internationally and are subject to the risks of doing business on a global basis. These risks include, but are not limited to, fluctuations in currency exchange rates, currency devaluations, imposition of trade barriers (which could, among other things, negatively impact our ability to export our products outside of the U.S.), imposition of tariffs and duties, restrictions on the transfer of funds, changes in law and regulatory requirements, involvement in judicial proceedings in unfavorable jurisdictions, economic instability and disruptions, political unrest and epidemics. If the U.S. administration makes certain changes to its foreign trade policies, such changes could lead to imposition of additional trade barriers and tariffs on us in foreign jurisdictions. Our operating results could be negatively affected by any of these risks.

A deterioration in global economic conditions may have a negative impact on our business and financial condition.

A deterioration in global economic conditions may have a negative impact on our business and our financial condition. Our ability to access the capital markets may be severely restricted at a time when we would like, or need, to access such markets, which could have an impact on our flexibility to react to changing economic and business conditions. In addition, the availability of additional financing at cost effective interest rates cannot be assured. A deterioration in global economic conditions could have an impact on the lenders under our revolving credit facility or on our customers and suppliers, causing them to fail to meet their obligations to us. Additionally, a deterioration in global economic conditions could result in reduced demand for our products, which would have a negative impact on our revenues and profits.

Our inability to compete successfully may reduce our operating profits.

The petrochemical industry is highly competitive. Historically, there have been a number of mergers, acquisitions, spin-offs and joint ventures in the industry. This restructuring activity has resulted in fewer but more competitive producers, many of which are larger than we are and have greater financial resources than we do. Among our competitors are some of the world's largest chemical companies and chemical industry joint ventures. Competition within the petrochemical industry and in the manufacturing of building products is affected by a variety of factors, including:

- product price;
- balance of product supply/demand;
- material, technology and process innovation;

- technical support and customer service;
- quality;
- reliability of raw material and utility supply;
- availability of potential substitute materials; and
- product performance.

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Changes in the competitive environment could have a material adverse effect on our business and our operations. These changes could include:

- the emergence of new domestic and international competitors;
- the rate of capacity additions by competitors;
- changes in customer base due to mergers;
- the intensification of price competition in our markets;
- the introduction of new or substitute products by competitors; and
- the technological innovations of competitors.

Our production facilities process some volatile and hazardous materials that subject us to operating risks that could adversely affect our operating results.

We have manufacturing sites in the United States, Europe and Asia. Our operations are subject to the usual hazards associated with chemical, plastics and building products manufacturing and the related use, storage, transportation and disposal of feedstocks, products and wastes, including:

- pipeline leaks and ruptures;
- explosions;
- fires;
- severe weather and natural disasters;
- mechanical failure;
- unscheduled downtime;
- labor difficulties;
- transportation interruptions;
- transportation accidents involving our products;
- remediation complications;
- chemical spills, discharges or releases of toxic or hazardous substances or gases;
- other environmental risks;
- sabotage;
- terrorist attacks; and
- political unrest.

According to some experts, global climate change could result in heightened hurricane activity in the Gulf of Mexico and other weather and natural disaster hazards worldwide. If this materializes, severe weather and natural disaster hazards could pose an even greater risk for our facilities, particularly those in Louisiana.

All these hazards can cause personal injury and loss of life, catastrophic damage to or destruction of property and equipment and environmental damage, and may result in a suspension of operations and the imposition of civil or criminal penalties. We could become subject to environmental claims brought by governmental entities or third parties. A loss or shutdown over an extended period of operations at any one of our chemical manufacturing facilities would have a material adverse effect on us. We maintain property, business interruption and casualty insurance that we believe is in accordance with customary industry practices, but we cannot be fully insured against all potential hazards incident to our business, including losses resulting from war risks or terrorist acts. As a result of market conditions, premiums and deductibles for certain insurance policies can increase substantially and, in some instances, certain insurance may become unavailable or available only for reduced amounts of coverage. If we were to incur a significant liability for which we were not fully insured, it could have a material adverse effect on our financial condition, results of operations or cash flows.

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We are exposed to significant losses from products liability, personal injury and other claims relating to the products we manufacture. Additionally, individuals currently seek, and likely will continue to seek, damages for alleged personal injury or property damage due to alleged exposure to chemicals at our facilities or to chemicals otherwise owned, controlled or manufactured by us. We are also subject to present and future claims with respect to workplace exposure, workers' compensation and other matters. Any such claims, whether with or without merit, could be time consuming, expensive to defend and could divert management's attention and resources. We maintain and expect to continue to maintain insurance for products liability, workplace exposure, workers' compensation and other claims, but the amount and scope of such insurance may not be adequate or available to cover a claim that is successfully asserted against us. In addition, such insurance could become more expensive and difficult to maintain and may not be available to us on commercially reasonable terms or at all. The results of any future litigation or claims are inherently unpredictable, but such outcomes could have a material adverse effect on our financial condition, results of operations or cash flows.

We rely on a limited number of outside suppliers for specified feedstocks and services.

We obtain a significant portion of our raw materials from a few key suppliers. If any of these suppliers is unable to meet its obligations under any present or future supply agreements, we may be forced to pay higher prices to obtain the necessary raw materials. Any interruption of supply or any price increase of raw materials could have a material adverse effect on our business and results of operations. A vendor may choose, subject to existing contracts, to modify its relationship due to general economic concerns or concerns relating to the vendor or us, at any time. Any significant change in the terms that we have with our key suppliers, or any significant additional requirements from our suppliers that we provide them additional security in the form of prepayments or with letters of credits, could materially adversely affect our financial condition, results of operations or cash flows.

We rely heavily on third party transportation, which subjects us to risks and costs that we cannot control. Such risks and costs may materially adversely affect our operations.

We rely heavily on railroads, barges, pipelines, ships, trucks and other shipping companies to transport raw materials to the manufacturing facilities used by our businesses and to ship finished products to customers. These transport operations are subject to various hazards and risks, including extreme weather conditions, work stoppages and operating hazards (including pipeline leaks and ruptures and storage tank leaks), as well as interstate transportation regulations. In addition, the methods of transportation we utilize, including shipping chlorine and other chemicals by railroad, may be subject to additional, more stringent and more costly regulations in the future. If we are delayed or unable to ship finished products or unable to obtain raw materials as a result of any such new regulations or public policy changes related to transportation safety, or these transportation companies fail to operate properly, or if there were significant changes in the cost of these services due to new or additional regulations, or otherwise, we may not be able to arrange efficient alternatives and timely means to obtain raw materials or ship goods, which could result in a material adverse effect on our business and results of operations.

We may pursue acquisitions, dispositions and joint ventures and/or other transactions that may impact our results of operations and financial condition.

We seek opportunities to maximize efficiency and create stockholder value through various transactions. These transactions may include domestic and international business combinations, purchases or sales of assets or contractual arrangements or joint ventures that are intended to result in the realization of synergies, the creation of efficiencies or the generation of cash to reduce debt. In this regard, we regularly consider acquisition opportunities that would be consistent or complementary to our existing business strategies. To the extent permitted under our credit facility, the indenture governing our senior notes and other debt agreements, some of these transactions may be financed by additional borrowings by us. Although we would pursue these transactions because we expect them to yield longer-term benefits if the efficiencies and synergies we expect are realized, they could adversely affect our results of operations in the short term because of the costs associated with such transactions and because they may divert management's attention from existing business operations. Other transactions may advance future cash flows from some of our businesses, thereby yielding increased short-term liquidity, but consequently resulting in lower cash flows from these operations over the longer term. These transactions may not yield the business benefits, synergies or financial benefits anticipated by management. Integration of other acquired operations can lead to restructuring charges or other costs. We may have difficulties integrating the operations of other acquired businesses.

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Our operations and assets are subject to extensive environmental, health and safety laws and regulations.

We use large quantities of hazardous substances and generate large quantities of hazardous wastes and emissions in our manufacturing operations. Due to the large quantities of hazardous substances and wastes, our industry is highly regulated and monitored by various environmental regulatory authorities such as the EPA, federal or state analogs in other countries and the European Union, which promulgated the Industrial Emission Directive ("IED"). As such, we are subject to extensive international, national, state and local laws, regulations and directives pertaining to pollution and protection of the environment, health and safety, which govern, among other things, emissions to the air, discharges onto land or waters, the maintenance of safe conditions in the workplace, the remediation of contaminated sites, and the generation, handling, storage, transportation, treatment and disposal of waste materials. Some of these laws, regulations and directives are subject to varying and conflicting interpretations. Many of these laws, regulations and directives provide for substantial fines and potential criminal sanctions for violations and require the installation of costly pollution control equipment or operational changes to limit pollution emissions or reduce the likelihood or impact of hazardous substance releases, whether permitted or not. For example, all of our petrochemical facilities in the United States and Europe may require improvements to comply with certain changes in process safety management requirements.

New laws, rules and regulations as well as changes to laws, rules and regulations may also affect us. For example, on April 17, 2012, the EPA promulgated maximum achievable control technology ("MACT") standards for major sources and generally available control technology ("GACT") standards for area sources of PVC production. The rule sets emission limits and work practice standards for total organic air toxics and for three specific air toxics: vinyl chloride, chlorinated di-benzo dioxins and furans ("CD/DF"), and hydrogen chloride and includes requirements to demonstrate initial and continuous compliance with the emission standards. While this rule is the subject of legal challenge and EPA reconsideration, the rule is not stayed.

In March 2011, the EPA proposed amendments to the emission standards for hazardous air pollutants for mercury emissions from mercury cell chlor-alkali plants. These proposed amendments would require improvements in work practices to reduce fugitive mercury emissions. We operate a mercury cell production unit at our Natrium facility. We cannot predict the timing or content of the final regulation, or its ultimate cost to, or impact on us.

Our operations produce greenhouse gas ("GHG") emissions, which have been the subject of increased scrutiny and regulation. In December 2015, the United States joined the international community at the 21st Conference of the Parties of the United Nations Framework Convention on Climate Change in Paris, France. The resulting Paris Agreement calls for the parties to undertake "ambitious efforts" to limit the average global temperature and to conserve and enhance sinks and reservoirs of greenhouse gases. The United States signed the Paris Agreement in April 2016, and the Paris Agreement went into effect in November 2016. However, in June 2017, the Trump Administration announced that the United States intends to withdraw from the Paris Agreement. Pursuant to the terms of the Paris Agreement, the earliest date the United States can effectively withdraw is November 2020. The United States' adherence to the exit process and/or the terms on which the United States may reenter the Paris Agreement or a separately negotiated agreement are unclear at this time. Legislation to regulate GHG emissions has also been introduced in the United States Congress, and there has been a wide-ranging policy debate regarding the impact of these gases and possible means for their regulation. Some of the proposals would require industries to meet stringent new standards that would require substantial reductions in carbon emissions. Those reductions could be costly and difficult to implement.

Various jurisdictions have considered or adopted laws and regulations on GHG emissions, with the general aim of reducing such emissions. The EPA currently requires certain industrial facilities to report their GHG emissions, and to obtain permits with stringent control requirements before constructing or modifying new facilities with significant GHG emissions. In the European Union, the Emissions Trading Scheme obligates certain emitters to obtain GHG emission allowances to comply with a cap and trade system for GHG emissions. In addition, the European Union has committed to reduce domestic GHG emissions by at least 40% below the 1990 level by 2030. As our chemical manufacturing processes result in GHG emissions, these and other GHG laws and regulations could affect our costs of doing business.

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Similarly, the Toxic Substances Control Act ("TSCA") imposes reporting, record-keeping and testing requirements, and restrictions relating to the production, handling, and use of chemical substances. The TSCA reform legislation enacted in June 2016 expanded the EPA's authority to review and regulate new and existing chemicals. Under the reform legislation, EPA is required to, among other things, undertake rule making within statutory time frames related to: (1) chemical risk evaluation, designation and management; (2) reporting of mercury supply, use and trade; and (3) management of persistent, bioaccumulative, and toxic chemical substances (PBTs). Rules issued by EPA in 2017 and 2018, implementing aspects of the TSCA reform legislation have been challenged. One rule establishes the EPA's process and criteria for identifying high priority chemicals for risk evaluation. Another rule sets the EPA's approach for determining whether these high priority chemicals present an unreasonable risk to health or the environment. In addition to these two rules, the TSCA inventory reset rule required industry reporting of chemicals manufactured or processed in the United States over the past 10 years, from which EPA will determine which substances are active or inactive on the existing inventory. A final mercury reporting rule published in June 2018 requires manufacturers, including manufacturers who intentionally use mercury in a manufacturing process, to report information about their mercury supply, use and trade. The first periodic report under the new mercury reporting rule is due July 1, 2019. EPA will use the information collected to develop an inventory of mercury and mercury-added products as well as mercury-use manufacturing processes. The EPA may then recommend actions or promulgate further rules aimed at reducing mercury use. We cannot predict the timing or content of these actions or rules, or their ultimate cost to, or impact on us.

Under the IED, European Union member state governments are expected to adopt rules and implement environmental permitting programs relating to air, water and waste for industrial facilities. In this context, concepts such as the "best available technique" are being explored. Future implementation of these concepts may result in technical modifications in our European facilities. In addition, under the Environmental Liability Directive, European Union member states can require the remediation of soil and groundwater contamination in certain circumstances, under the "polluter pays principle." We are unable to predict the impact these requirements and concepts may have on our future costs of compliance.

These rules or future new, amended or proposed laws or rules could increase our costs or reduce our production, which could have a material adverse effect on our business, financial condition, operating results or cash flows. In addition, we cannot accurately predict future developments, such as increasingly strict environmental and safety laws or regulations, and inspection and enforcement policies, as well as resulting higher compliance costs, which might affect the handling, manufacture, use, emission, disposal or remediation of products, other materials or hazardous and non-hazardous waste, and we cannot predict with certainty the extent of our future liabilities and costs under environmental, health and safety laws and regulations. These liabilities and costs may be material.

We also may face liability for alleged personal injury or property damage due to exposure to chemicals or other hazardous substances at our facilities or to chemicals that we otherwise manufacture, handle or own. Although these types of claims have not historically had a material impact on our operations, a significant increase in the success of these types of claims could have a material adverse effect on our business, financial condition, operating results or cash flows.

Environmental laws may have a significant effect on the nature and scope of, and responsibility for, cleanup of contamination at our current and former operating facilities, the costs of transportation and storage of raw materials and finished products, the costs of reducing emissions and the costs of the storage and disposal of wastewater. The U.S. Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), similar state laws and certain European directives impose joint and several liability for the costs of remedial investigations and actions on the entities that generated waste, arranged for disposal of the wastes, transported to or selected the disposal sites and the past and present owners and operators of such sites. All such potentially responsible parties (or any one of them, including us) may be required to bear all of such costs regardless of fault, legality of the original disposal or ownership of the disposal site. In addition, CERCLA, similar state laws and certain European directives could impose liability for damages to natural resources caused by contamination.

Although we seek to take preventive action, our operations are inherently subject to accidental spills, discharges or other releases of hazardous substances that may make us liable to governmental entities or private parties. This may involve contamination associated with our current and former facilities, facilities to which we sent wastes or by-products for treatment or disposal and other contamination. Accidental discharges may occur in the future, future action may be taken in connection with past discharges, governmental agencies may assess damages or penalties against us in connection with any past or future contamination, or third parties may assert claims against us for damages allegedly arising out of any past or future contamination. In addition, we may be liable for existing contamination related to certain of our facilities for which, in some cases, we believe third parties are liable in the event such third parties fail to perform their obligations.

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Capital projects are subject to risks, including delays and cost overruns, which could have an adverse impact on our financial condition and results of operations.

We have capital expansion plans for our facilities. Expansion projects may be subject to delays or cost overruns, including delays or cost overruns resulting from any one or more of the following:

- unexpectedly long delivery times for, or shortages of, key equipment, parts or materials;
- shortages of skilled labor and other personnel necessary to perform the work;
- delays and performance issues;
- failures or delays of third-party equipment vendors or service providers;
- unforeseen increases in the cost of equipment, labor and raw materials;
- work stoppages and other labor disputes;
- unanticipated actual or purported change orders;
- disputes with contractors and suppliers;
- design and engineering problems;
- latent damages or deterioration to equipment and machinery in excess of engineering estimates and assumptions;
- financial or other difficulties of our contractors and suppliers;
- sabotage;
- terrorist attacks;
- interference from adverse weather conditions; and
- difficulties in obtaining necessary permits or in meeting permit conditions.

Significant cost overruns or delays could materially affect our financial condition and results of operations. Additionally, actual capital expenditures could materially exceed our planned capital expenditures.

Our level of debt could adversely affect our ability to operate our business.

As of December 31, 2018, our indebtedness, including the current portion, totaled $2.7 billion, and our debt represented approximately 31% of our total capitalization. Our annual interest expense for 2018 was $126 million, net of interest capitalized of $7 million. Our level of debt and the limitations imposed on us by our existing or future debt agreements could have significant consequences on our business and future prospects, including the following:

- a portion of our cash flows from operations will be dedicated to the payment of interest and principal on our debt and will not be available for other purposes;
- we may not be able to obtain necessary financing in the future for working capital, capital expenditures, acquisitions, debt service requirements or other purposes;
- our less leveraged competitors could have a competitive advantage because they have greater flexibility to utilize their cash flows to improve their operations;
- we may be exposed to risks inherent in interest rate fluctuations because some of our borrowings are at variable rates of interest, which would result in higher interest expense in the event of increases in interest rates;
- we could be vulnerable in the event of a downturn in our business that would leave us less able to take advantage of significant business opportunities and to react to changes in our business and in market or industry conditions; and
- should we pursue additional expansions of existing assets or acquisition of third party assets, we may not be able to obtain additional liquidity at cost effective interest rates.

These factors could be magnified or accelerated to the extent we were to finance future acquisitions with significant amounts of debt.

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To service our indebtedness and fund our capital requirements, we will require a significant amount of cash. Our ability to generate cash depends on many factors beyond our control.

Our ability to make payments on and to refinance our indebtedness and to fund planned capital expenditures and pay cash dividends will depend on our ability to generate cash in the future, including any distributions that we may receive from Westlake Partners. This is subject to general economic, financial, currency, competitive, legislative, regulatory and other factors that are beyond our control.

Our business may not generate sufficient cash flows from operations, we may not receive sufficient distributions from Westlake Partners, and currently anticipated cost savings and operating improvements may not be realized on schedule. We also generate revenues denominated in currencies other than that of our indebtedness and may have difficulty converting those revenues into the currency of our indebtedness. We may need to refinance all or a portion of our indebtedness on or before maturity. In addition, we may not be able to refinance any of our indebtedness, including our credit facility and our senior notes, on commercially reasonable terms or at all. All of these factors could be magnified if we were to finance any future acquisitions with significant amounts of debt.

The Credit Agreement and the indenture governing certain of our senior notes impose significant operating and financial restrictions, which may prevent us from capitalizing on business opportunities and taking some actions.

The Credit Agreement and the indenture governing certain of our senior notes impose significant operating and financial restrictions on us. These restrictions limit our ability to:

- pay dividends on, redeem or repurchase our capital stock;
- make investments and other restricted payments;
- incur additional indebtedness or issue preferred stock;
- create liens;
- permit dividend or other payment restrictions on our restricted subsidiaries;
- sell all or substantially all of our assets or consolidate or merge with or into other companies;
- engage in transactions with affiliates; and
- engage in sale-leaseback transactions.

These limitations are subject to a number of important qualifications and exceptions. Currently, many of these restrictions in the indenture governing certain of our senior notes are suspended under the indenture because those notes are currently rated investment grade by at least two nationally recognized credit rating agencies. The Credit Agreement also requires us to maintain a quarterly total leverage ratio.

These covenants may adversely affect our ability to finance future business opportunities or acquisitions. A breach of any of these covenants could result in a default in respect of the related debt. If a default occurred, the relevant lenders could elect to declare the debt, together with accrued interest and other fees, to be immediately due and payable. In addition, any acceleration of debt under the Credit Agreement will constitute a default under some of our other debt, including the indentures governing our senior notes.

Our participation in joint ventures and similar arrangements exposes us to a number of risks, including risks of shared control.

We are party to several joint ventures and similar arrangements, including an investment, together with Lotte Chemical USA Corporation ("Lotte"), in a joint venture, LACC, LLC ("LACC"), to build an ethylene facility. Our participation in joint ventures and similar arrangements, by their nature, requires us to share control with unaffiliated third parties. In particular, with respect to our investment in LACC, we are a 10% holder and, therefore, our partner Lotte will have primary control over operations, including management of the contractors responsible for constructing the ethylene facility. If there are differences in views among joint venture participants in how to operate a joint venture that result in delayed decisions or the failure to make decisions, or our joint venture partners do not fulfill their obligations, the affected joint venture may not be able to operate according to its business plan and fulfill its obligations. In that case, we may be required to write down the value of our investment in a joint venture, increase the level of financial or other commitments to the joint venture or, if we have contractual agreements with the joint venture, our operations may be materially adversely affected. Any of the foregoing could have a material adverse effect on our financial condition, results of operations or cash flows.

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LACC may incur additional costs or delays in the construction of the LACC ethylene facility.

We have a commitment to contribute up to $225 million toward the construction of the LACC ethylene facility, which equates to approximately 10% of the equity in LACC. If there are cost overruns, our investment could be diluted below 10% if we do not make additional contributions to maintain our ownership position. The construction of the LACC ethylene facility without delays or significant cost overruns is subject to substantial risks, including:

- shortages and inconsistent quality of equipment, materials, and labor;
- labor costs and productivity;
- work stoppages;
- contractor or supplier delay or non-performance under construction or other agreements or non-performance by other major participants in construction projects;
- delays in or failure to receive necessary permits, approvals, tax credits, and other regulatory authorizations;
- delays associated with start-up activities, including major equipment failure, system integration, and operations, and/or unforeseen engineering problems;
- changes in project design or scope;
- impacts of new and existing laws and regulations, including environmental laws and regulations;
- the outcome of legal challenges to projects, including legal challenges to regulatory approvals;
- failure to construct in accordance with licensing requirements;
- continued public and policymaker support for such projects;
- adverse weather conditions or natural disasters;
- sabotage;
- terrorist attacks;
- environmental and geological conditions;
- delays or increased costs to interconnect facilities; and
- other unanticipated cost increases.

Regulations concerning the transportation of hazardous chemicals and the security of chemical manufacturing facilities could result in higher operating costs.

Targets such as chemical manufacturing facilities may be at greater risk of terrorist attacks than other targets. As a result, the chemical industry responded to the issues surrounding the terrorist attacks of September 11, 2001 by implementing initiatives relating to the security of chemicals industry facilities and the transportation of hazardous chemicals. Simultaneously, local, state, national and international governments put into effect a regulatory process that led to new regulations impacting the security of chemical plant locations and the transportation of hazardous chemicals. Our business or our customers' businesses could be adversely affected because of the cost of complying with these regulations.

A change in tax laws, treaties or regulations, or their interpretation or application, could have a negative impact on our business and results of operations.

We are subject to changes in applicable tax laws, treaties or regulations in the jurisdictions in which we operate. A material change in these tax laws, treaties or regulations, or their interpretation or application, could have a negative impact on our business and results of operations.

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We may have difficulties integrating the operations of future acquired businesses, including the operations of NAKAN.

If we are unable to integrate or to successfully manage the NAKAN operations or other businesses that we may acquire in the future, our business, financial condition and results of operations could be adversely affected. We may not be able to realize the operating efficiencies, synergies, cost savings or other benefits expected from the acquisition of NAKAN and other acquisitions for a number of reasons, including the following:

- we may fail to integrate the businesses we acquire into a cohesive, efficient enterprise;
- our resources, including management resources, are limited and may be strained if we engage in a large acquisition or significant number of acquisitions, and acquisitions may divert our management's attention from initiating or carrying out programs to save costs or enhance revenues; and
- our failure to retain key employees and contracts of the businesses we acquire.

Future acquisitions could lead to significant restructuring or other changes.

Regulations related to "conflict minerals" could adversely impact our business.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank Act") contains provisions to improve transparency and accountability concerning the supply of certain minerals, known as conflict minerals, originating from the Democratic Republic of Congo and adjoining countries (collectively, the "Covered Countries"). The term "conflict minerals" encompasses tantalum, tin, tungsten (and their ores) and gold.

In August 2012, pursuant to the Dodd-Frank Act, the SEC adopted annual disclosure and reporting requirements applicable to any company that files periodic public reports with the SEC, if any conflicts minerals are necessary to the functionality or production of a product manufactured, or contracted to be manufactured, by that company. These annual reporting requirements require companies to describe reasonable country of origin inquiries, due diligence measures and the results of those activities and related determinations.

Because we have a highly complex, multi-layered supply chain, we may incur significant costs to comply with these requirements. In addition, the implementation of procedures to comply with these requirements could adversely affect the sourcing, supply and pricing of materials, including components, used in our products. Our suppliers (or suppliers to our suppliers) may not be able or willing to provide all requested information or to take other steps necessary to ensure that no conflict minerals financing or benefiting armed groups are included in materials or components supplied to us for our manufacturing purposes. Also, we may encounter challenges to satisfy customers that may require all of the components of products purchased by them to be certified as conflict free. If we are not able to meet customer certification requirements, customers may choose to disqualify us as a supplier. In addition, since the applicability of the new conflict minerals requirements is limited to companies that file periodic reports with the SEC, not all of our competitors will need to comply with these requirements unless they are imposed by customers. As a result, those competitors may have cost and other advantages over us.

Our operations could be adversely affected by labor relations.

The vast majority of our employees in Europe, and some of our employees in North America, are represented by labor unions and works councils. Our operations may be adversely affected by strikes, work stoppages and other labor disputes.

We have certain material pension and other post-retirement employment benefit ("OPEB") obligations. Future funding obligations related to these obligations could restrict cash available for our operations, capital expenditures or other requirements or require us to borrow additional funds.

We have U.S. and non-U.S. defined benefit pension plans covering certain current and former employees. Certain non-U.S. defined benefit plans associated with our European operations have not been funded and we are not obligated to fund those plans under applicable law. As of December 31, 2018, the projected benefit obligations for our pension and OPEB plans were approximately $784 million and $70 million, respectively. The fair value of pension investment assets was $503 million as of December 31, 2018. The total underfunded status of the pension obligations calculated on a projected benefit obligation basis as of December 31, 2018 was approximately $281 million, including the Westlake Defined Benefit Plan, which was underfunded by approximately $135 million on an individual plan basis.

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The unfunded OPEB obligations as of December 31, 2018 were approximately $70 million. We will require future operating cash flows to fund our pension and OPEB obligations, which could restrict available cash for our operations, capital expenditures and other requirements. We may also not generate sufficient cash to satisfy these obligations, which could require us to seek funding from other sources, including through additional borrowings, which could materially increase our outstanding debt or debt service requirements.

If our goodwill, indefinite-lived intangible assets or other intangible assets become impaired in the future, we may be required to record non-cash charges to earnings, which could be significant.

Under GAAP, we review goodwill and indefinite-lived intangible assets for impairment on an annual basis or more frequently if events or circumstances indicate that their carrying value may not be recoverable. Other intangible assets are reviewed if events or circumstances indicate that their carrying value may not be recoverable. The process of impairment testing for our goodwill and intangible assets involves a number of judgments and estimates made by management including the fair values of assets and liabilities, future cash flows, our interpretation of current economic indicators and market conditions, overall economic conditions and our strategic operational plans with regards to our business units. If the judgments and estimates used in our analysis are not realized or change due to external factors, then actual results may not be consistent with these judgments and estimates, and our goodwill and intangible assets may become impaired in future periods. If our goodwill, indefinite-lived intangible assets or other intangible assets are determined to be impaired in the future, we may be required to record non-cash charges to earnings during the period in which the impairment is determined, which could be significant and have an adverse effect on our financial condition and results of operations.

The trading price of our common stock may negatively impact us.

Volatility in the capital and credit markets may cause downward pressure on stock prices and credit availability. A decline in the market value of our common stock could make it more difficult for us to raise any equity capital.

Failure to adequately protect critical data and technology systems could materially affect our operations.

Information technology system failures, network disruptions and breaches of data security due to internal or external factors including cyber-attacks could disrupt our operations by causing delays or cancellation of customer orders, impede the manufacture or shipment of products or cause standard business processes to become ineffective, resulting in the unintentional disclosure of information or damage to our reputation. While we have taken steps to address these concerns by implementing network security and internal control measures, including employee training, comprehensive monitoring of our networks and systems, maintenance of backup and protective systems and disaster recovery and incident response plans, our employees, systems, networks, products, facilities and services remain potentially vulnerable to sophisticated cyber-assault, and, as such, there can be no assurance that a system failure, network disruption or data security breach will not have a material adverse effect on our business, financial condition, operating results or cash flows.

Fluctuations in foreign currency exchange and interest rates could affect our consolidated financial results.

We earn revenues, pay expenses, own assets and incur liabilities in countries using currencies other than the U.S. dollar. Because our consolidated financial statements are presented in U.S. dollars, we must translate revenues and expenses into U.S. dollars at the average exchange rate during each reporting period, as well as assets and liabilities into U.S. dollars at exchange rates in effect at the end of each reporting period. Therefore, increases or decreases in the value of the U.S. dollar against other major currencies will affect our net sales, operating income and the value of balance sheet items denominated in foreign currencies. Because of the geographic diversity of our operations, weaknesses in various currencies might occur in one or many of such currencies over time. From time to time, we may use derivative financial instruments to further reduce our net exposure to currency exchange rate fluctuations. However, fluctuations in foreign currency exchange rates, such as the strengthening of the U.S. dollar against major currencies, including, in particular, the Euro and the Canadian dollar, could nevertheless materially adversely affect our financial results.

In addition, we are exposed to volatility in interest rates. When appropriate, we may use derivative financial instruments to reduce our exposure to interest rate risks. However, our financial risk management program may not be successful in reducing the risks inherent in exposures to interest rate fluctuations.

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Our property insurance has only partial coverage for acts of terrorism and, in the event of terrorist attack, we could lose net sales and our facilities.

As a result of the terrorist attacks of September 11, 2001 and other events, our insurance carriers created certain exclusions for losses from terrorism from our property insurance policies. While separate terrorism insurance coverage is available, premiums for full coverage are very expensive, especially for chemical facilities, and the policies are subject to high deductibles. Available terrorism coverage typically excludes coverage for losses from acts of war and from acts of foreign governments as well as nuclear, biological and chemical attacks. We have determined that it is not economically prudent to obtain full terrorism insurance, especially given the significant risks that are not covered by such insurance. Where feasible we have secured some limited terrorism insurance coverage on our property where insurers have included it in their overall programs. In the event of a terrorist attack impacting one or more of our facilities, we could lose the net sales from the facilities and the facilities themselves, and could become liable for any contamination or for personal or property damage due to exposure to hazardous materials caused by any catastrophic release that may result from a terrorist attack.

Westlake Partners' tax treatment depends on its status as a partnership for federal income tax purposes, and it not being subject to a material amount of entity-level taxation. We depend in part on distributions from Westlake Partners to generate cash for our operations, capital expenditures, debt service and other uses. If the Internal Revenue Service ("IRS") were to treat Westlake Partners as a corporation for federal income tax purposes, or if Westlake Partners become subject to entity-level taxation for state tax purposes, its cash available for distribution would be substantially reduced, which would also likely cause a substantial reduction in the value of its common units that we hold.

Despite the fact that Westlake Partners is organized as a limited partnership under Delaware law, it would be treated as a corporation for U.S. federal income tax purposes unless it satisfies a "qualifying income" requirement (the "Qualifying Income Exception") under Section 7704 of the Internal Revenue Code of 1986, as amended (the "Code"). Failure to meet the Qualifying Income Exception would cause Westlake Partners to be treated as a corporation for U.S. federal income tax purposes.

Prior to its initial public offering, Westlake Partners requested and obtained a favorable private letter ruling from the IRS to the effect that, based on facts presented in the private letter ruling request, income from the production, transportation, storage and marketing of ethylene and its co-products constitutes "qualifying income" within the meaning of Section 7704 of the Code. Failure to meet the Qualifying Income Exception or a change in current law could cause Westlake Partners to be treated as a corporation for U.S. federal income tax purposes or otherwise subject Westlake Partners to taxation as an entity.

We will be controlled by our principal stockholder and its affiliates as long as they own a majority of our common stock, and our other stockholders will be unable to affect the outcome of stockholder voting during that time. Our interests may conflict with those of the principal stockholder and its affiliates, and we may not be able to resolve these conflicts on terms possible in arms-length transactions.

