

VALERO ENERGY CORP/TX

Form 10-K

February 23, 2017

FORM 10-K

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

(Mark One)

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

For the fiscal year ended December 31, 2016

OR

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

For the transition period from _____ to _____

Commission file number 1-13175

VALERO ENERGY CORPORATION

(Exact name of registrant as specified in its charter)

Delaware 74-1828067

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

One

Valero

Way

San

Antonio, 78249

Texas

(Address

of principal executive offices) (Zip Code)

Registrant's telephone number, including area code: (210) 345-2000

Securities registered pursuant to Section 12(b) of the Act: Common stock, \$0.01 par value per share listed on the New York Stock Exchange.

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

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

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

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No
Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required

to submit and post such files). Yes No

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K.

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

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company

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

The aggregate market value of the voting and non-voting common stock held by non-affiliates was approximately \$23.6 billion based on the last sales price quoted as of June 30, 2016 on the New York Stock Exchange, the last business day of the registrant's most recently completed second fiscal quarter.

As of January 31, 2017, 451,049,519 shares of the registrant's common stock were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

We intend to file with the Securities and Exchange Commission a definitive Proxy Statement for our Annual Meeting of Stockholders scheduled for May 3, 2017, at which directors will be elected. Portions of the 2017 Proxy Statement are incorporated by reference in Part III of this Form 10-K and are deemed to be a part of this report.

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CROSS-REFERENCE SHEET

The following table indicates the headings in the 2017 Proxy Statement where certain information required in Part III of this Form 10-K may be found.

Form 10-K Item No. and Caption	Heading in 2017 Proxy Statement
10. Directors, Executive Officers and Corporate Governance	Information Regarding the Board of Directors, Independent Directors, Audit Committee, Proposal No. 1 Election of Directors, Information Concerning Nominees and Other Directors, Identification of Executive Officers, Section 16(a) Beneficial Ownership Reporting Compliance, and Governance Documents and Codes of Ethics
11. Executive Compensation	Compensation Committee, Compensation Discussion and Analysis, Director Compensation, Executive Compensation, and Certain Relationships and Related Transactions
12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters	Beneficial Ownership of Valero Securities and Equity Compensation Plan Information
13. Certain Relationships and Related Transactions, and Director Independence	Certain Relationships and Related Transactions and Independent Directors
14. Principal Accountant Fees and Services	KPMG LLP Fees and Audit Committee Pre-Approval Policy

Copies of all documents incorporated by reference, other than exhibits to such documents, will be provided without charge to each person who receives a copy of this Form 10-K upon written request to Valero Energy Corporation, Attn: Secretary, P.O. Box 696000, San Antonio, Texas 78269-6000.

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The terms “Valero,” “we,” “our,” and “us,” as used in this report, may refer to Valero Energy Corporation, to one or more of our consolidated subsidiaries, or to all of them taken as a whole. In this Form 10-K, we make certain forward-looking statements, including statements regarding our plans, strategies, objectives, expectations, intentions, and resources under the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. You should read our forward-looking statements together with our disclosures beginning on page 23 of this report under the heading: “CAUTIONARY STATEMENT FOR THE PURPOSE OF SAFE HARBOR PROVISIONS OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995.”

PART I

ITEMS 1. and 2. BUSINESS AND PROPERTIES

OVERVIEW

We are a Fortune 500 company based in San Antonio, Texas. Our corporate offices are at One Valero Way, San Antonio, Texas, 78249, and our telephone number is (210) 345-2000. We were incorporated in Delaware in 1981 under the name Valero Refining and Marketing Company. We changed our name to Valero Energy Corporation on August 1, 1997. Our common stock trades on the New York Stock Exchange (NYSE) under the symbol “VLO.” On January 31, 2017, we had 9,996 employees.

We own 15 petroleum refineries located in the United States (U.S.), Canada, and the United Kingdom (U.K.) with a combined throughput capacity of approximately 3.1 million barrels per day. Our refineries produce conventional gasolines, premium gasolines, gasoline meeting the specifications of the California Air Resources Board (CARB), diesel, low-sulfur diesel, ultra-low-sulfur diesel, CARB diesel, other distillates, jet fuel, asphalt, petrochemicals, lubricants, and other refined petroleum products. We sell our refined petroleum products in both the wholesale rack and bulk markets, and approximately 7,400 outlets carry our brand names in the U.S., Canada, the U.K., and Ireland. Most of our logistics assets support our refining operations, and some of these assets are owned by Valero Energy Partners LP (VLP), a midstream master limited partnership majority owned by us. We also own 11 ethanol plants in the Mid-Continent region of the U.S. with a combined production capacity of approximately 1.4 billion gallons per year. We sell our ethanol in the wholesale bulk market, and some of our logistics assets support our ethanol operations.

AVAILABLE INFORMATION

Our website address is www.valero.com. Information on our website is not part of this report. Our annual reports on Form 10-K, quarterly reports on Form 10-Q, and current reports on Form 8-K, and any amendments to those reports, filed with (or furnished to) the U.S. Securities and Exchange Commission (SEC) are available on our website (under “Investors”) free of charge, soon after we file or furnish such material. In this same location, we also post our corporate governance guidelines, codes of ethics, and the charters of the committees of our board of directors. These documents are available in print to any stockholder that makes a written request to Valero Energy Corporation, Attn: Secretary, P.O. Box 696000, San Antonio, Texas 78269-6000.

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SEGMENTS

As of December 31, 2016, we had two reportable segments — refining and ethanol. The refining segment includes our refining operations, the associated marketing activities, and logistics assets that support our refining operations. The ethanol segment includes our ethanol operations, the associated marketing activities, and logistics assets that support our ethanol operations. Financial information about our segments is presented in Note 16 of Notes to Consolidated Financial Statements and is incorporated herein by reference.

Effective January 1, 2017, we revised our reportable segments to align with certain changes in how our chief operating decision maker manages and allocates resources to our business and created a new reportable segment — VLP. The results of VLP, which are those of our majority-owned master limited partnership referred to by the same name, were transferred from the refining segment.

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VALERO'S OPERATIONS

REFINING

Refining Operations

As of December 31, 2016, our refining operations included 15 petroleum refineries in the U.S., Canada, and the U.K., with a combined total throughput capacity of approximately 3.1 million barrels per day (BPD). The following table presents the locations of these refineries and their approximate feedstock throughput capacities as of December 31, 2016.

Refinery	Location	Throughput Capacity (a) (BPD)
U.S. Gulf Coast:		
Port Arthur	Texas	395,000
Corpus Christi (b)	Texas	370,000
St. Charles	Louisiana	340,000
Texas City	Texas	260,000
Houston	Texas	235,000
Meraux	Louisiana	135,000
Three Rivers	Texas	100,000
		1,835,000
U.S. Mid-Continent:		
McKee	Texas	200,000
Memphis	Tennessee	195,000
Ardmore	Oklahoma	90,000
		485,000
North Atlantic:		
Pembroke	Wales, U.K.	270,000
Quebec City	Quebec, Canada	235,000
		505,000
U.S. West Coast:		
Benicia	California	170,000
Wilmington	California	135,000
		305,000
Total		3,130,000

(a) "Throughput capacity" represents estimated capacity for processing crude oil, inter-mediate, and other feedstocks.

(a) Total estimated crude oil capacity is approximately 2.6 million BPD.

(b) Represents the combined capacities of two refineries – the Corpus Christi East and Corpus Christi West Refineries.

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Total Refining System

The following table presents the percentages of principal charges and yields (on a combined basis) for all of our refineries for the year ended December 31, 2016, during which period our total combined throughput volumes averaged approximately 2.9 million BPD.

Combined Total Refining System Charges and Yields

Charges:

sour crude oil	32%
sweet crude oil	42%
residual fuel oil	10%
other feedstocks	5%
blendstocks	11%

Yields:

gasolines and blendstocks	49%
distillates	37%
other products (primarily includes petrochemicals, gas oils, No. 6 fuel oil, petroleum coke, sulfur and asphalt)	14%

U.S. Gulf Coast

The following table presents the percentages of principal charges and yields (on a combined basis) for the eight refineries in the U.S. Gulf Coast region for the year ended December 31, 2016, during which period total throughput volumes averaged approximately 1.7 million BPD.

Combined U.S. Gulf Coast Region Charges and Yields

Charges:

sour crude oil	43%
sweet crude oil	23%
residual fuel oil	15%
other feedstocks	7%
blendstocks	12%

Yields:

gasolines and blendstocks	46%
distillates	38%
other products (primarily includes petrochemicals, gas oils, No. 6 fuel oil, petroleum coke, sulfur and asphalt)	16%

Port Arthur Refinery. Our Port Arthur Refinery is located on the Texas Gulf Coast approximately 90 miles east of Houston. The refinery processes heavy sour crude oils and other feedstocks into gasoline, diesel, and jet fuel. The refinery receives crude oil by rail, marine docks, and pipelines. Finished products are distributed into the Colonial, Explorer, and other pipelines and across the refinery docks into ships or barges.

Corpus Christi East and West Refineries. Our Corpus Christi East and West Refineries are located on the Texas Gulf Coast along the Corpus Christi Ship Channel. The East Refinery processes sour crude oil, and the West Refinery processes sweet crude oil, sour crude oil, and residual fuel oil. The feedstocks are delivered by tanker or barge via deepwater docking facilities along the Corpus Christi Ship Channel, and West Texas or South Texas crude oil is delivered via pipelines. The refineries' physical locations allow for the transfer

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of various feedstocks and blending components between them. The refineries produce gasoline, aromatics, jet fuel, diesel, and asphalt. Truck racks service local markets for gasoline, diesel, jet fuels, liquefied petroleum gases, and asphalt. These and other finished products are also distributed by ship or barge across docks and third-party pipelines.

