

HollyFrontier Corp
Form 10-K
February 22, 2017

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 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 1-3876

HOLLYFRONTIER CORPORATION
(Exact name of registrant as specified in its charter)

Delaware	75-1056913
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)

2828 N. Harwood, Suite 1300	75201-1507
Dallas, Texas	
(Address of principal executive offices) (Zip Code)	
(214) 871-3555	
Registrant's telephone number, including area code	

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

Securities registered pursuant to 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

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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

On June 30, 2016, the last business day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the Common Stock, par value \$0.01 per share, held by non-affiliates of the registrant was approximately \$3.8 billion, based upon the closing price on the New York Stock Exchange on such date. (This is not deemed an admission that any person whose shares were not included in the computation of the amount set forth in the preceding sentence necessarily is an "affiliate" of the registrant.)

177,360,162 shares of Common Stock, par value \$.01 per share, were outstanding on February 17, 2017.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's proxy statement for its annual meeting of stockholders to be held on May 11, 2017, which proxy statement will be filed with the Securities and Exchange Commission within 120 days after December 31, 2016, are incorporated by reference in Part III.

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PART I

FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K contains certain “forward-looking statements” within the meaning of the federal securities laws. All statements, other than statements of historical fact included in this Form 10-K, including, but not limited to, those under “Business and Properties” in Items 1 and 2, “Risk Factors” in Item 1A, “Legal Proceedings” in Item 3 and “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in Item 7, are forward-looking statements. Forward-looking statements use words such as “anticipate,” “project,” “expect,” “plan,” “goal,” “forecast,” “intend,” “should,” “would,” “could,” “believe,” “may,” and similar expressions and statements regarding our plans and objectives for future operations. These statements are based on management’s beliefs and assumptions using currently available information and expectations as of the date hereof, are not guarantees of future performance and involve certain risks and uncertainties. All statements concerning our expectations for future results of operations are based on forecasts for our existing operations and do not include the potential impact of any future acquisitions. Although we believe that the expectations reflected in these forward-looking statements are reasonable, we cannot assure you that our expectations will prove to be correct. Therefore, actual outcomes and results could materially differ from what is expressed, implied or forecast in these statements. Any differences could be caused by a number of factors including, but not limited to:

- risks and uncertainties with respect to the actions of actual or potential competitive suppliers of refined petroleum products in our markets;
- the demand for and supply of crude oil and refined products;
- the spread between market prices for refined products and market prices for crude oil;
- the possibility of constraints on the transportation of refined products;
 - the possibility of inefficiencies, curtailments or shutdowns in refinery operations or pipelines;
- effects of governmental and environmental regulations and policies;
- the availability and cost of our financing;
- the effectiveness of our capital investments and marketing strategies;
- our efficiency in carrying out construction projects;
- our ability to acquire refined product operations or pipeline and terminal operations on acceptable terms and to integrate any existing or future acquired operations, including Petro-Canada Lubricants Inc.;
- the possibility of terrorist attacks and the consequences of any such attacks;
- general economic conditions; and
- other financial, operational and legal risks and uncertainties detailed from time to time in our Securities and Exchange Commission filings.

Cautionary statements identifying important factors that could cause actual results to differ materially from our expectations are set forth in this Form 10-K, including without limitation the forward-looking statements that are referred to above. When considering forward-looking statements, you should keep in mind the risk factors and other cautionary statements set forth in this Form 10-K under “Risk Factors” in Item 1A and in conjunction with the discussion in this Form 10-K in “Management’s Discussion and Analysis of Financial Condition and Results of Operations” under the heading “Liquidity and Capital Resources.” All forward-looking statements included in this Form 10-K and all subsequent written or oral forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by these cautionary statements. The forward-looking statements speak only as of the date made and, other than as required by law, we undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

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DEFINITIONS

Within this report, the following terms have these specific meanings:

“Alkylation” means the reaction of propylene or butylene (olefins) with isobutane to form an iso-paraffinic gasoline (inverse of cracking).

“Aromatic oil” is long chain oil that is highly aromatic in nature and is used to manufacture tires and industrial rubber products and in the production of specialty asphalt.

“BPD” means the number of barrels per calendar day of crude oil or petroleum products.

“BPSD” means the number of barrels per stream day (barrels of capacity in a 24 hour period) of crude oil or petroleum products.

“Biodiesel” means an alternative fuel produced from renewable biological resources.