As long as TTWF LP (the "principal stockholder") and its affiliates (the "principal stockholder affiliates") own a majority of our outstanding common stock, they will be able to exert significant control over us, and our other stockholders, by themselves, will not be able to affect the outcome of any stockholder vote. As a result, the principal stockholder, subject to any fiduciary duty owed to our minority stockholders under Delaware law, will be able to control all matters affecting us (some of which may present conflicts of interest), including:

- the composition of our Board of Directors and, through the Board, any determination with respect to our business direction and policies, including the appointment and removal of officers and the determination of compensation;
- any determinations with respect to mergers or other business combinations or the acquisition or disposition of assets;
- our financing decisions, capital raising activities and the payment of dividends; and
- amendments to our amended and restated certificate of incorporation or amended and restated bylaws.

The principal stockholder will be permitted to transfer a controlling interest in us without being required to offer our other stockholders the ability to participate or realize a premium for their shares of common stock. A sale of a controlling interest to a third party may adversely affect the market price of our common stock and our business and results of operations because the change in control may result in a change of management decisions and business policy. Because we have elected not to be subject to Section 203 of the General Corporation Law of the State of

Delaware, the principal stockholder may find it easier to sell its controlling interest to a third party than if we had not so elected.

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In addition to any conflicts of interest that arise in the foregoing areas, our interests may conflict with those of the principal stockholder affiliates in a number of other areas, including:

- business opportunities that may be presented to the principal stockholder affiliates and to our officers and directors associated with the principal stockholder affiliates, and competition between the principal stockholder affiliates and us within the same lines of business;
- the solicitation and hiring of employees from each other; and
- agreements with the principal stockholder affiliates relating to corporate services that may be material to our business.

We may not be able to resolve any potential conflicts with the principal stockholder affiliates, and even if we do, the resolution may be less favorable than if we were dealing with an unaffiliated party, particularly if the conflicts are resolved while we are controlled by the principal stockholder affiliates. Our amended and restated certificate of incorporation provides that the principal stockholder affiliates have no duty to refrain from engaging in activities or lines of business similar to ours and that the principal stockholder affiliates will not be liable to us or our stockholders for failing to present specified corporate opportunities to us.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our principal manufacturing facilities and principal products are set forth below. Except as noted, we own each of these facilities.

Location	Principal Products
Lake Charles, Louisiana	Ethylene, polyethylene, styrene, VCM, chlorine, caustic soda, chlorinated derivative products, electricity
Longview, Texas (1)	Polyethylene, polyethylene wax
Calvert City, Kentucky (2)	PVC, VCM, chlorine, caustic soda, ethylene
Plaquemine, Louisiana	PVC, VCM, chlorine, caustic soda, electricity
Geismar, Louisiana	PVC, VCM, chlorine, caustic soda
Gendorf, Bavaria, Germany (1)	PVC, VCM, chlorine, caustic soda
Burghausen, Bavaria, Germany (1)	PVC
Knapsack, North Rhine-Westphalia, Germany (1)	PVC, VCM, chlorine, caustic soda
Cologne, North Rhine-Westphalia, Germany (1)	PVC
Natrium, West Virginia	Chlorine, caustic soda, chlorinated derivative products

(1) We lease the land on which our facilities are located.
(2) We lease a portion of the land on which our Calvert City facility is located.

Olefins

Our olefins facility at our Lake Charles site consists of three tracts on approximately 1,700 acres in Lake Charles, each within three miles of one another. The site includes two ethylene plants, which are owned by OpCo, two polyethylene plants and a styrene monomer plant. The combined capacity of OpCo's two Lake Charles ethylene plants is approximately 3.0 billion pounds per year. The capacity of our two polyethylene plants is approximately 1.5 billion pounds per year and the capacity of our styrene plant is approximately 570 million pounds per year. One of our polyethylene plants has two production units that use gas phase technology with the capability to manufacture both LLDPE and HDPE.

Our Lake Charles site includes a marine terminal that provides for worldwide shipping capabilities. The site also is located near rail transportation facilities, which allows for efficient delivery of raw materials and prompt shipment of our products to customers. In addition, the site is connected by pipeline systems to our ethylene feedstock sources in both Texas and Louisiana. Within the site, OpCo's ethylene plants are connected by pipeline systems to our polyethylene and styrene plants.

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Our Longview site consists of three polyethylene plants, a specialty polyethylene wax plant, and a 200-mile ethylene pipeline owned by OpCo that runs from Mont Belvieu to our Longview site. The plants are located inside a large Eastman Chemical Company ("Eastman") facility where Eastman produces a number of other chemical products. We can access ethylene to support our polyethylene operations either by purchasing ethylene from Eastman at the site or by transporting ethylene from OpCo's Lake Charles plant into the Gulf Coast grid and by transporting ethylene through our ethylene pipeline into our Longview facility. The technologies we use to produce polyethylene at Longview are similar to the technologies that we employ at Lake Charles. The Longview facility has a total capacity of approximately 1.1 billion pounds per year.

Vinyls

Our Calvert City site is situated on approximately 750 acres on the Tennessee River in Kentucky and includes an ethylene plant, which is owned by OpCo, a chlor-alkali plant, a VCM plant and a PVC plant. The capacity of OpCo's Calvert City ethylene plant is approximately 730 million pounds per year and the capacity of our chlor-alkali plant is approximately 550 million pounds of chlorine and 605 million pounds of caustic soda per year. Our chlorine plant utilizes efficient, state-of-the-art membrane technology. Our VCM plant has a capacity of approximately 1.5 billion pounds per year and our Calvert City PVC plant has a capacity of approximately 1.5 billion pounds per year. In January 2017, OpCo completed an expansion project to increase the ethylene capacity of its ethylene plant at our Calvert City facility, which, along with other initiatives, increased ethylene capacity by approximately 100 million pounds annually.

Our vinyls facility at our Lake Charles site consists of two tracts of land making up approximately 1,690 acres, each within three miles of the other. The site operates a diverse portfolio of manufacturing plants, including three chlor-alkali plants, two VCM plants, a chlorinated derivative products plant and cogeneration assets. Our Lake Charles chlor-alkali plants are designed to produce approximately 2.8 billion pounds of chlorine and approximately 3.0 billion pounds of caustic soda per year. Our chlorine plants utilize both membrane and diaphragm technology. Our Lake Charles VCM plants have a capacity of approximately 2.1 billion pounds per year and our chlorinated derivative products plants have a capacity of approximately 715 million pounds per year. Our Lake Charles cogeneration assets have the capacity to generate approximately 420 Megawatts of electricity per year.

Our Plaquemine site is located on approximately 860 acres on the west bank of the Mississippi River in Iberville Parish and includes a chlor-alkali plant, a VCM plant, a PVC plant and cogeneration assets. The capacity of Plaquemine's chlor-alkali plant is approximately 940 million pounds of chlorine and approximately 1.0 billion pounds of caustic soda per year. Our chlorine plant utilizes diaphragm technology. Our Plaquemine VCM plant has a capacity of approximately 1.6 billion pounds per year and our PVC plant has a capacity of approximately 1.9 billion pounds per year. Our Plaquemine cogeneration assets have the capacity to generate approximately 240 Megawatts of electricity per year.

Our Geismar site is situated on approximately 185 acres on the east bank of the Mississippi River and includes a chlor-alkali plant, a VCM plant and a PVC plant. Our Geismar chlor-alkali plant is designed to produce approximately 700 million pounds of chlorine and approximately 770 million pounds of caustic soda per year. Our chlorine plant utilizes membrane technology. Our Geismar VCM plant has a capacity of approximately 850 million pounds per year and our PVC plant has a capacity of approximately 730 million pounds per year.

Our other North American vinyls manufacturing sites consist of facilities in Natrium, Longview and Beauharnois and include five chlor-alkali plants and five chlorinated derivative products plants. In addition, we have a PVC resin facility located in Aberdeen, Mississippi. The chlor-alkali plants have a combined capacity of approximately 1.0 billion pounds of chlorine and approximately 1.1 billion pounds of caustic soda per year, the PVC plant has a capacity of approximately 1.0 billion pounds per year and our chlorinated derivative products plants have a combined capacity of approximately 1.3 billion pounds per year.

Our European vinyls manufacturing sites consist of five facilities in Germany and one facility in the United Kingdom, and include two membrane chlor-alkali plants, two VCM plants and six PVC plants. The chlor-alkali plants have a combined capacity of approximately 950 million pounds of chlorine and approximately 1.0 billion pounds of caustic soda per year, the VCM plants have a combined capacity of approximately 1.5 billion pounds per year and the PVC plants have a combined capacity of approximately 1.7 billion pounds per year.

Our Asian vinyls manufacturing sites consist of one chlor-alkali plant (in our 60%-owned Taiwanese joint venture) and one PVC resin and sheet plant (in our 95%-owned Chinese joint venture).

As of February 13, 2019, we owned 36 building products and PVC compounds plants, including PVC pipe plants, siding, trim and mouldings plants and profile plants producing PVC fence, decking, windows and door profiles. The majority of our plants are strategically located near major markets and serve customers throughout North America, Europe and Asia. The combined capacity of our building products and PVC compounds plants is approximately 3.4 billion pounds per year.

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Headquarters

Our principal executive offices are located in Houston, Texas. Some of our office space is leased, at market rates, from an affiliate of our principal stockholder. See Note 17 to the consolidated financial statements appearing elsewhere in this Form 10-K and "Certain Relationships and Related Transactions" in our proxy statement to be filed with the SEC pursuant to Regulation 14A with respect to our 2019 annual meeting of stockholders (the "Proxy Statement").

Item 3. Legal Proceedings

In addition to the matters described under Item 1. Business—Environmental and Note 19 to our consolidated financial statements included in Item 8 of this Form 10-K, we are involved in various legal proceedings incidental to the conduct of our business. We do not believe that any of these legal proceedings will have a material adverse effect on our financial condition, results of operations or cash flows.

Item 4. Mine Safety Disclosure

Not Applicable.

Executive Officers of the Registrant

James Chao (age 71). Mr. Chao has been our Chairman of the Board of Directors since July 2004 and became a director in June 2003. From May 1996 to July 2004, he served as our Vice Chairman. Mr. Chao has over 45 years of global experience in the chemical industry. In addition, Mr. Chao has been the Chairman of the Board of Westlake Partners' general partner since its formation in March 2014. From June 2003 until November 2010, Mr. Chao was the executive chairman of Titan Chemicals Corp. Bhd. He has served as a Special Assistant to the Chairman of China General Plastics Group and worked in various financial, managerial and technical positions at Mattel Incorporated, Developmental Bank of Singapore, Singapore Gulf Plastics Pte. Ltd. and Gulf Oil Corporation. Mr. Chao, along with his brother Albert Chao, assisted their father T.T. Chao in founding Westlake Chemical Corporation. Mr. Chao is on the board of Baylor College of Medicine. Mr. Chao received his B.S. degree from Massachusetts Institute of Technology and an M.B.A. from Columbia University.

Albert Chao (age 69). Mr. Chao has been our President since May 1996 and a director since June 2003. Mr. Chao became our Chief Executive Officer in July 2004. Mr. Chao has over 40 years of global experience in the chemical industry. In 1985, Mr. Chao assisted his father T.T. Chao and his brother James Chao in founding Westlake Chemical Corporation, where he served as Executive Vice President until he succeeded James Chao as President. In addition, Mr. Chao has been the President, Chief Executive Officer and a director of Westlake Partners' general partner since its formation in March 2014. He has held positions in the Controller's Group of Mobil Oil Corporation, in the Technical Department of Hercules Incorporated, in the Plastics Group of Gulf Oil Corporation and has served as Assistant to the Chairman of China General Plastics Group and Deputy Managing Director of a plastics fabrication business in Singapore. Mr. Chao is a trustee of Rice University. Mr. Chao received a bachelor's degree from Brandeis University and an M.B.A. from Columbia University.

M. Steven Bender (age 62). Mr. Bender has been our Executive Vice President and Chief Financial Officer since July 2017. From February 2008 to July 2017, Mr. Bender served as our Senior Vice President and Chief Financial Officer. In addition, Mr. Bender served as our Treasurer from July 2011 to April 2017, a position he also held from February 2008 until December 2010. From February 2007 to February 2008, Mr. Bender served as our Vice President, Chief Financial Officer and Treasurer and from June 2005 to February 2007, he served as our Vice President and Treasurer. In addition, Mr. Bender has been the Senior Vice President, Chief Financial Officer and a director of Westlake Partners' general partner since its formation in March 2014, and its Treasurer since April 2015. Prior to joining Westlake, from June 2002 until June 2005, Mr. Bender served as Vice President and Treasurer of KBR, Inc., and from 1996 to 2002 he held the position of Assistant Treasurer for Halliburton Company. Prior to that, he held various financial positions within that company. Additionally, he was employed by Texas Eastern Corporation for over a decade in a variety of increasingly responsible audit, finance and treasury positions. Mr. Bender received a Bachelor of Business Administration from Texas A&M University and an M.B.A. from Southern Methodist University.
Mr. Bender is also a Certified Public Accountant.

Robert F. Buesinger (age 62). Mr. Buesinger has been our Executive Vice President, Vinyl Products since July 2017. From April 2010 to July 2017, Mr. Buesinger served as our Senior Vice President, Vinyls. Prior to joining us, Mr. Buesinger served as the General Manager and President of Chevron Phillips Chemical Company L.P.'s Performance Pipe Division from February 2010 to March 2010. From June 2008 to January 2010, Mr. Buesinger held the position of General Manager in the Alpha Olefins and Poly Alpha Olefins business of Chevron Phillips Chemical Company L.P. From April 2005 to May 2008, he served as the President and Managing Director of Chevron Phillips Singapore Chemicals Pte. Ltd. and Asia Region General Manager for Chevron Phillips Chemical Company L.P. Prior to that, he held various technical and sales management positions within that company. Mr. Buesinger holds a B.S. in Chemical Engineering from Tulane University.

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Roger L. Kearns (age 55). Mr. Kearns has been our Executive Vice President, Vinyls Chemicals since April 2018. Prior to joining Westlake, from 2008 to April 2018, he was a member of the Executive Committee at Solvay S.A. in Belgium. From 2013 to 2018, he had responsibility for Solvay's advanced materials business cluster, as well as its corporate research organization and its North America region. From 2008 to 2012 he was responsible for overseeing Solvay's Asia-Pacific businesses, including its vinyls operations in the region. Prior to that, from 2004 through 2007, he was President of Solvay Advanced Polymers in the United States and earlier, from 2001 through 2003, he led Solvay's performance compounds business unit. Since beginning his career with Solvay in 1986, he has held a series of manufacturing, technical, corporate development, marketing and business management positions in the United States, Europe and Asia. Mr. Kearns holds a bachelor's degree in Chemical Engineering from the Georgia Institute of Technology and an MBA from Stanford University.

Lawrence E. (Skip) Teel (age 60). Mr. Teel has been our Executive Vice President, Olefins since July 2017. From July 2014 to July 2017, Mr. Teel served as our Senior Vice President, Olefins and, from July 2012 to July 2014, he served as our Vice President, Olefins. In addition, Mr. Teel has been the Senior Vice President, Olefins of Westlake Partners' general partner since July 2014. Mr. Teel joined us in September 2009 as Director, Olefins and Feedstock after a 23-year career with Lyondell Chemical Company where he served as the Vice President, Refining from August 2006 to May 2008. From 2001 to 2006, Mr. Teel held the position of Director, Corporate Planning and Business Development at Lyondell Chemical Company. During his career, he has held a variety of marketing, operations and general management assignments. Mr. Teel received a B.S. in Chemical Engineering from New Mexico State University and an M.S. in Finance from the University of Houston.

L. Benjamin Ederington (age 48). Mr. Ederington has been our Senior Vice President, General Counsel, Chief Administrative Officer and Corporate Secretary since July 2017. From December 2015 to July 2017, Mr. Ederington served as our Vice President, General Counsel, Chief Administrative Officer and Corporate Secretary and, from October 2013 to December 2015, he served as our Vice President, General Counsel and Corporate Secretary. In addition, Mr. Ederington has been the Vice President, General Counsel, Secretary and a director of Westlake Partners' general partner since its formation in March 2014. Prior to joining Westlake, he held a variety of senior legal positions at LyondellBasell Industries, N.V. and its predecessor companies, LyondellBasell Industries AF SCA and Lyondell Chemical Company, including most recently as Associate General Counsel, Commercial & Strategic Transactions from March 2010 to September 2013. He began his legal career more than 20 years ago at the law firm of Steptoe & Johnson, LLP. Mr. Ederington holds a B.A. from Yale University and received his J.D. from Harvard University.

Andrew Kenner (age 54). Mr. Kenner has been our Senior Vice President, Chemical Manufacturing since July 2017. From July 2008 to July 2017, Mr. Kenner served as our Vice President, Manufacturing. Mr. Kenner joined us after a 19-year career at Valero Energy Corporation where he served as Vice President and General Manager of Valero's Delaware City Refinery from 2005 to 2008. Prior to 2005, Mr. Kenner held the position of Vice President and General Manager of Valero's Houston Refinery and other positions in Valero's refining system. Mr. Kenner holds a B.S. in Aerospace Engineering from Texas A&M University and a M.S. in Chemical Engineering from the University of Texas at Austin.

George J. Mangieri (age 68). Mr. Mangieri has been our Senior Vice President and Chief Accounting Officer since July 2017. From February 2007 to July 2017, Mr. Mangieri served as our Vice President and Chief Accounting Officer and, from April 2000 to February 2007, he served as our Vice President and Controller. In addition, Mr. Mangieri has been the Vice President and Chief Accounting Officer of Westlake Partners' general partner since its formation in March 2014. Prior to joining us, Mr. Mangieri served as Vice President and Controller of Zurn Industries, Inc. from 1998 to 2000. He previously was employed as Vice President and Controller for Imo Industries, Inc. in New Jersey, and spent over 10 years in public accounting with Ernst & Young LLP, where he served as Senior Manager. He received his Bachelor of Science degree from Monmouth College and is a Certified Public Accountant.

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PART II

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

Stockholder Matters

As of February 13, 2019, there were 39 holders of record of our common stock. Our common stock is listed on the New York Stock Exchange under the symbol "WLK."

Issuer Purchases of Equity Securities

The following table provides information on our purchase of equity securities during the quarter ended December 31, 2018:

Period	Total Number of Shares Purchased [(1)]	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs [(2)]	Maximum Number (or Approximate Dollar Value) of Shares that May Yet Be Purchased Under the Plans or Programs [(2)]
October 2018	88	$ 70.32	—	$ 271,606,000
November 2018	—	$ —	—	$ 271,606,000
December 2018	853,028	$ 66.51	853,028	$ 214,872,000
Total	853,116	$ 66.51	853,028	

(1) Includes 88 shares withheld during October 2018 in satisfaction of withholding taxes due upon the vesting of restricted stock units granted to our employees under the 2013 Plan.

(2) In November 2014, our Board of Directors authorized a $250 million stock repurchase program (the "2014 Program"). In November 2015, our Board of Directors approved the expansion of the 2014 Program by an additional $150 million. In August 2018, our Board of Directors approved the further expansion of the existing 2014 Program by an additional $150 million. As of December 31, 2018, 5,562,479 shares of our common stock had been acquired at an aggregate purchase price of approximately $335 million under the 2014 Program. Transaction fees and commissions are not reported in the average price paid per share in the table above. Decisions regarding the amount and the timing of purchases under the 2014 Program will be influenced by our cash on hand, our cash flows from operations, general market conditions and other factors. The 2014 Program may be discontinued by our Board of Directors at any time.

Equity Compensation Plan Information

Securities authorized for issuance under equity compensation plans are as follows:

Plan Category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders	1,818,743	$ 33.64	4,551,620
	N/A	N/A	N/A

Equity compensation plans not approved by security holders			
Total	1,818,743	$ 33.64	4,551,620

Other information regarding our equity compensation plans is set forth in the section entitled "Executive Compensation" in our Proxy Statement, which information is incorporated herein by reference.

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Item 6. Selected Financial and Operational Data [1]

	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(dollars in millions, except share amounts, per share data and volume data)				
Statement of Operations Data:					
Net sales	$8,635	$ 8,041	$ 5,076	$ 4,463	$ 4,415
Gross profit [2]	1,987	1,761	983	1,190	1,319
Selling, general and administrative expenses	445	399	258	218	179
Amortization of intangibles	101	108	38	7	5
Transaction and integration-related costs	33	29	104	—	9
Income from operations [2]	1,408	1,225	583	965	1,126
Interest expense	(126)	(159)	(79)	(35)	(37)
Other income (expense), net [2]	52	15	54	33	(5)
Income before income taxes	1,334	1,081	558	963	1,084
Provision for (benefit from) income taxes	300	(258)	138	298	399
Net income	1,034	1,339	420	665	685
Net income attributable to noncontrolling interests	38	35	21	19	6
Net income attributable to Westlake Chemical Corporation	$996	$ 1,304	$ 399	$ 646	$ 679
Earnings Per Share Attributable to Westlake Chemical Corporation:					
Basic	$7.66	$ 10.05	$ 3.07	$ 4.88	$ 5.09
Diluted	$7.62	$ 10.00	$ 3.06	$ 4.86	$ 5.07
Weighted average shares outstanding					
Basic	129,401,823	129,087,043	129,367,712	131,823,707	133,111,230
Diluted	129,985,753	129,540,013	129,974,822	132,301,812	133,643,414
Balance Sheet Data (end of period):					
Cash and cash equivalents	$753	$ 1,531	$ 459	$ 663	$ 881
Marketable securities	—	—	—	520	—
Working capital [3]	1,659	1,496	1,225	1,652	1,475
Total assets	11,602	12,076	10,890	5,569	5,208
Total long-term debt, net	2,668	3,127	3,679	758	758
Total Westlake Chemical Corporation stockholders' equity	5,590	4,874	3,524	3,266	2,912
Cash dividends declared per share	$0.9200	$ 0.8012	$ 0.7442	$ 0.6393	$ 0.5820
Other Operating Data:					
Cash flows from:					
Operating activities [4]	$1,409	$ 1,528	$ 867	$ 1,079	$ 1,032
Investing activities	(754)	(652)	(2,563)	(1,006)	(773)
Financing activities [4]	(1,427)	6	1,687	(287)	165
Depreciation and amortization	641	601	378	246	208
Capital expenditures	702	577	629	491	431
EBITDA [5]	2,101	1,841	1,015	1,244	1,329

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	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(dollars in millions, except share amounts, per share data and volume data)				
External Sales Volume (millions of pounds):					
Olefins Segment					
Polyethylene	2,433	2,363	2,392	2,445	2,364
Styrene, feedstock and other	671	828	794	1,182	941
Vinyls Segment					
PVC, caustic soda and other	16,625	12,997	8,118	5,026	3,174
Building products	1,180	1,193	770	629	572

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(1) The historical selected financial and operational data should be read together with Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations, and Item 8, Financial Statements and Supplementary Data included in this Form 10-K.

(2) Immaterial reclassifications were made from cost of sales to other income, net, retrospectively, as a result of the adoption of accounting standard update ("ASU") No. 2017-07 effective January 1, 2018. See Note 1 to our consolidated financial statements included in Item 8 of this Form 10-K for more information.

(3) Working capital equals current assets less current liabilities.

(4) Amounts were retrospectively adjusted as a result of the adoption of ASU No. 2016-18 effective January 1, 2018. Upon adoption of this ASU, we retrospectively adjusted our financial statements to reflect restricted cash in the beginning and ending cash and restricted cash balances within the statements of cash flows. See Note 1 to our consolidated financial statements included in Item 8 of this Form 10-K for more information.

(5) EBITDA (a non-GAAP financial measure) is calculated as net income before interest expense, income taxes, depreciation and amortization. The body of accounting principles generally accepted in the United States is commonly referred to as "GAAP." For this purpose a non-GAAP financial measure is generally defined by the Securities and Exchange Commission ("SEC") as one that purports to measure historical and future financial performance, financial position or cash flows, but excludes or includes amounts that would not be so adjusted in the most comparable GAAP measures. We have included EBITDA in this Form 10-K because our management considers it an important supplemental measure of our performance and believes that it is frequently used by securities analysts, investors and other interested parties in the evaluation of companies in our industry, some of which present EBITDA when reporting their results. We regularly evaluate our performance as compared to other companies in our industry that have different financing and capital structures and/or tax rates by using EBITDA. EBITDA allows for meaningful company-to-company performance comparisons by adjusting for factors such as interest expense, depreciation and amortization and taxes, which often vary from company to company. In addition, we utilize EBITDA in evaluating acquisition targets. Management also believes that EBITDA is a useful tool for measuring our ability to meet our future debt service, capital expenditures and working capital requirements, and EBITDA is commonly used by us and our investors to measure our ability to service indebtedness. EBITDA is not a substitute for the GAAP measures of earnings or of cash flows and is not necessarily a measure of our ability to fund our cash needs. In addition, it should be noted that companies calculate EBITDA differently and, therefore, EBITDA as presented in this Form 10-K may not be comparable to EBITDA reported by other companies. EBITDA has material limitations as a performance measure because it excludes (1) interest expense, which is a necessary element of our costs and ability to generate revenues because we have borrowed money to finance our operations, (2) depreciation, which is a necessary element of our costs and ability to generate revenues because we use capital assets and (3) income taxes, which is a necessary element of our operations. We compensate for these limitations by relying primarily on our GAAP results and using EBITDA

only supplementally. The following table reconciles EBITDA to net income, income from operations and net cash provided by operating activities.

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Reconciliation of EBITDA to Net Income, Income from Operations and Net Cash Provided by Operating Activities

	Year Ended December 31,				
	2018	2017	2016	2015	2014
	(dollars in millions)				
Net cash provided by operating activities [1]	$1,409	$1,528	$867	$1,079	$1,032
Changes in operating assets and liabilities and other [1]	(313)	(723)	(346)	(374)	(288)
Deferred income taxes	(62)	534	(101)	(40)	(59)
Net income	1,034	1,339	420	665	685
Less:					
Other income (expense), net	52	15	54	33	(5)
Interest expense	(126)	(159)	(79)	(35)	(37)
(Provision for) benefit from income taxes	(300)	258	(138)	(298)	(399)
Income from operations	1,408	1,225	583	965	1,126
Add:					
Depreciation and amortization	641	601	378	246	208
Other income (expense), net	52	15	54	33	(5)
EBITDA	$2,101	$1,841	$1,015	$1,244	$1,329

(1) Amounts were retrospectively adjusted as a result of the adoption of ASU No. 2016-18 effective January 1, 2018. See Note 1 to our consolidated financial statements included in Item 8 of this Form 10-K for more information.

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

Overview

We are a vertically integrated global manufacturer and marketer of petrochemicals, polymers and building products. Our two principal operating segments are Olefins and Vinyls. We use the majority of our internally-produced basic chemicals to produce higher value-added chemicals and building products.

Consumption of the basic chemicals that we manufacture in the commodity portions of our olefins and vinyls processes has increased significantly since we began operations in 1986. Our olefins and vinyls products are some of the most widely used chemicals in the world and are upgraded into a wide variety of higher value-added chemical products used in many end-markets. Petrochemicals are typically manufactured in large volume by a number of different producers using widely available technologies. The petrochemical industry exhibits cyclical commodity characteristics, and margins are influenced by changes in the balance between supply and demand and the resulting operating rates, the level of general economic activity and the price of raw materials. The cycle is generally characterized by periods of tight supply, leading to high operating rates and margins, followed by a decline in operating rates and margins primarily as a result of excess new capacity additions. Due to the significant size of new plants, capacity additions are built in large increments and typically require several years of demand growth to be absorbed.

Ethane-based ethylene producers have in the recent past experienced a cost advantage over naphtha-based ethylene producers during periods of higher crude oil prices. This cost advantage has resulted in a strong export market for polyethylene and other ethylene derivatives and has benefited operating margins and cash flows for our Olefins segment during such periods. However, we have seen a significant reduction in the cost advantage enjoyed by North American ethane-based ethylene producers due to lower crude oil prices from the third quarter of 2014 through 2018, which has resulted in reduced prices and lower margins for our Olefins segment. Further, our Olefins segment has experienced lower profitability in recent periods due to new ethylene and polyethylene capacity additions in North America and Asia that have led to higher global demand for ethane, resulting in higher feedstock costs as well as additional supply of ethylene and polyethylene. Looking forward, new ethylene and polyethylene capacity additions in North America, Asia and the Middle East will add additional supply and may continue to contribute to periods of lower profitability. However, increasing demand driven by strong economic growth may be able to absorb some of such additional supply.

Since late 2010, the PVC industry in the U.S. has experienced an increase in PVC resin exports, driven largely by more competitive feedstock and energy cost positions in the U.S. As a consequence, the U.S. PVC resin industry operating rates have improved since 2010. In addition, our 2014 acquisition of Vinnolit Holdings GmbH and its subsidiary companies, an integrated global leader in specialty PVC resins, has contributed to improved operating margins and cash flows for our Vinyls segment. With the acquisition of Axiall Corporation ("Axiall") in 2016, Westlake is the third-largest chlor-alkali producer and the third-largest PVC producer in the world. Globally, there were large chlor-alkali capacity additions between 2008 and 2015 resulting in excess capacity and lower industry operating rates which exerted downward pressure on caustic soda pricing. Since 2015, the capacity additions have been outpaced by an increase in demand driven by improving economic growth and U.S. producers' competitive export position, which has resulted in improved operating rates and caustic soda pricing. Westlake is the second-largest purchaser of ethylene in the U.S., and lower prices of ethylene could positively impact our Vinyls segment. Our recent acquisition of NAKAN is expected to expand our Vinyls segment's downstream business and increase our global footprint.

We purchase significant amounts of ethane feedstock, natural gas, ethylene and salt from external suppliers for use in production of basic chemicals in the olefins and vinyls chains. We also purchase significant amounts of electricity to supply the energy required in our production processes. While we have agreements providing for the supply of ethane feedstock, natural gas, ethylene, salt and electricity, the contractual prices for these raw materials and energy vary with market conditions and may be highly volatile. Factors that have caused volatility in our raw material prices in the past, and which may do so in the future include:

- the availability of feedstock from shale gas and oil drilling;
- supply and demand for crude oil;

- shortages of raw materials due to increasing demand;
- ethane and liquefied natural gas exports;
- capacity constraints due to higher construction costs for investments, construction delays, strike action or involuntary shutdowns;
- the general level of business and economic activity; and
- the direct or indirect effect of governmental regulation.

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Significant volatility in raw material costs tends to put pressure on product margins as sales price increases could lag behind raw material cost increases. Conversely, when raw material costs decrease, customers may seek immediate relief in the form of lower sales prices. We currently use derivative instruments to reduce price volatility risk on feedstock commodities and lower overall costs. Normally, there is a pricing relationship between a commodity that we process and the feedstock from which it is derived. When this pricing relationship deviates from historical norms, we have from time to time entered into derivative instruments and physical positions in an attempt to take advantage of this relationship.

Our historical results have been significantly affected by our plant production capacity, our efficient use of that capacity and our ability to increase capacity. Since our inception, we have followed a disciplined growth strategy that focuses on plant acquisitions, new plant construction and internal expansion. We evaluate each expansion project on the basis of its ability to produce sustained returns in excess of our cost of capital and its ability to improve efficiency or reduce operating costs. We also regularly look at acquisition opportunities that would be consistent with, or complimentary to, our overall business strategies. Depending on the size of the acquisition, any such acquisitions could require external financing.

As noted above in Item 1A, "Risk Factors," we are subject to extensive environmental regulations, which may impose significant additional costs on our operations in the future. Further, concerns about GHG emissions and their possible effects on climate change has led to the enactment of regulations, and to proposed legislation and additional regulations, that could affect us in the form of increased cost of feedstocks and fuel, other increased costs of production and decreased demand for our products. While we do not expect any of these enactments or proposals to have a material adverse effect on us in the near term, we cannot predict the longer-term effect of any of these regulations or proposals on our future financial condition, results of operations or cash flows.

Non-GAAP Financial Measures

The body of accounting principles generally accepted in the United States is commonly referred to as "GAAP." For this purpose, a non-GAAP financial measure is generally defined by the SEC as one that purports to measure historical or future financial performance, financial position or cash flows, but excludes or includes amounts that would not be so adjusted in the most comparable GAAP measures. In this report, we disclose non-GAAP financial measures, primarily earnings before interest, taxes, depreciation and amortization ("EBITDA"). EBITDA is calculated as net income before interest expense, income taxes, depreciation and amortization. The non-GAAP financial measures described in this Form 10-K are not substitutes for the GAAP measures of earnings and cash flows.