St. Charles Refinery. Our St. Charles Refinery is located approximately 25 miles west of New Orleans along the Mississippi River. The refinery processes sour crude oils and other feedstocks into gasoline and diesel. The refinery receives crude oil over docks and has access to the Louisiana Offshore Oil Port. Finished products can be shipped over these docks or through our Parkway pipeline or the Bengal pipeline, which ultimately provide access to the Plantation or Colonial pipeline networks.

Texas City Refinery. Our Texas City Refinery is located southeast of Houston on the Texas City Ship Channel. The refinery processes crude oils into gasoline, diesel, and jet fuel. The refinery receives its feedstocks by pipeline and by ship or barge via deepwater docking facilities along the Texas City Ship Channel. The refinery uses ships and barges, as well as the Colonial, Explorer, and other pipelines for distribution of its products.

Houston Refinery. Our Houston Refinery is located on the Houston Ship Channel. It processes a mix of crude and intermediate oils into gasoline, jet fuel, and diesel. In 2016, we completed construction of and placed into service a new 90,000 BPD crude distillation unit. The refinery receives its feedstocks by tankers or barges at deepwater docking facilities along the Houston Ship Channel and by various interconnecting pipelines. The majority of its finished products are delivered to local, mid-continent U.S., and northeastern U.S. markets through various pipelines, including the Colonial and Explorer pipelines.

Meraux Refinery. Our Meraux Refinery is located approximately 15 miles southeast of New Orleans along the Mississippi River. The refinery processes sour and sweet crude oils into gasoline, diesel, jet fuel, and high sulfur fuel oil. The refinery receives crude oil at its dock and has access to the Louisiana Offshore Oil Port. Finished products can be shipped from the refinery's dock or through the Colonial pipeline. The refinery is located about 40 miles from our St. Charles Refinery, allowing for integration of feedstocks and refined petroleum product blending.

Three Rivers Refinery. Our Three Rivers Refinery is located in South Texas between Corpus Christi and San Antonio. It processes sweet and sour crude oils into gasoline, distillates, and aromatics. The refinery has access to crude oil from sources outside the U.S. delivered to the Texas Gulf Coast at Corpus Christi, as well as crude oil from local sources through third-party pipelines and trucks. The refinery distributes its refined petroleum products primarily through third-party pipelines.

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U.S. Mid-Continent

The following table presents the percentages of principal charges and yields (on a combined basis) for the three refineries in the U.S. Mid-Continent region for the year ended December 31, 2016, during which period total throughput volumes averaged approximately 452,000 BPD.

Combined U.S. Mid-Continent Region Charges and Yields

Charges:

sour crude oil	2 %
sweet crude oil	90%
blendstocks	8 %

Yields:

gasolines and blendstocks	55%
distillates	35%
other products (primarily includes petrochemicals, gas oils, No. 6 fuel oil, and asphalt)	10%

McKee Refinery. Our McKee Refinery is located in the Texas Panhandle. It processes primarily sweet crude oils into gasoline, diesel, jet fuels, and asphalt. The refinery has access to local and Permian Basin crude oil sources via third-party pipelines. The refinery distributes its products primarily via third-party pipelines to markets in Texas, New Mexico, Arizona, Colorado, and Oklahoma.

Memphis Refinery. Our Memphis Refinery is located in Tennessee along the Mississippi River. It processes primarily sweet crude oils. Most of its production is gasoline, diesel, and jet fuels. Crude oil is supplied to the refinery via the Capline pipeline and can also be received, along with other feedstocks, via barge. Most of the refinery's products are distributed via truck rack and barges.

Ardmore Refinery. Our Ardmore Refinery is located in Oklahoma, approximately 100 miles south of Oklahoma City. It processes medium sour and sweet crude oils into gasoline, diesel, and asphalt. The refinery receives local crude oil and feedstock supply via third-party pipelines. Refined petroleum products are transported to market via rail, trucks, and the Magellan pipeline system.

North Atlantic

The following table presents the percentages of principal charges and yields (on a combined basis) for the two refineries in the North Atlantic region for the year ended December 31, 2016, during which period total throughput volumes averaged approximately 483,000 BPD.

Combined North Atlantic Region Charges and Yields

Charges:

sour crude oil	4 %
sweet crude oil	82%
residual fuel oil	6 %
blendstocks	8 %

Yields:

gasolines and blendstocks	46%
distillates	42%
other products (primarily includes petrochemicals, gas oils, and No. 6 fuel oil)	12%

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Pembroke Refinery. Our Pembroke Refinery is located in the County of Pembrokeshire in southwest Wales, U.K. The refinery processes primarily sweet crude oils into gasoline, diesel, jet fuel, heating oil, and low-sulfur fuel oil. The refinery receives all of its feedstocks and delivers the majority of its products by ship and barge via deepwater docking facilities along the Milford Haven Waterway, with its remaining products being delivered by our Mainline pipeline system and by trucks.

Quebec City Refinery. Our Quebec City Refinery is located in Lévis, Canada (near Quebec City). It processes sweet crude oils into gasoline, diesel, jet fuel, heating oil, and low-sulfur fuel oil. The refinery receives crude oil by ship at its deepwater dock on the St. Lawrence River or by pipeline or ship from western Canada. The refinery transports its products through our pipeline from Quebec City to our terminal in Montreal and to various other terminals throughout eastern Canada by rail, ships, trucks, and third-party pipelines.

U.S. West Coast

The following table presents the percentages of principal charges and yields (on a combined basis) for the two refineries in the U.S. West Coast region for the year ended December 31, 2016, during which period total throughput volumes averaged approximately 267,000 BPD.

Combined U.S. West Coast Region Charges and Yields

Charges:

sour crude oil	69%
sweet crude oil	4%
other feedstocks	12%
blendstocks	15%

Yields:

gasolines and blendstocks	61%
distillates	23%
other products (primarily includes gas oil, No. 6 fuel oil, petroleum coke, sulfur and asphalt)	16%

Benicia Refinery. Our Benicia Refinery is located northeast of San Francisco on the Carquinez Straits of San Francisco Bay. It processes sour crude oils into gasoline, diesel, jet fuel, and asphalt. Gasoline production is primarily CARBOB gasoline, which meets CARB specifications when blended with ethanol. The refinery receives crude oil feedstocks via a marine dock and crude oil pipelines connected to a southern California crude oil delivery system. Most of the refinery's products are distributed via pipeline and truck rack into northern California markets.

Wilmington Refinery. Our Wilmington Refinery is located near Los Angeles, California. The refinery processes a blend of heavy and high-sulfur crude oils. The refinery produces CARBOB gasoline, diesel, CARB diesel, jet fuel, and asphalt. The refinery is connected by pipeline to marine terminals and associated dock facilities that can move and store crude oil and other feedstocks. Refined petroleum products are distributed via pipeline systems to various third-party terminals in southern California, Nevada, and Arizona.

Feedstock Supply

Approximately 55 percent of our crude oil feedstock requirements are purchased through term contracts while the remaining requirements are generally purchased on the spot market. Our term supply agreements include arrangements to purchase feedstocks at market-related prices directly or indirectly from various national oil companies as well as international and U.S. oil companies. The contracts generally permit the parties to amend the contracts (or terminate them), effective as of the next scheduled renewal date, by giving

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the other party proper notice within a prescribed period of time (e.g., 60 days, 6 months) before expiration of the current term. The majority of the crude oil purchased under our term contracts is purchased at the producer's official stated price (i.e., the "market" price established by the seller for all purchasers) and not at a negotiated price specific to us.

Marketing

Overview

We sell refined petroleum products in both the wholesale rack and bulk markets. These sales include refined petroleum products that are manufactured in our refining operations, as well as refined petroleum products purchased or received on exchange from third parties. Most of our refineries have access to marine transportation facilities and interconnect with common-carrier pipeline systems, allowing us to sell products in the U.S., Canada, the U.K., and other countries.

Wholesale Rack Sales

We sell branded and unbranded gasoline and distillate production, as well as other products, such as asphalt, lube oils, and natural gas liquids (NGLs), on a wholesale basis through an extensive rack marketing network. The principal purchasers of our refined petroleum products from terminal truck racks are wholesalers, distributors, retailers, and truck-delivered end users throughout the U.S., Canada, the U.K., and Ireland.

The majority of our rack volume is sold through unbranded channels. The remainder is sold to distributors and dealers that are members of the Valero-brand family that operate approximately 5,700 branded sites in the U.S., approximately 900 branded sites in the U.K. and Ireland, and approximately 800 branded sites in Canada. These sites are independently owned and are supplied by us under multi-year contracts. For branded sites, products are sold under the Valero[®], Beacon[®], Diamond Shamrock[®], and Shamrock[®] brands in the U.S., the Texaco[®] brand in the U.K. and Ireland, and the Ultramar[®] brand in Canada.

Bulk Sales

We sell a significant portion of our gasoline and distillate production, as well as other products, such as asphalt, petrochemicals, and NGLs, through bulk sales channels in the U.S. and international markets. Our bulk sales are made to various oil companies and traders as well as certain bulk end-users such as railroads, airlines, and utilities. Our bulk sales are transported primarily by pipeline, barges, and tankers to major tank farms and trading hubs.