“Black wax crude oil” is a low sulfur, low gravity crude oil produced in the Uintah Basin in Eastern Utah that has certain characteristics that require specific facilities to transport, store and refine into transportation fuels.

“Catalytic reforming” means a refinery process which uses a precious metal (such as platinum) based catalyst to convert low octane naphtha to high octane gasoline blendstock and hydrogen. The hydrogen produced from the reforming process is used to desulfurize other refinery oils and is a primary source of hydrogen for the refinery.

“Cracking” means the process of breaking down larger, heavier and more complex hydrocarbon molecules into simpler and lighter molecules.

“Crude oil distillation” means the process of distilling vapor from liquid crudes, usually by heating, and condensing the vapor slightly above atmospheric pressure turning it back to liquid in order to purify, fractionate or form the desired products.

“Ethanol” means a high octane gasoline blend stock that is used to make various grades of gasoline.

“FCC,” or fluid catalytic cracking, means a refinery process that breaks down large complex hydrocarbon molecules into smaller more useful ones using a circulating bed of catalyst at relatively high temperatures.

“Hydrodesulfurization” means to remove sulfur and nitrogen compounds from oil or gas in the presence of hydrogen and a catalyst at relatively high temperatures.

“Hydrogen plant” means a refinery unit that converts natural gas and steam to high purity hydrogen, which is then used in the hydrodesulfurization, hydrocracking and isomerization processes.

“HF alkylation” or hydrofluoric alkylation, means a refinery process which combines isobutane and C3/C4 olefins using HF acid as a catalyst to make high octane gasoline blend stock.

“Isomerization” means a refinery process for rearranging the structure of C5/C6 molecules without changing their size or chemical composition and is used to improve the octane of C5/C6 gasoline blendstocks.

“LPG” means liquid petroleum gases.

“Lubricant” or “lube” means a solvent neutral paraffinic product used in commercial heavy duty engine oils, passenger car oils and specialty products for industrial applications such as heat transfer, metalworking, rubber and other general process oil.

“MSAT2” means Control of Hazardous Air Pollutants from Mobile Sources, a rule issued by the U.S. Environmental Protection Agency to reduce hazardous emissions from motor vehicles and motor vehicle fuels.

“MEK” means a lube process that separates waxy oil from non-waxy oils using methyl ethyl ketone as a solvent.

“MMBTU” means one million British thermal units.

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“Natural gasoline” means a low octane gasoline blend stock that is purchased and used to blend with other high octane stocks produced to make various grades of gasoline.

“Paraffinic oil” is a high paraffinic, high gravity oil produced by extracting aromatic oils and waxes from gas oil and is used in producing high-grade lubricating oils.

“Refinery gross margin” means the difference between average net sales price and average product costs per produced barrel of refined products sold. This does not include the associated depreciation and amortization costs.

“Reforming” means the process of converting gasoline type molecules into aromatic, higher octane gasoline blend stocks while producing hydrogen in the process.

“RINs” means renewable identification numbers and refers to serial numbers assigned to credits generated from biodiesel production under the Environmental Protection Agency’s Renewable Fuel Standard 2 (“RFS2”) regulations that mandate increased volumes of renewable fuels blended into the nation’s fuel supply. In lieu of blending, refiners may purchase these transferable credits in order to comply with the regulations.

“Roofing flux” is produced from the bottom cut of crude oil and is the base oil used to make roofing shingles for the housing industry.

“ROSE,” or “Solvent deasphalter / residuum oil supercritical extraction,” means a refinery unit that uses a light hydrocarbon like propane or butane to extract non-asphaltene heavy oils from asphalt or atmospheric reduced crude. These deasphalted oils are then further converted to gasoline and diesel in the FCC process. The remaining asphaltenes are either sold, blended to fuel oil or blended with other asphalt as a hardener.

“Scanfiner” is a refinery unit that removes sulfur from gasoline to produce low sulfur gasoline blendstock.

“Sour crude oil” means crude oil containing quantities of sulfur greater than 0.4 percent by weight, while “sweet crude oil” means crude oil containing quantities of sulfur equal to or less than 0.4 percent by weight.

“Vacuum distillation” means the process of distilling vapor from liquid crudes, usually by heating, and condensing the vapor below atmospheric pressure turning it back to a liquid in order to purify, fractionate or form the desired products.

“WTI” means West Texas Intermediate and is a grade of crude oil used as a common benchmark in oil pricing. WTI is a sweet crude oil and has a relatively low density.