EBITDA is included in this Form 10-K because our management considers it an important supplemental measure of our performance and believes that it is frequently used by securities analysts, investors and other interested parties in the evaluation of companies in our industry, some of which present EBITDA when reporting their results. We regularly evaluate our performance as compared to other companies in our industry that have different financing and capital structures and/or tax rates by using EBITDA. In addition, we utilize EBITDA in evaluating acquisition targets. Management also believes that EBITDA is a useful tool for measuring our ability to meet our future debt service, capital expenditures and working capital requirements, and EBITDA is commonly used by us and our investors to measure our ability to service indebtedness. EBITDA is not a substitute for the GAAP measures of earnings or of cash flows and is not necessarily a measure of our ability to fund our cash needs. In addition, it should be noted that companies calculate EBITDA differently and, therefore, EBITDA as presented for us may not be comparable to EBITDA reported by other companies. EBITDA has material limitations as a performance measure because it excludes interest expense, depreciation and amortization, and income taxes.

Recent Developments

On January 2, 2019, we completed the acquisition of NAKAN, a global compounding solutions business, for approximately $250 million. NAKAN's products are used in a wide-variety of applications, including in the automotive, building and construction, and medical industries.

On October 4, 2018, Westlake Chemical Partners LP ("Westlake Partners") and Westlake Chemical Partners GP LLC, the general partner of Westlake Partners, entered into an Equity Distribution Agreement (the "ATM Agreement") with UBS Securities LLC, Barclays Capital Inc., Citigroup Global Markets Inc., Deutsche Bank Securities Inc., RBC Capital Markets, LLC, Merrill Lynch, Pierce, Fenner & Smith Incorporated and Wells Fargo Securities, LLC (collectively, the "Managers"). Pursuant to the terms of the ATM Agreement, Westlake Partners may offer and sell common units representing limited partner interests in Westlake Partners from time to time to, or through, the Managers, as Westlake Partners' sales agents or as principals, having an aggregate offering amount of up to $50 million. Westlake Partners intends to use the net proceeds of sales of the common units for general partnership purposes, including the funding of potential future drop-downs and other acquisitions.

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On August 17, 2018, our Board of Directors authorized us to repurchase an additional $150 million of shares of our common stock under our 2014 share repurchase program. See "Liquidity and Capital Resources—Liquidity and Financing Arrangements" below for further discussions.

We have an 81.7% limited partner interest in Westlake Chemical OpCo LP ("OpCo"), a 43.8% limited partner interest in Westlake Partners, a general partner interest in Westlake Partners and incentive distribution rights ("IDRs"). On July 27, 2018, the Westlake Partners' partnership agreement was amended to revise the minimum quarterly distribution thresholds for Westlake Partners' IDRs. For more information on the amendment, see Note 18 to the consolidated financial statements included in Item 8 of this Form 10-K.

On July 24, 2018, we entered into a new $1 billion revolving credit facility that is scheduled to mature on July 24, 2023. See "Liquidity and Capital Resources—Debt—Credit Agreement" for more information.

On May 15, 2018, we redeemed all of the outstanding Westlake 4.875% Senior Notes due 2023 ($434 million aggregate principal amount) and all of the outstanding Axiall Corporation 4.875% Senior Notes due 2023 ($16 million aggregate principal amount) (collectively, the "2023 Notes") at a redemption price equal to 102.438% of the principal amount of the 2023 Notes plus accrued and unpaid interest on the 2023 Notes to the redemption date.

On February 15, 2018, we redeemed all of the outstanding Westlake 4.625% Senior Notes due 2021 ($625 million aggregate principal amount) and all of the outstanding Eagle Spinco Inc. 4.625% Senior Notes due 2021 ($63 million aggregate principal amount) (collectively, the "2021 Notes") at a redemption price equal to 102.313% of the principal amount of the 2021 Notes plus accrued and unpaid interest on the 2021 Notes to the redemption date.

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Results of Operations

Segment Data

	Year Ended December 31,		
	2018	2017	2016
	(dollars in millions, except per share data)		
Net external sales			
Olefins			
Polyethylene	$1,519	$1,518	$1,463
Styrene, feedstock and other	500	533	431
Total Olefins	2,019	2,051	1,894
Vinyls			
PVC, caustic soda and other	5,359	4,769	2,493
Building products	1,257	1,221	689
Total Vinyls	6,616	5,990	3,182
Total	$8,635	$8,041	$5,076
Income (loss) from operations			
Olefins	$573	$655	$558
Vinyls	913	639	176
Corporate and other	(78)	(69)	(151)
Total income from operations	1,408	1,225	583
Interest expense	(126)	(159)	(79)
Other income, net	52	15	54
Provision for (benefit from) income taxes	300	(258)	138
Net income	1,034	1,339	420
Net income attributable to noncontrolling interests	38	35	21
Net income attributable to Westlake Chemical Corporation	$996	$1,304	$399
Diluted earnings per share	$7.62	$10.00	$3.06

	Year Ended December 31,			
	2018		2017	
	Average Sales Price	Volume	Average Sales Price	Volume
Product sales price and volume percentage change from prior year				
Olefins	-1 %	— %	+9 %	-1 %
Vinyls	+7 %	+4 %	+14 %	+74 %
Company average	+5 %	+3 %	+12 %	+46 %

	Year Ended December 31,		
	2018	2017	2016
Average industry prices (1)			
Ethane (cents/lb)	11.0	8.3	6.6
Propane (cents/lb)	20.8	18.1	11.4
Ethylene (cents/lb) (2)	19.0	28.0	26.9
Polyethylene (cents/lb) (3)	71.3	71.1	65.3
Styrene (cents/lb) (4)	91.4	86.5	64.8
Caustic ($/short ton) (5)	768.3	635.4	645.0
Chlorine ($/short ton) (6)	343.8	323.8	297.7
PVC (cents/lb) (7)	67.4	62.6	54.7

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(1) Industry pricing data was obtained through IHS Markit ("IHS"). We have not independently verified the data.
(2) Represents average North American spot prices of ethylene over the period as reported by IHS.
(3) Represents average North American net transaction prices of polyethylene low density GP-Film grade over the period as reported by IHS.
(4) Represents average North American contract prices of styrene over the period as reported by IHS.
(5) Represents average North American United States Gulf Coast undiscounted contract prices of caustic soda over the period as reported by IHS. During the first quarter of 2018, IHS discontinued the previous caustic soda index that we used. For comparability, the average 2017 caustic soda is based on the current index.
(6) Represents average North American contract prices of chlorine (into chemicals) over the period as reported by IHS.
(7) Represents average North American contract prices of polyvinyl chloride (PVC) over the period as reported by IHS. Effective January 1, 2017, IHS made a non-market downward adjustment of 15 cents per pound to PVC prices. For comparability, we adjusted each prior-year period's PVC price downward by 15 cents per pound consistent with the IHS non-market adjustment.

Summary

For the year ended December 31, 2018, net income attributable to Westlake Chemical Corporation was $996 million, or $7.62 per diluted share, on net sales of $8,635 million. This represents a decrease in net income attributable to Westlake Chemical Corporation of $308 million, or $2.38 per diluted share, compared to 2017 net income attributable to Westlake Chemical Corporation of $1,304 million, or $10.00 per diluted share, on net sales of $8,041 million. Net income for the year ended December 31, 2018 decreased versus the prior year primarily due to the recognition of a $591 million income tax benefit in 2017 under U.S. Tax Cuts and Jobs Act enacted in 2017 (the "Tax Act") and higher ethane feedstock costs. These decreases were partially offset by (1) higher sales prices and volumes for caustic soda; (2) a lower effective income tax rate resulting from the reduced U.S. corporate income tax rate under the Tax Act; (3) lower purchased ethylene costs; (4) higher other income, including a one-time pension settlement gain of $14 million, and higher interest income; and (5) a lower interest expense due to lower average debt outstanding for 2018 as compared to 2017. Net sales for the year ended December 31, 2018 increased $594 million to $8,635 million compared to net sales for the year ended December 31, 2017 of $8,041 million, mainly due to higher sales prices and volumes for caustic soda and higher sales volumes for PVC resin and polyethylene, partially offset by lower polyethylene sales prices and lower styrene sales volumes. Income from operations was $1,408 million for the year ended December 31, 2018 as compared to $1,225 million for the year ended December 31, 2017, an increase of $183 million. The increase in income from operations for the year ended December 31, 2018 was mainly a result of higher sales prices and volumes for caustic soda and improved operating rates in the Vinyls segment due to fewer planned turnarounds and unplanned outages, partially offset by higher ethane feedstock costs, as compared to the year ended December 31, 2017. Pre-tax transaction and integration-related costs for the year ended December 31, 2018 were $33 million, or $0.19 per diluted share after tax, as compared to $29 million in 2017.

2018 Compared with 2017

Net Sales. Net sales increased by $594 million, or 7%, to $8,635 million in 2018 from $8,041 million in 2017, primarily attributable to higher sales prices and volumes for caustic soda and higher sales volumes for PVC resin and polyethylene, partially offset by lower polyethylene sales prices and lower styrene sales volumes. Average sales prices for 2018 increased by 5% as compared to 2017. Overall sales volumes increased by 3% in 2018 as compared to 2017.

Gross Profit. Gross profit margin percentage increased to 23% in 2018 from 22% in 2017. The gross profit margin for 2018 was higher primarily due to higher sales prices and volumes for caustic soda, lower purchased ethylene costs and improved operating rates in the Vinyls segment due to fewer planned turnarounds and unplanned outages, partially offset by higher ethane feedstock costs, as compared to 2017.

Selling, General and Administrative Expenses. Selling, general and administrative expenses increased by $46 million to $445 million in 2018 from $399 million in 2017. This increase was mainly due to an increase in employee compensation and professional consulting fees.

Amortization of Intangibles. Amortization expense for 2018 was comparable to 2017.

Transaction and Integration-related Costs. Transaction and integration-related costs were $33 million in 2018 as compared to $29 million in 2017. The transaction and integration-related costs primarily consisted of integration-related consulting fees, severance benefits provided in conjunction with acquisition and reorganization charges.

Interest Expense. Interest expense decreased by $33 million to $126 million in 2018 from $159 million in 2017, primarily as a result of lower average debt outstanding for 2018 as compared to 2017. The lower average debt balance in 2018 was mainly due to the redemption of the 2023 Notes in May 2018 and the 2021 Notes in February 2018. See "Liquidity and Capital Resources—Debt" below for further discussion of our indebtedness.

Other Income, Net. Other income, net increased by $37 million to $52 million in 2018 from $15 million in 2017. The increase was primarily attributable to a one-time pension settlement gain of $14 million, an increase in interest income of $13 million, a net gain of $6 million recognized on the redemption of the 2021 Notes and an increase in income from unconsolidated subsidiaries of $6 million.

Income Taxes. The effective income tax rate was an expense of 22% in 2018 as compared to a benefit of 24% in 2017. The effective tax rate in 2018 was higher as compared to 2017, primarily due to the recognition of a $591 million income tax benefit in 2017 as a result of the revaluation of deferred tax assets and liabilities. In addition, the U.S. corporate income tax rate was lower in 2018 as compared to 2017. The effective income tax rate in 2018 was above the U.S. federal statutory rate of 21% primarily due to state and foreign taxes.

Olefins Segment

Net Sales. Net sales decreased by $32 million, or 2%, to $2,019 million in 2018 from $2,051 million in 2017. The decrease was mainly due to lower sales volumes for styrene as a result of a planned turnaround in the second quarter of 2018 and lower polyethylene sales prices, partially offset by higher sales volumes for polyethylene and higher sales prices for styrene, as compared to 2017. Average sales prices for the Olefins segment decreased by 1% in 2018 as compared to 2017, while average sales volumes in 2018 were consistent with 2017.

Income from Operations. Income from operations was $573 million in 2018 as compared to $655 million in 2017. The decrease was primarily due to lower margins resulting from higher ethane feedstock costs and lower polyethylene sales prices, partially offset by higher polyethylene sales volumes.

Vinyls Segment

Net Sales. Net sales increased by $626 million, or 10%, to $6,616 million in 2018 from $5,990 million in 2017. This increase was mainly attributable to higher sales prices and volumes for caustic soda and higher sales volumes for PVC resin as compared to 2017. Average sales volumes increased by 4% in 2018, as compared to 2017, and average sales prices increased by 7% in 2018 as compared to 2017.

Income from Operations. Income from operations was $913 million in 2018 as compared to $639 million in 2017. This increase was mainly attributable to higher sales prices and volumes for caustic soda, lower purchased ethylene costs, improved operating rates and lower costs associated with planned turnarounds and unplanned outages, as compared to 2017.

2017 Compared with 2016

Net Sales. Net sales increased by $2,965 million, or 58%, to $8,041 million in 2017 from $5,076 million in 2016, primarily attributable to higher sales volume contributed by Axiall and higher sales prices for our major products. Overall sales volumes increased by 46% in 2017 as compared to 2016, primarily attributable to higher sales contributed by Axiall. Average sales prices for 2017 increased by 12% as compared to 2016.

Gross Profit. Gross profit margin percentage increased to 22% in 2017 from 19% in 2016. The gross profit margin for 2017 was higher primarily due to higher sales prices for our major products and higher sales volumes for caustic soda, chlorine and PVC resin contributed primarily by Axiall, as compared to 2016. These increases were offset by higher unabsorbed fixed manufacturing and other costs associated with turnarounds and unplanned outages and a proportionately larger sales volume for the Vinyls segment, for which industry margins in 2017 and 2016 were lower as compared to the Olefins industry.

Selling, General and Administrative Expenses. Selling, general and administrative expenses increased by $141 million, or 55%, in 2017 as compared to 2016, primarily because a full year of Axiall's expenses were included in 2017, as compared to only four months in 2016 and an increase in employee compensation.

Amortization of Intangibles. Amortization of intangibles are comprised of amortization expense for customer relationships, trade name and other intangible assets. The amortization expense increased by $70 million in 2017, as compared to 2016, because a full year of expense related to the intangible assets acquired in the Axiall Merger was included in 2017, as compared to only four months in 2016.

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Transaction and Integration-related Costs. Transaction and integration-related costs were $29 million in 2017 as compared to $104 million in 2016. Transaction and integration-related costs were $75 million lower in 2017 as compared to 2016 predominantly because significant transaction and integration-related costs were incurred at the time of the Axiall Merger in 2016. The transaction and integration-related costs in 2017 primarily consisted of severance benefits provided to former Axiall employees in conjunction with the Axiall Merger and integration costs and consulting fees related to the Axiall Merger. The transaction and integration-related costs in 2016 primarily consisted of severance benefits provided to former Axiall executives in conjunction with the Axiall Merger, including the conversion of Axiall restricted stock units into our restricted stock units, transitional service expenses for certain former Axiall employees, retention agreement costs and consulting and professional fees related to the Axiall Merger.
Interest Expense. Interest expense increased by $80 million to $159 million in 2017 from $79 million in 2016, primarily as a result of higher average debt outstanding for the year as well as decreased capitalized interest on major capital projects in 2017 as compared to 2016. The debt balance increased in August 2016 to finance the Axiall Merger. See "Liquidity and Capital Resources—Debt" below for further discussion of our indebtedness.
Other Income, Net. Other income, net decreased by $39 million to $15 million in 2017 from $54 million in 2016. The decrease was mainly attributable to the realized gain in 2016 of $49 million from the previously held common stock of Axiall.
Income Taxes. The effective income tax rate was a benefit of 24% in 2017 as compared to an expense of 25% in 2016. The effective income tax rate for 2017 was below the U.S. federal statutory rate of 35% primarily due to the $591 million income tax benefit as a result of the revaluation of deferred tax assets and liabilities, partially offset by a one-time U.S. tax on the mandatory deemed repatriation of our post-1986 foreign earnings as part of the Tax Act, the domestic manufacturing deduction, depletion deductions, income attributable to noncontrolling interests, foreign earnings rate differential and foreign withholding tax related to such earnings. The effective income tax rate for 2016 was below the U.S. federal statutory rate of 35% primarily due to the benefit of state tax credits, the domestic manufacturing deduction, depletion deductions, income attributable to noncontrolling interests, the non-recognition of tax related to the gain recognized on previously held outstanding shares of common stock of Axiall, the benefit in prior years' and current-year tax credits for increased research and development expenditures and adjustments related to prior years' tax returns as filed, change in state apportionment and the foreign earnings rate differential, partially offset by state income taxes and nondeductible transaction costs related to the Axiall Merger.
Olefins Segment
Net Sales. Net sales increased by $157 million, or 8%, to $2,051 million in 2017 from $1,894 million in 2016, mainly due to higher sales prices for our major products compared to the prior year. Average sales prices for the Olefins segment increased by 9% in 2017 as compared to 2016, while average sales volumes decreased by 1% in 2017 as compared to 2016, primarily due to lower polyethylene sales.
Income from Operations. Income from operations was $655 million in 2017 as compared to $558 million in 2016. This increase was mainly attributable to higher olefins integrated product margins, primarily due to higher sales prices for our major products, higher operating rates and lower costs associated with turnarounds and unplanned outages as compared to the prior year. These increases were partially offset by higher energy costs. Income from operations for 2016 was negatively impacted by the planned turnaround and expansion of the Lake Charles Petro 1 ethylene unit along with other unplanned outages. Trading activity for 2017 resulted in a loss of $4 million as compared to a gain of $20 million for 2016.
Vinyls Segment
Net Sales. Net sales increased by $2,808 million, or 88%, to $5,990 million in 2017 from $3,182 million in 2016. This increase was mainly attributable to higher sales volume contributed primarily by Axiall and higher sales prices for our major products. Average sales volumes increased by 74% in 2017 as compared to 2016 primarily because a full year of Axiall's operations was included in 2017 as compared to only four months of Axiall's operations included in 2016. Average sales prices for the Vinyls segment increased by 14% in 2017 as compared to 2016.
Income from Operations. Income from operations was $639 million in 2017 as compared to $176 million in 2016. This increase was mainly attributable to earnings contributed by Axiall and higher sales prices and volumes for our major products. These increases were partially offset by higher unabsorbed fixed manufacturing and other costs

associated with the planned turnaround and expansion at the Calvert City facility and other turnarounds and unplanned outages in addition to higher energy costs in 2017, as compared to 2016.

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Cash Flows

Operating Activities

Operating activities provided cash of $1,409 million in 2018 compared to cash provided of $1,528 million in 2017. The $119 million decrease in cash flows from operating activities was mainly due to an increase in working capital requirements, partially offset by an increase in income from operations in 2018 and lower income taxes for 2018 as a result of the Tax Act, as compared to 2017. Income from operations increased by $183 million in 2018, as compared to the prior year 2017. The increase in income from operations was primarily a result of higher sales price and volume for caustic soda partially offset by higher feedstock costs. Changes in components of working capital, which we define for purposes of this cash flow discussion as accounts receivable, inventories, prepaid expenses and other current assets, less accounts payable and accrued liabilities, used cash of $290 million in 2018, compared to $155 million of cash provided in 2017, an unfavorable change of $445 million. The change was mainly driven by unfavorable changes in inventories, accounts payable and accrued liabilities. Unfavorable changes in inventories were primarily the result of higher feedstock costs in 2018, as compared to 2017, and the changes in accounts payable and accrued liabilities were primarily due to the timing of purchases and payments to suppliers as well as due to a lower income tax accrual as a result of the lower tax rate under the Tax Act.

Operating activities provided cash of $1,528 million in 2017 compared to cash provided of $867 million in 2016. The $661 million increase in cash flows from operating activities was mainly due to an increase in income from operations and a decrease in working capital requirements. Income from operations increased by $642 million in 2017, as compared to the prior year, mainly as a result of higher sales prices, resulting in a higher margin, as well as higher earnings contributed by Axiall. Changes in components of working capital, which we define for purposes of this cash flow discussion as accounts receivable, inventories, prepaid expenses and other current assets, less accounts payable and accrued liabilities provided cash of $155 million in 2017, compared to $59 million of cash provided in 2016, a favorable change of $96 million. The favorable change was mainly due to a decrease in cash usage in 2017 of $141 million resulting from higher accounts payable and accrued liabilities, partially offset by higher accounts receivable, resulting in an increase in cash usage of $90 million, as compared to 2016.

Investing Activities

Net cash used for investing activities during 2018 was $754 million as compared to net cash used of $652 million in 2017. Capital expenditures were $702 million in 2018 compared to $577 million in 2017. Capital expenditures in 2018 were primarily related to expansion projects as well as projects to improve production capacity or reduce costs, maintenance and safety and environmental projects at our various facilities. The expansion projects include our previously announced ongoing expansions of chlor-alkali, PVC and VCM capacities at our plants in Germany and Geismar. Capital expenditures in 2017 were primarily incurred on the upgrade and expansion of OpCo's Calvert City ethylene plant at our Calvert City site. The remaining capital expenditures in 2017 primarily related to projects to improve production capacity or reduce costs, maintenance and safety and environmental projects at our various facilities. We spent $58 million in 2018 to fund the construction costs of our LACC joint venture, as compared to $66 million in 2017. In addition, we invested $10 million in other unconsolidated subsidiaries in 2018. Please see "Liquidity and Capital Resources—Liquidity and Financing Arrangements" below for further discussion.

Net cash used for investing activities during 2017 was $652 million as compared to net cash used of $2,563 million in 2016. We used $2,438 million of cash, net of cash acquired, for the acquisition of Axiall in 2016. Capital expenditures were $577 million in 2017 compared to $629 million in 2016. Capital expenditures in 2017 were incurred on several projects, including the upgrade and expansion of OpCo's Calvert City ethylene plant at our Calvert City site. Capital expenditures in 2016 were primarily incurred on the upgrade and expansion of OpCo's Petro 1 ethylene unit at our Lake Charles site. The remaining capital expenditures in 2017 and 2016 primarily related to projects to improve production capacity or reduce costs, maintenance and safety and environmental projects at our various facilities. In addition, we spent $66 million in 2017 related to our contribution to LACC to fund the construction costs of the ethylene plant, as compared to $17 million in 2016. Please see "Liquidity and Capital Resources—Liquidity and Financing Arrangements" below for further discussion. We did not purchase any securities in 2017 compared to a total of $138 million of securities purchased in 2016. Other 2016 investing activity was related to the receipt of proceeds of $663 million from the sales and maturities of our investments.

Cash provided by operating and investing activities in 2017 and 2016 was retrospectively adjusted as a result of the adoption of accounting standards update No. 2016-18 effective January 1, 2018. See Note 1 to our consolidated financial statements included in Item 8 of this Form 10-K for more information.

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Financing Activities

Net cash used by financing activities during 2018 was $1,427 million as compared to net cash provided of $6 million in 2017. We used $1,179 million for the repayment of notes payable, of which $704 million was used for the redemption of the 2021 Notes in February 2018 and $461 million was used for the redemption of the 2023 Notes in May 2018 and the remaining balance was used for the repayment of short-term notes payable. The remaining activities in 2018 were primarily related to the $120 million payment of cash dividends, the $45 million payment of cash distributions to noncontrolling interests, treasury stock repurchases of $106 million and proceeds of $14 million from the issuance of short-term notes payable. The 2017 activity was mainly related to the issuance of notes, drawdown under the Credit Agreement and issuance of Westlake Partners common units, partially offset by repayment of borrowings under the Credit Agreement, the payment of cash dividends, the payment of cash distributions to noncontrolling interests and the payment of debt issuance costs.

Net cash provided by financing activities during 2017 was $6 million as compared to net cash provided of $1,687 million in 2016. We received net proceeds in 2017 of $978 million from notes payable and drawdown of revolver which comprised of (1) $495 million from the issuance in November 2017 of the 4.375% Senior Notes due 2047; (2) $250 million from the remarketing in November 2017 of the Refunding Bonds; (3) $225 million from a drawdown under the Credit Agreement; and (4) $8 million issuance of notes payable. Additionally, we received $111 million from the issuance of Westlake Partners common units as a result of its secondary offering in September 2017. In 2017, we used cash of (1) $150 million for the repayment of our prior term loan; (2) $250 million for the redemption of the 6 ¾% tax exempt revenue bonds due November 2032; and (3) $550 million for the repayment of borrowings under the Credit Agreement. The remaining 2017 activity was primarily related to the $103 million payment of cash dividends, the $28 million payment of cash distributions to noncontrolling interests, the $6 million payment of debt issuance costs and activities related to Huasu's short-term notes payable to banks in connection with payments of suppliers through letters of credit. The 2016 activity was mainly related to the issuance of senior notes and our prior term loan and borrowings under the Credit Agreement, partially offset by repayment of borrowings under the Credit Agreement, the payment of cash dividends, the payment of cash distributions to noncontrolling interests, the payment of debt issuance costs and the repurchase of shares of our common stock.

Liquidity and Capital Resources

Liquidity and Financing Arrangements

Our principal sources of liquidity are from cash and cash equivalents, cash from operations, short-term borrowings under the Credit Agreement and our long-term financing.

On January 2, 2019, we acquired NAKAN and paid approximately $250 million as the purchase price.

On July 24, 2018, we entered into a new $1 billion revolving credit facility that is scheduled to mature on July 24, 2023. See "Liquidity and Capital Resources—Debt—Credit Agreement" for more information.

In November 2014, our Board of Directors authorized a $250 million stock repurchase program (the "2014 Program"). In November 2015, our Board of Directors approved the expansion of the 2014 Program by an additional $150 million. In August 2018, our Board of Directors approved the further expansion of the existing 2014 Program by an additional $150 million. As of December 31, 2018, we had repurchased 5,562,479 shares of our common stock for an aggregate purchase price of approximately $335 million under the 2014 Program. During the year ended December 31, 2018, 1,368,881 shares of our common stock were repurchased under the 2014 Program. Purchases under the 2014 Program may be made either through the open market or in privately negotiated transactions. Decisions regarding the amount and the timing of purchases under the 2014 Program will be influenced by our cash on hand, our cash flow from operations, general market conditions and other factors. The 2014 Program may be discontinued by our Board of Directors at any time.

We are party to a joint venture with Lotte Chemical USA Corporation to build an ethylene facility, LACC. The ethylene facility is located adjacent to our vinyls facility in Lake Charles. Pursuant to the contribution and subscription agreement, we agreed to make a maximum capital commitment to LACC of up to $225 million to fund the construction costs of the ethylene plant, which represents approximately 10% of the interests in LACC. The construction of the ethylene plant commenced in January 2016, with an anticipated start-up in the first half of 2019. As of December 31, 2018, we had funded approximately $183 million of our portion of the construction costs of the

ethylene plant.
On February 15 and May 15, 2018, we redeemed all of the 2021 Notes ($688 million aggregate principal amount) and all of the 2023 Notes ($450 million aggregate principal amount), respectively.

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We believe that our sources of liquidity as described above are adequate to fund our normal operations and ongoing capital expenditures. Funding of any potential large expansions or potential acquisitions would likely necessitate and therefore depend on our ability to obtain additional financing in the future. We may not be able to access additional liquidity at cost effective interest rates due to the volatility of the commercial credit markets.

Cash and Cash Equivalents

As of December 31, 2018, our cash and cash equivalents totaled $753 million. In addition, we have the Credit Agreement available to supplement cash if needed, as described under "Debt" below.

Debt

As of December 31, 2018, our indebtedness, including the current portion, totaled $2,668 million. See Note 8 to the consolidated financial statements appearing elsewhere in this Form 10-K for a discussion of our long-term indebtedness. Defined terms used in this section have the definitions assigned to such terms in Note 8 to the consolidated financial statements included in Item 8 of this Form 10-K.

Our ability to make payments on our indebtedness and to fund planned capital expenditures will depend on our ability to generate cash in the future, which is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control. Based on our current level of operations and unless we were to undertake a new expansion or large acquisition, we believe our cash flows from operations, available cash and available borrowings under the Credit Agreement will be adequate to meet our normal operating needs for the foreseeable future.

Credit Agreement

On July 24, 2018, we entered into a new $1 billion revolving credit facility that is scheduled to mature on July 24, 2023 (the "Credit Agreement") and, in connection therewith, terminated the existing $1 billion revolving credit facility that was scheduled to mature on August 23, 2021 (the "Prior Credit Agreement"). The Credit Agreement bears interest at either (a) LIBOR plus a spread ranging from 1.00% to 1.75% or (b) Alternate Base Rate plus a spread ranging from 0.00% to 0.75% in each case depending on the credit rating of the Company. At December 31, 2018, we had no borrowings outstanding under the Credit Agreement. As of December 31, 2018, we had outstanding letters of credit totaling $4 million and borrowing availability of $996 million under the Credit Agreement. The Credit Agreement contains certain affirmative and negative covenants, including a quarterly total leverage ratio financial maintenance covenant. As of December 31, 2018, we were in compliance with the total leverage ratio financial maintenance covenant.

The Credit Agreement also contains certain events of default and if and for so long as certain events of default have occurred and are continuing, any overdue amounts outstanding under the Credit Agreement will accrue interest at an increased rate, the lenders can terminate their commitments thereunder and payments of any outstanding amounts could be accelerated by the lenders. None of our subsidiaries are required to guarantee our obligations under the Credit Agreement.

The Credit Agreement includes a $150 million sub-limit for letters of credit, and any outstanding letters of credit will be deducted from availability under the facility. The Credit Agreement also provides for a discretionary $50 million commitment for swingline loans to be provided on a same-day basis. We may also increase the size of the facility, in increments of at least $25 million, up to a maximum of $500 million, subject to certain conditions and if certain lenders agree to commit to such an increase.

In connection with our entry into the Credit Agreement and termination of the Prior Credit Agreement on July 24, 2018, all guarantees by our subsidiaries of our payment obligations under the 4.375% 2047 Senior Notes, the 3.60% 2022 Senior Notes, the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes were released.

GO Zone Bonds and IKE Zone Bonds

In November 2017, the Louisiana Local Government Environmental Facility and Development Authority (the "Authority") completed the offering of $250 million aggregate principal amount of 3.50% tax-exempt revenue refunding bonds due November 1, 2032 (the "Refunding Bonds"), the net proceeds of which were used to redeem $250 million aggregate principal amount of the Authority's 6 ¾% tax-exempt revenue bonds due November 1, 2032 issued by the Authority under the Gulf Opportunity Zone Act of 2005 (the "GO Zone Act") in December 2007. In connection with the issuance of the Refunding Bonds, we issued $250 million of the 3.5% 2032 GO Zone Refunding

Senior Notes. The Refunding Bonds are subject to optional redemption by the Authority upon the direction of the Company at any time on or after November 1, 2027, for 100% of the principal plus accrued interest.

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In July 2010, the Authority completed the reoffering of $100 million of the 6 ½% 2029 GO Zone Bonds. In connection with the reoffering of the 6 ½% 2029 GO Zone Bonds, we issued $100 million of the 6 ½% 2029 GO Zone Senior Notes. In December 2010, the Authority issued $89 million of the 6 ½% 2035 GO Zone Bonds. In connection with the issuance of the 6 ½% 2035 GO Zone Bonds, we issued $89 million of the 6 ½% 2035 GO Zone Senior Notes. In December 2010, the Authority completed the offering of $65 million of the 6 ½% 2035 IKE Zone Bonds under Section 704 of the Emergency Economic Stabilization Act of 2008 (the "IKE Zone Act"). In connection with the issuance of the 6 ½% 2035 IKE Zone Bonds, we issued $65 million of the 6 ½% 2035 IKE Zone Senior Notes.

The 6 ½% 2029 GO Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company at any time prior to August 1, 2020 for 100% of the principal plus accrued interest and a discounted "make whole" payment. On or after August 1, 2020, the 6 ½% 2029 GO Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company for 100% of the principal plus accrued interest. The 6 ½% 2035 GO Zone Bonds and the 6 ½% 2035 IKE Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company at any time prior to November 1, 2020 for 100% of the principal plus accrued interest and a discounted "make whole" payment. On or after November 1, 2020, the 6 ½% 2035 GO Zone Bonds and the 6 ½% 2035 IKE Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company for 100% of the principal plus accrued interest. See Note 8 to the consolidated financial statements included in Item 8 of this Form 10-K for more information.

3.60% Senior Notes due 2026 and 5.0% Senior Notes due 2046

In August 2016, we completed the private offering of $750 million aggregate principal amount of our 3.60% 2026 Senior Notes and $700 million aggregate principal amount of our 5.0% 2046 Senior Notes. In March 2017, the Company commenced registered exchange offers to exchange the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes for new notes that are identical in all material respects to the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes, except that the offer and issuance of the new Securities and Exchange Commission ("SEC")-registered notes have been registered under the Securities Act of 1933, as amended (the "Securities Act"). The exchange offers expired on April 24, 2017, and approximately 99.97% of the 3.60% 2026 Senior Notes and 100% of the 5.0% 2046 Senior Notes were exchanged. The notes that were not exchanged in the exchange offers have not been registered under the Securities Act or any state securities laws and may not be offered or sold in the U.S. absent registration or an applicable exemption from registration requirements or a transaction not subject to the registration requirements of the Securities Act or any state securities law.