We also enter into refined petroleum product exchange and purchase agreements. These agreements help minimize transportation costs, optimize refinery utilization, balance refined petroleum product availability, broaden geographic distribution, and provide access to markets not connected to our refined-product pipeline systems. Exchange agreements provide for the delivery of refined petroleum products by us to unaffiliated companies at our and third-parties' terminals in exchange for delivery of a similar amount of refined petroleum products to us by these unaffiliated companies at specified locations. Purchase agreements involve our purchase of refined petroleum products from third parties with delivery occurring at specified locations.

Logistics

We own logistics assets (crude oil pipelines, refined petroleum product pipelines, terminals, tanks, marine docks, truck rack bays, and other assets) that support our refining operations. In addition, through subsidiaries, we own the 2.0 percent general partner interest and the majority of the limited partner interest in VLP. VLP's common units, representing limited partner interests, are traded on the NYSE under the symbol "VLP." Its assets support the operations of our Ardmore, Corpus Christi, Houston, McKee, Memphis, Meraux, Port Arthur, St. Charles, and Three Rivers Refineries. VLP is discussed more fully in Note 11 of Notes to Consolidated Financial Statements.

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ETHANOL

We own 11 ethanol plants with a combined ethanol production capacity of about 1.4 billion gallons per year. Our ethanol plants are dry mill facilities¹ that process corn to produce ethanol, distillers grains, and corn oil.² We source our corn supply from local farmers and commercial elevators. Our facilities receive corn primarily by rail and truck. We publish on our website a corn bid for local farmers and cooperative dealers to use to facilitate corn supply transactions.

We sell our ethanol primarily to refiners and gasoline blenders under term and spot contracts in bulk markets such as New York, Chicago, the U.S. Gulf Coast, Florida, and the U.S. West Coast. We ship our dry distillers grains (DDGs) by truck or rail primarily to animal feed customers in the U.S. and Mexico. We also sell modified distillers grains locally at our plant sites, and corn oil by truck or rail. We distribute our ethanol through logistics assets, which include railcars owned by us.

The following table presents the locations of our ethanol plants, their approximate annual production capacities for ethanol (in millions of gallons) and DDGs (in tons), and their approximate corn processing capacities (in millions of bushels).

State	City	Ethanol Production Capacity	Production of DDGs	Corn Processed
Indiana	Linden	130	385,000	46
	Mount Vernon	100	320,000	37
Iowa	Albert City	130	385,000	46
	Charles City	135	400,000	48
	Fort Dodge	135	400,000	48
	Hartley	135	400,000	48
Minnesota	Welcome	135	400,000	48
Nebraska	Albion	130	385,000	46
Ohio	Bloomingsburg	130	385,000	46
South Dakota	Aurora	135	400,000	48
Wisconsin	Jefferson	105	335,000	39
Total		1,400	4,195,000	500

The combined production of denatured ethanol from our plants averaged 3.8 million gallons per day during the year ended December 31, 2016.

¹ Ethanol is commercially produced using either the wet mill or dry mill process. Wet milling involves separating the grain kernel into its component parts (germ, fiber, protein, and starch) prior to fermentation. In the dry mill process, the entire grain kernel is ground into flour. The starch in the flour is converted to ethanol during the fermentation process, creating carbon dioxide and distillers grains.

² During fermentation, nearly all of the starch in the grain is converted into ethanol and carbon dioxide, while the remaining nutrients (proteins, fats, minerals, and vitamins) are concentrated to yield corn oil, modified distillers grains, or, after further drying, dried distillers grains. Distillers grains generally are an economical partial replacement for corn and soybeans in feeds for cattle, swine, and poultry. Corn oil is produced as fuel grade and feed grade (not for human consumption), and is sold primarily as a feedstock for biodiesel or renewable diesel production with a smaller percentage sold into animal feed markets.

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ENVIRONMENTAL MATTERS

We incorporate by reference into this Item the environmental disclosures contained in the following sections of this report:

• Item 1A, “Risk Factors”—Compliance with and changes in environmental laws, including proposed climate change laws and regulations, could adversely affect our performance;

• Item 1A, “Risk Factors”—Compliance with the U.S. Environmental Protection Agency Renewable Fuel Standard could adversely affect our performance;

• Item 1A, “Risk Factors”—We may incur additional costs as a result of our use of rail cars for the transportation of crude oil and the products that we manufacture;

• Item 3, “Legal Proceedings” under the caption “Environmental Enforcement Matters,” and;

• Item 8, “Financial Statements and Supplementary Data” in Note 7 of Notes to Consolidated Financial Statements and Note 9 of Notes to Consolidated Financial Statements under the caption “Environmental Matters.”

Capital Expenditures Attributable to Compliance with Environmental Regulations. In 2016, our capital expenditures attributable to compliance with environmental regulations were \$58 million, and they are currently estimated to be \$169 million for 2017 and \$289 million for 2018. The estimates for 2017 and 2018 do not include amounts related to capital investments at our facilities that management has deemed to be strategic investments. These amounts could materially change as a result of governmental and regulatory actions.

PROPERTIES

Our principal properties are described above under the caption “Valero’s Operations,” and that information is incorporated herein by reference. We believe that our properties and facilities are generally adequate for our operations and that our facilities are maintained in a good state of repair. As of December 31, 2016, we were the lessee under a number of cancelable and noncancelable leases for certain properties. Our leases are discussed more fully in Notes 8 and 9 of Notes to Consolidated Financial Statements. Financial information about our properties is presented in Note 5 of Notes to Consolidated Financial Statements and is incorporated herein by reference.

Our patents relating to our refining operations are not material to us as a whole. The trademarks and tradenames under which we conduct our branded wholesale business — Valero®, Diamond Shamrock®, Shamrock®, Ultramar®, Beacon®, and Texaco®— and other trademarks employed in the marketing of petroleum products are integral to our wholesale rack marketing operations.

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ITEM 1A. RISK FACTORS

You should carefully consider the following risk factors in addition to the other information included in this report. Each of these risk factors could adversely affect our business, operating results, and/or financial condition, as well as adversely affect the value of an investment in our common stock.

Our financial results are affected by volatile refining margins, which are dependent upon factors beyond our control, including the price of crude oil and the market price at which we can sell refined petroleum products.

Our financial results are primarily affected by the relationship, or margin, between refined petroleum product prices and the prices for crude oil and other feedstocks. Historically, refining margins have been volatile, and we believe they will continue to be volatile in the future. Our cost to acquire feedstocks and the price at which we can ultimately sell refined petroleum products depend upon several factors beyond our control, including regional and global supply of and demand for crude oil, gasoline, diesel, and other feedstocks and refined petroleum products. These in turn depend on, among other things, the availability and quantity of imports, the production levels of U.S. and international suppliers, levels of refined petroleum product inventories, productivity and growth (or the lack thereof) of U.S. and global economies, U.S. relationships with foreign governments, political affairs, and the extent of governmental regulation.

Some of these factors can vary by region and may change quickly, adding to market volatility, while others may have longer-term effects. The longer-term effects of these and other factors on refining and marketing margins are uncertain. We do not produce crude oil and must purchase all of the crude oil we refine. We may purchase our crude oil and other refinery feedstocks long before we refine them and sell the refined petroleum products. Price level changes during the period between purchasing feedstocks and selling the refined petroleum products from these feedstocks could have a significant effect on our financial results. A decline in market prices may negatively impact the carrying value of our inventories.

Economic turmoil and political unrest or hostilities, including the threat of future terrorist attacks, could affect the economies of the U.S. and other countries. Lower levels of economic activity could result in declines in energy consumption, including declines in the demand for and consumption of our refined petroleum products, which could cause our revenues and margins to decline and limit our future growth prospects.

Refining margins are also significantly impacted by additional refinery conversion capacity through the expansion of existing refineries or the construction of new refineries. Worldwide refining capacity expansions may result in refining production capability exceeding refined petroleum product demand, which would have an adverse effect on refining margins.

A significant portion of our profitability is derived from the ability to purchase and process crude oil feedstocks that historically have been cheaper than benchmark crude oils, such as Louisiana Light Sweet (LLS) and Brent crude oils. These crude oil feedstock differentials vary significantly depending on overall economic conditions and trends and conditions within the markets for crude oil and refined petroleum products, and they could decline in the future, which would have a negative impact on our results of operations.

Compliance with and changes in environmental laws, including proposed climate change laws and regulations, could adversely affect our performance.

The principal environmental risks associated with our operations are emissions into the air and releases into the soil, surface water, or groundwater. Our operations are subject to extensive environmental laws and regulations, including those relating to the discharge of materials into the environment, waste management,

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pollution prevention measures, greenhouse gas (GHG) emissions, and characteristics and composition of fuels, including gasoline and diesel. Certain of these laws and regulations could impose obligations to conduct assessment or remediation efforts at our facilities as well as at formerly owned properties or third-party sites where we have taken wastes for disposal or where our wastes have migrated. Environmental laws and regulations also may impose liability on us for the conduct of third parties, or for actions that complied with applicable requirements when taken, regardless of negligence or fault. If we violate or fail to comply with these laws and regulations, we could be fined or otherwise sanctioned.

Because environmental laws and regulations are becoming more stringent and new environmental laws and regulations are continuously being enacted or proposed, such as those relating to GHG emissions and climate change, the level of expenditures required for environmental matters could increase in the future. Current and future legislative action and regulatory initiatives could result in changes to operating permits, material changes in operations, increased capital expenditures and operating costs, increased costs of the goods we sell, and decreased demand for our products that cannot be assessed with certainty at this time. We may be required to make expenditures to modify operations, discontinue use of certain process units (e.g., HF alkylation), or install pollution control equipment that could materially and adversely affect our business, financial condition, results of operations, and liquidity.