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Items 1 and 2. Business and Properties

COMPANY OVERVIEW

References herein to HollyFrontier Corporation (“HollyFrontier”) include HollyFrontier and its consolidated subsidiaries. In accordance with the Securities and Exchange Commission’s (“SEC”) “Plain English” guidelines, this Annual Report on Form 10-K has been written in the first person. In this document, the words “we,” “our,” “ours” and “us” refer only to HollyFrontier and its consolidated subsidiaries or to HollyFrontier or an individual subsidiary and not to any other person, with certain exceptions. Generally, the words “we,” “our,” “ours” and “us” include Holly Energy Partners, L.P. (“HEP”) and its subsidiaries as consolidated subsidiaries of HollyFrontier, unless when used in disclosures of transactions or obligations between HEP and HollyFrontier or its other subsidiaries. This document contains certain disclosures of agreements that are specific to HEP and its consolidated subsidiaries and do not necessarily represent obligations of HollyFrontier. When used in descriptions of agreements and transactions, “HEP” refers to HEP and its consolidated subsidiaries.

We are principally an independent petroleum refiner that produces high-value light products such as gasoline, diesel fuel, jet fuel, specialty lubricant products, and specialty and modified asphalt. We were incorporated in Delaware in 1947 and maintain our principal corporate offices at 2828 N. Harwood, Suite 1300, Dallas, Texas 75201-1507. Our telephone number is 214-871-3555 and our internet website address is www.hollyfrontier.com. The information contained on our website does not constitute part of this Annual Report on Form 10-K. A print copy of this Annual Report on Form 10-K will be provided without charge upon written request to the Vice President, Investor Relations at the above address. A direct link to our SEC filings is available on our website under the Investor Relations tab. Also available on our website are copies of our Corporate Governance Guidelines, Audit Committee Charter, Compensation Committee Charter, Nominating / Corporate Governance Committee Charter, Environmental, Health, Safety, and Public Policy Committee Charter and Code of Business Conduct and Ethics, all of which will be provided without charge upon written request to the Vice President, Investor Relations at the above address. Our Code of Business Conduct and Ethics applies to all of our officers, employees and directors, including our principal executive officer, principal financial officer and principal accounting officer. Our common stock is traded on the New York Stock Exchange under the trading symbol “HFC.”

As of December 31, 2016, we:

- owned and operated a petroleum refinery in El Dorado, Kansas (the "El Dorado Refinery"), two refinery facilities located in Tulsa, Oklahoma (collectively, the "Tulsa Refineries"), a refinery in Artesia, New Mexico that is operated in conjunction with crude oil distillation and vacuum distillation and other facilities situated 65 miles away in Lovington, New Mexico (collectively, the “Navajo Refinery”), a refinery located in Cheyenne, Wyoming (the "Cheyenne Refinery") and a refinery in Woods Cross, Utah (the “Woods Cross Refinery”);
- owned and operated HollyFrontier Asphalt Company (“HFC Asphalt”) which operates various asphalt terminals in Arizona, New Mexico and Oklahoma;
- owned a 37% interest in HEP, which includes our 2% general partner interest.

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor Energy Inc. (“Suncor”) to acquire 100% of the outstanding capital stock of Petro-Canada Lubricants Inc. (“PCLI”) that closed on February 1, 2017. Cash consideration paid was \$862.1 million, or \$1.125 billion in Canadian dollars.

PCLI is located in Mississauga, Ontario and is the largest producer of base oils in Canada with a plant having 15,600 BPD of lubricant production capacity, and is the only North American producer of high margin Group III base oils. The facility is downstream integrated from base oils to finished lubricants and produces a broad spectrum of specialty

lubricants and white oils that are distributed to end customers worldwide. The acquisition brings HollyFrontier industry-leading product innovation and research and development capabilities, a global sales and distribution network and a strong brand portfolio recognized globally. With this transaction, we have also acquired a perpetual exclusive license to use the Petro-Canada trademark in association with the lubricant products. With the addition of PCLI, HollyFrontier becomes the fourth largest lubricants producer in North America with a capacity of 28,000 BPD, approximately 10% of North American production.

HEP is a consolidated variable interest entity (“VIE”) as defined under U.S. generally accepted accounting principles (“GAAP”). Information on HEP's assets and acquisitions completed between 2012 and 2016 can be found under the “Holly Energy Partners, L.P.” section provided later in this discussion of Items 1 and 2, “Business and Properties.”