3.60% Senior Notes due 2022

In July 2012, we issued $250 million aggregate principal amount of the 3.60% 2022 Senior Notes. We may optionally redeem the 3.60% 2022 Senior Notes at any time and from time to time prior to April 15, 2022 (three months prior to the maturity date) for 100% of the principal plus accrued interest and a discounted "make whole" payment. On or after April 15, 2022, we may optionally redeem the 3.60% 2022 Senior Notes for 100% of the principal plus accrued interest. The holders of the 3.60% 2022 Senior Notes may require us to repurchase the 3.60% 2022 Senior Notes at a price of 101% of their principal amount, plus accrued and unpaid interest to the date of repurchase, upon the occurrence of both a "change of control" and, within 60 days of such change of control, a "below investment grade rating event" (as such terms are defined in the indenture governing the 3.60% 2022 Senior Notes).

4.375% Senior Notes due 2047

In November 2017, we completed the registered public offering of $500 million aggregate principal amount of 4.375% Senior Notes due November 15, 2047. We may optionally redeem the 4.375% 2047 Senior Notes at any time and from time to time prior to May 15, 2047 (six months prior to the maturity date) for 100% of the principal plus accrued interest and a discounted "make whole" payment. On or after May 15, 2047, we may optionally redeem the 4.375% 2047 Senior Notes for 100% of the principal amount plus accrued interest. The holders of the 4.375% 2047 Senior Notes may require us to repurchase the 4.375% 2047 Senior Notes at a price of 101% of their principal amount, plus accrued and unpaid interest to, but not including, the date of repurchase, upon the occurrence of both a "change of control" and, within 60 days of such change of control, a "below investment grade rating event" (as such terms are defined in the indenture governing the 4.375% 2047 Senior Notes). See Note 8 to the consolidated financial statements for more information.

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4.625% Senior Notes due 2021 and 4.875% Senior Notes due 2023

In September 2016, we completed offers to exchange (the "Axiall Exchange Offers") any and all of the $688 million aggregate principal amount of the 4.625% Subsidiary 2021 Senior Notes and the $450 million aggregate principal amount of the 4.875% Subsidiary 2023 Senior Notes (together with the 4.625% Subsidiary 2021 Senior Notes, the "Subsidiary Notes") issued by Axiall for new senior notes issued by us having the same maturity and interest rates as the Subsidiary Notes. Pursuant to the Axiall Exchange Offers, $625 million aggregate principal amount of the 4.625% Subsidiary 2021 Senior Notes and $434 million aggregate principal amount of the 4.875% Subsidiary 2021 Senior Notes were exchanged for an identical amount of 4.625% Westlake 2021 Senior Notes and 4.875% Westlake 2021 Senior Notes, respectively, leaving outstanding $63 million aggregate principal amount of 4.625% Subsidiary 2021 Senior Notes and $16 million aggregate amount of 4.875% Subsidiary 2021 Notes. In December 2017, we delivered notices for the optional redemption of all of the outstanding 4.625% Westlake 2021 Senior Notes and 4.625% Subsidiary 2021 Senior Notes (collectively, the "2021 Notes"). The 2021 Notes were redeemed on February 15, 2018 at a redemption price equal to 102.313% of the principal amount of the 2021 Notes plus accrued and unpaid interest on the 2021 Notes to the redemption date. In March 2018, we delivered notices for the optional redemption of all of the outstanding Westlake 4.875% Senior Notes due 2023 and 4.875% Subsidiary Notes due 2023 (collectively, the "2023 Notes"). The 2023 Notes were redeemed on May 15, 2018 at a redemption price equal to 102.438% of the principal amount of the 2023 Notes plus accrued and unpaid interest on the 2023 Notes to the redemption date.

Revenue Bonds

In December 1997, we entered into a loan agreement with a public trust established for public purposes for the benefit of the Parish of Calcasieu, Louisiana. The public trust issued $11 million principal amount of tax-exempt waste disposal revenue bonds in order to finance our construction of waste disposal facilities for an ethylene plant. The waste disposal revenue bonds expire in December 2027 and are subject to redemption and mandatory tender for purchase prior to maturity under certain conditions. Interest on the waste disposal revenue bonds accrues at a rate determined by a remarketing agent and is payable quarterly. The interest rate on the waste disposal revenue bonds at December 31, 2018 and 2017 was 1.85% and 1.73%, respectively.

The indenture governing the 3.60% 2026 Senior Notes, the 5.0% 2046 Senior Notes, the 3.60% 2022 Senior Notes and the 4.375% 2047 Senior Notes contains customary events of default and covenants that will restrict us and certain of our subsidiaries' ability to (1) incur certain secured indebtedness, (2) engage in certain sale-leaseback transactions and (3) consolidate, merge or transfer all or substantially all of its assets.

As of December 31, 2018, we were in compliance with all of our long-term debt covenants.

Westlake Chemical Partners LP Credit Arrangements

Our subsidiary, Westlake Chemical Finance Corporation, is the lender party to a $600 million revolving credit facility with Westlake Chemical Partners LP ("Westlake Partners"), originally entered into on April 29, 2015. The revolving credit facility is scheduled to mature on April 29, 2021. Borrowings under the revolver bear interest at LIBOR plus a spread ranging from 2.0% to 3.0% (depending on Westlake Partners' consolidated leverage ratio), payable quarterly. Westlake Partners may pay all or a portion of the interest on any borrowings in kind, in which case any such amounts would be added to the principal amount of the loan. As of December 31, 2018, outstanding borrowings under the credit facility totaled $254 million and bore interest at the LIBOR rate plus 2.0%.

Our subsidiary, Westlake Polymers LLP, is the administrative agent to a $600 million revolving credit facility with OpCo. The revolving credit facility was amended on September 25, 2018 to extend the maturity date from August 2019 to September 2023 and to revise the applicable margin from 3.0% to 2.0%. As of December 31, 2018, outstanding borrowings under the credit facility totaled $224 million and bore interest at the LIBOR rate plus 2.0%, which is accrued in arrears quarterly.

We consolidate Westlake Partners and OpCo for financial reporting purposes as we have a controlling financial interest. As such, the revolving credit facilities described above between our subsidiaries and Westlake Partners and OpCo are eliminated upon consolidation.

Contractual Obligations and Commercial Commitments

In addition to long-term debt, we are required to make payments relating to various types of obligations. The following table summarizes our contractual obligations as of December 31, 2018 relating to long-term debt, operating leases, capital leases, pension benefits funding, post-retirement healthcare benefits, purchase obligations and interest payments for the next five years and thereafter. The amounts do not include deferred charges and other items classified in other liabilities in the consolidated balance sheet due to the uncertainty of the future payment schedule.

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	Payment Due by Period				
	Total	2019	2020-2021	2022-2023	Thereafter
	(dollars in millions)				
Contractual Obligations					
Long-term debt	$2,715	$—	$ —	$ 250	$ 2,465
Operating leases	515	106	159	98	152
Capital leases	19	3	5	4	7
Pension benefits funding	187	5	15	55	112
Post-retirement healthcare benefits	100	8	16	15	61
Purchase obligations	8,183	1,796	2,391	1,637	2,359
Interest payments	2,198	118	236	223	1,621
Asset retirement obligations	42	7	1	—	34
Investment in LACC	42	42	—	—	—
Total	$14,001	$2,085	$ 2,823	$ 2,282	$ 6,811
Other Commercial Commitments					
Standby letters of credit	$37	$33	$ —	$ —	$ 4

Pension Benefits Funding. This represents the projected timing of contributions to our defined benefit pension plans which cover certain eligible employees in the United States and non-U.S. countries.

Post-retirement Healthcare Benefits. This represents the projected timing of contributions to our post-retirement healthcare benefits to the employees of certain subsidiaries who meet certain minimum age and service requirements.

Purchase Obligations. Purchase obligations include agreements to purchase goods and services that are enforceable and legally binding and that specify all significant terms, including a minimum quantity and price. We are party to various obligations to purchase goods and services, including commitments to purchase various feedstock, utilities, nitrogen, oxygen, product storage, pipeline usage and logistic support, in each case in the ordinary course of our business, as well as various purchase commitments for our capital projects. The amounts shown in the table above reflect our estimates based on the contractual quantities and the prices in effect under contractual agreements as of December 31, 2018.

Interest Payments. Interest payments are based on interest rates in effect at December 31, 2018.

Asset retirement obligations. This includes the estimated costs and timing of payments to satisfy our recognized asset retirement obligations.

Investment in LACC. This includes our portion of the forecasted capital contributions related to the engineering, procurement and construction of LACC's new ethylene plant.

Standby Letters of Credit. This includes (1) our obligation under an $11 million letter of credit issued in connection with the $11 million tax-exempt waste disposal revenue bonds and (2) other letters of credit totaling $26 million issued primarily to support commercial obligations and obligations under our insurance programs, including workers' compensation claims.

Uncertain income tax positions. We have recognized a liability for our uncertain income tax positions of approximately $12 million as of December 31, 2018. We do not believe we are likely to pay any material amounts during the year ending December 31, 2019. The ultimate resolution and timing of payment for remaining matters continues to be uncertain and are therefore excluded from the Contractual Obligations table above.

Off-Balance Sheet Arrangements

None.

Critical Accounting Policies

Critical accounting policies are those that are important to our financial condition and require management's most difficult, subjective or complex judgments. Different amounts would be reported under different operating conditions or under alternative assumptions. We have evaluated the accounting policies used in the preparation of the accompanying consolidated financial statements and related notes and believe those policies are reasonable and appropriate.

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We apply those accounting policies that we believe best reflect the underlying business and economic events, consistent with GAAP. Our more critical accounting policies include those related to long-lived assets, fair value estimates, accruals for long-term employee benefits, accounts receivable, income taxes and environmental and legal obligations. Inherent in such policies are certain key assumptions and estimates. We periodically update the estimates used in the preparation of the financial statements based on our latest assessment of the current and projected business and general economic environment. Our significant accounting policies are summarized in Note 1 to the consolidated financial statements appearing elsewhere in this Form 10-K. We believe the following to be our most critical accounting policies applied in the preparation of our financial statements.

Long-Lived Assets. Key estimates related to long-lived assets include useful lives, recoverability of carrying values and existence of any retirement obligations. Such estimates could be significantly modified. The carrying values of long-lived assets could be impaired by significant changes or projected changes in supply and demand fundamentals (which would have a negative impact on operating rates or margins), new technological developments, new competitors with significant raw material or other cost advantages, adverse changes associated with the United States and world economies, the cyclical nature of the chemical and refining industries and uncertainties associated with governmental actions.

We evaluate long-lived assets for potential impairment indicators whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable, including when negative conditions such as significant current or projected operating losses exist. Our judgments regarding the existence of impairment indicators are based on legal factors, market conditions and the operational performance of our businesses. Actual impairment losses incurred could vary significantly from amounts estimated. Long-lived assets assessed for impairment are grouped at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. Additionally, future events could cause us to conclude that impairment indicators exist and that associated long-lived assets of our businesses are impaired. Any resulting impairment loss could have a material adverse impact on our financial condition and results of operations.

The estimated useful lives of long-lived assets range from one to 40 years. Depreciation and amortization of these assets, including amortization of deferred turnaround costs, under the straight-line method over their estimated useful lives totaled $641 million, $601 million and $378 million in 2018, 2017 and 2016, respectively. If the useful lives of the assets were found to be shorter than originally estimated, depreciation or amortization charges would be accelerated.

We defer the costs of planned major maintenance activities, or turnarounds, and amortize the costs over the period until the next planned turnaround of the affected unit. Total costs deferred on turnarounds were $79 million, $47 million and $77 million in 2018, 2017 and 2016, respectively. Amortization in 2018, 2017 and 2016 of previously deferred turnaround costs was $39 million, $30 million and $22 million, respectively. As of December 31, 2018, deferred turnaround costs, net of accumulated amortization, totaled $144 million. Expensing turnaround costs as incurred would likely result in greater variability of our quarterly operating results and would adversely affect our financial position and results of operations.

Additional information concerning long-lived assets and related depreciation and amortization appears in Notes 6 and 7 to the consolidated financial statements appearing elsewhere in this Form 10-K.

Fair Value Estimates. We develop estimates of fair value to allocate the purchase price paid to acquire a business to the assets acquired and liabilities assumed in an acquisition, to assess impairment of long-lived assets, goodwill and intangible assets and to record marketable securities, derivative instruments and pension plan assets. We use all available information to make these fair value determinations, including the engagement of third-party consultants. At December 31, 2018, our recorded goodwill was $1,002 million, which was associated with the acquisition of Axiall, our specialty PVC pipe business and our Longview facilities. In addition, we record all derivative instruments, pension plan assets and certain marketable securities at fair value. The fair value of these items is determined by quoted market prices or from observable market-based inputs. See Note 13 to the consolidated financial statements for more information.

Business Combinations and Intangible Assets Including Goodwill. We account for business combinations using the acquisition method of accounting, and accordingly, the assets and liabilities of the acquired business are recorded at their fair values at the date of acquisition. The excess of the purchase price over the estimated fair value is recorded as goodwill. Any changes in the estimated fair values of the net assets recorded for acquisitions prior to the finalization of more detailed analysis, but not to exceed one year from the date of acquisition, will change the amount of the purchase price allocable to goodwill. Any subsequent changes to any purchase price allocations that are material to our consolidated financial results will be adjusted in the same period's financial statements, including the effect on earnings of changes in depreciation, amortization or other income effects, if any, as a result of the change to the provisional amounts, calculated as if the accounting had been completed at the acquisition date. All acquisition costs are expensed as incurred and in-process research and development costs are recorded at fair value as an indefinite-lived intangible asset and assessed for impairment thereafter until completion, at which point the asset is amortized over its expected useful life. Separately recognized transactions associated with business combinations are generally expensed subsequent to the acquisition date. The application of business combination and impairment accounting requires the use of significant estimates and assumptions.

Goodwill is evaluated for impairment at least annually, or when events or changes in circumstances indicate the fair value of a reporting unit with goodwill has been reduced below its carrying value. We perform our annual impairment assessment for the Olefins and Vinyls reporting units in October and April, respectively. We may elect to perform an optional qualitative assessment to determine whether a quantitative impairment analysis is required. The qualitative assessment considers factors such as macroeconomic conditions, industry and market considerations, cost factors related to raw materials and labor, current and projected financial performance, changes in management or strategy, and market capitalization. Alternatively, we may unconditionally elect to bypass the qualitative assessment and perform a quantitative goodwill impairment assessment in any period. We elected to perform the qualitative assessment for both of our segments' reporting units during 2018 and concluded that quantitative impairment test was not required.

If we elect to bypass the qualitative assessment or conclude, based on the totality of events or circumstances, it is more likely than not that a reporting unit's fair value is less than its carrying amount, a quantitative impairment analysis is performed. The quantitative analysis compares a reporting unit's fair value to its carrying amount to determine whether goodwill is impaired. The fair values of the reporting units are calculated using both a discounted cash flow methodology and a market value methodology. The discounted cash flow projections are based on a forecast to reflect the cyclicality of the business. The forecast is based on historical results and estimates by management, including its strategic and operational plans, and financial performance of the market. The future cash flows are discounted to present value using an applicable discount rate. The significant assumptions used in determining the fair value of the reporting unit using the market value methodology include the determination of appropriate market comparables and the estimated multiples of EBITDA a willing buyer is likely to pay. Even if the fair values of the reporting units decreased by 10% from the fair values determined in the most recent quantitative tests performed during 2017, the carrying values of the reporting units would not have exceeded their fair values. See Item 1A, "Risk Factors—If our goodwill, indefinite-lived intangible assets or other intangible assets become impaired in the future, we may be required to record non-cash charges to earnings, which could be significant."

The results of operations of acquired businesses are included in our consolidated financial statements from the acquisition date.

Long-Term Employee Benefit Costs. Our costs for long-term employee benefits, particularly pension and postretirement medical and life benefits, are incurred over long periods of time and involve many uncertainties over those periods. The net periodic benefit cost attributable to current periods is based on several assumptions about such future uncertainties and is sensitive to changes in those assumptions. It is our responsibility, often with the assistance of independent experts, to select assumptions that represent the best estimates of those uncertainties. It is also our responsibility to review those assumptions periodically and, if necessary, adjust the assumptions to reflect changes in economic or other factors.

Accounting for employee retirement plans involves estimating the cost of benefits that are to be provided in the future and attempting to match, for each employee, that estimated cost to the period worked. To accomplish this, we rely extensively on advice from actuaries, and we make assumptions about inflation, investment returns, mortality, employee turnover and discount rates that ultimately impact amounts recorded. Changes in these assumptions may result in different expense and liability amounts. One of the more significant assumptions relates to the discount rate for measuring benefit obligations. At December 31, 2018, the projected pension benefit obligations for U.S. and non-U.S. plans were calculated using assumed weighted average discount rates of 4.1% and 2.0%, respectively. The discount rates were determined using a benchmark pension discount curve and applying spot rates from the curve to each year of expected benefit payments to determine the appropriate discount rate. As a result of the funding relief provided by the enactment of the Bipartisan Budget Act of 2015, no minimum funding requirements are expected during 2019 for the U.S. pension plans. Additional information on the 2019 funding requirements and key assumptions underlying these benefit costs appear in Note 11 to the consolidated financial statements appearing elsewhere in this Form 10-K.

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The following table reflects the sensitivity of the benefit obligation of our pension plans to changes in the actuarial assumptions:

	2018	
	U.S. Plans	Non-U.S. Plans
	(dollars in millions)	
Projected benefit obligation, end of year	$648	$ 136
Discount rate increases by 100 basis points	(68)	(19)
Discount rate decreases by 100 basis points	81	24

A one-percentage point increase or decrease in assumed healthcare trend rates would not have a significant effect on the amounts reported for the healthcare plans.

While we believe that the amounts recorded in the consolidated financial statements appearing elsewhere in this Form 10-K related to these retirement plans are based on the best estimates and judgments available, the actual outcomes could differ from these estimates.

Income Taxes. We utilize the liability method of accounting for income taxes. Under the liability method, deferred tax assets or liabilities are recorded based upon temporary differences between the tax basis of assets and liabilities and their carrying values for financial reporting purposes. Deferred tax expense or benefit is the result of changes in the deferred tax assets and liabilities during the period. Valuation allowances are recorded against deferred tax assets when it is considered more likely than not that the deferred tax assets will not be realized.

Environmental and Legal Obligations. We consult with various professionals to assist us in making estimates relating to environmental costs and legal proceedings. We accrue an expense when we determine that it is probable that a liability has been incurred and the amount is reasonably estimable. While we believe that the amounts recorded in the accompanying consolidated financial statements related to these contingencies are based on the best estimates and judgments available, the actual outcomes could differ from our estimates. Additional information about certain legal proceedings and environmental matters appears in Note 19 to the consolidated financial statements appearing elsewhere in this Form 10-K.

Asset Retirement Obligations. We recognize asset retirement obligations in the period in which the liability becomes probable and reasonably estimable. Initially, the asset retirement obligation is recorded at fair value and capitalized as a component of the carrying value of the long-lived asset to which the obligation relates. The liability is recorded at its future value each period, and the capitalized cost is depreciated over the estimated useful life of the related asset. Upon settlement of the liability, a gain or loss is recorded. We have conditional asset retirement obligations for the removal and disposal of hazardous materials from certain of our manufacturing facilities.

We also have conditional asset retirement obligations that have not been recognized because the fair values of the conditional legal obligations cannot be measured due to the indeterminate settlement date of the obligations. Settlements of the unrecognized conditional asset retirement obligations are not expected to have a material adverse effect on our financial condition, results of operations or cash flows in any individual reporting period.

Recent Accounting Pronouncements

See Note 1 to the consolidated financial statements included in Item 8 of this Form 10-K for a full description of recent accounting pronouncements, including expected dates of adoption and estimated effects on results of operations and financial condition, which is incorporated herein by reference.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

Commodity Price Risk

A substantial portion of our products and raw materials are commodities whose prices fluctuate as market supply and demand fundamentals change. Accordingly, product margins and the level of our profitability tend to fluctuate with changes in the business cycle. We try to protect against such instability through various business strategies. Our strategies include ethylene product feedstock flexibility and moving downstream into the olefins and vinyls products where pricing is more stable. We use derivative instruments in certain instances to reduce price volatility risk on feedstocks and products. Based on our open derivative positions at December 31, 2018, a hypothetical $0.10 increase in the price of a gallon of ethane would have increased our income before income taxes by $17 million.

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Interest Rate Risk

We are exposed to interest rate risk with respect to fixed and variable rate debt. At December 31, 2018, we had $2,704 million aggregate principal amount of fixed rate debt. We are subject to the risk of higher interest cost if and when this debt is refinanced. If interest rates were 1% higher at the time of refinancing, our annual interest expense would increase by approximately $27 million. Also, at December 31, 2018, we had $11 million principal amount of variable rate debt outstanding, which represents the tax exempt waste disposal revenue bonds. We do not currently hedge our variable interest rate debt, but we may do so in the future. The average variable interest rate for our variable rate debt of $11 million as of December 31, 2018 was 1.85%. A hypothetical 100 basis point increase in the average interest rate on our variable rate debt would not result in a material change in the interest expense.

Foreign Currency Exchange Rate Risk

We are exposed to foreign currency exchange rate risk associated with our international operations. However, the effect of fluctuations in foreign currency exchange rates caused by our international operations has not had a material impact on our overall operating results. We may engage in activities to mitigate our exposure to foreign currency exchange risk in certain instances through the use of currency exchange derivative instruments, including forward exchange contracts, cross-currency swaps or spot purchases. A forward exchange contract obligates us to exchange predetermined amounts of specified currencies at a stated exchange rate on a stated date. A cross-currency swap obligates us to make periodic payments in the local currency and receive periodic payments in our functional currency based on the notional amount of the instrument. In January 2018, we entered into hedging arrangements designated as net investment hedges with an aggregate notional value of 220 million euros to reduce the volatility in stockholders' equity from changes in currency exchange rates associated with our net investments in foreign operations. The arrangement is scheduled to mature in 2026.

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Item 8. Financial Statements and Supplementary Data

Index to Consolidated Financial Statements

Financial statement schedules not included in this Form 10-K have been omitted because they are not applicable or because the required information is shown in the financial statements or notes thereto.

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The management of Westlake Chemical Corporation is responsible for establishing and maintaining adequate internal control over financial reporting. Westlake'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.

Westlake management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2018. In making this assessment, management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in Internal Control—Integrated Framework (2013). Based on its assessment, Westlake's management has concluded that the Company's internal control over financial reporting was effective as of December 31, 2018 based on those criteria.

PricewaterhouseCoopers LLP, the independent registered public accounting firm that audited the financial statements included in this Annual Report on Form 10-K, has also audited the effectiveness of internal control over financial reporting as of December 31, 2018 as stated in their report that appears on the following page.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM
To the Board of Directors and Stockholders
of Westlake Chemical Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting
We have audited the accompanying consolidated balance sheets of Westlake Chemical Corporation and its subsidiaries (the "Company") as of December 31, 2018 and 2017, and the related consolidated statements of operations, of comprehensive income, of changes in stockholders' equity and of cash flows for each of the three years in the period ended December 31, 2018, including the related notes (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).
In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.
Basis for Opinions
The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) ("PCAOB") and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.
We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.
Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting
A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly

reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

/s/PricewaterhouseCoopers LLP

Houston, Texas
February 20, 2019

We have served as the Company's auditor since 1986, which includes periods before the Company became subject to SEC reporting requirements.

WESTLAKE CHEMICAL CORPORATION
CONSOLIDATED BALANCE SHEETS

	December 31, 2018		2017	
	(in millions of dollars, except par values and share amounts)			
ASSETS				
Current assets				
Cash and cash equivalents	$	753	$	1,531
Accounts receivable, net	1,037		1,001	
Inventories	1,014		900	
Prepaid expenses and other current assets	38		31	
Total current assets	2,842		3,463	
Property, plant and equipment, net	6,595		6,412	
Goodwill	1,002		1,012	
Customer relationships, net	525		616	
Other intangible assets, net	134		161	
Other assets, net	504		412	
Total assets	$	11,602	$	12,076
LIABILITIES AND EQUITY				
Current liabilities				
Accounts payable	$	507	$	600
Accrued liabilities	676		657	
Current portion of long-term debt, net	—		710	
Total current liabilities	1,183		1,967	
Long-term debt, net	2,668		3,127	
Deferred income taxes	1,159		1,111	
Pension and other post-retirement benefits	337		344	
Other liabilities	179		158	
Total liabilities	5,526		6,707	
Commitments and contingencies (Note 19)				
Stockholders' equity				

Preferred stock, $0.01 par value, 50,000,000 shares authorized; no shares issued and outstanding	—	—
Common stock, $0.01 par value, 300,000,000 shares authorized; 134,651,380 and 134,651,380 shares issued at December 31, 2018 and 2017, respectively	1	1
Common stock, held in treasury, at cost; 6,183,125 and 5,232,875 shares at December 31, 2018 and 2017, respectively	(382)	(302)
Additional paid-in capital	556	555
Retained earnings	5,477	4,613
Accumulated other comprehensive income (loss)	(62)	7
Total Westlake Chemical Corporation stockholders' equity	5,590	4,874
Noncontrolling interests	486	495
Total equity	6,076	5,369
Total liabilities and equity	$ 11,602	$ 12,076

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

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WESTLAKE CHEMICAL CORPORATION

CONSOLIDATED STATEMENTS OF OPERATIONS

	Year Ended December 31,		
	2018	2017	2016
	(in millions of dollars, except share amounts and per share data)		
Net sales	$8,635	$ 8,041	$ 5,076
Cost of sales	6,648	6,280	4,093
Gross profit	1,987	1,761	983
Selling, general and administrative expenses	445	399	258
Amortization of intangibles	101	108	38
Transaction and integration-related costs	33	29	104
Income from operations	1,408	1,225	583
Other income (expense)			
Interest expense	(126)	(159)	(79)
Other income, net	52	15	54
Income before income taxes	1,334	1,081	558
Provision for (benefit from) income taxes	300	(258)	138
Net income	1,034	1,339	420
Net income attributable to noncontrolling interests	38	35	21
Net income attributable to Westlake Chemical Corporation	$996	$ 1,304	$ 399
Earnings per common share attributable to Westlake Chemical Corporation:			
Basic	$7.66	$ 10.05	$ 3.07
Diluted	$7.62	$ 10.00	$ 3.06
Weighted average shares outstanding			
Basic	129,401,823	129,087,043	129,367,712
Diluted	129,985,753	129,540,013	129,974,822

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

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WESTLAKE CHEMICAL CORPORATION

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended December 31,		
	2018	2017	2016
	(in millions of dollars)		
Net income	$1,034	$1,339	$420
Other comprehensive income (loss), net of income taxes			
Pension and other post-retirement benefits			
Pension and other post-retirement benefits reserves adjustment	(33)	19	60
Amortization of benefits liability	—	2	1
Income tax benefit (provision) on pension and other post-retirement benefits	8	(7)	(24)
Foreign currency translation adjustments			
Foreign currency translation	(59)	124	(34)
Income tax provision on foreign currency translation	—	(5)	—
Available-for-sale investments			
Unrealized holding gains on investments	—	—	62
Reclassification of net realized gains to net income	—	—	(54)
Income tax provision on available-for-sale investments	—	—	(3)
Other comprehensive income (loss), net of income taxes	(84)	133	8
Comprehensive income	950	1,472	428
Comprehensive income attributable to noncontrolling interests, net of tax of $4, $1 and $0 for 2018, 2017 and 2016, respectively	36	40	21
Comprehensive income attributable to Westlake Chemical Corporation	$914	$1,432	$407

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

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WESTLAKE CHEMICAL CORPORATION
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

	Common Stock		Common Stock, Held in Treasury						
	Number of Shares	Amount	Number of Shares	At Cost	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Noncontrolling Interests	Total
	(in millions of dollars, except share amounts)								
Balances at December 31, 2015	134,663,244	$ 1	4,444,898	$(258)	$ 542	$3,110	$ (129)	$ 296	$3,562
Net income	—	—	—	—	—	399	—	21	420
Other comprehensive income	—	—	—	—	—	—	8	—	8
Common stock repurchased	—	—	1,511,109	(67)	—	—	—	—	(67)
Shares issued—stock-based compensation	(11,864)	—	(117,019)	3	5	—	—	—	8
Stock-based compensation	—	—	(112,611)	3	4	—	—	—	7
Dividends declared	—	—	—	—	—	(97)	—	—	(97)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(17)	(17)
Noncontrolling interests in acquired business	—	—	—	—	—	—	—	68	68
Balances at December 31, 2016	134,651,380	1	5,726,377	(319)	551	3,412	(121)	368	3,892
Net income	—	—	—	—	—	1,304	—	35	1,339
Other comprehensive income	—	—	—	—	—	—	128	5	133
Shares issued—stock-based compensation	—	—	(493,502)	17	(6)	—	—	—	11
Stock-based compensation	—	—	—	—	14	—	—	—	14
Dividends declared	—	—	—	—	—	(103)	—	—	(103)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(28)	(28)
Issuance of Westlake Chemical Partners LP common units	—	—	—	—	(4)	—	—	115	111
Balances at December 31, 2017	134,651,380	1	5,232,875	(302)	555	4,613	7	495	5,369
Cumulative effect of accounting change	—	—	—	—	—	1	—	—	1
Reclassification of certain tax effects to retained earnings	—	—	—	—	—	(13)	13	—	—
Net income	—	—	—	—	—	996	—	38	1,034

Other comprehensive loss	—	—	—	—	—	—	(82)	(2)	(84)
Common stock repurchased	—	—	1,368,881	(106)	—	—	—	—	(106)
Shares issued—stock-based compensation	—	—	(418,631)	26	(17)	—	—	—	9
Stock-based compensation	—	—	—	—	18		—	—	18
Dividends declared	—	—	—	—	—	(120)	—	—	(120)
Distributions to noncontrolling interests	—	—	—	—	—	—	—	(45)	(45)
Balances at December 31, 2018	134,651,380	$ 1	6,183,125	$(382)	$ 556	$5,477	$ (62)	$ 486	$6,076

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

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WESTLAKE CHEMICAL CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2018	2017	2016
	(in millions of dollars)		
Cash flows from operating activities			
Net income	$1,034	$1,339	$420
Adjustments to reconcile net income to net cash provided by operating activities			
Depreciation and amortization	641	601	378
Stock-based compensation expense	22	23	14
Gain realized on previously held shares of Axiall common stock and from sales of securities	—	—	(54)
Loss from disposition of property, plant and equipment	44	22	9
Deferred income taxes	62	(534)	101
Other losses (gains), net	(20)	(3)	5
Changes in operating assets and liabilities, net of effect of business acquisitions			
Accounts receivable	(58)	(40)	50
Inventories	(123)	(32)	(62)
Prepaid expenses and other current assets	(1)	26	11
Accounts payable	(100)	86	12
Accrued liabilities	(8)	115	48
Other, net	(84)	(75)	(65)
Net cash provided by operating activities	1,409	1,528	867
Cash flows from investing activities			
Acquisition of business, net of cash acquired	—	(13)	(2,438)
Additions to property, plant and equipment	(702)	(577)	(629)
Additions to investments in unconsolidated subsidiaries	(68)	(66)	(17)
Proceeds from sales and maturities of securities	—	—	663
Purchase of securities	—	—	(138)
Other, net	16	4	(4)
Net cash used for investing activities	(754)	(652)	(2,563)
Cash flows from financing activities			
Debt issuance costs	—	(6)	(36)
Dividends paid	(120)	(103)	(97)
Distributions to noncontrolling interests	(45)	(28)	(17)
Proceeds from notes payable and drawdown of revolver	14	978	2,037
Net proceeds from issuance of Westlake Chemical Partners LP common units	—	111	—
Repayment of term loan	—	(150)	—
Repayment of revolver	—	(550)	(125)
Redemption and repayment of notes payable	(1,179)	(257)	(13)
Repurchase of common stock for treasury	(106)	—	(67)
Other	9	11	5
Net cash provided by (used for) financing activities	(1,427)	6	1,687
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(7)	26	(8)
Net increase (decrease) in cash, cash equivalents and restricted cash	(779)	908	(17)
Cash, cash equivalents and restricted cash at beginning of the year	1,554	646	663
Cash, cash equivalents and restricted cash at end of the year	$775	$1,554	$646

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

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WESTLAKE CHEMICAL CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(in millions of dollars, except share amounts and per share data)

1. Description of Business and Significant Accounting Policies
Description of Business
Westlake Chemical Corporation (the "Company") operates as an integrated global manufacturer and marketer of basic chemicals, vinyls, polymers and building products. These products include some of the most widely used chemicals in the world, which are fundamental to many diverse consumer and industrial markets, including flexible and rigid packaging, automotive products, coatings, residential and commercial construction as well as other durable and non-durable goods. The Company's customers range from large chemical processors and plastics fabricators to small construction contractors, municipalities and supply warehouses primarily throughout North America and Europe. The petrochemical industry is subject to price fluctuations and volatile feedstock pricing typical of a commodity-based industry, the effects of which may not be immediately passed along to customers.
Acquisition of Axiall Corporation
On August 31, 2016, the Company completed the acquisition of Axiall Corporation ("Axiall") for $33.00 per share in an all-cash transaction (the "Axiall Merger").
Westlake Chemical Partners LP
In 2014, the Company formed Westlake Chemical Partners LP ("Westlake Partners") to operate, acquire and develop ethylene production facilities and related assets. Westlake Partners' assets consist of a limited partner interest in Westlake Chemical OpCo LP ("OpCo"), as well as the general partner interest in OpCo. OpCo's assets include two ethylene production facilities at the Company's Lake Charles, Louisiana site, one ethylene production facility at the Company's Calvert City, Kentucky site and a 200-mile common carrier ethylene pipeline that runs from Mont Belvieu, Texas to the Company's Longview, Texas site. As of December 31, 2018, the Company held an 81.7% limited partner interest in OpCo and a controlling interest in Westlake Partners. The operations of Westlake Partners are consolidated in the Company's financial statements.
Principles of Consolidation
The consolidated financial statements include the accounts of the Company and subsidiaries in which the Company directly or indirectly owns more than a 50% voting interest and exercises control and, when applicable, entities for which the Company has a controlling financial interest or is the primary beneficiary. Investments in majority-owned companies where the Company does not exercise control and investments in nonconsolidated affiliates (20%-50% owned companies, joint ventures and partnerships) are accounted for using the equity method of accounting. Undistributed earnings from joint ventures included in retained earnings were immaterial as of December 31, 2018. All intercompany transactions and balances are eliminated in consolidation.
Certain reclassifications have been made to the prior-year financial statements to conform to the current-year presentation.
Noncontrolling interests represent the direct equity interests held by investors in the Company's consolidated subsidiaries, Westlake Partners, Taiwan Chlorine Industries, Ltd. and Suzhou Huasu Plastics Co., Ltd.
Cash and Cash Equivalents
Cash equivalents consist of highly liquid investments that are readily convertible into cash and have a maturity of three months or less at the date of acquisition.
Concentration of Credit Risk
Financial instruments which potentially subject the Company to concentration of risk consist principally of trade receivables from customers engaged in manufacturing polyethylene products, polyvinyl chloride ("PVC") products and PVC pipe products. The Company performs periodic credit evaluations of the customers' financial condition and generally does not require collateral. The Company maintains allowances for potential losses.