For example, the U.S. Environmental Protection Agency (EPA) has, in recent years, adopted final rules making more stringent the National Ambient Air Quality Standards (NAAQS) for ozone, sulfur dioxide, and nitrogen dioxide. Emerging rules and permitting requirements implementing these revised standards may require us to install more stringent controls at our facilities, which may result in increased capital expenditures. Governmental regulations regarding GHG emissions and low carbon fuel standards could result in increased compliance costs, additional operating restrictions or permitting delays for our business, and an increase in the cost of, and reduction in demand for, the products we produce, which could have a material adverse effect on our financial position, results of operations, and liquidity.

In addition, in 2015, the U.S., Canada, and the U.K. participated in the United Nations Conference on Climate Change, which led to the creation of the Paris Agreement. The Paris Agreement, which was signed by the U.S. in April 2016, requires countries to review and “represent a progression” in their intended nationally determined contributions (which set GHG emission reduction goals) every five years beginning in 2020. While the current administration is considering withdrawal from the Paris Agreement, there are no guarantees that it will not be implemented. Restrictions on emissions of methane or carbon dioxide that have been or may be imposed in various U.S. states or at the U.S. federal level or in other countries could adversely affect the oil and gas industry.

Finally, some scientists have concluded that increasing concentrations of GHG emissions in the Earth’s atmosphere may produce climate changes that have significant physical effects, such as increased frequency and severity of storms, droughts, and floods and other climatic events. If any such effects were to occur, it is uncertain if they would have an adverse effect on our financial condition and operations.

Compliance with the U.S. Environmental Protection Agency Renewable Fuel Standard could adversely affect our performance.

The U.S. EPA has implemented a Renewable Fuel Standard (RFS) pursuant to the Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007. The RFS program sets annual quotas for the quantity of renewable fuels (such as ethanol) that must be blended into transportation fuels consumed in the United States. A Renewable Identification Number (RIN) is assigned to each gallon of renewable fuel produced in or imported into the U.S. As a producer of petroleum-based transportation fuels, we are obligated to blend renewable fuels into the products we produce at a rate that is at least commensurate to the U.S. EPA’s quota

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and, to the extent we do not, we must purchase RINs in the open market to satisfy our obligation under the RFS program.

We are exposed to the volatility in the market price of RINs. We cannot predict the future prices of RINs. RINs prices are dependent upon a variety of factors, including U.S. EPA regulations, the availability of RINs for purchase, the price at which RINs can be purchased, and levels of transportation fuels produced, all of which can vary significantly from quarter to quarter. If sufficient RINs are unavailable for purchase or if we have to pay a significantly higher price for RINs, or if we are otherwise unable to meet the U.S. EPA's RFS mandates, our results of operations and cash flows could be adversely affected.

Disruption of our ability to obtain crude oil could adversely affect our operations.

A significant portion of our feedstock requirements is satisfied through supplies originating in the Middle East, Africa, Asia, North America, and South America. We are, therefore, subject to the political, geographic, and economic risks attendant to doing business with suppliers located in, and supplies originating from, these areas. If one or more of our supply contracts were terminated, or if political events disrupt our traditional crude oil supply, we believe that adequate alternative supplies of crude oil would be available, but it is possible that we would be unable to find alternative sources of supply. If we are unable to obtain adequate crude oil volumes or are able to obtain such volumes only at unfavorable prices, our results of operations could be materially adversely affected, including reduced sales volumes of refined petroleum products or reduced margins as a result of higher crude oil costs.

In addition, the U.S. government can prevent or restrict us from doing business in or with other countries. These restrictions, and those of other governments, could limit our ability to gain access to business opportunities in various countries. Actions by both the U.S. and other countries have affected our operations in the past and will continue to do so in the future.

We are subject to interruptions and increased costs as a result of our reliance on third-party transportation of crude oil and the products that we manufacture.

We generally use the services of third parties to transport feedstocks to our facilities and to transport the products we manufacture to market. If we experience prolonged interruptions of supply or increases in costs to deliver our products to market, or if the ability of the pipelines, vessels, or railroads to transport feedstocks or products is disrupted because of weather events, accidents, derailment, collision, fire, explosion, governmental regulations, or third-party actions, it could have a material adverse effect on our financial position, results of operations, and liquidity.

We may incur additional costs as a result of our use of rail cars for the transportation of crude oil and the products that we manufacture.

We currently use rail cars for the transportation of some feedstocks to certain of our facilities and for the transportation of some of the products we manufacture to their markets. We own and lease rail cars for our operations. Rail transportation is subject to a variety of federal, state, and local regulations. New laws and regulations and changes in existing laws and regulations are continuously being enacted or proposed that could result in increased expenditures for compliance. For example, in May 2014, the U.S. Department of Transportation (DOT) issued an order requiring rail carriers to provide certain notifications to state agencies along routes used by trains over a certain length carrying crude oil. In addition, in November 2014, the U.S. DOT issued a final rule regarding safety training standards under the Rail Safety Improvement Act of 2008. The rule required each railroad or contractor to develop and submit a training program to perform regular oversight and annual written reviews. In May 2015, the Pipeline and Hazardous Materials Safety Administration (PHMSA) and the Federal Railroad Administration (FRA) issued new final rules for enhanced

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tank car standards and operational controls for high-hazard flammable trains. In August 2016, PHMSA and FRA adopted a final rule expanding the requirements and mandating additional controls for enhanced tank cars. Although we do not believe recently adopted rules will have a material impact on our financial position, results of operations, and liquidity, further changes in law, regulations or industry standards could require us to incur additional costs to the extent they are applicable to us.

Competitors that produce their own supply of feedstocks, own their own retail sites, have greater financial resources, or provide alternative energy sources may have a competitive advantage.

The refining and marketing industry is highly competitive with respect to both feedstock supply and refined petroleum product markets. We compete with many companies for available supplies of crude oil and other feedstocks and for sites for our refined petroleum products. We do not produce any of our crude oil feedstocks and, following the separation of our retail business, we do not have a company-owned retail network. Many of our competitors, however, obtain a significant portion of their feedstocks from company-owned production and some have extensive retail sites. Such competitors are at times able to offset losses from refining operations with profits from producing or retailing operations, and may be better positioned to withstand periods of depressed refining margins or feedstock shortages. Some of our competitors also have materially greater financial and other resources than we have. Such competitors have a greater ability to bear the economic risks inherent in all phases of our industry. In addition, we compete with other industries that provide alternative means to satisfy the energy and fuel requirements of our industrial, commercial, and individual consumers.

Uncertainty and illiquidity in credit and capital markets can impair our ability to obtain credit and financing on acceptable terms, and can adversely affect the financial strength of our business partners.

Our ability to obtain credit and capital depends in large measure on capital markets and liquidity factors that we do not control. Our ability to access credit and capital markets may be restricted at a time when we would like, or need, to access those markets, which could have an impact on our flexibility to react to changing economic and business conditions. In addition, the cost and availability of debt and equity financing may be adversely impacted by unstable or illiquid market conditions. Protracted uncertainty and illiquidity in these markets also could have an adverse impact on our lenders, commodity hedging counterparties, or our customers, causing them to fail to meet their obligations to us. In addition, decreased returns on pension fund assets may also materially increase our pension funding requirements.

Our access to credit and capital markets also depends on the credit ratings assigned to our debt by independent credit rating agencies. We currently maintain investment-grade ratings by Standard & Poor's Ratings Services, Moody's Investors Service, and Fitch Ratings on our senior unsecured debt. Ratings from credit agencies are not recommendations to buy, sell, or hold our securities. Each rating should be evaluated independently of any other rating. We cannot provide assurance that any of our current ratings will remain in effect for any given period of time or that a rating will not be lowered or withdrawn entirely by a rating agency if, in its judgment, circumstances so warrant. Specifically, if ratings agencies were to downgrade our long-term rating, particularly below investment grade, our borrowing costs would increase, which could adversely affect our ability to attract potential investors and our funding sources could decrease. In addition, we may not be able to obtain favorable credit terms from our suppliers or they may require us to provide collateral, letters of credit, or other forms of security, which would increase our operating costs. As a result, a downgrade below investment grade in our credit ratings could have a material adverse impact on our financial position, results of operations, and liquidity.

From time to time, our cash needs may exceed our internally generated cash flow, and our business could be materially and adversely affected if we were unable to obtain necessary funds from financing activities.

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From time to time, we may need to supplement our cash generated from operations with proceeds from financing activities. We have existing revolving credit facilities, committed letter of credit facilities, and an accounts receivable sales facility to provide us with available financing to meet our ongoing cash needs. In addition, we rely on the counterparties to our derivative instruments to fund their obligations under such arrangements. Uncertainty and illiquidity in financial markets may materially impact the ability of the participating financial institutions and other counterparties to fund their commitments to us under our various financing facilities or our derivative instruments, which could have a material adverse effect on our financial position, results of operations, and liquidity.

A significant interruption in one or more of our refineries could adversely affect our business.

Our refineries are our principal operating assets. As a result, our operations could be subject to significant interruption if one or more of our refineries were to experience a major accident or mechanical failure, be damaged by severe weather or other natural or man-made disaster, such as an act of terrorism, or otherwise be forced to shut down. If any refinery were to experience an interruption in operations, earnings from the refinery could be materially adversely affected (to the extent not recoverable through insurance) because of lost production and repair costs. Significant interruptions in our refining system could also lead to increased volatility in prices for crude oil feedstocks and refined petroleum products, and could increase instability in the financial and insurance markets, making it more difficult for us to access capital and to obtain insurance coverage that we consider adequate.