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Our operations are currently organized into two reportable segments, Refining and HEP. The Refining segment includes the operations of our El Dorado, Tulsa, Navajo, Cheyenne and Woods Cross Refineries and HFC Asphalt. The HEP segment involves all of the operations of HEP. See Note 20 “Segment Information” in the Notes to Consolidated Financial Statements for additional information on our reportable segments.

REFINERY OPERATIONS

Our refinery operations serve the Mid-Continent, Southwest and Rocky Mountain regions of the United States. We own and operate five complex refineries having a combined crude oil processing capacity of 457,000 barrels per stream day. Each of our refineries has the complexity to convert discounted, heavy and sour crude oils into a high percentage of gasoline, diesel and other high-value refined products. For 2016, gasoline, diesel fuel, jet fuel and specialty lubricants (excluding volumes purchased for resale) represented 52%, 35%, 4% and 3%, respectively, of our total refinery sales volumes.

The tables presented below and elsewhere in this discussion of our refinery operations set forth information, including non-GAAP performance measures, about our refinery operations. The cost of products and refinery gross and net operating margins do not include the non-cash effects of lower of cost or market inventory valuation adjustments and depreciation and amortization. Reconciliations to amounts reported under GAAP are provided under “Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles” following Item 7A of Part II of this Form 10-K.

	Years Ended December 31,			
	2016	2015	2014	
Consolidated				
Crude charge (BPD) ⁽¹⁾	423,910	432,560	406,180	
Refinery throughput (BPD) ⁽²⁾	457,480	463,580	436,400	
Refinery production (BPD) ⁽³⁾	442,110	446,560	425,010	
Sales of produced refined products (BPD)	435,420	438,000	420,990	
Sales of refined products (BPD) ⁽⁴⁾	464,980	488,350	461,640	
Refinery utilization ⁽⁵⁾	92.8	% 97.6	% 91.7	%
Average per produced barrel ⁽⁶⁾				
Net sales		\$58.02	\$71.32	\$110.19
Cost of products ⁽⁷⁾		49.64	55.25	96.21
Refinery gross margin ⁽⁸⁾		8.38	16.07	13.98
Refinery operating expenses ⁽⁹⁾		5.57	5.71	6.38
Net operating margin ⁽⁸⁾		\$2.81	\$10.36	\$7.60
Refinery operating expenses per throughput barrel ⁽¹⁰⁾		\$5.30	\$5.39	\$6.16
Feedstocks:				
Sweet crude oil	48	% 51	% 53	%
Sour crude oil	26	% 25	% 23	%
Heavy sour crude oil	16	% 15	% 15	%
Black wax crude oil	3	% 2	% 2	%
Other feedstocks and blends	7	% 7	% 7	%
Total	100	% 100	% 100	%

(1)Crude charge represents the barrels per day of crude oil processed at our refineries.

(2)

Refinery throughput represents the barrels per day of crude and other refinery feedstocks input to the crude units and other conversion units at our refineries.

(3) Refinery production represents the barrels per day of refined products yielded from processing crude and other refinery feedstocks through the crude units and other conversion units at our refineries.

(4) Includes refined products purchased for resale.

Represents crude charge divided by total crude capacity (BPSD). Effective July 1, 2016, our consolidated crude

(5) capacity increased from 443,000 BPSD to 457,000 BPSD upon completion of our Woods Cross Refinery expansion project.

Represents average per barrel amount for produced refined products sold, which is a non-GAAP measure.

(6) Reconciliations to amounts reported under GAAP are provided under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 7A of Part II of this Form 10-K.

(7) Transportation, terminal and refinery storage costs billed from HEP are included in cost of products.

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Excludes lower of cost or market inventory valuation adjustments that increased refinery gross margin by \$291.9 (8) million for the year ended December 31, 2016 and decreased refinery gross margin by \$227.0 million and \$397.5 million for the years ended December 31, 2015 and 2014, respectively.

(9) Represents operating expenses of our refineries, exclusive of depreciation and amortization.

(10) Represents refinery operating expenses, exclusive of depreciation and amortization, divided by refinery throughput.

Principal Products and Customers

Set forth below is information regarding our principal products.

	Years Ended					
	December 31,					
	2016	2015	2014			
Consolidated						
Sales of produced refined products:						
Gasolines	52	%	52	%	50	%
Diesel fuels	35	%	35	%	34	%
Jet fuels	4	%	4	%	4	%
Fuel oil	2	%	1	%	2	%
Asphalt	2	%	2	%	3	%
Lubricants	3	%	3	%	2	%
LPG and other	2	%	3	%	5	%
Total	100%		100%		100%	

Light products are shipped to customers via product pipelines or are available for loading at our refinery truck facilities and terminals. Light products are also made available to customers at various other locations via exchange with other parties.