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WESTLAKE CHEMICAL CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)
(in millions of dollars, except share amounts and per share data)

Allowance for Doubtful Accounts
The determination of the allowance for doubtful accounts is based on estimation of the amount of accounts receivable that the Company believes are unlikely to be collected. Estimating this amount requires analysis of the financial strength of the Company's customers, the use of historical experience, the Company's accounts receivable aged trial balance, and specific collectibility analysis. The allowance for doubtful accounts is reviewed quarterly. Past due balances over 90 days and high risk accounts as determined by the analysis of financial strength of customers are reviewed individually for collectibility.
Inventories
Inventories primarily include product, material and supplies. Inventories are stated at lower of cost or net realizable value. Cost is determined using the first-in, first-out ("FIFO") or average method.
Property, Plant and Equipment
Property, plant and equipment are carried at cost, net of accumulated depreciation. Cost includes expenditures for improvements and betterments that extend the useful lives of the assets and interest capitalized on significant capital projects. Capitalized interest was $7, $4 and $10 for the years ended December 31, 2018, 2017 and 2016, respectively. Repair and maintenance costs are charged to operations as incurred. Gains and losses on the disposition or retirement of fixed assets are reflected in the consolidated statement of operations when the assets are sold or retired.
The accounting guidance for asset retirement obligations requires the recording of liabilities equal to the fair value of asset retirement obligations and corresponding additional asset costs, when there is a legal asset retirement obligation as a result of existing or enacted law, statute or contract.
Depreciation is provided by utilizing the straight-line method over the estimated useful lives of the assets as follows:

Classification	Years
Buildings and improvements	40
Plant and equipment	10-25
Other	3-15

Impairment of Long-Lived Assets
The accounting guidance for the impairment or disposal of long-lived assets requires that the Company review long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Long-lived assets assessed for impairment are grouped at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. Recoverability of assets to be held and used is measured by a comparison of the carrying amount of an asset to future net undiscounted cash flows expected to be generated by the asset. Assets are considered to be impaired if the carrying amount of an asset exceeds the future undiscounted cash flows. The impairment recognized is measured by the amount by which the carrying amount of the assets exceeds the fair value of the assets. Assets to be disposed of are reported at the lower of the carrying amount or estimated fair value less costs to sell.
Impairment of Goodwill and Intangible Assets
The accounting guidance requires that goodwill is tested for impairment at least annually, or when events or changes in circumstances indicate the fair value of a reporting unit with goodwill has been reduced below its carrying value. The Company performed its annual impairment tests for the Olefins and Vinyls segments' goodwill in October 2018 and April 2018, respectively, and the impairment tests indicated that the recorded goodwill was not impaired. There has been no impairment of the Olefins or Vinyls segments' goodwill since the goodwill was initially recorded. Other intangible assets with finite lives are amortized over their estimated useful lives and reviewed for impairment in accordance with the provisions of the accounting guidance. See Note 7 for more information on the Company's annual

goodwill impairment tests.

Other Assets, net

Other assets, net include turnaround costs, investments in unconsolidated subsidiaries, restricted cash, deferred charges and other long-term assets.

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WESTLAKE CHEMICAL CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)
(in millions of dollars, except share amounts and per share data)

The Company accounts for turnaround costs under the deferral method. Turnarounds are the scheduled and required shutdowns of specific operating units in order to perform planned major maintenance activities. The costs related to the significant overhaul and refurbishment activities include maintenance materials, parts and direct labor costs. The costs of the turnaround are deferred when incurred at the time of the turnaround and amortized (within depreciation and amortization) on a straight-line basis until the next planned turnaround, which ranges from three to six years. Deferred turnaround costs are presented as a component of other assets, net. The cash outflows related to these costs are included in operating activities in the consolidated statement of cash flows.

Business Combinations

The Company records business combinations using the acquisition method of accounting. Under the acquisition method of accounting, identifiable assets acquired and liabilities assumed are recorded at their acquisition date fair values. The excess of the purchase price over the estimated fair value is recorded as goodwill. Changes in the estimated fair values of net assets recorded for acquisitions prior to the finalization of more detailed analysis, but not to exceed one year from the date of acquisition, will adjust the amount of the purchase price allocable to goodwill. Measurement period adjustments are reflected in the period in which they occur.

Income Taxes

The Company utilizes the liability method of accounting for deferred income taxes. Under the liability method, deferred tax assets or liabilities are recorded based upon temporary differences between the tax basis of assets and liabilities and their carrying values for financial reporting purposes. Deferred tax expense or benefit is the result of changes in the deferred tax assets and liabilities during the period. Valuation allowances are recorded against deferred tax assets when it is considered more likely than not that the deferred tax assets will not be realized.

On December 22, 2017, the United States ("U.S.") Tax Cuts and Jobs Act (the "Tax Act") was signed into law. The Tax Act, among other changes, reduced the U.S. corporate income tax rate from 35% to 21%, effective January 1, 2018, and also required a one-time deemed repatriation of foreign earnings at specified rates. The Company provisionally recognized a $591 income tax benefit in the 2017 consolidated financial statements that was primarily comprised of the revaluation of deferred tax assets and liabilities partially offset by a one-time U.S. tax on the mandatory deemed repatriation of the Company's post-1986 foreign earnings. The Company did not record any material measurement period adjustment in 2018. For additional information, see Note 14.

As a result of the Tax Act, the Financial Accounting Standards Board ("FASB") concluded that Global Intangible Low-Taxed Income Tax ("GILTI tax") can be recognized in the financial statements, no later than December 22, 2018, per an accounting policy choice, by: (1) recording a period cost (permanent item) or (2) providing deferred income taxes stemming from certain basis differences that are expected to result in GILTI tax. The Company elected to record GILTI tax as a period cost. The GILTI tax recognized in 2018 was not material to the consolidated financial statements.

Foreign Currency Translation

Assets and liabilities of foreign subsidiaries are translated to U.S. dollars at the exchange rate as of the end of the year. Statement of operations items are translated at the average exchange rate for the year. The resulting translation adjustment is recorded as a separate component of stockholders' equity.

Revenue Recognition

Revenue is recognized when the Company transfers control of inventories to its customers. Amounts recognized as revenues reflect the consideration to which the Company expects to be entitled in exchange for those inventories. Provisions for discounts, rebates and returns are incorporated in the estimate of variable consideration and reflected as reduction to revenue in the same period as the related sales.

Control of inventories generally transfers upon shipment for domestic sales. The Company excludes taxes collected on behalf of customers from the estimated contract price. For export contracts, the point at which control passes to the customer varies depending on the terms specified in the customer contract.

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The Company generally invoices customers and recognizes revenue and accounts receivable upon transferring control of inventories. In limited circumstances, the Company transfers control of inventories shortly before it has an unconditional right to receive consideration, resulting in recognition of contract assets. The Company also receives advance payments from certain customers, resulting in recognition of contract liabilities. Contract assets and liabilities are generally settled within the period and are not material to the consolidated balance sheets.

The Company expenses sales commissions when incurred. These costs are recorded within selling, general and administrative expenses. The Company does not disclose the value of unsatisfied performance obligations because its contracts with customers (1) have an original expected duration of one year or less or (2) have only variable consideration that is calculated based on market prices at specified dates and is allocated to wholly unsatisfied performance obligations.

Prior to the adoption of ASU No. 2014-09, Revenue from Contracts with Customers ("ASC 606"), on January 1, 2018, the revenue was recognized when persuasive evidence of an arrangement existed, products were delivered to the customer, the sales price was fixed or determinable and collectability was reasonably assured. For domestic contracts, title and risk of loss had passed to the customer upon delivery under executed customer purchase orders or contracts. For export contracts, the title and risk of loss had passed to customers at the time specified by each contract.

Transportation and Freight

Amounts billed to customers for freight and handling costs on outbound shipments are included in net sales in the consolidated statements of operations. Transportation and freight costs incurred by the Company on outbound shipments are included in cost of sales in the consolidated statements of operations.

Price Risk Management

The Company recognizes derivative instruments on the balance sheet at fair value, and changes in a derivative's fair value are currently recognized in earnings or comprehensive income, depending on the designation of the derivative. If the derivative is designated as a fair value hedge, the changes in the fair value of the derivative and of the hedged item attributable to the hedged risk are recognized in earnings. If the derivative is designated as a cash flow hedge, the effective portion of the change in the fair value of the derivative is recorded in comprehensive income and is recognized in the statement of operations when the hedged item affects earnings. Ineffective portions of changes in the fair value of cash flow hedges are recognized in earnings currently. The derivative instruments did not have a material impact on the Company's consolidated financial statements.

Asset Retirement Obligations

The Company has conditional asset retirement obligations for the removal and disposal of hazardous materials from certain of the Company's manufacturing facilities.

The Company recognizes asset retirement obligations in the period in which the liability becomes probable and reasonably estimable. Recognized asset retirement obligations are initially recorded at fair value and capitalized as a component of the carrying value of the long-lived asset to which the obligation relates. The liability is accreted to its future value each period, and the capitalized cost is depreciated over the estimated useful life of the related asset. Upon settlement of the liability, a gain or loss is recorded. As of December 31, 2018, the Company had $8 and $20 of asset retirement obligations recorded as accrued liabilities and other liabilities, respectively. As of December 31, 2017, the Company had $3 and $18 of asset retirement obligations recorded as accrued liabilities and other liabilities, respectively.

The Company also has conditional asset retirement obligations that have not been recognized because the fair values of the conditional legal obligations cannot be measured due to the indeterminate settlement date of the obligations. Settlements of the unrecognized conditional asset retirement obligations are not expected to have a material adverse effect on the Company's financial condition, results of operations or cash flows in any individual reporting period.

Environmental Costs

Environmental costs relating to current operations are expensed or capitalized, as appropriate, depending on whether such costs provide future economic benefits. Remediation liabilities are recognized when the costs are considered probable and can be reasonably estimated. Measurement of liabilities is based on currently enacted laws and regulations, existing technology and undiscounted site-specific costs. Environmental liabilities in connection with properties that are sold or closed are realized upon such sale or closure, to the extent they are probable and estimable and not previously reserved. Recognition of any joint and several liabilities is based upon the Company's best estimate of its final pro rata share of the liability.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses, and the disclosure of contingent assets and liabilities. Actual results could differ from those estimates.

Recent Accounting Pronouncements

Leases (ASU No. 2016-02)

In February 2016, the FASB issued an accounting standards update on a new lease standard that will supersede the existing lease guidance. The standard requires a lessee to recognize assets and liabilities related to long-term leases that are classified as operating leases under current guidance on its balance sheet. An asset would be recognized related to the right to use the underlying asset and a liability would be recognized related to the obligation to make lease payments over the term of the lease. The standard also requires expanded disclosures related to leases. The standard requires adoption using a modified retrospective approach and allows for the election of certain transition practical expedients. The accounting standards update allows for certain transition expedients for leases that commenced prior to the adoption of the new standard. Under the optional transition expedients an entity is not required to reassess (1) whether any expired or existing lease contracts are or contain leases, (2) the classification of leases as operating or capital leases or (3) whether any initial direct costs qualify for capitalization under the new accounting standard. These expedients are required to be elected as a group. The accounting standards update also allows the use of hindsight to determine the lease term when considering lease renewal or termination options.

During 2018, the FASB issued additional authoritative guidance that provides an optional transition method which allows entities to continue applying the existing lease guidance in the comparative periods and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. The FASB also issued an accounting standards update that allows entities to apply their existing policy for accounting for land easements that exist as of, or expired before, the effective date of the new lease standard.

The accounting standard will be effective for reporting periods beginning after December 15, 2018. The accounting standard is expected to result in the recognition of material right-of-use assets and lease liabilities in the Company's consolidated balance sheet. The accounting standard is not expected to have a material impact on the Company's consolidated statements of operations and cash flows.

Credit Losses (ASU No. 2016-13)

In June 2016, the FASB issued an accounting standards update providing new guidance for the accounting for credit losses on loans and other financial instruments. The new guidance introduces an approach based on expected losses to estimate credit losses on certain types of financial instruments. The standard also modifies the impairment model for available-for-sale debt securities and provides for a simplified accounting model for purchased financial assets with credit deterioration since their origination. The accounting standard will be effective for reporting periods beginning after December 15, 2019 and is not expected to have a material impact on the Company's consolidated financial position, results of operations and cash flows.

Intangibles - Goodwill and Other (ASU No. 2017-04)
In January 2017, the FASB issued an accounting standards update to simplify the subsequent measurement of goodwill. The guidance removes Step 2 of the goodwill impairment test, which requires a hypothetical purchase price allocation. A goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. The accounting standard will be effective for reporting periods beginning after December 15, 2019 and is not expected to have a material impact on the Company's consolidated financial position, results of operations and cash flows.
Fair Value Measurement (ASU No. 2018-13)
In August 2018, the FASB issued an accounting standards update to modify the disclosure requirements on fair value measurements. The amendments are effective beginning after December 15, 2019. An entity is permitted to early adopt any removed or modified disclosures and delay adoption of the additional disclosures until the effective date. Most amendments should be applied retrospectively, but certain amendments will be applied prospectively. The Company is in the process of assessing the impact of the standard on the Company's fair value disclosures. However, the standard is not expected to have an impact on the Company's consolidated financial position, results of operations and cash flows.
Recently Adopted Accounting Standards
Revenue from Contracts with Customers (ASU No. 2014-09)
In May 2014, the FASB issued an accounting standards update on a comprehensive new revenue recognition standard that supersedes virtually all previously issued revenue recognition guidance. The new accounting guidance creates a framework by which an entity will allocate the transaction price to separate performance obligations and recognize revenue when each performance obligation is satisfied. Under the new standard, entities are required to use judgment and make estimates, including identifying performance obligations in a contract, estimating the amount of variable consideration to include in the transaction price, allocating the transaction price to each separate performance obligation and determining when an entity satisfies its performance obligations. The standard allows for "modified retrospective" adoption, meaning the standard is applied only to the most current period presented in the financial statements with a cumulative catch-up as of the current period.
The Company adopted ASU No. 2014-09, Revenue from Contracts with Customers , effective January 1, 2018. The Company applied the modified retrospective transition method to all contracts that were not completed as of the adoption date. Periods prior to January 1, 2018 were not adjusted and are reported under the accounting standards that were in place during those periods. The cumulative effects of changes to the Company's consolidated January 1, 2018 balance sheet for the adoption of this accounting standard were immaterial.
The impact of ASC 606 adoption on the financial statements for the year ended December 31, 2018 as compared with the guidance that was in effect prior to January 1, 2018 was immaterial.
ASC 606 requires disclosure of disaggregated revenue into categories that depict the nature of how the Company's revenue and cash flows are affected by economic factors. The Company discloses revenues by product and segment in Note 20.
Recognition and Measurement of Financial Assets and Financial Liabilities (ASU No. 2016-01)
In January 2016, the FASB issued an accounting standards update making certain changes principally to the current guidance for equity investments, financial liabilities under the fair value option and the presentation and disclosure requirements for financial instruments. Among other things, the guidance (1) requires equity investments (except those accounted for under the equity method of accounting or those that result in consolidation of the investee) to be measured at fair value, with changes in fair value recognized in net income; (2) allows entities to elect to measure equity investments without readily determinable fair values at cost, less impairment, adjusted for subsequent observable price changes (changes in the basis of these equity investments to be reported in net income); (3) requires an entity that has elected the fair value option for financial liabilities to recognize changes in fair value due to instrument-specific credit risk separately in other comprehensive income; (4) clarified current guidance related to the

valuation allowance assessment when recognizing deferred tax assets resulting from unrealized losses on available-for-sale debt securities; and (5) requires specific disclosure pertaining to financial assets and financial liabilities in the financial statements. The accounting standard became effective for reporting periods beginning after December 15, 2017. The Company adopted this accounting standard effective January 1, 2018 and the adoption did not have a material impact on the Company's consolidated financial position, results of operations and cash flows.

Cash Flows (ASU No. 2016-15)

In August 2016, the FASB issued an accounting standards update providing new guidance on the classification of certain cash receipts and payments including debt extinguishment costs, debt prepayment costs, settlement of zero-coupon debt instruments, contingent consideration payments, proceeds from the settlement of insurance claims and life insurance policies and distributions received from equity method investees in the statement of cash flows. This update is required to be applied using the retrospective transition method to each period presented unless it is impracticable to be applied retrospectively. In such situation, this guidance is to be applied prospectively. The accounting standard became effective for reporting periods beginning after December 15, 2017. The Company adopted this accounting standard effective January 1, 2018 and the adoption did not have a material impact on the Company's consolidated financial position, results of operations and cash flows.

Cash Flows (ASU No. 2016-18)

In November 2016, the FASB issued an accounting standards update to clarify certain existing principles in Accounting Standards Codification 230, Cash flows, including providing additional guidance related to transfers between cash and restricted cash and how entities present, in their statement of cash flows, the cash receipts and cash payments that directly affect the restricted cash accounts. The accounting standard became effective for reporting periods beginning after December 15, 2017. The Company adopted this accounting standard effective January 1, 2018. Upon adoption, the Company retrospectively adjusted its financial statements to reflect restricted cash in the beginning and ending cash and restricted cash balances within the statements of cash flows. As a result of this retrospective adoption and reclassification of restricted cash and cash equivalents, net cash provided by financing activities in the consolidated statement of cash flows for the year ended December 31, 2017 has been adjusted to $6 from the originally reported $160. Net cash provided by financing activities in the consolidated statement of cash flows for the year ended December 31, 2016 has been adjusted to $1,687 from the originally reported $1,533. Net cash provided by operating activities for the year ended December 31, 2017 has been adjusted to $1,528 from the originally reported $1,538. Net cash provided by operating activities for the year ended December 31, 2016 has been adjusted to $867 from the originally reported $834.

Business Combinations (ASU No. 2017-01)

In January 2017, the FASB issued an accounting standards update to assist entities with evaluating when a set of transferred assets and activities is a business. The guidance requires an entity to evaluate if substantially all of the fair value of the gross assets acquired is concentrated in a single identifiable asset or a group of similar identifiable assets; if so, the set of transferred assets and activities is not a business. The guidance also requires a business to include at least one substantive process and narrows the definition of outputs by more closely aligning it with how outputs are described in ASC 606. The accounting standard became effective for reporting periods beginning after December 15, 2017. The Company adopted the accounting standard effective January 1, 2018 and the adoption did not have a material impact on the Company's consolidated financial position, results of operations and cash flows.

Other Income - Gains and Losses from the Derecognition of Nonfinancial Assets (ASU No. 2017-05)

In February 2017, the FASB issued an accounting standards update to clarify the scope of guidance related to other income—gains and losses from the derecognition of nonfinancial assets, and to add guidance for partial sales of nonfinancial assets. The new guidance clarifies that an in substance nonfinancial asset is an asset or group of assets for which substantially all of the fair value consists of nonfinancial assets and the group or subsidiary is not a business. The guidance also outlines that when an entity transfers its controlling interest in a nonfinancial asset, but retains a noncontrolling interest, it will measure the retained interest at fair value resulting in full gain or loss recognition upon sale of the controlling interest. The accounting standard became effective for reporting periods beginning after December 15, 2017. The Company adopted this accounting standard effective January 1, 2018 and the adoption did not have a material impact on the Company's consolidated financial position, results of operations and cash flows.

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Compensation - Retirement Benefits (ASU No. 2017-07)
In March 2017, the FASB issued an accounting standards update to improve the presentation of net periodic pension cost and net periodic postretirement benefit cost. The new guidance requires employers to disaggregate the service cost component from the other components of net periodic benefit cost and report the service cost component in the same line item or items as other compensation costs arising from services rendered by the pertinent employees during the period. The amendments also allow only the service cost component to be eligible for capitalization when applicable. The accounting standard became effective for reporting periods beginning after December 15, 2017. The Company adopted this accounting standard effective January 1, 2018 and the adoption did not have a material impact on the Company's consolidated financial position, results of operations and cash flows. The adoption resulted in retrospective reclassification of immaterial amounts from cost of sales to other income, net.
Compensation - Stock Compensation (ASU No. 2017-09)
In May 2017, the FASB issued an accounting standards update to provide clarity and reduce both (1) diversity in practice and (2) cost and complexity when applying the guidance in Topic 718, Compensation-Stock Compensation, to a change to the terms or conditions of a share-based payment award. The amendments in this update provide guidance about which changes to the terms or conditions of a share-based payment award require the application of modification accounting in Topic 718. Essentially, an entity will not have to account for the effects of a modification if: (1) the fair value of the modified award is the same immediately before and after the modification; (2) the vesting conditions of the modified award are the same immediately before and after the modification; and (3) the classification of the modified award as either an equity instrument or liability instrument is the same immediately before and after the modification. This update is to be applied prospectively to an award modified on or after the adoption date. The accounting standard became effective for reporting periods beginning after December 15, 2017. The Company adopted this accounting standard effective January 1, 2018 and the adoption did not have a material impact on the Company's consolidated financial position, results of operations and cash flows.
Derivatives and Hedging - Targeted Improvements to Accounting for Hedging Activities (ASU No. 2017-12)
In August 2017, the FASB issued an accounting standards update to improve financial reporting of hedging relationships, to better portray the economic results of an entity's risk management activities in the financial statements and to simplify application of hedge accounting guidance. The accounting standard eliminates certain hedge effectiveness measurement and reporting requirements and expands the types of permissible hedging strategies. The accounting standard will be effective for reporting periods beginning after December 15, 2018, and interim periods within those fiscal years. Early application is permitted in any interim period after issuance, to be applied retrospectively to the beginning of the fiscal year. The Company adopted this accounting standard effective January 1, 2018 and the adoption did not have a material impact on the Company's consolidated financial position, results of operations and cash flows.
Income Statement - Reporting Comprehensive Income (ASU No. 2018-02)
In February 2018, the FASB issued an accounting standards update to (1) allow reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the Tax Act; and (2) require certain disclosures about stranded tax effects. Certain tax effects become stranded in accumulated other comprehensive income when deferred tax balances originally recorded at the historical income tax rate are adjusted in income from continuing operations based on the lower, newly-enacted income tax rate. The accounting standard is effective for reporting periods beginning after December 15, 2018 and early adoption is permitted. The Company adopted the accounting standard effective October 1, 2018 and reclassified $13 of stranded tax effects relating to its pension benefits liability and cumulative effect of foreign exchange from accumulated other comprehensive income to retained earnings.
Intangibles - Goodwill and Other (ASU No. 2018-15)
In August 2018, the FASB issued an accounting standards update to align the requirements for capitalizing implementation costs incurred in a hosting arrangement that is a service contract with the requirements for capitalizing

implementation costs incurred to develop or obtain internal-use software (and hosting arrangements that include an internal use software license). The amendments are effective for fiscal years beginning after December 15, 2019 and early adoption is permitted. The amendments should be applied either retrospectively or prospectively to all implementation costs incurred after the date of adoption. The Company adopted the standard on October 1, 2018, prospectively, and the adoption did not have a material impact on the Company's consolidated financial position, results of operations and cash flows.

2. Acquisitions

Axiall Corporation

On August 31, 2016, the Company completed its acquisition of, and acquired all the remaining equity interest in, Axiall, a Delaware corporation. Prior to the acquisition, the Company held 3.1 million shares in Axiall. The combined company is the third-largest global chlor-alkali producer and the third-largest global PVC producer. The Company's management believes that this strategic acquisition will enhance its strategy of integration and will further strengthen its role in the North American markets.

Axiall produces a highly integrated chain of chlor-alkali and derivative products, including chlorine, caustic soda, vinyl chloride monomer ("VCM"), PVC resin, PVC compounds and chlorinated derivative products. Axiall also manufactures and sells building products, including siding, trim, mouldings, pipe and pipe fittings.

Total consideration transferred for the Axiall Merger was $2,540. The Axiall Merger was accounted for under the acquisition method of accounting. The assets acquired and liabilities assumed and the results of operations of the acquired business are included in the Company's Vinyls segment.

For the year ended December 31, 2016, the Company recognized $104 of transaction and integration-related costs. This included acquisition-related costs of $49 for advisory, consulting and professional fees and other expenses during the year ended December 31, 2016. Transaction and integration-related costs also included $55 during the year ended December 31, 2016 related to the settlement of Axiall share-based awards, retention agreement costs and severance benefits provided to former Axiall employees in connection with the Axiall Merger.

The following table summarizes the consideration transferred and the estimated fair value of identified assets acquired and liabilities assumed at the date of acquisition. The allocation of the consideration transferred is based on management's estimates, judgments and assumptions. When determining the fair values of assets acquired, liabilities assumed and noncontrolling interests of the acquiree, management made significant estimates, judgments and assumptions. Management estimated that consideration paid exceeded the fair value of the net assets acquired. Therefore, goodwill of $942 was recorded. The goodwill recognized is primarily attributable to synergies related to the Company's vinyls integration strategy that are expected to arise from the Axiall Merger. All of the goodwill is assigned to the Company's Vinyls segment. As a portion of the goodwill arising from the Axiall Merger is attributable to foreign operations, there will be a continuing foreign currency impact to goodwill in the consolidated financial statements.

	Final Purchase Consideration as of August 31, 2016
Closing stock purchase:	
Offer per share	$ 33.00
Multiplied by number of shares outstanding at acquisition (in thousands of shares)	67,277
Fair value of Axiall shares outstanding purchased by the Company	2,220
Plus:	
Axiall debt repaid at acquisition	247
Seller's transaction costs paid by the Company (1)	48
Total fair value of consideration transferred	2,515
Fair value of Axiall share-based awards attributed to pre-combination service (2)	12
Additional settlement value of shares acquired	13
Purchase consideration	2,540
Fair value of previously held equity interest in Axiall (3)	102

Total fair value allocated to net assets acquired	$ 2,642

(in millions of dollars, except share amounts and per share data)

(1) Transactions costs incurred by the seller included legal and advisory costs incurred for the benefit of Axiall's former shareholders and board of directors to evaluate the Company's initial merger proposals, explore strategic alternatives and negotiate the purchase price.

(2) The fair value of share-based awards attributable to pre-combination service includes the ratio of the pre-combination service performed to the original service period of the Axiall restricted share units and options, including related dividend equivalent rights.

(3) Prior to the Axiall Merger, the Company owned 3.1 million shares in Axiall. The investment in Axiall was carried at estimated fair value with unrealized gains recorded as a component of accumulated other comprehensive loss in the consolidated balance sheet. The Company recognized a $49 gain for the investment in other income, net in the consolidated statements of operations upon gaining control.

The acquired business contributed net sales and net loss of $976 and $96, respectively, to the Company for the period from August 31, 2016 to December 31, 2016. The net loss for the period from August 31, 2016 to December 31, 2016 included integration-related costs and the negative impact of selling higher cost Axiall inventory recorded at fair value. The following unaudited consolidated pro forma information presents consolidated pro forma information as if the Axiall Merger had occurred on January 1, 2015:

	Pro Forma Year Ended December 31, 2016
Net sales	$ 7,081
Net income [1]	$ 397
Net income attributable to noncontrolling interests	23
Net income attributable to Westlake Chemical Corporation [1]	$ 374
Earnings per common share attributable to Westlake Chemical Corporation:	
Basic	$ 2.88
Diluted	$ 2.86

(1) The 2016 pro forma net income amounts include Axiall's historical charges recorded during the eight-month period prior to the closing of the Axiall Merger for (1) divestitures; (2) restructuring; and (3) legal and settlement claims, net, of $27, $23 and $23, respectively. These amounts have not been eliminated for pro forma results because they do not relate to nonrecurring transaction-specific costs related to the Axiall Merger.

The pro forma amounts above have been calculated after applying the Company's accounting policies and adjusting the Axiall results to reflect (1) the increase to depreciation and amortization that would have been charged assuming the fair value adjustments to property, plant and equipment and intangible assets had been applied from January 1, 2015; (2) the elimination of net sales and cost of sales between the Company and Axiall; (3) additional pension service costs; (4) amortization of debt premium and accretion of asset retirement obligations and environmental liabilities as part of the Company's adjustments to fair value; (5) incremental interest expense that would have been incurred assuming the financing arrangements entered into by the Company and the repayment of a portion of Axiall's outstanding debt had occurred on January 1, 2015; (6) the elimination of transaction-related costs; and (7) an adjustment to tax-effect the aforementioned pro forma adjustments using an estimated aggregate statutory income tax rate of the jurisdictions to which the above adjustments relate. The pro forma amounts do not include any potential synergies, cost savings or other expected benefits of the Axiall Merger, are presented for illustrative purposes only and are not necessarily indicative of results that would have been achieved if the Axiall Merger had occurred as of January 1, 2015 or of future operating performance.

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3. Financial Instruments

Cash Equivalents

The Company had $10 and $644 of held-to-maturity securities with original maturities of three months or less, primarily consisting of corporate debt securities, classified as cash equivalents at December 31, 2018 and 2017, respectively. The Company's investments in held-to-maturity securities were held at amortized cost, which approximates fair value.

Restricted Cash and Cash Equivalents

The Company had restricted cash and cash equivalents of $22 and $23 at December 31, 2018 and 2017, respectively. The Company's restricted cash and cash equivalents are primarily related to balances that are restricted for payment of distributions to certain of the Company's current and former employees and are reflected primarily in other assets, net in the consolidated balance sheets.

Available-for-Sale Marketable Securities

The Company had no available-for-sale securities at December 31, 2018 and 2017. The proceeds from sales and maturities of available-for-sale securities included in the consolidated statements of cash flows and the gross realized gains included in the consolidated statements of operations are reflected in the table below. No gross realized losses were realized during these periods. The cost of securities sold was determined using the specific identification method.