A significant interruption related to our information technology systems could adversely affect our business.

Our information technology systems and network infrastructure may be subject to unauthorized access or attack, which could result in a loss of sensitive business information, systems interruption, or the disruption of our business operations. There can be no assurance that our infrastructure protection technologies and disaster recovery plans can prevent a technology systems breach or systems failure, which could have a material adverse effect on our financial position or results of operations.

Our business may be negatively affected by work stoppages, slowdowns or strikes by our employees, as well as new labor legislation issued by regulators.

Workers at some of our refineries are covered by collective bargaining agreements. To the extent we are in negotiations for labor agreements expiring in the future, there is no assurance an agreement will be reached without a strike, work stoppage, or other labor action. Any prolonged strike, work stoppage, or other labor action could have an adverse effect on our financial condition or results of operations. In addition, future federal or state labor legislation could result in labor shortages and higher costs, especially during critical maintenance periods.

We are subject to operational risks and our insurance may not be sufficient to cover all potential losses arising from operating hazards. Failure by one or more insurers to honor its coverage commitments for an insured event could materially and adversely affect our financial position, results of operations, and liquidity.

Our operations are subject to various hazards common to the industry, including explosions, fires, toxic emissions, maritime hazards, and natural catastrophes. As protection against these hazards, we maintain insurance coverage against some, but not all, potential losses and liabilities. We may not be able to maintain or obtain insurance of the type and amount we desire at reasonable rates. As a result of market conditions, premiums and deductibles for certain of our insurance policies could increase substantially. In some instances, certain insurance could become unavailable or available only for reduced amounts of coverage. For example, coverage for hurricane damage is very limited, and coverage for terrorism risks includes very broad

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exclusions. 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 position, results of operations, and liquidity.

Our insurance program includes a number of insurance carriers. Significant disruptions in financial markets could lead to a deterioration in the financial condition of many financial institutions, including insurance companies. We can make no assurances that we will be able to obtain the full amount of our insurance coverage for insured events.

Large capital projects can take many years to complete, and market conditions could deteriorate over time, negatively impacting project returns.

We may engage in capital projects based on the forecasted project economics and level of return on the capital to be employed in the project. Large-scale projects take many years to complete, and market conditions can change from our forecast. As a result, we may be unable to fully realize our expected returns, which could negatively impact our financial condition, results of operations, and cash flows.

Compliance with and changes in tax laws could adversely affect our performance.

We are subject to extensive tax liabilities imposed by multiple jurisdictions, including income taxes, indirect taxes (excise/duty, sales/use, gross receipts, and value-added taxes), payroll taxes, franchise taxes, withholding taxes, and ad valorem taxes. New tax laws and regulations and changes in existing tax laws and regulations are continuously being enacted or proposed that could result in increased expenditures for tax liabilities in the future. Many of these liabilities are subject to periodic audits by the respective taxing authority. Subsequent changes to our tax liabilities as a result of these audits may subject us to interest and penalties.

We may incur losses and incur additional costs as a result of our forward-contract activities and derivative transactions.

We currently use commodity derivative instruments, and we expect to continue their use in the future. If the instruments we use to hedge our exposure to various types of risk are not effective, we may incur losses. In addition, we may be required to incur additional costs in connection with future regulation of derivative instruments to the extent it is applicable to us.

One of our subsidiaries acts as the general partner of a publicly traded master limited partnership, VLP, which may involve a greater exposure to legal liability than our historic business operations.

One of our subsidiaries acts as the general partner of VLP, a publicly traded master limited partnership. Our control of the general partner of VLP may increase the possibility of claims of breach of fiduciary duties, including claims of conflicts of interest, related to VLP. Liability resulting from such claims could have a material adverse effect on our financial position, results of operations, and liquidity.

If our spin-off of CST (the "Spin-off"), or certain internal transactions undertaken in anticipation of the Spin-off, were determined to be taxable for U.S. federal income tax purposes, then we and certain of our stockholders could be subject to significant tax liability.

We received a private letter ruling from the Internal Revenue Service (IRS) substantially to the effect that, for U.S. federal income tax purposes, the Spin-off, except for cash received in lieu of fractional shares, qualified as tax-free under sections 355 and 361 of the U.S. Internal Revenue Code of 1986, as amended (Code), and that certain internal transactions undertaken in anticipation of the Spin-off qualified for favorable treatment. The IRS did not rule, however, on whether the Spin-off satisfied certain requirements necessary to obtain tax-free treatment under section 355 of the Code. Instead, the private letter ruling was based on representations by us that those requirements were satisfied, and any inaccuracy in those representations could invalidate the private letter ruling. In connection with the private letter ruling, we also obtained an

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opinion from a nationally recognized accounting firm, substantially to the effect that, for U.S. federal income tax purposes, the Spin-off qualified under sections 355 and 361 of the Code. The opinion relied on, among other things, the continuing validity of the private letter ruling and various assumptions and representations as to factual matters made by CST and us which, if inaccurate or incomplete in any material respect, would jeopardize the conclusions reached by such counsel in its opinion. The opinion is not binding on the IRS or the courts, and there can be no assurance that the IRS or the courts would not challenge the conclusions stated in the opinion or that any such challenge would not prevail. Furthermore, notwithstanding the private letter ruling, the IRS could determine on audit that the Spin-off or the internal transactions undertaken in anticipation of the Spin-off should be treated as taxable transactions if it determines that any of the facts, assumptions, representations, or undertakings we or CST have made or provided to the IRS are incorrect or incomplete, or that the Spin-off or the internal transactions should be taxable for other reasons, including as a result of a significant change in stock or asset ownership after the Spin-off.

If the Spin-off ultimately were determined to be taxable, each holder of our common stock who received shares of CST common stock in the Spin-off generally would be treated as receiving a spin-off of property in an amount equal to the fair market value of the shares of CST common stock received by such holder. Any such spin-off would be a dividend to the extent of our current earnings and profits as of the end of 2013, and any accumulated earnings and profits. Any amount that exceeded our relevant earnings and profits would be treated first as a non-taxable return of capital to the extent of such holder's tax basis in our shares of common stock with any remaining amount generally being taxed as a capital gain. In addition, we would recognize gain in an amount equal to the excess of the fair market value of shares of CST common stock distributed to our holders on the Spin-off date over our tax basis in such shares of CST common stock. Moreover, we could incur significant U.S. federal income tax liabilities if it ultimately were determined that certain internal transactions undertaken in anticipation of the Spin-off were taxable.

Under the terms of the tax matters agreement we entered into with CST in connection with the Spin-off, we generally are responsible for any taxes imposed on us and our subsidiaries in the event that the Spin-off and/or certain related internal transactions were to fail to qualify for tax-free treatment. However, if the Spin-off and/or such internal transactions were to fail to qualify for tax-free treatment because of actions or failures to act by CST or its subsidiaries, CST would be responsible for all such taxes. If we were to become liable for taxes under the tax matters agreement, that liability could have a material adverse effect on us.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 3. LEGAL PROCEEDINGS

LITIGATION

We incorporate by reference into this Item our disclosures made in Part II, Item 8 of this report included in Note 9 of Notes to Consolidated Financial Statements under the caption "Litigation Matters."

ENVIRONMENTAL ENFORCEMENT MATTERS

While it is not possible to predict the outcome of the following environmental proceedings, if any one or more of them were decided against us, we believe that there would be no material effect on our financial position, results of operations, or liquidity. We are reporting these proceedings to comply with SEC regulations, which require us to disclose certain information about proceedings arising under federal, state,

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or local provisions regulating the discharge of materials into the environment or protecting the environment if we reasonably believe that such proceedings will result in monetary sanctions of \$100,000 or more.

U.S. EPA. In our quarterly report for the quarter ended March 31, 2016, we reported that certain of our refineries had received one or more letters or demands from the Department of Justice on behalf of the U.S. EPA concerning proposed stipulated penalties under an existing consent decree. Some of these penalty amounts are in excess of \$100,000 but are still being evaluated. We continue to work with the U.S. EPA to resolve these matters.

U.S. EPA (Ardmore Refinery). In our quarterly report for the quarter ended June 30, 2016, we reported that we had received a penalty demand in the amount of \$730,820 from the U.S. EPA for alleged reporting violations at our Ardmore Refinery. We continue to work with the U.S. EPA to resolve this matter.

U.S. EPA (Meraux Refinery). In November 2016, we received from the U.S. EPA Region 6 a draft Consent Agreement and Final Order related to a previous Risk Management Plan inspection at our Meraux Refinery, which included proposed penalties of \$182,000. We are working with the U.S. EPA to resolve this matter.

People of the State of Illinois, ex rel. v. The Premcor Refining Group Inc., et al., Third Judicial Circuit Court, Madison County (Case No. 03-CH-00459, filed May 29, 2003) (Hartford Refinery and terminal). The Illinois EPA (ILEPA) has issued several Notices of Violation (NOVs) alleging violations of air and waste regulations at Premcor's Hartford, Illinois terminal and closed refinery. We continue to negotiate the terms of a consent order for corrective action with the ILEPA.

Bay Area Air Quality Management District (BAAQMD) (Benicia Refinery). We currently have multiple outstanding Violation Notices (VNs) issued by the BAAQMD from 2013 to present. These VNs are for various alleged air regulation and air permit violations at our Benicia Refinery and asphalt plant. In the fourth quarter of 2016, we entered into an agreement with BAAQMD to resolve various VNs and continue to work with the BAAQMD to resolve the remaining VNs.