	Year Ended December 31, 2016
Proceeds from sales and maturities of securities	$ 663
Gross realized gains	54

4. Accounts Receivable

Accounts receivable consist of the following at December 31:

	2018	2017
Trade customers	$969	$974
Affiliates	6	9
Allowance for doubtful accounts	(23)	(22)
	952	961
Federal and state taxes	57	7
Other	28	33
Accounts receivable, net	$1,037	$1,001

5. Inventories

Inventories consist of the following at December 31:

	2018	2017
Finished products	$657	$549
Feedstock, additives, chemicals and other raw materials	203	221
Materials and supplies	154	130
Inventories	$1,014	$900

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6. Property, Plant and Equipment
Property, plant and equipment consist of the following at December 31:

	2018	2017
Land	$193	$198
Buildings and improvements	544	495
Plant and equipment	7,568	7,281
Other	437	388
	8,742	8,362
Less: Accumulated depreciation	(2,720)	(2,338)
	6,022	6,024
Construction in progress	573	388
Property, plant and equipment, net	$6,595	$6,412

Depreciation expense on property, plant and equipment of $478, $449 and $305 is included in cost of sales in the consolidated statements of operations for the years ended December 31, 2018, 2017 and 2016, respectively.
7. Goodwill and Other Intangible Assets
Goodwill
The gross carrying amounts and changes in the carrying amount of goodwill for the years ended December 31, 2018 and 2017 are as follows:

	Olefins Segment	Vinyls Segment	Total
Balance at December 31, 2016	$ 30	$ 917	$947
Measurement period adjustment	—	55	55
Effects of changes in foreign exchange rates	—	10	10
Balance at December 31, 2017	30	982	1,012
Effects of changes in foreign exchange rates	—	(10)	(10)
Balance at December 31, 2018	$ 30	$ 972	$1,002

Olefins Segment Goodwill
The Company performed its annual impairment analysis for the Olefins segment, the reporting unit assessed, during the fourth quarter of 2018. The Company elected to perform a qualitative assessment (commonly known as "step zero") for the purposes of its annual goodwill impairment analysis for the Olefins reporting unit. Based upon this assessment, the Company determined that it is more likely than not that the fair value of the Olefins reporting unit exceeds its carrying value. Factors considered in the qualitative assessment included macroeconomic conditions, industry and market considerations, cost factors related to raw materials and labor, current and projected financial performance, changes in management or strategy, and market capitalization.
Vinyls Segment Goodwill
The Company performed its annual impairment analysis for the Vinyls reporting units during the second quarter of 2018. The Company elected to perform a qualitative assessment (commonly known as "step zero") for the purposes of its annual goodwill impairment analysis for the Vinyls reporting units. Based upon this assessment, the Company determined that it is more likely than not that the fair value of each of the Vinyls reporting units exceeds its carrying value. Factors considered in the qualitative assessment included macroeconomic conditions, industry and market considerations, cost factors related to raw materials and labor, current and projected financial performance, changes in management or strategy, and market capitalization.

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Intangible Assets
Intangible assets consisted of the following at December 31:

	2018			2017			Weighted
	Cost	Accumulated Amortization	Net	Cost	Accumulated Amortization	Net	Average Life
Customer relationships	$745	$ (220)	$525	$754	$ (138)	$616	10
Other intangible assets:							
Licenses and intellectual property	122	(65)	57	124	(55)	69	13
Trademarks	90	(26)	64	93	(17)	76	13
Other	35	(22)	13	31	(15)	16	11
Total other intangible assets	$247	$ (113)	$134	$248	$ (87)	$161	

Scheduled amortization of intangible assets for the next five years is as follows: $106, $103, $101, $80 and $44 in 2019, 2020, 2021, 2022 and 2023, respectively.

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8. Long-Term Debt
Long-term debt consisted of the following at December 31:

	December 31, 2018			December 31, 2017		
	Principal Amount	Unamortized Discount and Debt Issuance Costs	Net Long-Term Debt	Principal Amount	Unamortized Premium, Discount and Debt Issuance Costs	Net Long-Term Debt
3.60% senior notes due 2022 (the "3.60% 2022 Senior Notes")	$250	$ (1)	$ 249	$250	$ (1)	$ 249
3.60% senior notes due 2026 (the "3.60% 2026 Senior Notes")	750	(9)	741	750	(10)	740
Loan related to tax-exempt waste disposal revenue bonds due 2027	11	—	11	11	—	11
6 ½% senior notes due 2029 (the "6 ½% 2029 GO Zone Senior Notes")	100	(1)	99	100	(1)	99
6 ½% senior notes due 2035 (the "6 ½% 2035 GO Zone Senior Notes")	89	(1)	88	89	(1)	88
6 ½% senior notes due 2035 (the "6 ½% 2035 IKE Zone Senior Notes")	65	—	65	65	—	65
5.0% senior notes due 2046 (the "5.0% 2046 Senior Notes")	700	(24)	676	700	(25)	675
4.375% senior notes due 2047 (the "4.375% 2047 Senior Notes")	500	(9)	491	500	(9)	491
3.50% senior notes due 2032 (the "3.50% 2032 GO Zone Refunding Senior Notes")	250	(2)	248	250	(2)	248
4.625% senior notes due 2021 (the "4.625% Westlake 2021 Senior Notes")	—	—	—	625	20	645
4.625% senior notes due 2021(the "4.625% Subsidiary 2021 Senior Notes")	—	—	—	63	2	65
4.875% senior notes due 2023 (the "4.875% Westlake 2023 Senior Notes")	—	—	—	434	11	445
4.875% senior notes due 2023 (the "4.875% Subsidiary 2023 Senior Notes")	—	—	—	16	—	16
Total Long-term debt	2,715	(47)	2,668	3,853	(16)	3,837
Less:						
Current portion - 4.625% Westlake 2021 Senior Notes and 4.625% Subsidiary 2021 Senior Notes	—	—	—	688	22	710
Long-term debt, net of current portion	$2,715	$ (47)	$ 2,668	$3,165	$ (38)	$ 3,127

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Credit Agreement

On July 24, 2018, the Company entered into a new $1,000 revolving credit facility that is scheduled to mature on July 24, 2023 (the "Credit Agreement") and, in connection therewith, terminated the existing $1,000 revolving credit facility that was scheduled to mature on August 23, 2021 (the "Prior Credit Agreement"). The Credit Agreement bears interest at either (a) LIBOR plus a spread ranging from 1.00% to 1.75% or (b) Alternate Base Rate plus a spread ranging from 0.00% to 0.75% in each case depending on the credit rating of the Company. At December 31, 2018, the Company had no borrowings outstanding under the Credit Agreement. As of December 31, 2018, the Company had outstanding letters of credit totaling $4 and borrowing availability of $996 under the Credit Agreement. The Credit Agreement contains certain affirmative and negative covenants, including a quarterly total leverage ratio financial maintenance covenant. As of December 31, 2018, the Company was in compliance with the total leverage ratio financial maintenance covenant. The Credit Agreement also contains certain events of default and if and for so long as certain events of default have occurred and are continuing, any overdue amounts outstanding under the Credit Agreement will accrue interest at an increased rate, the lenders can terminate their commitments thereunder and payments of any outstanding amounts could be accelerated by the lenders. None of the Company's subsidiaries are required to guarantee the obligations of the Company under the Credit Agreement.

The Credit Agreement includes a $150 sub-limit for letters of credit, and any outstanding letters of credit will be deducted from availability under the facility. The Credit Agreement also provides for a discretionary $50 commitment for swingline loans to be provided on a same-day basis. The Company may also increase the size of the facility, in increments of at least $25, up to a maximum of $500, subject to certain conditions and if certain lenders agree to commit to such an increase.

In connection with the Company's entry into the Credit Agreement and termination of the Prior Credit Agreement on July 24, 2018, all guarantees by the Company's subsidiaries of the Company's payment obligations under the 4.375% 2047 Senior Notes, the 3.60% 2022 Senior Notes, the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes were released. As a result, beginning with the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2018, the Company no longer discloses condensed consolidating financial information of its guarantor and non-guarantor subsidiaries.

3.60% Senior Notes due 2026 and 5.0% Senior Notes due 2046

In August 2016, the Company issued $750 aggregate principal amount of the 3.60% 2026 Senior Notes and $700 aggregate principal amount of the 5.0% 2046 Senior Notes. In March 2017, the Company commenced registered exchange offers to exchange the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes for new notes that are identical in all material respects to the 3.60% 2026 Senior Notes and the 5.0% 2046 Senior Notes, except that the offer and issuance of the new Securities and Exchange Commission ("SEC")-registered notes have been registered under the Securities Act of 1933, as amended (the "Securities Act"). The exchange offers expired on April 24, 2017, and approximately 99.97% of the 3.60% 2026 Senior Notes and 100% of the 5.0% 2046 Senior Notes were exchanged. The 3.60% 2026 Senior Notes that were not exchanged in the 3.60% 2026 Senior Notes exchange offer have not been registered under the Securities Act or any state securities laws and may not be offered or sold in the U.S. absent registration or an applicable exemption from registration requirements or a transaction not subject to the registration requirements of the Securities Act or any state securities law.

4.625% Senior Notes due 2021 and 4.875% Senior Notes due 2023

In September 2016, the Company issued $625 aggregate principal amount of the 4.625% Westlake 2021 Senior Notes and $434 aggregate principal amount of the 4.875% Westlake 2023 Senior Notes upon the closing of the Company's offers to exchange any and all of the $688 aggregate principal amount of the outstanding 4.625% senior notes due 2021 issued by Eagle Spinco Inc., a wholly-owned subsidiary of Axiall ("Eagle Spinco"), and the $450 aggregate principal amount of the outstanding 4.875% senior notes due 2023 issued by Axiall. In the exchange offers, $625 aggregate principal amount of the 4.625% Westlake 2021 Senior Notes and $434 aggregate principal amount of the 4.875% Westlake 2023 Senior Notes were issued by the Company, leaving outstanding $63 aggregate principal amount of the 4.625% Subsidiary 2021 Senior Notes and $16 aggregate principal amount of the 4.875% Subsidiary 2023 Senior Notes. In March 2017, the Company commenced registered exchange offers to exchange the 4.625% Westlake 2021 Senior Notes and the 4.875% Westlake 2023 Senior Notes for new SEC-registered notes that are identical in all material respects to the 4.625% Westlake 2021 Senior Notes and the 4.875% Westlake 2023 Senior Notes, except that the offer and issuance of the new notes have been registered under the Securities Act. The exchange offers expired on April 24, 2017, and 100% of both the 4.625% Westlake 2021 Senior Notes and the 4.875% Westlake 2023 Senior Notes were exchanged.

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In December 2017, the Company delivered irrevocable notices for the optional redemption of all of the outstanding 4.625% Westlake 2021 Senior Notes and 4.625% Subsidiary 2021 Senior Notes (collectively, the "2021 Notes"). The 2021 Notes were redeemed on February 15, 2018 at a redemption price equal to 102.313% of the principal amount of the 2021 Notes plus accrued and unpaid interest on the 2021 Notes to the redemption date. The 2021 Notes were classified as a component of current liabilities in the consolidated balance sheet at December 31, 2017, based on the terms of the redemption.

In March 2018, the Company delivered irrevocable notices for the optional redemption of all of the outstanding 4.875% Westlake 2023 Senior Notes and 4.875% Subsidiary 2023 Senior Notes (collectively, the "2023 Notes"). The 2023 Notes were redeemed on May 15, 2018 at a redemption price equal to 102.438% of the principal amount of the 2023 Notes plus accrued and unpaid interest on the 2023 Notes to the redemption date.

3.60% Senior Notes due 2022

In July 2012, the Company issued $250 aggregate principal amount of the 3.60% 2022 Senior Notes. The 3.60% 2022 Senior Notes are unsecured and were issued with an original issue discount of $1. There is no sinking fund and no scheduled amortization of the 3.60% 2022 Senior Notes prior to maturity. The Company may optionally redeem the 3.60% 2022 Senior Notes in accordance with the terms of the 3.60% 2022 Senior Notes.

4.375% Senior Notes due 2047

In November 2017, the Company completed the registered public offering of $500 aggregate principal amount of the 4.375% 2047 Senior Notes. The 4.375% 2047 Senior Notes are unsecured and mature on November 15, 2047. There is no sinking fund and no scheduled amortization of the 4.375% 2047 Senior Notes prior to maturity. The Company may optionally redeem the 4.375% 2047 Senior Notes in accordance with the terms of the 4.375% 2047 Senior Notes.

The indenture governing the 3.60% 2026 Senior Notes, 5.0% 2046 Senior Notes, 3.60% 2022 Senior Notes and 4.375% 2047 Senior Notes contains customary events of default and covenants that will restrict the Company and certain of the Company's subsidiaries' ability to (1) incur certain secured indebtedness, (2) engage in certain sale-leaseback transactions and (3) consolidate, merge or transfer all or substantially all of its assets.

IKE Zone Bonds

In December 2010, the Louisiana Local Government Authority Environmental Facilities and Community Development Authority (the "Authority"), a political subdivision of the State of Louisiana, completed the offering of $65 of 6 ½% IKE Zone Bonds under Section 704 of the Emergency Economic Stabilization Act of 2008 (the "IKE Zone Act"). In connection with the issuance of the 6 ½% 2035 IKE Zone Bonds, the Company issued $65 of the 6 ½% 2035 IKE Zone Senior Notes.

GO Zone Bonds

In December 2010, the Authority issued $89 of 6 ½% tax-exempt revenue bonds due November 1, 2035 under the Gulf Opportunity Zone Act of 2005 (the "GO Zone Act") (the "6 ½% 2035 GO Zone Bonds"). In connection with the issuance of the 6 ½% 2035 GO Zone Bonds, the Company issued $89 of the 6 ½% 2035 GO Zone Senior Notes. In July 2010, the Authority completed the reoffering of $100 of 6 ½% tax-exempt revenue bonds due August 1, 2029 under the GO Zone Act (the "6 ½% 2029 GO Zone Bonds"). In connection with the reoffering of the 6 ½% 2029 GO Zone Bonds, the Company issued $100 of the 6 ½% 2029 GO Zone Senior Notes. In December 2007, the Authority issued $250 of 6 ¾% tax-exempt revenue bonds due November 1, 2032 under the GO Zone Act (the "6 ¾% 2032 GO Zone Bonds"). In connection with the issuance of the 6 ¾% 2032 GO Zone Bonds, the Company issued $250 of the 6 ¾% 2032 GO Zone Senior Notes.

Each series of the tax-exempt bonds is subject to redemption and the holders may require the bonds to be repurchased upon a change of control or a change in or loss of the current tax status of the bonds. In addition, the bonds are subject to optional redemption by the Authority upon the direction of the Company if certain events have occurred in connection with the operation of the projects for which the bond proceeds may be used, including if the Company has determined that the continued operation of any material portion of the projects would be impracticable, uneconomical or undesirable for any reason.

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In September 2017, the Company directed the Authority to optionally redeem in full the $250 aggregate principal amount of the 6 ¾% 2032 GO Zone Bonds on November 1, 2017. In connection with the redemption of the 6 ¾% 2032 GO Zone Bonds, the Authority was required to cause the GO Zone Bonds trustee to surrender the 6 ¾% 2032 GO Zone Senior Notes to the Senior Notes trustee for cancellation. The 6 ¾% 2032 GO Zone Bonds were redeemed and the 6 ¾% 2032 GO Zone Senior Notes were cancelled on November 1, 2017.

In November 2017, the Authority completed the remarketing of $250 aggregate principal amount of 3.50% tax-exempt revenue refunding bonds due November 1, 2032 (the "3.50% 2032 GO Zone Bonds"). In connection with the remarketing of the 3.50% 2032 GO Zone Bonds, the Company issued $250 of the 3.50% 2032 Senior Notes. The 3.50% 2032 GO Zone Bonds are subject to optional redemption by the Authority upon the direction of the Company at any time on or after November 1, 2027, for 100% of the principal amount plus accrued interest. The indenture governing the 3.50% 2032 Senior Notes contains customary events of default and covenants that will restrict the Company and certain of the Company's subsidiaries' ability to (1) incur certain secured indebtedness, (2) engage in certain sale-leaseback transactions and (3) consolidate, merge or transfer all of substantially all of its assets.

In connection with each offering of the tax-exempt bonds, the Company entered into a loan agreement with the Authority pursuant to which the Company agreed to pay all of the principal, premium, if any, and interest on the bonds and certain other amounts to the Authority. The net proceeds from the offerings were loaned by the Authority to the Company. The Company used the proceeds to expand, refurbish and maintain certain of its facilities in the Louisiana Parishes of Calcasieu and Ascension. The bonds are unsecured and rank equally in right of payment with other existing and future unsecured senior indebtedness. As of December 31, 2018, the Company had drawn all proceeds from the tax-exempt bonds. In connection with each such offering of the tax-exempt bonds, the Company issued senior notes under a base indenture and supplemental indenture to collateralize its obligations under the loan agreement relating to such tax-exempt bonds (collectively, the "Tax-Exempt Bond Related Senior Notes").

The indentures governing the Tax-Exempt Bond Related Senior Notes excluding the 3.5% 2032 GO Zone Refunding Senior Notes contain customary covenants and events of default. Accordingly, these agreements generally impose significant operating and financial restrictions on the Company. These restrictions, among other things, provide limitations on incurrence of additional indebtedness, the payment of dividends, certain investments and acquisitions and sales of assets. However, the effectiveness of certain of these restrictions is currently suspended because the Tax-Exempt Bond Related Senior Notes are currently rated investment grade by at least two nationally recognized credit rating agencies. The most significant of these provisions, if it were currently effective, would restrict the Company from incurring additional debt, except specified permitted debt (including borrowings under its credit facility), when the Company's fixed charge coverage ratio is below 2.0:1. These limitations are subject to a number of important qualifications and exceptions, including, without limitation, an exception for the payment of the Company's regular quarterly dividend of up to $0.10 per share. If the restrictions were currently effective, distributions in excess of $100 would not be allowed unless, after giving pro forma effect to the distribution, the Company's fixed charge coverage ratio is at least 2.0:1 and such payment, together with the aggregate amount of all other distributions after January 13, 2006, is less than the sum of 50% of the Company's consolidated net income for the period from October 1, 2003 to the end of the most recent quarter for which financial statements have been filed, plus 100% of net cash proceeds received after October 1, 2003 as a contribution to the Company's common equity capital or from the issuance or sale of certain securities, plus several other adjustments.

Revenue Bonds

In December 1997, the Company entered into a loan agreement with a public trust established for public purposes for the benefit of the Parish of Calcasieu, Louisiana. The public trust issued $11 principal amount of tax-exempt waste disposal revenue bonds in order to finance the Company's construction of waste disposal facilities for an ethylene plant. The waste disposal revenue bonds expire in December 2027 and are subject to redemption and mandatory tender for purchase prior to maturity under certain conditions. The interest rate on the waste disposal revenue bonds at December 31, 2018 and 2017 was 1.85% and 1.73%, respectively.

As of December 31, 2018, the Company was in compliance with all of its long-term debt covenants.
The weighted average interest rate on all long-term debt was 4.4% and 4.5% at December 31, 2018 and 2017, respectively. Unamortized debt issuance costs on long-term debt were $25 and $26 at December 31, 2018 and 2017, respectively.

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Aggregate scheduled maturities of long-term debt during the next five years consist of $250 in 2022. There are no other scheduled maturities of debt in 2019 through 2023.

9. Stockholders' Equity

The Company's Board of Directors has declared regular quarterly dividends to holders of its common stock aggregating $120, $103 and $97 for the years ended December 31, 2018, 2017 and 2016, respectively.

Common Stock

Each share of common stock entitles the holder to one vote on all matters on which holders are permitted to vote, including the election of directors. There are no cumulative voting rights. Accordingly, holders of a majority of the total votes entitled to vote in an election of directors will be able to elect all of the directors standing for election. Subject to preferences that may be applicable to any outstanding preferred stock, the holders of the common stock will share equally on a per share basis any dividends when, as and if declared by the Board of Directors out of funds legally available for that purpose. If the Company is liquidated, dissolved or wound up, the holders of the Company's common stock will be entitled to a ratable share of any distribution to stockholders, after satisfaction of all the Company's liabilities and of the prior rights of any outstanding class of the Company's preferred stock. The Company's common stock has no preemptive or conversion rights or other subscription rights. There are no redemption or sinking fund provisions applicable to the Company's common stock.

Preferred Stock

The Company's charter authorizes the issuance of shares of preferred stock. The Company's Board of Directors has the authority, without shareholder approval, to issue preferred shares from time to time in one or more series, and to fix the number of shares and terms of each such series. The Board may determine the designations and other terms of each series including dividend rates, whether dividends will be cumulative or non-cumulative, redemption rights, liquidation rights, sinking fund provisions, conversion or exchange rights and voting rights.

Stock Repurchase Program

In November 2014, the Company's Board of Directors approved a $250 share repurchase program (the "2014 Program"). In November 2015, the Company's Board of Directors approved the expansion of the 2014 Program by an additional $150. In August 2018, the Company's Board of Directors approved the expansion of the 2014 Program by an additional $150. The total number of shares repurchased by the Company under the 2014 Program was 1,368,881, 0 and 1,511,109 for the years ended December 31, 2018, 2017 and 2016, respectively. As of December 31, 2018, the Company had repurchased a total of 5,562,479 shares of its common stock for an aggregate purchase price of approximately $335.

Any shares repurchased under the 2014 Program are held by the Company as treasury stock and may be used for general corporate purposes, including for the 2013 Omnibus Incentive Plan. In 2014, the Company began delivering treasury shares to employees and non-employee directors for options exercised and for the settlement of restricted stock units. The cost of treasury shares delivered is determined using the specific identification method.

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10. Accumulated Other Comprehensive Income (Loss)
Changes in accumulated other comprehensive income (loss) by component were as follows:

	Benefits Liability, Net of Tax	Cumulative Foreign Currency Exchange	Total
Balances at December 31, 2016	$ 29	$ (150)	$(121)
Other comprehensive income (loss) before reclassifications	12	114	126
Amounts reclassified from accumulated other comprehensive income (loss)	2	—	2
Net other comprehensive income attributable to Westlake Chemical Corporation	14	114	128
Balances at December 31, 2017	43	(36)	7
Other comprehensive income (loss) before reclassifications	(14)	(57)	(71)
Amounts reclassified from accumulated other comprehensive income (loss)	(11)	—	(11)
Reclassification of certain tax effects to retained earnings [(1)]	9	4	13
Net other comprehensive loss attributable to Westlake Chemical Corporation	(16)	(53)	(69)
Balances at December 31, 2018	$ 27	$ (89)	$(62)

(1) The Company reclassified certain income tax effects to retained earnings upon adoption of ASU No. 2018-02. See Note 14 for additional information.

The following table provides the details of the amounts reclassified from accumulated other comprehensive income (loss) into net income in the consolidated statements of operations:

Details about Accumulated Other Comprehensive Income (Loss) Components	Location of Reclassification (Income (Expense)) in Consolidated Statements of Operations	Year Ended December 31, 2018	2017	2016
Amortization of pension and other post-retirement net loss	(1)	$—	$(2)	$(2)
Pension settlement gain	(1)	14	—	—
Income tax benefit (provision) on pension and other post-retirement benefits	Provision for (benefit from) income taxes	(3)	—	1
		11	(2)	(1)
Realized gain on available-for-sale investments	Other income, net	—	—	54
Income tax provision on realized gain on available-for-sale investments	Provision for (benefit from) income taxes	—	—	(2)
		—	—	52
Total reclassifications for the period		$11	$(2)	$51

(1) These accumulated other comprehensive income (loss) components are included in the computation of net periodic benefit cost and reflected in other income, net in the consolidated statements of operations. See Note 11 for additional information on the pension settlement gain.

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11. Employee Benefits

Defined Contribution Plans

U.S. Plans

The Company has a defined contribution savings plan covering the eligible U.S. regular full-time and part-time employees, whereby eligible employees may elect to contribute up to 100% of their annual eligible compensation, subject to an annual plan limit in line with the annual elective contribution limit as determined by the Internal Revenue Service. During 2017, the Axiall savings plans were merged into the Company's defined contribution plan. The Company matches its employee's contribution up to a certain percentage of such employee's compensation, per the terms of the plan. The Company may, at its discretion and per the terms of the plan, make an additional non-matching contribution in an amount as the Board of Directors may determine. For the years ended December 31, 2018, 2017 and 2016, the Company recorded approximately $21, $23 and $11, respectively, to expense for these contributions.

Further, within the plan, the Company also makes an annual retirement contribution to substantially all employees of certain subsidiaries. The Company's contributions to the plan are determined as a percentage of employees' pay. For the years ended December 31, 2018, 2017 and 2016, the Company charged approximately $31, $29 and $17, respectively, to expense for these contributions.

Non-U.S. Plans

The Company has various defined contribution plans in Germany, Canada, the United Kingdom, Italy and Belgium covering eligible employees of the Company. The Company's contributions to the plans are based on applicable laws in each country. Contributions to the Company's non-U.S. defined contribution plans are made by both the employee and the Company. For the years ended December 31, 2018, 2017 and 2016, the Company charged approximately $5, $5 and $2, respectively, to expense for its contributions to these plans.

Defined Benefit Plans

U.S. Plans

The Company has noncontributory defined benefit pension plans that cover certain eligible salaried and wage employees of certain subsidiaries. However, eligibility for the Company's plans has been frozen. Benefits for salaried employees under these plans are based primarily on years of service and employees' pay near retirement. Benefits for wage employees are based upon years of service and a fixed amount as periodically adjusted. The Company recognizes the years of service prior to the Company's acquisition of the subsidiary's facilities for purposes of determining vesting, eligibility and benefit levels for certain employees of the subsidiary and for determining vesting and eligibility for certain other employees of the subsidiary. The measurement date for these plans is December 31.

In connection with the Axiall Merger, the Company assumed certain U.S. pension plans and other post-retirement benefit plans covering Axiall employees. The Axiall pension plans were closed to new participants and provide benefits to certain employees and retirees. The Axiall pension plans' assets and obligations merged into the Company's defined benefit pension plan for salaried employees during 2017. In 2018, a portion of the assets and obligations of the defined benefit pension plan for salaried employees was transferred to the defined benefit pension plan for wage employees, which was subsequently renamed the Westlake Defined Benefit Plan. The remaining portion of the assets and obligations of the defined benefit pension plan for salaried employees was terminated through an annuity purchase transaction. The other post-retirement benefit plans are unfunded and provide medical and life insurance benefits for certain employees and their dependents.

Non-U.S. Plans

The Company has defined benefit pension plans covering current and former employees associated with the Company's operations. These pension plans are closed to new participants and are for employees who commenced employment before July 1, 2007. Benefits for employees for these plans are based primarily on employees' pay near retirement. These pension plans are unfunded and have no plan assets. In connection with the Axiall Merger, the Company assumed certain defined benefit pension plans. These pension plans are for employees outside of the U.S., namely in Canada and Taiwan. The measurement date for the non-U.S. plans is December 31.

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Details of the changes in benefit obligations, plan assets and funded status of the Company's pension plans are as follows:

	2018 U.S. Plans	2018 Non-U.S. Plans	2017 U.S. Plans	2017 Non-U.S. Plans
Change in benefit obligation				
Benefit obligation, beginning of year	$807	$ 142	$799	$ 125
Service cost	3	2	3	2
Interest cost	24	3	25	3
Actuarial loss (gain)	(43)	—	41	—
Benefits paid	(40)	(4)	(45)	(3)
Settlements	(103)	—	(16)	(1)
Foreign exchange effects	—	(7)	—	16
Benefit obligation, end of year	$648	$ 136	$807	$ 142
Change in plan assets				
Fair value of plan assets, beginning of year	$650	$ 18	$614	$ 16
Actual return	(22)	—	97	1
Employer contribution	3	1	2	1
Benefits paid	(40)	(1)	(45)	—
Administrative expenses paid	(2)	—	(2)	—
Settlements	(103)	—	(16)	(1)
Foreign exchange effects	—	(1)	—	1
Fair value of plan assets, end of year	$486	$ 17	$650	$ 18
Funded status, end of year	$(162)	$ (119)	$(157)	$ (124)

	2018 U.S. Plans	2018 Non-U.S. Plans	2017 U.S. Plans	2017 Non-U.S. Plans
Amounts recognized in the consolidated balance sheet at December 31				
Current liabilities	$(2)	$ (3)	$(2)	$ (3)
Noncurrent liabilities	(160)	(116)	(155)	(121)
Net amount recognized	$(162)	$ (119)	$(157)	$ (124)

	2018 U.S. Plans	2018 Non-U.S. Plans	2017 U.S. Plans	2017 Non-U.S. Plans
Amounts recognized in accumulated other comprehensive income (loss)				
Net loss (gain)	$(36)	$ 9	$(71)	$ 9
Total before tax [(1)]	$(36)	$ 9	$(71)	$ 9

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(1) After-tax totals for pension benefits were $22 and $43 for 2018 and 2017, respectively, and are reflected in stockholders' equity as accumulated other comprehensive income (loss).

In the U.S., the Pension Protection Act of 2006 (the "Pension Protection Act") established a relationship between a qualified pension plan's funded status and the actual benefits that can be provided. Restrictions on plan benefits and additional funding and notice requirements are imposed when a plan's funded status is less than certain threshold levels. For the 2018 plan year, the funded status for the Company's U.S. pension plans are above 80% and, as such, are exempt from the Pension Protection Act's benefit restrictions.

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Pension plans with an accumulated benefit obligation in excess of plan assets at December 31 are as follows:

	2018		2017	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Information for pension plans with an accumulated benefit obligation in excess of plan assets				
Projected benefit obligation	$(648)	$ (128)	$(807)	$ (128)
Accumulated benefit obligation	(648)	(125)	(807)	(126)
Fair value of plan assets	486	10	650	5

The following table provides the components of net periodic benefit costs, other changes in plan assets and benefit obligation recognized in other comprehensive income.

	Year Ended December 31,					
	2018		2017		2016	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Components of net periodic benefit cost						
Service cost	$3	$ 2	$3	$ 2	$1	$ 2
Administrative expenses	3	—	2	—	3	—
Interest cost	24	3	25	2	9	2
Expected return on plan assets	(42)	(1)	(40)	(1)	(15)	—
Net amortization	(1)	1	1	1	1	—
Settlement gain	(14)	—	—	—	—	—
Net periodic benefit cost (gain)	$(27)	$ 5	$(9)	$ 4	$(1)	$ 4
Other changes in plan assets and benefit obligation recognized in other comprehensive income (OCI)						
Net loss (gain) emerging	$20	$ 1	$(18)	$ —	$(67)	$ 13
Settlement gain	14	—	—	—	—	—
Amortization of net gain (loss)	1	(1)	(1)	(1)	(1)	—
Total recognized in OCI	$35	$ —	$(19)	$ (1)	$(68)	$ 13
Total net periodic benefit cost and OCI	$8	$ 5	$(28)	$ 3	$(69)	$ 17

The estimated prior service cost and net loss for the defined benefit plans to be amortized from accumulated other comprehensive income (loss) into net periodic benefit cost during 2019 are both expected to be zero.

During the third quarter of 2018, the Company's U.S. pension plans settled portions of their projected benefit obligations through the purchase of annuities and lump sum payments to certain participants. In conjunction with the settlement, the Company also remeasured the pension obligations and plan assets of the affected plans, resulting in a $26 increase in accumulated other comprehensive income (loss) before tax and a corresponding decrease in net pension liabilities recorded in the consolidated balance sheets. The Company recognized a $14 one-time settlement gain in other income, net, which was reclassified from accumulated other comprehensive income (loss).

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The weighted-average assumptions used to determine pension plan obligations and net periodic benefit costs for the plans are as follows:

	2018		2017		2016	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Weighted average assumptions used to determine benefit obligations at December 31						
Discount rate	4.1%	2.0 %	3.4%	1.8 %	3.8%	1.8 %
Rate of compensation increase	— %	2.6 %	— %	2.6 %	— %	2.6 %
Weighted average assumptions used to determine net periodic benefit costs for years ended December 31						
Discount rate for benefit obligations	3.4%	1.8 %	3.8%	1.8 %	3.2%	2.4 %
Discount rate for service cost	3.8%	2.0 %	4.1%	1.9 %	3.4%	2.4 %
Discount rate for interest cost	3.3%	2.0 %	3.2%	2.0 %	2.9%	2.4 %
Expected return on plan assets	7.0%	3.8 %	6.8%	3.8 %	6.8%	4.6 %
Rate of compensation increase	— %	2.6 %	— %	2.6 %	— %	2.6 %

The discount rates for the Company's U.S. and non-U.S. plans are determined using a benchmark pension discount curve and applying spot rates from the curve to each year of expected benefit payments to determine the appropriate discount rate for the Company.

The Company's U.S. pension plan investments are held in the Westlake Defined Benefit Plan. The Company's overall investment strategy for these pension plan assets is to achieve a balance between moderate income generation and capital appreciation. The investment strategy includes a mix of approximately 60% of investments for long-term growth, and 40% for near-term benefit payments with a diversification of asset types. These pension funds' investment policies target asset allocations from approximately 60% equity securities and 40% fixed income securities in order to pursue a balance between moderate income generation and capital appreciation.

Equity securities primarily include investments in large-cap and small-cap companies located in the U.S. and international developed and emerging markets stocks. Fixed income securities are comprised of investment and non-investment grade bonds, including U.S. Treasuries and U.S. and non-U.S. corporate bonds of companies from diversified industries. Each pension fund investment policy allows a discretionary range in various asset classes within the asset allocation model of up to 10%. The Company does not believe that there are significant concentrations of risk in the pension plan assets due to its strategy of asset diversification. At December 31, 2018, plan assets did not include direct ownership of the Company's common stock.

Under the accounting guidance for fair value measurements, inputs used to measure fair value are classified in one of three levels:

Level 1: Quoted market prices in active markets for identical assets or liabilities.

Level 2: Observable market-based inputs or unobservable inputs that are corroborated by market data.

Level 3: Unobservable inputs that are not corroborated by market data.

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The investments in the collective trust and mutual funds are valued using a market approach based on the net asset value of units held. The fair values of the Company's U.S. plan assets at December 31, by asset category, are as follows:

	2018					
	U.S. Plans			Non U.S. Plans		
	Level 1	Level 2	Total	Level 1	Level 2	Total
Cash and common stock:						
Cash and cash equivalents	$—	$ —	$—	$5	$ —	$ 5
Common stock	13	—	13	—	—	—
Collective investment trust and mutual funds—Equity securities:						
Large-cap funds (1)	44	98	142	—	1	1
Small-cap funds (2)	6	13	19	—	—	—
International funds (3)	64	38	102	—	5	5
Collective investment trust and mutual funds—Fixed income:						
Bond funds (4)	96	102	198	—	6	6
Short-term investment funds	—	12	12	—	—	—
	$223	$ 263	$486	$5	$ 12	$ 17

	2017					
	U.S. Plans			Non U.S. Plans		
	Level 1	Level 2	Total	Level 1	Level 2	Total
Cash and common stock:						
Cash and cash equivalents	$—	$ —	$—	$5	$ —	$ 5
Common stock	21	—	21	—	—	—
Collective investment trust and mutual funds—Equity securities:						
Large-cap funds (1)	49	173	222	—	2	2
Small-cap funds (2)	9	25	34	—	—	—
International funds (3)	69	50	119	—	5	5
Collective investment trust and mutual funds—Fixed income:						
Bond funds (4)	116	125	241	—	6	6
Short-term investment funds	—	13	13	—	—	—
	$264	$ 386	$650	$5	$ 13	$ 18

(1) Substantially all of the assets of these funds are invested in large-cap U.S. companies. The remainder of the assets of these funds is invested in cash reserves.
(2) Substantially all of the assets of these funds are invested in small-cap U.S. companies. The remainder of the assets of these funds is invested in cash reserves.
(3) Substantially all of the assets of these funds are invested in international companies in developed markets (excluding the U.S.). The remainder of the assets of these funds is invested in cash reserves.
(4) This category represents investment grade bonds of U.S. issuers, including U.S. Treasury notes.

The Company's funding policy for its U.S. plans is consistent with the minimum funding requirements of federal law and regulations, and based on preliminary estimates, the Company expects to make contributions of approximately $2 for the pension plans in 2019.

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Multi-employer Plans

Non-U.S. Plans

The Company participates in two multi-employer plans, Pensionskasse der Mitarbeiter der Hoechst-Gruppe VVaG and Pensionskasse der Wacker-Chemie GmbH VVaG, which provide benefits to certain of the Company's employees in Germany. These multi-employer plans are closed to new participants. The benefit obligations are covered up to a certain salary threshold by contributions made by the Company and employees to the plans.

Contributions to the Company's multi-employer plans are expensed as incurred and were as follows:

	Year Ended December 31,		
	2018	2017	2016
	Non-U.S. Plans	Non-U.S. Plans	Non-U.S. Plans
Contributions to multi-employer plans [(1)]	$ 7	$ 8	$ 5

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(1) The plan information for both the Pensionskasse der Mitarbeiter der Hoechst-Gruppe VVaG and Pensionskasse der Wacker-Chemie GmbH VVaG plans is publicly available. The plans provide fixed, monthly retirement payments on the basis of the credits earned by the participating employees. To the extent that the plans are underfunded, future contributions to the plans may increase and may be used to fund retirement benefits for employees related to other employers. The Company does not consider either of its multi-employer plans individually significant.

Other Post-retirement Benefits

In the U.S., the Company provides post-retirement healthcare benefits to the employees of two subsidiaries who meet certain minimum age and service requirements. The Company has the right to modify or terminate some of these benefits.

In conjunction with the Axiall Merger, the Company assumed post-retirement plans in the U.S. and Canada which are unfunded and provide medical and life insurance benefits for certain employees and their dependents.

The following table provides a reconciliation of the benefit obligations of the Company's unfunded post-retirement healthcare plans.

	2018		2017	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Change in benefit obligation				
Benefit obligation, beginning of year	$73	$ 3	$80	$ 3
Service cost	1	—	1	—
Interest cost	2	—	2	—
Actuarial gain	(1)	—	(1)	—
Benefits paid	(8)	—	(9)	—
Benefit obligation, end of year	$67	$ 3	$73	$ 3
Change in plan assets				
Fair value of plan assets, beginning of year	$—	$ —	$—	$ —
Employer contribution	8	—	9	—
Benefits paid	(8)	—	(9)	—
Fair value of plan assets, end of year	$—	$ —	$—	$ —
Funded status, end of year	$(67)	$ (3)	$(73)	$ (3)

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	2018 U.S. Plans	2018 Non-U.S. Plans	2017 U.S. Plans	2017 Non-U.S. Plans
Amounts recognized in the consolidated balance sheet at December 31				
Current liabilities	$(8)	$ —	$(8)	$ —
Noncurrent liabilities	(59)	(3)	(65)	(3)
Net amount recognized	$(67)	$ (3)	$(73)	$ (3)

	2018 U.S. Plans	2018 Non-U.S. Plans	2017 U.S. Plans	2017 Non-U.S. Plans
Amounts recognized in accumulated other comprehensive income (loss)				
Net gain	$(6)	$ —	$(5)	$ —
Total before tax [(1)]	$(6)	$ —	$(5)	$ —

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(1) After-tax totals for post-retirement healthcare benefits were $5 and $0 for 2018 and 2017, respectively, and are reflected in stockholders' equity as accumulated other comprehensive income (loss).

The following table provides the components of net periodic benefit costs, other changes in plan assets and benefit obligation recognized in other comprehensive income.

	Year Ended December 31, 2018 U.S. Plans	2018 Non-U.S. Plans	2017 U.S. Plans	2017 Non-U.S. Plans	2016 U.S. Plans	2016 Non-U.S. Plans
Components of net periodic benefit cost						
Service cost	$1	$ —	$1	$ —	$—	$ —
Interest cost	2	—	2	—	1	—
Net amortization	—	—	—	—	—	—
Net periodic benefit cost	$3	$ —	$3	$ —	$1	$ —
Other changes in plan assets and benefit obligation recognized in OCI						
Net gain emerging	$(1)	$ (1)	$(1)	$ —	$(6)	$ —
Total recognized in OCI	$(1)	$ (1)	$(1)	$ —	$(6)	$ —
Total net periodic benefit cost and OCI	$2	$ (1)	$2	$ —	$(5)	$ —

The estimated prior service cost and net loss for the post-retirement healthcare benefit plans that will be amortized from accumulated other comprehensive income (loss) into net periodic benefit cost during 2019 are both expected to be zero.

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The weighted-average assumptions used to determine post-retirement healthcare plan obligations and net periodic benefit costs for the plans are as follows:

	2018		2017		2016	
	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans	U.S. Plans	Non-U.S. Plans
Weighted average assumptions used to determine benefit obligations at December 31						
Discount rate	3.7%	3.9 %	3.0%	4.0 %	3.3%	4.0 %
Health care cost trend rate						
- Initial rate	7.0%	5.8 %	7.3%	6.2 %	7.3%	6.2 %
- Ultimate rate	4.5%	4.0 %	4.5%	4.5 %	4.5%	4.5 %
- Years to ultimate	11	22	11	12	11	12
Weighted average assumptions used to determine net periodic benefit costs for years ended December 31						
Discount rate for benefit obligations	3.0%	3.6 %	3.3%	3.3 %	2.6%	3.3 %
Discount rate for service cost	3.4%	3.6 %	3.8%	3.3 %	3.1%	3.3 %
Discount rate for interest cost	2.7%	3.6 %	2.6%	3.3 %	2.8%	3.3 %
Health care cost trend rate						
- Initial rate	7.0%	6.1 %	6.8%	6.8 %	7.0%	6.8 %
- Ultimate rate	4.5%	4.5 %	4.6%	4.5 %	4.5%	4.5 %
- Years to ultimate	10	11	11	12	12	13

The discount rate is determined using a benchmark pension discount curve and applying spot rates from the curve to each year of expected benefit payments to determine the appropriate discount rate for the Company. A one percentage-point increase or decrease in assumed healthcare trend rates would not have a significant effect on the amounts reported for the healthcare plans.

Estimated Future Benefit Payments

The following benefit payments are expected to be paid:

	Pension Benefits	Other Post-retirement Benefits
Estimated future benefit payments:		
Year 1	$ 44	$ 8
Year 2	44	8
Year 3	45	8
Year 4	46	8
Year 5	46	8
Years 6 to 10	233	25

12. Stock-Based Compensation

Under the Westlake Chemical Corporation 2013 Omnibus Incentive Plan (as amended and restated in 2017, the "2013 Plan"), all employees and non-employee directors of the Company, as well as certain individuals who have agreed to become the Company's employees, are eligible for awards. Shares of common stock may be issued as authorized in the 2013 Plan. At the discretion of the administrator of the 2013 Plan, employees and non-employee directors may be granted awards in the form of stock options, stock appreciation rights, stock awards, restricted stock units or cash awards (any of which may be a performance award). Outstanding stock option awards have a 10-year term and vest (1) ratably on an annual basis over a three-year period or (2) at the end of a five-year period. Outstanding restricted stock units vest either (1) ratably on an annual basis over a two to five-year period or (2) at the end of a six-year period. In accordance with accounting guidance related to share-

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based payments, stock-based compensation expense for all stock-based compensation awards is based on estimated grant-date fair value. The Company recognizes these stock-based compensation costs net of a forfeiture rate and on a straight-line basis over the requisite service period of the award for only those shares expected to vest. For the years ended December 31, 2018, 2017 and 2016, the total recognized stock-based compensation expense related to equity awards issued under the 2013 Plan was $18, $14 and $14, respectively.
Option activity and changes during the year ended December 31, 2018 were as follows:

	Options	Weighted Average Exercise Price	Weighted Average Remaining Term (Years)	Aggregate Intrinsic Value
Outstanding at December 31, 2017	1,269,601	$ 41.04		
Granted	173,195	107.75		
Exercised	(323,182)	28.81		
Cancelled	(3,660)	77.16		
Outstanding at December 31, 2018	1,115,954	$ 54.82	6.1	$ 20
Exercisable at December 31, 2018	628,926	$ 39.05	4.5	$ 17

For options outstanding at December 31, 2018, the options had the following range of exercise prices:

Range of Prices	Options Outstanding	Weighted Average Remaining Contractual Life (Years)
$7.12 - $30.05	272,632	1.9
$40.38 - $44.42	223,589	7.1
$45.70 - $61.87	300,549	7.5
$63.98 - $68.09	112,386	5.7
$68.18 - $107.75	206,798	8.6

The aggregate intrinsic value in the table above represents the total pretax intrinsic value (the difference between the Company's closing stock price on the last trading day of the year and the exercise price, multiplied by the number of in-the-money options) that would have been received by the option holders had all option holders exercised their options on December 31, 2018. This amount changes based on the fair market value of the Company's common stock. For the years ended December 31, 2018, 2017 and 2016, the total intrinsic value of options exercised was $21, $24 and $4, respectively.
As of December 31, 2018, $5 of total unrecognized compensation cost related to stock options is expected to be recognized over a weighted-average period of 1.7 years. Income tax benefits of $4, $8 and $1 were realized from the exercise of stock options during the years ended December 31, 2018, 2017 and 2016, respectively.
The Company used the Black-Scholes option pricing model to value its options. The table below presents the weighted average value and assumptions used in determining each option's fair value. Volatility was calculated using historical trends of the Company's common stock price.

	Stock Option Grants Year Ended December 31,		
	2018	2017	2016
Weighted average fair value	$28.94	$15.84	$11.67
Risk-free interest rate	2.7 %	2.1 %	1.4 %
Expected life in years	5	5	5

Expected volatility	27.6	%	29.2	%	32.9	%
Expected dividend yield	0.7	%	1.2	%	1.6	%

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The Company had no non-vested restricted stock awards as of December 31, 2018 and 2017. As of December 31, 2018, there was no unrecognized stock-based compensation expense related to non-vested restricted stock awards. The total fair value of restricted stock awards that vested during the years ended December 31, 2018, 2017 and 2016 was $0, $0 and $4, respectively.

Non-vested restricted stock units as of December 31, 2018 and changes during the year ended December 31, 2018 were as follows:

	Number of Units	Weighted Average Grant Date Fair Value
Non-vested at December 31, 2017	663,866	$ 56.86
Granted	146,811	106.58
Vested	(95,449)	65.32
Forfeited	(12,439)	74.46
Non-vested at December 31, 2018	702,789	$ 65.79

As of December 31, 2018, there was $17 of unrecognized stock-based compensation expense related to non-vested restricted stock units. This cost is expected to be recognized over a weighted-average period of 1.5 years. The total fair value of restricted stock units that vested during the years ended December 31, 2018, 2017 and 2016 was $10, $6 and $4, respectively.

Axiall Awards Assumed in the Axiall Merger

In the Axiall Merger, all outstanding Axiall restricted stock units were assumed by the Company and converted into restricted stock units in respect of the Company's common stock, with the same terms and conditions except that upon settlement the award holders will receive the greater of (1) the value of $33.00 per Axiall restricted stock unit that was converted into a restricted stock unit in respect of the Company's common stock and (2) the value of the Company's common stock. The awards are classified as liability awards for accounting purposes and are re-measured at each reporting date until they vest. The portion of the replacement award that is attributable to pre-combination service by the employee was included in the measure of consideration transferred to acquire Axiall. The remaining fair value of the replacement awards will be recognized as stock-based compensation expense over the remaining vesting period. Total stock-based compensation expense recognized related to Axiall restricted stock units that were assumed by the Company and converted into restricted stock units during the years ended December 31, 2018, 2017, and 2016 was $4, $9 and $38, respectively, of which $33 was included in transaction and integration-related costs in the consolidated statement of operations during the year ended December 31, 2016.

The Company estimates the fair value of these awards using the Company's common stock price and a pricing model to estimate the value attributable to the $33.00 minimum price per Axiall restricted stock unit converted into a restricted stock unit in respect of the Company's common stock. The table below presents the assumptions used in determining each liability classified restricted stock unit's fair value. Volatility was calculated using historical trends of the Company's common stock price.

	Liability Classified Restricted Stock Awards Year Ended December 31, 2018
Weighted average vesting period in years	0.3
Risk-free interest rate	2.5 %

Expected volatility	32.9 %
Expected dividend yield	1.5 %

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Non-vested liability classified restricted stock awards as of December 31, 2018 and changes during the year ended December 31, 2018 were as follows:

	Number of Units	Weighted Average Fair Value
Non-vested at December 31, 2017	100,992	$ 106.53
Vested	(48,845)	116.99
Cancelled	(2,619)	99.50
Non-vested at December 31, 2018	49,528	$ 66.46

As of December 31, 2018, there was $1 of unrecognized stock-based compensation expense related to non-vested liability classified restricted stock awards. The total fair value of liability classified restricted stock awards that vested during the years ended December 31, 2018, 2017 and 2016 was $6, $11 and $3, respectively. The total fair value of liability classified restricted stock awards cancelled during the year ended December 31, 2018 was $0.

Westlake Chemical Partners LP Awards

The Company's wholly-owned subsidiary and the general partner of Westlake Partners, Westlake Chemical Partners GP LLC ("WLKP GP"), maintains a unit-based compensation plan for directors and employees of WLKP GP and Westlake Partners.

The Westlake Partners 2014 Long-term Incentive Plan ("Westlake Partners 2014 Plan") permits various types of equity awards including but not limited to grants of phantom units and restricted units. Awards granted under the Westlake Partners 2014 Plan may be settled with Westlake Partners units or in cash or a combination thereof. Compensation expense for these awards was not material to the Company's consolidated financial statements for the years ended December 31, 2018, 2017 and 2016.

13. Fair Value Measurements

The Company has financial assets and liabilities subject to fair value measures. These financial assets and liabilities include cash and cash equivalents, accounts receivable, net, accounts payable and long-term debt, all of which are recorded at carrying value. The amounts reported in the consolidated balance sheets for cash and cash equivalents, accounts receivable, net and accounts payable approximate their fair value due to the short maturities of these instruments. The carrying and fair values of the Company's long-term debt (including the current portion of long-term debt) at December 31, 2018 and 2017 are summarized in the table below. The Company's long-term debt instruments are publicly-traded. A market approach, based upon quotes from financial reporting services, is used to measure the fair value of the Company's long-term debt. Because the Company's long-term debt instruments may not be actively traded, the inputs used to measure the fair value of the Company's long-term debt are classified as Level 2 inputs within the fair value hierarchy.

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	2018		2017	
	Carrying Value	Fair Value	Carrying Value	Fair Value
3.60% 2022 Senior Notes	$249	$248	$249	$255
3.60% 2026 Senior Notes	741	692	740	757
Loan related to tax-exempt waste disposal revenue bonds due 2027	11	11	11	11
6 ½% 2029 GO Zone Senior Notes	99	106	99	111
6 ½% 2035 GO Zone Senior Notes	88	95	88	99
6 ½% 2035 IKE Zone Senior Notes	65	69	65	74
5.0% 2046 Senior Notes	676	641	675	787
4.375% 2047 Senior Notes	491	417	491	518
3.50% 2032 GO Zone Refunding Senior Notes	248	233	248	256
4.625% Westlake 2021 Senior Notes [1]	—	—	645	639
4.625% Subsidiary 2021 Senior Notes [1]	—	—	65	65
4.875% Westlake 2023 Senior Notes	—	—	445	449
4.875% Subsidiary 2023 Senior Notes	—	—	16	16

(1) The 4.625% Westlake 2021 Senior Notes and 4.625% Subsidiary 2021 Senior Notes were classified as a component of current liabilities in the consolidated balance sheet at December 31, 2017. For additional information, see Note 8.

14. Income Taxes

The components of income before income taxes are as follows:

	Year Ended December 31,		
	2018	2017	2016
Domestic	$1,087	$917	$476
Foreign	247	164	82
	$1,334	$1,081	$558

The Company's provision for (benefit from) income taxes consists of the following:

	Year Ended December 31,		
	2018	2017	2016
Current			
Federal	$158	$231	$8
State	28	18	9
Foreign	52	27	20
	238	276	37
Deferred			
Federal	59	(557)	136
State	(2)	25	(33)
Foreign	5	(2)	(2)
	62	(534)	101
Total provision for (benefit from) income taxes	$300	$(258)	$138

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A reconciliation of taxes computed at the statutory rate to the Company's income tax expense is as follows:

	Year Ended December 31, 2018	2017	2016
Provision for federal income tax, at statutory rate	$280	$378	$195
State income tax provision, net of federal income tax effect	28	26	1
Foreign income tax rate differential	5	(33)	(8)
Manufacturing deduction	—	(23)	(2)
Depletion	(4)	(7)	(2)
Noncontrolling interests	(6)	(9)	(7)
Tax on previously held shares of Axiall Corporation and certain other acquisition related items	—	—	(13)
Tax Act related adjustment	—	(591)	—
Changes in state apportionment and other state adjustments	(6)	2	(17)
Research and development expenditures and adjustments related to prior years' tax returns	(1)	(1)	(8)
Other, net	4	—	(1)
	$300	$(258)	$138

The tax effects of the principal temporary differences between financial reporting and income tax reporting at December 31 are as follows:

	2018	2017
Net operating loss carryforward	$50	$64
Credit carryforward	24	26
Accruals	64	53
Pension	76	79
Allowance for doubtful accounts	5	5
Inventories	13	11
Other	12	15
Deferred taxes assets—total	244	253
Property, plant and equipment	(948)	(906)
Intangibles	(148)	(154)
Turnaround costs	(20)	(8)
Basis difference—consolidated partnerships	(202)	(209)
Other	(27)	(18)
Deferred tax liabilities—total	(1,345)	(1,295)
Valuation allowance	(47)	(56)
Total net deferred tax liabilities	$(1,148)	$(1,098)
Balance sheet classifications		
Noncurrent deferred tax asset	$11	$13
Noncurrent deferred tax liability	(1,159)	(1,111)
Total net deferred tax liabilities	$(1,148)	$(1,098)

At December 31, 2018, the Company had foreign and state net operating loss carryforwards of approximately $331, which will expire in varying amounts between 2019 and 2038 and are subject to certain limitations on an annual basis. Management believes the Company will realize the benefit of a portion of the net operating loss carryforwards before they expire, but to the extent that the full benefit may not be realized, a valuation allowance has been recorded. The valuation allowance decreased by $9 in 2018 mostly as a result of a change to the foreign net operating losses carryforward.

(in millions of dollars, except share amounts and per share data)

As result of the Tax Act, the Company recognized an income tax benefit of $591 in the 2017 consolidated financial statements for items such as a revaluation of deferred tax assets and liabilities, partially offset by a one-time U.S. tax on the mandatory deemed repatriation of the Company's post-1986 foreign earnings. The Company did not record any material measurement period adjustment in 2018. The accounting for the income tax effects of the Tax Act was completed in the fourth quarter of 2018.

In February 2018, the FASB issued an accounting standards update, Income Statement - Reporting Comprehensive Income, to (1) allow reclassification from accumulated other comprehensive income (loss) to retained earnings for stranded tax effects resulting from the Tax Act; and (2) require certain disclosures about stranded tax effects. Certain tax effects become stranded in accumulated other comprehensive income (loss) when deferred tax balances originally recorded at the historical income tax rate are adjusted in income from operations based on the lower, newly-enacted income tax rate. The Company adopted the accounting standard effective October 1, 2018 and reclassified $13 of stranded tax effects relating to its pension benefits liability and cumulative effect of foreign exchange from accumulated other comprehensive income (loss) to retained earnings.

During the fourth quarter of 2018, the Company made a policy election to record the impact of the accounting for GILTI tax as a period cost. The GILTI tax recognized in 2018 was not material to the consolidated financial statements.

For the year ended December 31, 2018, the Company accrued $20 of foreign tax as it is no longer permanently reinvested with respect to the outside basis difference for all of its foreign subsidiaries.

The Company files income tax returns in the U.S. federal jurisdiction, various states and foreign jurisdictions. The Company is no longer subject to examinations by tax authorities before the year 2012.

15. Earnings and Dividends per Share

The Company has unvested restricted stock units outstanding that are considered participating securities and, therefore, computes basic and diluted earnings per share under the two-class method. Basic earnings per share for the periods are based upon the weighted average number of shares of common stock outstanding during the periods. Diluted earnings per share include the effect of certain stock options.

	Year Ended December 31,		
	2018	2017	2016
Net income attributable to Westlake Chemical Corporation	$996	$1,304	$399
Less:			
Net income attributable to participating securities	(5)	(7)	(2)
Net income attributable to common shareholders	$991	$1,297	$397

The following table reconciles the denominator for the basic and diluted earnings per share computations shown in the consolidated statements of operations:

	Year Ended December 31,		
	2018	2017	2016
Weighted average common shares—basic	129,401,823	129,087,043	129,367,712
Plus incremental shares from:			
Assumed exercise of options	583,930	452,970	607,110
Weighted average common shares—diluted	129,985,753	129,540,013	129,974,822
Earnings per common share attributable to Westlake Chemical Corporation:			
Basic	$7.66	$ 10.05	$ 3.07
Diluted	$7.62	$ 10.00	$ 3.06

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Excluded from the computation of diluted earnings per share for the years ended December 31, 2018 and 2016 are options to purchase 150,479 and 318,259 shares of common stock, respectively. There are no antidilutive options to purchase shares of common stock for the year ended December 31, 2017. These options were outstanding during the periods reported but were excluded because the effect of including them would have been antidilutive.

Dividends per Share

Dividends per common share for the years ended December 31, 2018, 2017, and 2016 were as follows:

	Year Ended December 31,		
	2018	2017	2016
Dividends per common share	$0.9200	$0.8012	$0.7442

16. Supplemental Information

Accrued Liabilities

Accrued liabilities were $676 and $657 at December 31, 2018 and 2017, respectively. Accrued rebates, which is a component of accrued liabilities, was $125 and $108 at December 31, 2018 and 2017, respectively. No other component of accrued liabilities was more than five percent of total current liabilities.

Non-cash Investing Activity

The change in capital expenditure accruals reducing additions to property, plant and equipment was $48 and $9 for the years ended December 31, 2018 and 2017, respectively. The change in capital expenditure accruals increasing additions to property, plant and equipment was $7 for the year ended December 31, 2016.

Other Income, Net

For the year ended December 31, 2018, other income, net included income from pension and post-retirement plans, including a one-time settlement gain, income from unconsolidated subsidiaries and interest income on cash and cash equivalents of $25, $16 and $17, respectively. For the year ended December 31, 2017, other income, net included income from unconsolidated subsidiaries of $10. For the year ended December 31, 2016, other income, net included a $49 gain realized on previously held shares of Axiall common stock. No other components of other income, net were material to the statements of operations for the years ended December 31, 2018, 2017 and 2016.

Cash Flow Information

	Year Ended December 31,		
	2018	2017	2016
Cash paid for:			
Interest paid, net of interest capitalized	$140	$154	$ 46
Income taxes paid	376	84	3

17. Related Party and Affiliate Transactions

The Company leases office space for management and administrative services from an affiliate of the Company's principal stockholder. For each of the years ended December 31, 2018, 2017 and 2016, the Company incurred lease payments of approximately $3.

Cypress Interstate Pipeline L.L.C., a natural gas liquids pipeline joint venture company in which the Company owns a 50% equity stake, transports natural gas liquid feedstocks to the Company's Lake Charles complex through its pipeline. The Company accounts for its investments in Cypress Interstate Pipeline L.L.C. under the equity method of accounting. The investment in Cypress Interstate Pipeline L.L.C. at December 31, 2018 and 2017 was $8 and $9, respectively. For the years ended December 31, 2018, 2017 and 2016, the Company incurred pipeline fees of approximately $14, $15 and $14, respectively, payable to this joint venture for usage of the pipeline. The amounts due to this joint venture were $2 and $1 at December 31, 2018 and 2017, respectively.

The Company owned a 15% and an 11% equity stake in InfraServ Knapsack GmbH & Co. KG and InfraServ Gendorf GmbH & Co. KG, respectively (collectively "Infraserv") as of January 31, 2018. Effective February 1, 2018, the Company acquired additional 5% and 9% equity interests in InfraServ Knapsack GmbH & Co. KG and InfraServ Gendorf GmbH & Co. KG, respectively. Upon the acquisition of additional interests, the Company began accounting for its investments in Infraserv under the equity method of accounting. The Company has service agreements with these entities, including contracts to provide electricity and technical services to certain of the Company's production facilities in Germany. The investment in Infraserv was $57 and $46 at December 31, 2018 and 2017, respectively. For the years ended December 31, 2018, 2017 and 2016, the Company incurred charges aggregating approximately $145, $133 and $131, respectively, for these services. The amounts accrued for these related parties were approximately $48 and $33 at December 31, 2018 and 2017, respectively.

The Company owns a 50% interest in RS Cogen LLC ("RS Cogen"), which the Company acquired as a result of the Axiall Merger. RS Cogen operates a process steam, natural gas-fired cogeneration facility adjacent to the Lake Charles South Facility. The Company accounts for its investment in RS Cogen under the equity method of accounting. The investment in RS Cogen at December 31, 2018 and 2017 was $5 and $10, respectively. For the years ended December 31, 2018 and 2017, and for the period from August 31, 2016 to December 31, 2016, the Company recorded purchases of approximately $25, $26 and $9 from RS Cogen, respectively.

The Company owns a 50% interest in Vinyl Solutions, LLC ("Vinyl Solutions"), which the Company acquired as a result of the Axiall Merger. The Company accounts for its investments in Vinyl Solutions under the equity method of accounting. Vinyl Solutions is a compounding manufacturer of specialty compounds. For the years ended December 31, 2018 and 2017, and for the period from August 31, 2016 to December 31, 2016, the Company recorded sales of $13, $17 and $6 respectively, to Vinyl Solutions. The amounts receivable from this related party were $3 and $7 at December 31, 2018 and 2017, respectively.

On June 17, 2015, Eagle US 2 LLC ("Eagle"), a wholly-owned subsidiary of Axiall, entered into an amended and restated limited liability company agreement with Lotte Chemical USA Corporation ("Lotte") related to the formation of LACC, LLC ("LACC"), which was formed by Eagle and Lotte to design, build and operate a 2.2 billion pounds per year ethylene plant. Pursuant to a contribution and subscription agreement, dated as of June 17, 2015, between Eagle and LACC, Eagle has agreed to make a maximum capital commitment to LACC of up to $225 to fund the construction costs of the plant, representing a 10% interest in LACC. Eagle and Lotte also entered into a call option agreement, dated as of June 17, 2015, pursuant to which Eagle has the right, but not the obligation, until the third anniversary of the substantial completion of the plant, to acquire up to a 50% ownership interest in LACC from Lotte. The construction of the plant commenced in January 2016. The plant is being built adjacent to the Company's largest chlor-alkali chemical facility, located in Lake Charles, to take advantage of the Company's existing infrastructure, access to competitive feedstock resources and ethylene distribution infrastructure. The anticipated start-up for the plant is expected to be in the first half of 2019. The Company acquired this investment as a result of the Axiall Merger. As of December 31, 2018 and 2017, the Company's investment in LACC was $183 and $125, respectively. Total funding by the Company in LACC for the years ended December 31, 2018 and 2017, and for the period from August 31, 2016 to December 31, 2016, amounted to $58, $66 and $17, respectively. The amounts receivable from LACC at December 31, 2018 and 2017 were approximately $1 and $0, respectively. The Company measures its investment in LACC at cost, adjusted for observable price changes because the investment does not have a readily determinable fair value.

Dividends received from equity method investments were $5, $6 and $5 for the years ended December 31, 2018, 2017 and 2016, respectively.

One of the Company's directors serves as Chairman and Chief Executive Officer of American Air Liquide Holdings, Inc. and as a Senior Vice President of the Air Liquide Group ("Air Liquide"). The Company purchased oxygen, nitrogen and utilities and leased cylinders from various affiliates of American Air Liquide Holdings, Inc. including Airgas and subsidiaries that were acquired in 2016 by Air Liquide aggregating approximately $31, $30 and $22 for the years ended December 31, 2018, 2017 and 2016, respectively. The Company also sold certain utilities to Air Liquide aggregating approximately $7, $7 and $4 during the years ended December 31, 2018, 2017 and 2016, respectively. The amounts payable to Air Liquide were $4 and $2 at December 31, 2018 and 2017, respectively, and the amounts receivable from Air Liquide were $1 and $1 at December 31, 2018 and 2017, respectively.

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18. Westlake Chemical Partners LP

On August 4, 2014, Westlake Partners completed its initial public offering (the "IPO") of 12,937,500 common units at a price of $24.00 per unit. Net proceeds to Westlake Partners from the sale of the units was approximately $286, net of underwriting discounts, structuring fees and offering expenses of approximately $24. At the consummation of the IPO, Westlake Partners' assets consisted of a 10.6% limited partner interest in OpCo, as well as the general partner interest in OpCo. Immediately after the IPO, the Company retained an 89.4% limited partner interest in OpCo and a significant interest in Westlake Partners. The IPO represented the sale of 47.8% of the common units in Westlake Partners.

Westlake Partners purchased additional 2.7% and 5.0% newly-issued limited partner interests in OpCo on April 29, 2015 and on September 29, 2017, respectively.

On September 29, 2017, Westlake Partners completed a secondary offering of 5,175,000 common units at a price of $22.00 per unit. Net proceeds to Westlake Partners from the sale of the units were $111, net of underwriting discounts, structuring fees and estimated offering expenses of approximately $3. At December 31, 2018, Westlake Partners had a 18.3% limited partner interest in OpCo, and the Company retained an 81.7% limited partner interest in OpCo and a 43.8% interest in Westlake Partners, a general partner interest in Westlake Partners and incentive distribution rights ("IDRs").

On July 27, 2018, the Westlake Partners' partnership agreement was amended to revise the minimum quarterly distribution thresholds for Westlake Partners' IDRs. The amended agreement provides that Westlake Partners will distribute cash each quarter to all the unitholders, pro rata, until each unit has received a distribution of $1.2938. If cash distributions to Westlake Partners' unitholders exceed $1.2938 per unit in any quarter, Westlake Partners' unitholders and Westlake, as the holder of the Westlake Partners' incentive distribution rights, will receive distributions according to the following percentage allocations per the amendment:

	Marginal Percentage Interest in Distributions	
Total Quarterly Distribution Per Unit	Unitholders	IDR Holders
Above $1.2938 up to $1.4063	85.0%	15.0 %
Above $1.4063 up to $1.6875	75.0%	25.0 %
Above $1.6875	50.0%	50.0 %

The Westlake Partners' distribution for the three months ended December 31, 2018 did not exceed the $1.2938 per unit threshold, and, as a result of the amendment, no distribution was made to Westlake, as the holder of the Westlake Partners' IDRs.