South Coast Air Quality Management District (SCAQMD) (Wilmington Refinery). We currently have multiple NOVs issued by the SCAQMD. These NOVs are for alleged reporting violations and excess emissions at our Wilmington Refinery. We continue to work with the SCAQMD to resolve these NOVs.

San Francisco Regional Water Quality Control Board (RWQCB) (Benicia Refinery). In our quarterly report for the quarter ended September 30, 2016, we reported that the RWQCB had issued a Notice of Administrative Civil Liability to our Benicia Refinery for alleged violations of the Refinery's National Pollutant Discharge Elimination System permit, along with a proposed penalty of \$197,500. We have resolved this matter with the RWQCB.

Texas Commission on Environmental Quality (TCEQ) (McKee Refinery). In our quarterly report for the quarter ended June 30, 2016, we reported that we had received a proposed Agreed Order in the amount of \$121,314 from the TCEQ as an administrative penalty for alleged excess emissions at our McKee Refinery. We continue to work with the TCEQ to resolve this matter.

Environment Canada (EC) (Quebec Refinery). In our quarterly report for the quarter ended September 30, 2016, we reported that we were involved in a legal proceeding initiated by the EC alleging breaches of certain conditions at our Quebec Refinery of a directive issued under the Canadian Fisheries Act. We continue to work with the EC to resolve this matter, which we believe will result in penalties in excess of \$100,000.

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ITEM 4. MINE SAFETY DISCLOSURES

None.

PART II

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

Our common stock trades on the NYSE under the symbol "VLO."

As of January 31, 2017, there were 5,751 holders of record of our common stock.

The following table shows the high and low sales prices of and dividends declared on our common stock for each quarter of 2016 and 2015.

Quarter Ended	Sales Prices of the Common Stock		Dividends Per Common Share
	High	Low	
2016:			
December 31	\$69.85	\$52.51	\$ 0.60
September 30	58.08	46.88	0.60
June 30	64.06	49.91	0.60
March 31	72.49	52.55	0.60
2015:			
December 31	73.88	58.98	0.50
September 30	71.50	51.68	0.40
June 30	64.28	56.09	0.40
March 31	64.49	43.45	0.40

On January 26, 2017, our board of directors declared a quarterly cash dividend of \$0.70 per common share payable March 7, 2017 to holders of record at the close of business on February 15, 2017.

Dividends are considered quarterly by the board of directors, may be paid only when approved by the board, and will depend on our financial condition, results of operations, cash flows, prospects, industry conditions, capital requirements, and other factors and restrictions our board deems relevant. There can be no assurance that we will pay a dividend at the rates we have paid historically, or at all, in the future.

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The following table discloses purchases of shares of our common stock made by us or on our behalf during the fourth quarter of 2016.

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Not Purchased as Part of Publicly Announced Plans or Programs (a)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet Be Purchased Under the Plans or Programs (b)
October 2016	433,272	\$ 52.69	50,337	382,935	\$2.7 billion
November 2016	667,644	\$ 62.25	248,349	419,295	\$2.6 billion
December 2016	1,559,569	\$ 66.09	688	1,558,881	\$2.5 billion
Total	2,660,485	\$ 62.95	299,374	2,361,111	\$2.5 billion

The shares reported in this column represent purchases settled in the fourth quarter of 2016 relating to (i) our purchases of shares in open-market transactions to meet our obligations under stock-based compensation plans, and (ii) our purchases of shares from our employees and non-employee directors in connection with the exercise of stock options, the vesting of restricted stock, and other stock compensation transactions in accordance with the terms of our stock-based compensation plans.

On July 13, 2015, we announced that our board of directors authorized our purchase of up to \$2.5 billion of our outstanding common stock. This authorization has no expiration date. As of December 31, 2016, the approximate dollar value of shares that may yet be purchased under the 2015 authorization is \$40 million. On September 21, 2016, we announced that our board of directors authorized our purchase of up to an additional \$2.5 billion of our outstanding common stock with no expiration date. As of December 31, 2016, no purchases have been made under the 2016 authorization.

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The following performance graph is not “soliciting material,” is not deemed filed with the SEC, and is not to be incorporated by reference into any of Valero’s filings under the Securities Act of 1933 or the Securities Exchange Act of 1934, as amended, respectively.

This performance graph and the related textual information are based on historical data and are not indicative of future performance. The following line graph compares the cumulative total return¹ on an investment in our common stock against the cumulative total return of the S&P 500 Composite Index and an index of peer companies (that we selected) for the five-year period commencing December 31, 2011 and ending December 31, 2016. Our peer group comprises the following 11 companies: Alon USA Energy, Inc.; BP plc; CVR Energy, Inc.; Delek US Holdings, Inc.; HollyFrontier Corporation; Marathon Petroleum Corporation; PBF Energy Inc.; Phillips 66; Royal Dutch Shell plc; Tesoro Corporation; and Western Refining, Inc.

COMPARISON OF 5 YEAR CUMULATIVE TOTAL RETURN¹

Among Valero Energy Corporation, the S&P 500 Index,
and Peer Group

	As of December 31,					
	2011	2012	2013	2014	2015	2016
Valero Common Stock	\$100.00	\$166.17	\$274.19	\$274.85	\$403.46	\$406.63
S&P 500	100.00	116.00	153.58	174.60	177.01	198.18
Peer Group	100.00	109.23	132.93	122.45	110.45	130.66

Assumes that an investment in Valero common stock and each index was \$100 on December 31, 2011. “Cumulative¹ total return” is based on share price appreciation plus reinvestment of dividends from December 31, 2011 through December 31, 2016.

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ITEM 6. SELECTED FINANCIAL DATA

The selected financial data for the five-year period ended December 31, 2016 was derived from our audited financial statements. The following table should be read together with Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and with the historical financial statements and accompanying notes included in Item 8, “Financial Statements and Supplementary Data.”

The following summaries are in millions of dollars, except for per share amounts:

	Year Ended December 31,				
	2016 (a)	2015 (b)	2014	2013 (c)	2012
Operating revenues	\$75,659	\$87,804	\$130,844	\$138,074	\$138,393
Income from continuing operations	2,417	4,101	3,775	2,722	3,114
Earnings per common share from continuing operations – assuming dilution	4.94	7.99	6.97	4.96	5.61
Dividends per common share	2.40	1.70	1.05	0.85	0.65
Total assets (d)	46,173	44,227	45,355	46,957	44,163
Debt and capital lease obligations, less current portion (d)	7,886	7,208	5,747	6,224	6,423

(a) Includes a noncash lower of cost or market inventory valuation reserve adjustment that resulted in a net benefit to our results of operations of \$747 million as described in Note 4 of Notes to Consolidated Financial Statements.

(b) Includes a noncash lower of cost or market inventory valuation adjustment that resulted in a net charge to our results of operations of \$790 million.

(c) Includes the operations of our retail business prior to its separation from us on May 1, 2013.

Amounts reported as of December 31, 2015, 2014, 2013, and 2012 have been reclassified to reflect the (d) retrospective adoption of certain amendments to the Accounting Standards Codification as of January 1, 2016 as described in Note 1 of Notes to Consolidated Financial Statements.

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

The following review of our results of operations and financial condition should be read in conjunction with Item 1A, "Risk Factors," and Item 8, "Financial Statements and Supplementary Data," included in this report.

CAUTIONARY STATEMENT FOR THE PURPOSE OF SAFE HARBOR PROVISIONS OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995

This report, including without limitation our disclosures below under the heading "OVERVIEW AND OUTLOOK," includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934. You can identify our forward-looking statements by the words "anticipate," "believe," "expect," "plan," "intend," "estimate," "project," "projection," "predict," "budget," "forecast," "goal," "guidance," "should," "may," and similar expressions.

These forward-looking statements include, among other things, statements regarding:

- future refining margins, including gasoline and distillate margins;
- future ethanol margins;
- expectations regarding feedstock costs, including crude oil differentials, and operating expenses;
- anticipated levels of crude oil and refined petroleum product inventories;
- our anticipated level of capital investments, including deferred costs for refinery turnarounds and catalyst, capital expenditures for environmental and other purposes, and joint venture investments, and the effect of those capital investments on our results of operations;
- anticipated trends in the supply of and demand for crude oil and other feedstocks and refined petroleum products in the regions where we operate, as well as globally;
- expectations regarding environmental, tax, and other regulatory initiatives; and
- the effect of general economic and other conditions on refining and ethanol industry fundamentals.