Prior to the amendment, Westlake Partners' partnership agreement provided that Westlake Partners' unitholders and Westlake, as the holder of Westlake Partners' IDRs, would receive distributions according to the following percentage allocations:

	Marginal Percentage Interest in Distributions	
Total Quarterly Distribution Per Unit	Unitholders	IDR Holders
Above $0.3163 up to $0.3438	85.0%	15.0 %
Above $0.3438 up to $0.4125	75.0%	25.0 %
Above $0.4125	50.0%	50.0 %

On October 4, 2018, Westlake Partners and Westlake Chemical Partners GP LLC, the general partner of Westlake Partners, entered into an Equity Distribution Agreement with UBS Securities LLC, Barclays Capital Inc., Citigroup Global Markets Inc., Deutsche Bank Securities Inc., RBC Capital Markets, LLC, Merrill Lynch, Pierce, Fenner & Smith Incorporated and Wells Fargo Securities, LLC to offer and sell Westlake Partners' common units, from time to time, up to an aggregate offering amount of $50. No common units were issued under this program in 2018.

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19. Commitments and Contingencies
The Company is involved in a number of legal and regulatory matters, principally environmental in nature, that are incidental to the normal conduct of its business, including lawsuits, investigations and claims. The outcome of these matters are inherently unpredictable. The Company believes that, in the aggregate, the outcome of all known legal and regulatory matters will not have a material adverse effect on its consolidated financial statements; however, under certain circumstances, if required to recognize costs in a specific period, when combined with other factors, outcomes with respect to such matters may be material to the Company's consolidated statements of operations in such period. The Company's assessment of the potential impact of environmental matters, in particular, is subject to uncertainty due to the complex, ongoing and evolving process of investigation and remediation of such environmental matters, and the potential for technological and regulatory developments. In addition, the impact of evolving claims and programs, such as natural resource damage claims, industrial site reuse initiatives and state remediation programs creates further uncertainty of the ultimate resolution of these matters. The Company anticipates that the resolution of many legal and regulatory matters, and in particular environmental matters, will occur over an extended period of time.
Environmental. As of December 31, 2018 and 2017, the Company had reserves for environmental contingencies totaling approximately $54 and $49, respectively, most of which was classified as noncurrent liabilities. The Company's assessment of the potential impact of these environmental contingencies is subject to considerable uncertainty due to the complex, ongoing and evolving process of investigation and remediation, if necessary, of such environmental contingencies, and the potential for technological and regulatory developments.
Calvert City Proceedings. For several years, the Environmental Protection Agency (the "EPA") has been conducting remedial investigation and feasibility studies at the Company's Calvert City, Kentucky facility pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"). As the current owner of the Calvert City facility, the Company was named by the EPA as a potentially responsible party ("PRP") along with Goodrich Corporation ("Goodrich") and its successor-in-interest, PolyOne Corporation ("PolyOne"). On November 30, 2017, the EPA published a draft Proposed Plan, incorporating by reference an August 2015 draft Remedial Investigation ("RI") report, an October 2017 draft Feasibility Study ("FS") report and a new Technical Impracticability Waiver document dated December 19, 2017. On June 18, 2018, the EPA published an amendment to its Proposed Plan. The amended Proposed Plan describes a final remedy for the onshore portion of the site comprised of a containment wall, targeted treatment and supplemental hydraulic containment. The amended Proposed Plan also describes an interim approach to address the contamination under the river that would include recovery of any mobile contaminants by an extraction well along with further study of the extent of the contamination and potential treatment options. The EPA's estimated cost of implementation is $107, with an estimated $1 to $3 in annual operation and maintenance ("O&M") costs. In September 2018, the EPA published the Record of Decision ("ROD") for the site, formally selecting the preferred final and interim remedies outlined in the amended Proposed Plan. In October 2018, EPA issued Special Notice letters to the PRPs for the remedial design phase of work under the ROD. The PRPs submitted a joint Good Faith Offer in December 2018 indicating their intent to negotiate a Remedial Design Agreed Order on Consent and capability to undertake the Remedial Design at the site. The Company's allocation of liability for remedial or O&M costs, if any, will be determined by the outcome of the contractual dispute with Goodrich/PolyOne, which is the subject of a pending arbitration proceeding as described below.
In connection with the 1990 and 1997 acquisitions of the Goodrich chemical manufacturing complex in Calvert City, Goodrich agreed to indemnify the Company for any liabilities related to preexisting contamination at the complex. For its part, the Company agreed to indemnify Goodrich for post-closing contamination caused by the Company's operations. The soil and groundwater at the complex, which does not include the Company's nearby PVC facility, had been extensively contaminated by Goodrich's operations. In 1993, Goodrich spun off the predecessor of PolyOne, and that predecessor assumed Goodrich's indemnification obligations relating to preexisting contamination. In 2003, litigation arose among the Company, Goodrich and PolyOne with respect to the allocation of the cost of remediating

contamination at the site. The parties settled this litigation in December 2007 and the case was dismissed. In the settlement, the parties agreed that, among other things: (1) PolyOne would pay 100% of the costs (with specified exceptions), net of recoveries or credits from third parties, incurred with respect to environmental issues at the Calvert City site from August 1, 2007 forward; and (2) either the Company or PolyOne might, from time to time in the future (but not more than once every five years), institute an arbitration proceeding to adjust that percentage. In May 2017, PolyOne filed a demand for arbitration. In this proceeding, PolyOne seeks to readjust the percentage allocation of future costs and to recover approximately $10 from the Company in reimbursement of previously paid remediation costs. The Company has filed a cross demand for arbitration seeking unreimbursed remediation costs incurred during the relevant period.

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On July 10, 2018, PolyOne filed another action in the U.S. District Court for the Western District of Kentucky, seeking for the court to issue an injunction against continued proceedings in the arbitration. On July 30, 2018, the Court denied PolyOne's motion for a temporary restraining order and preliminary injunction. The arbitration hearing began in August 2018 and concluded in December 2018. A decision from the panel is anticipated in the second quarter of 2019.

At this time, the Company is not able to estimate the impact, if any, that the arbitration proceeding could have on the Company's consolidated financial statements either in the current period or in later periods. Any cash expenditures that the Company might incur in the future with respect to the remediation of contamination at the Calvert City complex would likely be spread out over an extended period. As a result, the Company believes it is unlikely that any remediation costs allocable to it will be material in terms of expenditures made in any individual reporting period.

Environmental Remediation: Reasonably Possible Matters. The Company's assessment of the potential impact of environmental contingencies is subject to considerable uncertainty due to the complex, ongoing and evolving process of investigation and remediation, if necessary, of such environmental contingencies, and the potential for technological and regulatory developments. As such, in addition to the amounts currently reserved, the Company may be subject to reasonably possible loss contingencies related to environmental matters in the range of $65 to $130.

Other Commitments

The Company is obligated under various long-term and short-term noncancelable operating leases, primarily related to rail car leases and land. Several of the leases provide for renewal terms and, in certain leases, purchase options. At December 31, 2018, future minimum lease commitments for operating lease obligations and capital lease obligations were as follows:

	Operating Leases	Capital Leases
2019	$ 94	$ 3
2020	89	3
2021	70	2
2022	56	2
2023	42	2
Thereafter	152	7
Total minimum lease payments	$ 503	$ 19
Less: Imputed interest costs		(10)
Present value of net minimum lease payments		$ 9

Operating lease rental expense was approximately $160, $147 and $87 for the years ended December 31, 2018, 2017 and 2016, respectively.

The Company has various unconditional purchase obligations, primarily to purchase goods and services, including commitments to purchase various utilities, feedstock, nitrogen, oxygen, product storage and pipeline usage. Unrecorded unconditional purchase obligations for the next five years are as follows: $555, $669, $697, $421 and $308 in 2019, 2020, 2021, 2022 and 2023, respectively.

20. Segment and Geographic Information

Segment Information

The Company operates in two principal operating segments: Olefins and Vinyls. These segments are strategic business units that offer a variety of different products. The Company manages each segment separately as each business requires different technology and marketing strategies.

The Company's Olefins segment manufactures and markets polyethylene, styrene monomer and various ethylene co-products. The Company's ethylene production is used in the Company's polyethylene, styrene and VCM operations. In addition, the Company sells ethylene and ethylene co-products, primarily propylene, crude butadiene, pyrolysis gasoline and hydrogen, to external customers.

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No single customer accounted for more than 10% of sales in the Olefins segment for the years ended December 31, 2018, 2017 or 2016.

The Company's Vinyl segment manufactures and markets PVC, VCM, ethylene dichloride ("EDC"), chlor-alkali (chlorine and caustic soda), chlorinated derivative products and ethylene. The Company also manufactures and sells building products fabricated from PVC, including siding, pipe, fittings, profiles, trim, mouldings, fence and decking products, window and door components and film and sheet products. The Company's primary North American chemical manufacturing facilities are located in its Calvert City, Kentucky and Lake Charles, Plaquemine and Geismar, Louisiana sites. The Company also produces chlorine, caustic soda, hydrogen and chlorinated derivative products at its facilities in Natrium, Longview, Washington and Beauharnois, Quebec and PVC resin and PVC compounds at several facilities in Mississippi. In addition, the Company has manufacturing facilities in Germany, the United Kingdom, Taiwan and the People's Republic of China.

As of December 31, 2018, the Company owned 24 building products facilities. The Company uses its chlorine, VCM and PVC production to manufacture its building products. No single customer accounted for more than 10% of sales in the Vinyls segment for the years ended December 31, 2018, 2017 or 2016.

The accounting policies of the individual segments are the same as those described in Note 1.

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	Year Ended December 31,		
	2018	2017	2016
Net external sales			
Olefins			
Polyethylene	$1,519	$1,518	$1,463
Styrene, feedstock and other	500	533	431
Total olefins	2,019	2,051	1,894
Vinyls			
PVC, caustic soda and other	5,359	4,769	2,493
Building products	1,257	1,221	689
Total vinyls	6,616	5,990	3,182
	$8,635	$8,041	$5,076
Intersegment sales			
Olefins	$500	$393	$165
Vinyls	2	1	26
	$502	$394	$191
Income (loss) from operations			
Olefins	$573	$655	$558
Vinyls	913	639	176
Corporate and other	(78)	(69)	(151)
	$1,408	$1,225	$583
Depreciation and amortization			
Olefins	$138	$145	$136
Vinyls	491	449	238
Corporate and other	12	7	4
	$641	$601	$378
Other income, net			
Olefins	$4	$3	$5
Vinyls	35	7	1
Corporate and other	13	5	48
	$52	$15	$54
Provision for (benefit from) income taxes			
Olefins	$128	$63	$175
Vinyls	212	(302)	25
Corporate and other	(40)	(19)	(62)
	$300	$(258)	$138
Capital expenditures			
Olefins	$110	$97	$324
Vinyls	585	459	302
Corporate and other	7	21	3

$702	$577	$629

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WESTLAKE CHEMICAL CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)
(in millions of dollars, except share amounts and per share data)

A reconciliation of total segment income from operations to consolidated income before income taxes is as follows:

	Year Ended December 31,		
	2018	2017	2016
Income from operations for reportable segments	$1,408	$1,225	$583
Interest expense	(126)	(159)	(79)
Other income, net	52	15	54
Income before income taxes	$1,334	$1,081	$558

	December 31, 2018	December 31, 2017
Total assets		
Olefins	$ 2,024	$ 2,006
Vinyls	8,879	8,853
Corporate and other	699	1,217
	$ 11,602	$ 12,076

Geographic Information

	Year Ended December 31,		
	2018	2017	2016
Net sales to external customers (1)			
United States	$6,114	$5,739	$3,526
Foreign			
Canada	649	653	317
Germany	500	432	402
China	155	104	87
Italy	105	96	84
Taiwan	102	96	25
Other	1,010	921	635
	$8,635	$8,041	$5,076

	December 31, 2018	December 31, 2017
Long-lived assets		
United States	$ 5,829	$ 5,668
Foreign		
Germany	528	504
Other	238	240
	$ 6,595	$ 6,412

(1) Net sales are attributed to countries based on location of customer.

21. Subsequent Events

On January 2, 2019, Westlake acquired NAKAN, a global compounding solutions business, and paid approximately $250 as the base purchase price, subject to post-closing adjustments. NAKAN's products are used in a wide-variety of applications, including in the automotive, building and construction, and medical industries.

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WESTLAKE CHEMICAL CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS—(Continued)
(in millions of dollars, except share amounts and per share data)

22. Quarterly Financial Information (Unaudited)

	Three Months Ended			
	March 31, 2018	June 30, 2018	September 30, 2018	December 31, 2018
Net sales	$2,150	$2,235	$ 2,255	$ 1,995
Gross profit	542	552	539	354
Income from operations	401	404	396	207
Net income	297	288	318	131
Net income attributable to Westlake Chemical Corporation	287	278	308	123
Earnings per common share attributable to Westlake Chemical Corporation: (1)				
Basic	$2.21	$2.13	$ 2.36	$ 0.95
Diluted	$2.20	$2.12	$ 2.35	$ 0.95

	Three Months Ended			
	March 31, 2017	June 30, 2017	September 30, 2017	December 31, 2017
Net sales	$1,943	$1,979	$ 2,109	$ 2,010
Gross profit (2)	366	403	496	496
Income from operations (2)	234	264	364	363
Net income	145	159	219	816
Net income attributable to Westlake Chemical Corporation	138	153	211	802
Earnings per common share attributable to Westlake Chemical Corporation: (1)				
Basic	$1.07	$1.18	$ 1.62	$ 6.18
Diluted	$1.06	$1.17	$ 1.61	$ 6.15

(1) Basic and diluted earnings per common share ("EPS") for each quarter is computed using the weighted average shares outstanding during that quarter, while EPS for the year is computed using the weighted average shares outstanding for the year. As a result, the sum of the EPS for each of the four quarters may not equal the EPS for the year.

(2) Immaterial reclassifications were made from cost of sales to other income, net, retrospectively, as a result of the adoption of accounting standard update ("ASU") No. 2017-07 effective January 1, 2018. See Note 1 to the consolidated financial statements.

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

None.

Item 9A. Controls and Procedures

Disclosure, Controls and Procedures

We carried out an evaluation, under the supervision and with the participation of our management, including our President and Chief Executive Officer (our principal executive officer) and our Executive Vice President and Chief Financial Officer (our principal financial officer), of the effectiveness of our disclosure controls and procedures pursuant to Rules 13a-15 and 15d-15 under the Securities Exchange Act of 1934 as of the end of the period covered by this Form 10-K. Based upon that evaluation, our President and Chief Executive Officer and our Executive Vice President and Chief Financial Officer concluded that our disclosure controls and procedures are effective as of December 31, 2018 to provide reasonable assurance that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and is accumulated and communicated to management as appropriate to allow timely decisions regarding required disclosure.

Internal Control Over Financial Reporting

Westlake's management's report on internal control over financial reporting appears on page 46 of this Annual Report on Form 10-K. In addition, PricewaterhouseCoopers LLP, the independent registered public accounting firm that audited the financial statements included in this Annual Report on Form 10-K, has also audited the effectiveness of internal control over financial reporting as of December 31, 2018, as stated in their report that appears on page 47 of this Annual Report on Form 10-K.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting that occurred during the quarter ended December 31, 2018 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

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Item 9B. Other Information

On February 15, 2019, our Board of Directors determined to grant long-term stock performance awards (the "PSUs") under the 2013 Plan for the 2019-2021 performance cycle in place of the long-term cash performance awards that have been granted in the recent past. The purpose of the change was to better align the mix of cash and non-cash incentives with market practice, while continuing to reward executives based on achievement of a performance target. The PSUs were granted to certain of the Company's executive officers, including the named executive officers disclosed in the Company's proxy statement for its 2018 annual meeting of stockholders. The PSUs were made pursuant to, and are subject to all of the terms, conditions and provisions of, the 2013 Plan. The PSUs are a new element of the Company's Long-Term Incentive compensation for 2019 and the PSUs granted to the 2018 named executive officers were as follows:

Name	Title	Long-Term Stock Performance Awards [(1)]		
		Threshold	Target	Maximum
Albert Chao	President and Chief Executive Officer	$367,400	$1,469,600	$2,939,200
James Chao	Chairman	293,920	1,175,680	2,351,360
M. Steven Bender	Executive Vice President and Chief Financial Officer	95,190	380,760	761,520
Robert F. Buesinger	Executive Vice President, Vinyls Products	77,446	309,785	619,570
L. Benjamin Ederington	Senior Vice President, General Counsel, Chief Administrative Officer and Secretary	75,985	303,940	607,880

(1) The PSUs are subject to a three-year performance period beginning on January 1, 2019 and ending on December 31, 2021. The final number of Performance Stock Units earned with respect to the award shall be calculated based on the Company's achievement of certain performance conditions (the "Performance Conditions"). The Performance Conditions for the 2019-2021 performance cycle shall be based on the greater of the average annual economic-value-added results for the Company (equal to net operating profit after tax less a capital charge based upon the weighted average cost of capital) and relative total shareholder return as compared to a peer group of companies. The PSUs shall vest on the date that the administrator of the 2013 Plan determines to what extent the Performance Conditions were satisfied. Fractional shares will be rounded for purposes of vesting in accordance with 2013 Plan policy.

The foregoing description of the PSUs does not purport to be complete and is qualified in its entirety by reference to the full text of the form of long-term stock performance award letter, which is filed as an Exhibit 10.25 to this Annual Report on Form 10-K.

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PART III

Item 10. Directors, Executive Officers and Corporate Governance.
Pursuant to Item 401(b) of Regulation S-K, the information required by this item with respect to our executive officers is set forth in Part I of this Form 10-K.
Item 11. Executive Compensation.
Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.
Item 13. Certain Relationships and Related Transactions, and Director Independence.
Item 14. Principal Accountant Fees and Services.
The information required by Items 10, 11, 12, 13 and 14 is incorporated by reference to the Proxy Statement, which will be filed with the SEC pursuant to Regulation 14A under the Exchange Act within 120 days of December 31, 2018.

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PART IV

Item 15. Exhibits and Financial Statement Schedules

(a)(1)	The financial statements listed in the Index to Consolidated Financial Statements in Item 8 of this Form 10-K are filed as part of this Form 10-K.
(a)(2)	All schedules are omitted because the information is not applicable, not required, or has been furnished in the Consolidated Financial Statements or Notes thereto in Item 8 of this Form 10-K.
(a)(3)	Exhibits

Exhibit No.	Exhibit Index
2.1	Agreement and Plan of Merger, dated June 10, 2016, by and among Westlake Chemical Corporation, Lagoon Merger Sub, Inc. and Axiall Corporation (incorporated by reference to Exhibit 2.1 to Westlake's Current Report on Form 8-K, filed on June 14, 2016, File No. 001-32260).
3.1	Amended and Restated Certificate of Incorporation of Westlake as filed with the Delaware Secretary of State on August 6, 2004 (incorporated by reference to Westlake's Registration Statement on Form S-1/A, filed on August 9, 2004).
3.2	Certificate of Amendment to the Amended and Restated Certificate of Incorporation of Westlake as filed with the Delaware Secretary of State on May 16, 2014 (incorporated by reference to Westlake's Current Report on Form 8-K, filed on May 16, 2014, File No. 001-32260).
3.3	Bylaws of Westlake (incorporated by reference to Westlake's Registration Statement on Form S-1/A, filed on August 9, 2004).
4.1	Indenture dated as of January 1, 2006 by and among Westlake, the potential subsidiary guarantors listed therein and JPMorgan Chase Bank, National Association, as trustee (incorporated by reference to Westlake's Current Report on Form 8-K, filed on January 13, 2006, File No. 1-32260).
4.2	Third Supplemental Indenture, dated as of July 2, 2010, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Westlake's Current Report on Form 8-K, filed on July 8, 2010, File No. 1-32260).
4.3	Fourth Supplemental Indenture, dated as of December 2, 2010, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Westlake's Current Report on Form 8-K, filed on December 8, 2010, File No. 1-32260).
4.4	Fifth Supplemental Indenture, dated as of December 2, 2010, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Westlake's Current Report on Form 8-K, filed on December 8, 2010, File No. 1-32260).
4.5	Supplemental Indenture, dated as of December 31, 2007, among the Company, WPT LLC, Westlake Polymers LLC, Westlake Petrochemicals LLC, Westlake Styrene LLC, the other subsidiary guarantors party thereto and The Bank of New York Trust Company, N.A. related to the 6 ¾% senior notes (incorporated by reference to Exhibit 4.7 to Westlake's Annual Report on Form 10-K for the year ended

	December 31, 2007, filed on February 20, 2008, File No. 1-32260).
4.6	Sixth Supplemental Indenture, dated as of July 17, 2012, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K, filed with the Securities and Exchange Commission on July 16, 2012, File No. 1-32260).
4.7	Seventh Supplemental Indenture, dated as of February 12, 2013, among the Company, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.16 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2012, filed on February 22, 2013, File No. 1-32260).
4.8	Eighth Supplemental Indenture (including the form of the Notes), dated as of August 10, 2016, among Westlake Chemical Corporation, the Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to Westlake's Current Report on Form 8-K, filed on August 10, 2016, File No. 001-32260).

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Exhibit No.	Exhibit Index
4.9	Fourth Supplemental Indenture, dated as of August 22, 2016, to the Indenture, dated as of February 1, 2013, by and among Axiall Corporation, the guarantors party thereto and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 to Axiall's Current Report on Form 8-K, filed on August 22, 2016, File No. 001-09753).
4.10	Fifth Supplemental Indenture, dated as of August 22, 2016, to the Indenture, dated as of January 28, 2013, by and among Eagle Spinco Inc., the guarantors party thereto and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.2 to Axiall's Current Report on Form 8-K, filed on August 22, 2016, File No. 001-09753).
4.11	Ninth Supplemental Indenture (including the form of the Notes) as of September 7, 2016, among Westlake Chemical Corporation, the Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to Westlake's Current Report on Form 8-K, filed on September 7, 2016, File No. 001-32260).
4.12	Tenth Supplemental Indenture (including the form of the Notes), dated as of November 29, 2017, among Westlake Chemical Corporation, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.2 to Westlake's Current Report on Form 8-K, filed on November 28, 2017, File No. 001-32260).
4.13	Eleventh Supplemental Indenture (including the form of the Notes), dated as of November 28, 2017, among Westlake Chemical Corporation, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.3 to Westlake's Current Report on Form 8-K, filed on November 28, 2017, File No. 001-32260).
4.14	Supplemental Indenture dated February 1, 2018, among Westlake Chemical Corporation, the Subsidiary Guarantors (as defined therein) and The Bank of New York Mellon Trust Company, N.A., as trustee (incorporated by reference to Exhibit 4.19 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2017, filed on February 21, 2018, File No. 001-32260)
	Westlake and its subsidiaries are party to other long-term debt instruments not filed herewith under which the total amount of securities authorized does not exceed 10% of the total assets of Westlake and its subsidiaries on a consolidated basis. Pursuant to paragraph 4(iii)(A) of Item 601(b) of Regulation S-K, Westlake agrees to furnish a copy of such instruments to the SEC upon request.
10.1	Credit Agreement, dated as of August 10, 2016, by and between Bank of America, N.A. and Westlake International Holdings II C.V. (incorporated by reference to Exhibit 10.3 to Westlake's Quarterly Report on Form 10-Q for the quarter ended on September 30, 2016, and filed on November 9, 2016, File No. 001-32260).
10.2	Credit Agreement, dated as of August 23, 2016, by and among Westlake Chemical Corporation, the other borrowers and guarantors referred to therein, the lenders from time to time party thereto, the issuing banks party thereto and JPMorgan Chase Bank, National Association, as Administrative Agent, relating to a $1 billion senior unsecured revolving credit facility (incorporated by reference to Exhibit 10.1 to Westlake's Current Report on Form 8-K, filed on August 24, 2016, File No. 001-32260).
10.3	

	Joinder Agreement, dated as of October 14, 2016, among JPMorgan Chase Bank, N.A., as Administrative Agent, and certain new guarantors (as defined therein) (incorporated herein by reference to Exhibit 10.5 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2016, filed on February 22, 2017, File No. 001-32260).
10.4	Joinder Agreement, dated as of August 23, 2016, among Westlake Compounds, LLC, the Guarantors (as defined therein) and JPMorgan Chase Bank, N.A., as Administrative Agent (incorporated herein by reference to Exhibit 10.4 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2017, filed on February 21, 2018, File No. 001-32260).
10.5	Amended and Restated Loan Agreement, dated as of July 2, 2010, by and between the Company and the Louisiana Local Government Environmental Facilities and Community Development Authority (incorporated by reference to Westlake's Current Report on Form 8-K, filed on July 8, 2010, File No. 1-32260).
10.6	Loan Agreement, dated as of November 1, 2010, by and between the Company and the Louisiana Local Government Environmental Facilities and Community Development Authority, relating to the 2035 GO Zone Notes (incorporated by reference to Westlake's Current Report on Form 8-K, filed on December 8, 2010, File No. 1-32260).

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Exhibit No.	Exhibit Index
10.7	Loan Agreement, dated as of November 1, 2010, by and between the Company and the Louisiana Local Government Environmental Facilities and Community Development Authority, relating to the 2035 IKE Zone Notes (incorporated by reference to Westlake's Current Report on Form 8-K, filed on December 8, 2010, File No. 1-32260).
10.8	Amended and Restated Loan Agreement, dated as of November 1, 2017, by and between the Louisiana Local Government Environmental Facilities and Community Development Authority and Westlake Chemical Corporation (incorporated by reference to Exhibit 4.6 to Westlake's Current Report on Form 8-K, filed on November 28, 2017, File No. 001-32260).
10.9	Senior Unsecured Revolving Credit Agreement between Westlake Chemical OpCo LP and Westlake Development Corporation (incorporated by reference to Exhibit 10.13 to Westlake Chemical Partners LP's Registration Statement on Form S-1/A, filed on June 30, 2014, File No. 1-36567).
10.10	Senior Unsecured Revolving Credit Agreement by and among Westlake Chemical Partners LP and Westlake Chemical Finance Corporation, dated as of April 29, 2015 (incorporated by reference to Exhibit 10.1 to Westlake Chemical Partners LP's Current Report on Form 8-K filed on April 30, 2015, File No. 1-36567).
10.11	First Amendment to Senior Unsecured Revolving Credit Agreement by and between Westlake Chemical Partners LP, as borrower, and Westlake Chemical Finance Corporation, as lender, dated as of August 1, 2017 (incorporated by reference to Exhibit 10.1 to Westlake Chemical Partners LP's Quarterly Report on Form 10-Q for the quarter ended June 30, 2017, File No. 01-36567).
10.12	Second Amendment to Senior Unsecured Revolving Credit Agreement by and between Westlake Chemical Partners LP, as borrower, and Westlake Chemical Finance Corporation, as lender, dated as of November 28, 2017 (incorporated herein by reference to Exhibit 10.12 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2017, filed on February 21, 2018, File No. 001-32260).
10.13	Form of Registration Rights Agreement between Westlake and TTWF LP (incorporated by reference to Westlake's Registration Statement on Form S-1/A, filed on July 2, 2004).
10.14+	Westlake Chemical Corporation 2013 Omnibus Incentive Plan (as amended and restated as of May 19, 2017) (incorporated by reference to Appendix B to Westlake's Definitive Proxy Statement on Schedule 14A filed on April 7, 2017, File No.1-32260).
10.15+	Westlake Chemical Corporation Amended and Restated Annual Incentive Plan adopted by the Compensation Committee of the Board of Directors on March 24, 2011 (incorporated by reference to Westlake's Quarterly Report on Form 10-Q for the quarter ended March 31, 2011, filed on May 4, 2011, File No. 1-32260).
10.16+	Form of Restricted Stock Units Award Letter effective as of February 15, 2013 (incorporated by reference to Exhibit 10.29 to Westlake's Annual Report on Form 10-K for the year ended December 31, 2012 filed on February 22, 2013, File No. 1-32260).
10.17+	Form of Stock Option Award Letter for 2015 Executive Officer Awards (incorporated by reference to Exhibit 10.3 to Westlake's Quarterly Report on Form 10-Q for the quarter ended March 31, 2015, File

	No. 1-32260).
10.18+	Form of Restricted Stock Units Award Letter for 2015 Executive Officer Awards (incorporated by reference to Exhibit 10.4 to Westlake's Quarterly Report on From 10-Q for the quarter ended March 31, 2015, File No. 1-32260).
10.19+	Form of Long-Term Cash Performance Award Letter for 2015 Executive Officer Awards (incorporated by reference to Exhibit 10.5 to Westlake's Quarterly Report on From 10-Q for the quarter ended March 31, 2015, File No. 1-32260).
10.20	Investment Management Agreement among Westlake Chemical Corporation, Westlake Chemical OpCo LP and Westlake Chemical Partners LP, dated as of August 1, 2017 (incorporated herein by reference to Exhibit 10.1 to Westlake's Quarterly Report on Form 10-Q for the quarter ended September 30, 2017, filed on November 7, 2017, File No. 001-32260).
10.21	Credit Agreement dated as of July 24, 2018, by and among Westlake Chemical Corporation, the lenders from time to time party thereto, the issuing banks party thereto and JPMorgan Chase Bank, National Association, as Administrative Agent, relating to a $1 billion senior unsecured revolving credit facility (incorporated by reference to Exhibit 10.1 to Westlake's Current Report on Form 8-K filed on July 26, 2018, File No. 001-32260).
10.22+	Form of Stock Option Award Letter for 2018 Executive Officer Awards. (incorporated by reference to Exhibit 10.21 to Westlake's Current Report on Form 10-K filed on February 21, 2018, File No. 001-32260).

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Exhibit No.	Exhibit Index
10.23+	Form of Restricted Stock Unit Award Letter for 2018 Executive Officer Awards. (incorporated by reference to Exhibit 10.22 to Westlake's Current Report on Form 10-K filed on February 21, 2018, File No. 001-32260).
10.24+	Form of Special Incentive Award Letter for 2018 Executive Officer Awards. (incorporated by reference to Exhibit 10.24 to Westlake's Current Report on Form 10-K filed on February 21, 2018, File No. 001-32260).
10.25†+	Form of Performance Stock Service Award Letter for 2019 Executive Officer Award.
21†	Subsidiaries of Westlake.
23.1†	Consent of PricewaterhouseCoopers LLP.
31.1†	Rule 13a-14(a) / 15d-14(a) Certification (Principal Executive Officer).
31.2†	Rule 13a-14(a) / 15d-14(a) Certification (Principal Financial Officer).
32.1††	Section 1350 Certification (Principal Executive Officer and Principal Financial Officer).
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.

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† Filed herewith.
†† Furnished herewith.
+ Management contract, compensatory plan or arrangement.

Item 16. Form 10-K Summary.
None.

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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.

WESTLAKE CHEMICAL CORPORATION

Date: February 20, 2019 /S/ ALBERT CHAO
Albert Chao, President and Chief Executive Officer

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

Signature	Title	Date
/S/ ALBERT CHAO Albert Chao	President and Chief Executive Officer (Principal Executive Officer)	February 20, 2019
/S/ M. STEVEN BENDER M. Steven Bender	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 20, 2019
/S/ GEORGE J. MANGIERI George J. Mangieri	Senior Vice President and Chief Accounting Officer (Principal Accounting Officer)	February 20, 2019
/S/ JAMES CHAO James Chao	Chairman of the Board of Directors	February 20, 2019
/S/ ROBERT T. BLAKELY Robert T. Blakely	Director	February 20, 2019
/S/ ALBERT CHAO Albert Chao	Director	February 20, 2019
/S/ DAVID CHAO David Chao	Director	February 20, 2019
/S/ JOHN CHAO John Chao	Director	February 20, 2019
/S/ MICHAEL J. GRAFF Michael J. Graff	Director	February 20, 2019
/S/ MARIUS HAAS Marius Haas	Director	February 20, 2019
/S/ DOROTHY C. JENKINS Dorothy C. Jenkins	Director	February 20, 2019
/S/ MAX L. LUKENS Max L. Lukens	Director	February 20, 2019

/S/ MARK A. MCCOLLUM Mark A. McCollum	Director	February 20, 2019
/S/ R. BRUCE NORTHCUTT R. Bruce Northcutt	Director	February 20, 2019
/S/ H. JOHN RILEY, JR. H. John Riley, Jr.	Director	February 20, 2019
/S/ JEFFREY SHEETS Jeffrey Sheets	Director	February 20, 2019