We based our forward-looking statements on our current expectations, estimates, and projections about ourselves and our industry. We caution that these statements are not guarantees of future performance and involve risks, uncertainties, and assumptions that we cannot predict. In addition, we based many of these forward-looking statements on assumptions about future events that may prove to be inaccurate. Accordingly, our actual results may differ materially from the future performance that we have expressed or forecast in the forward-looking statements. Differences between actual results and any future performance suggested in these forward-looking statements could result from a variety of factors, including the following:

- acts of terrorism aimed at either our facilities or other facilities that could impair our ability to produce or transport refined petroleum products or receive feedstocks;
- political and economic conditions in nations that produce crude oil or consume refined petroleum products;
- demand for, and supplies of, refined petroleum products such as gasoline, diesel, jet fuel, petrochemicals, and ethanol;
- demand for, and supplies of, crude oil and other feedstocks;
- the ability of the members of the Organization of Petroleum Exporting Countries to agree on and to maintain crude oil price and production controls;
- the level of consumer demand, including seasonal fluctuations;
- refinery overcapacity or undercapacity;

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our ability to successfully integrate any acquired businesses into our operations;

the actions taken by competitors, including both pricing and adjustments to refining capacity in response to market conditions;

the level of competitors' imports into markets that we supply;

accidents, unscheduled shutdowns, or other catastrophes affecting our refineries, machinery, pipelines, equipment, and information systems, or those of our suppliers or customers;

changes in the cost or availability of transportation for feedstocks and refined petroleum products;

the price, availability, and acceptance of alternative fuels and alternative-fuel vehicles;

the levels of government subsidies for alternative fuels;

the volatility in the market price of biofuel credits (primarily RINs needed to comply with the RFS) and GHG emission credits needed to comply with the requirements of various GHG emission programs;

delay of, cancellation of, or failure to implement planned capital projects and realize the various assumptions and benefits projected for such projects or cost overruns in constructing such planned capital projects;

earthquakes, hurricanes, tornadoes, and irregular weather, which can unforeseeably affect the price or availability of natural gas, crude oil, grain and other feedstocks, and refined petroleum products and ethanol;

rulings, judgments, or settlements in litigation or other legal or regulatory matters, including unexpected environmental remediation costs, in excess of any reserves or insurance coverage;

legislative or regulatory action, including the introduction or enactment of legislation or rulemakings by governmental authorities, including tax and environmental regulations, such as those implemented under the California Global Warming Solutions Act (also known as AB 32), Quebec's Regulation respecting the cap-and-trade system for greenhouse gas emission allowances (the Quebec cap-and-trade system), and the U.S. EPA's regulation of GHGs, which may adversely affect our business or operations;

changes in the credit ratings assigned to our debt securities and trade credit;

changes in currency exchange rates, including the value of the Canadian dollar, the pound sterling, and the euro relative to the U.S. dollar;

overall economic conditions, including the stability and liquidity of financial markets; and

other factors generally described in the "Risk Factors" section included in Item 1A, "Risk Factors" in this report.

Any one of these factors, or a combination of these factors, could materially affect our future results of operations and whether any forward-looking statements ultimately prove to be accurate. Our forward-looking statements are not guarantees of future performance, and actual results and future performance may differ materially from those suggested in any forward-looking statements. We do not intend to update these statements unless we are required by the securities laws to do so.

All subsequent written and oral forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by the foregoing. We undertake no obligation to publicly release any revisions to any such forward-looking statements that may be made to reflect events or circumstances after the date of this report or to reflect the occurrence of unanticipated events.

This report includes references to financial measures that are not defined under U.S. generally accepted accounting principles (GAAP). These non-GAAP financial measures include adjusted net income attributable to Valero stockholders, gross margin, and adjusted operating income. We have included these non-GAAP financial measures to help facilitate the comparison of operating results between periods. See the accompanying financial tables in "RESULTS OF OPERATIONS" for a reconciliation of these non-GAAP

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financial measures to the most directly comparable U.S. GAAP financial measures. In note (d) to the accompanying tables, we disclose the reasons why we believe our use of the non-GAAP financial measures provides useful information.

OVERVIEW AND OUTLOOK

Overview

For the year ended December 31, 2016, we reported net income attributable to Valero stockholders from continuing operations of \$2.3 billion and adjusted net income attributable to Valero stockholders from continuing operations of \$1.7 billion. For the year ended December 31, 2015, we reported net income attributable to Valero stockholders from continuing operations of \$4.0 billion and adjusted net income attributable to Valero stockholders from continuing operations of \$4.6 billion. The decrease in net income attributable to Valero stockholders from continuing operations of \$1.7 billion and the decrease in adjusted net income attributable to Valero stockholders from continuing operations of \$2.9 billion are outlined in the following table (in millions).

	Year Ended December 31,		
	2016	2015	Change
Net income attributable to Valero Energy Corporation stockholders from continuing operations	\$2,289	\$3,990	\$(1,701)
Adjusted net income attributable to Valero Energy Corporation stockholders from continuing operations ⁽¹⁾	1,724	4,614	(2,890)

The decrease in both net income and adjusted net income attributable to Valero stockholders from continuing operations was due to lower operating income in 2016 compared to 2015 (net of the resulting decrease of \$1.1 billion in income tax expense between the years). Operating income decreased by \$2.8 billion, while adjusted operating income decreased by \$4.3 billion, as outlined by segment in the following table (in millions).

	Year Ended December 31,		
	2016	2015	Change
Operating income (loss) by segment:			
Refining	\$3,995	\$6,973	\$(2,978)
Ethanol	340	142	198
Corporate	(763)	(757)	(6)
Total	\$3,572	\$6,358	\$(2,786)
Adjusted operating income (loss) by segment ⁽¹⁾ :			
Refining	\$3,354	\$7,713	\$(4,359)
Ethanol	290	192	98
Corporate	(763)	(757)	(6)
Total	\$2,881	\$7,148	\$(4,267)

Net income and operating income have been adjusted for certain items that we believe are not indicative of our core operating performance and that may obscure our underlying business results and trends. Each of these adjustments is reflected in the tables on pages 28 and 29. Adjusted amounts are non-GAAP measurements.

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The \$2.8 billion decrease in operating income was impacted by the net effect of noncash adjustments for a lower of cost or market inventory valuation adjustment and an asset impairment loss. We have excluded such effects from adjusted operating income because we believe that these adjustments are not indicative of our core operating performance and may obscure the underlying business results and trends. The resulting \$4.3 billion decrease in adjusted operating income is primarily due to the following:

Refining segment - The \$4.4 billion decrease in adjusted operating income was primarily due to lower margins on refined petroleum products and lower discounts on light sweet crude oils and sour crude oils relative to Brent crude oil, which also negatively impacted our refining margins. This is more fully described on pages 37 and 38.

- Ethanol segment - The \$98 million increase in adjusted operating income was primarily due to higher ethanol margins that resulted from lower corn prices combined with lower operating expenses, partially offset by lower margins on other co-products. This is more fully described on page 38.

Additional details and analysis of the changes in the operating income and adjusted operating income of our business segments and other components of net income and adjusted net income attributable to Valero stockholders from continuing operations, including a reconciliation of non-GAAP financial measures used in this Overview to their most comparable measures reported under U.S. GAAP, are provided below under “RESULTS OF OPERATIONS” beginning on page 27.

Outlook

For the year ended December 31, 2016, margins were unfavorable compared to 2015, and thus far in the first quarter of 2017 margins have been mixed. Below are several factors that have impacted or may impact our results of operations during the first quarter of 2017:

Refining and ethanol product margins are expected to remain near current levels.

Crude oil discounts are expected to remain weak due to lower demand resulting from industry-wide refinery maintenance.

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RESULTS OF OPERATIONS

The following tables highlight our results of operations, our operating performance, and market prices that directly impact our operations. In addition, these tables include financial measures that are not defined under U.S. GAAP and represent non-GAAP financial measures. These non-GAAP financial measures are reconciled to their most comparable U.S. GAAP financial measures and include adjusted net income attributed to Valero stockholders, adjusted net income from continuing operations attributable to Valero stockholders, adjusted operating income, and gross margin. In note (d) to these tables, we disclose the reasons why we believe our use of non-GAAP financial measures provides useful information. The narrative following these tables provides an analysis of our results of operations.

2016 Compared to 2015

Financial Highlights

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

	Year Ended December 31,		
	2016	2015	Change
Operating revenues	\$75,659	\$87,804	\$(12,145)
Costs and expenses:			
Cost of sales (excluding the lower of cost or market inventory valuation adjustment)	65,962	73,861	(7,899)
Lower of cost or market inventory valuation adjustment (a)	(747)	790	(1,537)
Operating expenses:			
Refining	3,792	3,795	(3)
Ethanol	415	448	(33)
General and administrative expenses	715	710	5
Depreciation and amortization expense:			
Refining	1,780	1,745	35
Ethanol	66	50	16
Corporate	48	47	1
Asset impairment loss (b)	56	—	56
Total costs and expenses	72,087	81,446	(9,359)
Operating income	3,572	6,358	(2,786)
Other income, net	56	46	10
Interest and debt expense, net of capitalized interest	(446)	(433)	(13)
Income before income tax expense	3,182	5,971	(2,789)
Income tax expense (b) (c)	765	1,870	(1,105)
Net income	2,417	4,101	(1,684)
Less: Net income attributable to noncontrolling interests	128	111	17
Net income attributable to Valero Energy Corporation stockholders	\$2,289	\$3,990	\$(1,701)
Earnings per common share – assuming dilution	\$4.94	\$7.99	\$(3.05)
Weighted-average common shares outstanding – assuming dilution (in millions)	464	500	(36)

See note references on pages 50 through 52.

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Reconciliation of Non-GAAP Measures to Most Comparable Measures
 Reported under U.S. GAAP (d)
 (millions of dollars)

	Year Ended December 31, 2016	2015
Reconciliation of net income attributable to Valero Energy Corporation stockholders to adjusted net income attributable to Valero Energy Corporation stockholders		
Net income attributable to Valero Energy Corporation stockholders	\$ 2,289	\$ 3,990
Exclude adjustments:		
Lower of cost or market inventory valuation adjustment (a)	747	(790)
Income tax (expense) benefit related to the lower of cost or market inventory valuation adjustment	(168)	166
Lower of cost or market inventory valuation adjustment, net of taxes	579	(624)
Asset impairment loss (b)	(56)	—
Income tax benefit on Aruba Disposition (b)	42	—
Total adjustments	565	(624)
Adjusted net income attributable to Valero Energy Corporation stockholders	\$ 1,724	\$ 4,614

See note references on pages 50 through 52.

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Reconciliation of Non-GAAP Measures to Most Comparable Measures
 Reported under U.S. GAAP (d)
 (millions of dollars)

	Year Ended December 31,	
	2016	2015
Reconciliation of operating income to gross margin and reconciliation of operating income to adjusted operating income by segment		
Refining segment		
Operating income	\$3,995	\$6,973
Add back:		
Lower of cost or market inventory valuation adjustment (a)	(697)	740
Operating expenses	3,792	3,795
Depreciation and amortization expense	1,780	1,745
Asset impairment loss (b)	56	—
Gross margin	\$8,926	\$13,253
Operating income	\$3,995	\$6,973
Exclude adjustments:		
Lower of cost or market inventory valuation adjustment (a)	697	(740)
Asset impairment loss (b)	(56)	—
Adjusted operating income	\$3,354	\$7,713
Ethanol segment		
Operating income	\$340	\$142
Add back:		
Lower of cost or market inventory valuation adjustment (a)	(50)	50
Operating expenses	415	448
Depreciation and amortization expense	66	50
Gross margin	\$771	\$690
Operating income	\$340	\$142
Exclude adjustment: Lower of cost or market inventory valuation adjustment (a)	50	(50)
Adjusted operating income	\$290	\$192

See note references on pages 50 through 52.

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Reconciliation of Non-GAAP Measures to Most Comparable Measures
 Reported under U.S. GAAP (d)
 (millions of dollars)

	Year Ended December 31,	
	2016	2015
Reconciliation of operating income to gross margin and reconciliation of operating income to adjusted operating income by refining segment region (f)		
U.S. Gulf Coast region		
Operating income	\$1,959	\$3,945
Add back:		
Lower of cost or market inventory valuation adjustment (a)	(37)	33
Operating expenses	2,163	2,113
Depreciation and amortization expense	1,070	1,036
Asset impairment loss (b)	56	—
Gross margin	\$5,211	\$7,127
Operating income	\$1,959	\$3,945
Exclude adjustments:		
Lower of cost or market inventory valuation adjustment (a)	37	(33)
Asset impairment loss (b)	(56)	—
Adjusted operating income	\$1,978	\$3,978
U.S. Mid-Continent region		
Operating income	\$456	\$1,425
Add back:		
Lower of cost or market inventory valuation adjustment (a)	(9)	9
Operating expenses	588	586
Depreciation and amortization expense	268	278
Gross margin	\$1,303	\$2,298
Operating income	\$456	\$1,425
Exclude adjustment: Lower of cost or market inventory valuation adjustment (a)	9	(9)
Adjusted operating income	\$447	\$1,434

See note references on pages 50 through 52.

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Reconciliation of Non-GAAP Measures to Most Comparable Measures
 Reported under U.S. GAAP (d)
 (millions of dollars)

	Year Ended December 31,	
	2016	2015
Reconciliation of operating income to gross margin and reconciliation of operating income to adjusted operating income by refining segment region (f) (continued)		
North Atlantic region		
Operating income	\$1,355	\$753
Add back:		
Lower of cost or market inventory valuation adjustment (a)	(646)	693
Operating expenses	501	521
Depreciation and amortization expense	195	211
Gross margin	\$1,405	\$2,178
Operating income	\$1,355	\$753
Exclude adjustment: Lower of cost or market inventory valuation adjustment (a)	646	(693)
Adjusted operating income	\$709	\$1,446
U.S. West Coast region		
Operating income	\$225	\$850
Add back:		
Lower of cost or market inventory valuation adjustment (a)	(5)	5
Operating expenses	540	575
Depreciation and amortization expense	247	220
Gross margin	\$1,007	\$1,650
Operating income	\$225	\$850
Exclude adjustment: Lower of cost or market inventory valuation adjustment (a)	5	(5)
Adjusted operating income	\$220	\$855

See note references on pages 50 through 52.

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Refining Segment Operating Highlights

(millions of dollars, except per barrel amounts)

	Year Ended December 31,		
	2016	2015	Change
Throughput volumes (thousand BPD)			
Feedstocks:			
Heavy sour crude oil	396	438	(42)
Medium/light sour crude oil	526	428	98
Sweet crude oil	1,193	1,208	(15)
Residuals	272	274	(2)
Other feedstocks	152	140	12
Total feedstocks	2,539	2,488	51
Blendstocks and other	316	311	5
Total throughput volumes	2,855	2,799	56
Yields (thousand BPD)			
Gasolines and blendstocks	1,404	1,364	40
Distillates	1,066	1,066	—
Other products (g)	421	408	13
Total yields	2,891	2,838	53
Refining segment operating statistics			
Gross margin (d)	\$8,926	\$13,253	\$(4,327)
Adjusted operating income (d)	\$3,354	\$7,713	\$(4,359)
Throughput volumes (thousand BPD)	2,855	2,799	56
Throughput margin per barrel (h)	\$8.54	\$12.97	\$(4.43)
Operating costs per barrel:			
Operating expenses	3.63	3.71	(0.08)
Depreciation and amortization expense	1.70	1.71	(0.01)
Total operating costs per barrel	5.33	5.42	(0.09)
Adjusted operating income per barrel (i)	\$3.21	\$7.55	\$(4.34)

See note references on pages 50 through 52.

Table of ContentsEthanol Segment Operating Highlights
(millions of dollars, except per gallon amounts)

	Year Ended		
	December 31,		
	2016	2015	Change
Ethanol segment operating statistics			
Gross margin (d)	\$771	\$690	\$81
Adjusted operating income (d)	\$290	\$192	\$98
Production volumes (thousand gallons per day)	3,842	3,827	15
Gross margin per gallon of production (h)	\$0.55	\$0.49	\$0.06
Operating costs per gallon of production:			
Operating expenses	0.30	0.32	(0.02)
Depreciation and amortization expense	0.04	0.03	0.01
Total operating costs per gallon of production	0.34	0.35	(0.01)
Adjusted operating income per gallon of production (i)	\$0.21	\$0.14	\$0.07

See note references on pages 50 through 52.

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Refining Segment Operating Highlights

(millions of dollars, except per barrel amounts)

	Year Ended December		
	2016	2015	Change
Refining segment operating statistics by region (f)			
U.S. Gulf Coast region			
Gross margin (d)	\$5,211	\$7,127	\$(1,916)
Adjusted operating income (d)	\$1,978	\$3,978	\$(2,000)
Throughput volumes (thousand BPD)	1,653	1,592	61
Throughput margin per barrel (h)	\$8.61	\$12.27	\$(3.66)
Operating costs per barrel:			
Operating expenses	3.57	3.64	(0.07)
Depreciation and amortization expense	1.77	1.78	(0.01)
Total operating costs per barrel	5.34	5.42	(0.08)
Adjusted operating income per barrel (i)	\$3.27	\$6.85	\$(3.58)
U.S. Mid-Continent region			
Gross margin (d)	\$1,303	\$2,298	\$(995)
Adjusted operating income (d)	\$447	\$1,434	\$(987)
Throughput volumes (thousand BPD)	452	447	5
Throughput margin per barrel (h)	\$7.89	\$14.09	\$(6.20)
Operating costs per barrel:			
Operating expenses	3.56	3.59	(0.03)
Depreciation and amortization expense	1.63	1.71	(0.08)
Total operating costs per barrel	5.19	5.30	(0.11)
Adjusted operating income per barrel (i)	\$2.70	\$8.79	\$(6.09)

See note references on pages 50 through 52.

Table of ContentsRefining Segment Operating Highlights
(millions of dollars, except per barrel amounts)

	Year Ended December		
	2016	2015	Change
Refining segment operating statistics by region (f) (continued)			
North Atlantic region			
Gross margin (d)	\$1,405	\$2,178	\$(773)
Adjusted operating income (d)	\$709	\$1,446	\$(737)
Throughput volumes (thousand BPD)	483	494	(11)
Throughput margin per barrel (h)	\$7.95	\$12.06	\$(4.11)
Operating costs per barrel:			
Operating expenses	2.84	2.88	(0.04)
Depreciation and amortization expense	1.10	1.17	(0.07)
Total operating costs per barrel	3.94	4.05	(0.11)
Adjusted operating income per barrel (i)	\$4.01	\$8.01	\$(4.00)
U.S. West Coast region			
Gross margin (d)	\$1,007	\$1,650	\$(643)
Adjusted operating income (d)	\$220	\$855	\$(635)
Throughput volumes (thousand BPD)	267	266	1
Throughput margin per barrel (h)	\$10.30	\$17.00	\$(6.70)
Operating costs per barrel:			
Operating expenses	5.53	5.92	(0.39)
Depreciation and amortization expense	2.52	2.26	0.26
Total operating costs per barrel	8.05	8.18	(0.13)
Adjusted operating income per barrel (i)	\$2.25	\$8.82	\$(6.57)

See note references on pages 50 through 52.

Table of ContentsAverage Market Reference Prices and Differentials
(dollars per barrel, except as noted)

	Year Ended December		
	31, 2016	2015	Change
Feedstocks			
Brent crude oil	\$45.02	\$53.62	\$(8.60)
Brent less West Texas Intermediate (WTI) crude oil	1.83	4.91	(3.08)
Brent less Alaska North Slope (ANS) crude oil	1.25	0.67	0.58
Brent less LLS crude oil (j)	0.15	1.26	(1.11)
Brent less Argus Sour Crude Index (ASCI) crude oil (k)	5.18	5.63	(0.45)
Brent less Maya crude oil	8.63	9.54	(0.91)
LLS crude oil (j)	44.87	52.36	(7.49)
LLS less ASCI crude oil (j) (k)	5.03	4.37	0.66
LLS less Maya crude oil (j)	8.48	8.28	0.20
WTI crude oil	43.19		