Our principal customers for gasoline include other refiners, convenience store chains, independent marketers and retailers. Diesel fuel is sold to other refiners, truck stop chains, wholesalers and railroads. Jet fuel is sold for commercial airline use. Specialty lubricant products are sold in both commercial and specialty markets. LPG's are sold to LPG wholesalers and LPG retailers. We produce and purchase asphalt products that are sold to governmental entities, paving contractors or manufacturers. Asphalt is also blended into fuel oil and is either sold locally or is shipped to the Gulf Coast. See Note 22 "Significant Customers" in the Notes to Consolidated Financial Statements for additional information on our significant customers.

Mid-Continent Region (El Dorado and Tulsa Refineries)

Facilities

The El Dorado Refinery is a high-complexity coking refinery with a 135,000 barrels per stream day processing capacity and the ability to process significant volumes of heavy and sour crudes. The integrated refining processes at the Tulsa West and East refinery facilities provide us with a highly complex refining operation having a combined crude processing rate of approximately 125,000 barrels per stream day. For 2016, gasoline, diesel fuel, jet fuel and specialty lubricants (excluding volumes purchased for resale) represented 50%, 33%, 7% and 5%, respectively, of our Mid-Continent sales volumes.

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The following table sets forth information about our Mid-Continent region operations, including non-GAAP performance measures.

	Years Ended December 31,		
	2016	2015	2014
Mid-Continent Region (El Dorado and Tulsa Refineries)			
Crude charge (BPD) ⁽¹⁾	262,170	263,340	243,240
Refinery throughput (BPD) ⁽²⁾	280,920	277,260	255,020
Refinery production (BPD) ⁽³⁾	269,840	266,170	249,350
Sales of produced refined products (BPD)	261,200	258,420	245,600
Sales of refined products (BPD) ⁽⁴⁾	285,080	295,470	273,630
Refinery utilization ⁽⁵⁾	100.8 %	101.3 %	93.6 %
Average per produced barrel ⁽⁶⁾			
Net sales	\$58.14	\$72.33	\$110.79
Cost of products ⁽⁷⁾	50.17	56.88	98.39
Refinery gross margin ⁽⁸⁾	7.97	15.45	12.40
Refinery operating expenses ⁽⁹⁾	4.69	4.95	5.73
Net operating margin ⁽⁸⁾	\$3.28	\$10.50	\$6.67
Refinery operating expenses per throughput barrel ⁽¹⁰⁾	\$4.36	\$4.61	\$5.52

	Years Ended		
	December 31,		
	2016	2015	2014
Mid-Continent Region (El Dorado and Tulsa Refineries)			
Feedstocks:			
Sweet crude oil	58 %	59 %	71 %
Sour crude oil	18 %	21 %	11 %
Heavy sour crude oil	17 %	15 %	14 %
Other feedstocks and blends	7 %	5 %	4 %
Total	100%	100%	100%

Footnote references are provided under our Consolidated Refinery Operating Data table on page 7.

The El Dorado Refinery is located on 1,100 acres south of El Dorado, Kansas and is a fully integrated refinery. The principal processing units at the El Dorado Refinery consist of crude and vacuum distillation; hydrodesulfurization of naphtha, kerosene, diesel, and gas oil streams; isomerization; catalytic reforming; aromatics recovery; catalytic cracking; alkylation; delayed coking; hydrogen production; and sulfur recovery. Refining operations began at the site in 1917 and the operating units now present include both newly constructed units and older units that have been upgraded over the years.

The Tulsa West facility is located on a 750-acre site in Tulsa, Oklahoma situated along the Arkansas River. The principal processing units at the Tulsa West facility consist of crude and vacuum distillation (with light ends recovery), naphtha hydrodesulfurization, propane de-asphalting, lubes extraction, MEK dewaxing, delayed coker and butane splitter units. Most of the operating units at the facility currently in service were built in the late 1950s and early 1960s. The refinery was reconfigured to emphasize specialty lubricant production in the early 1990s.

The Tulsa East facility is located on a 466-acre site also in Tulsa, Oklahoma situated along the Arkansas River. The principal process units at the Tulsa East facility consist of crude and vacuum distillation, naphtha

hydrodesulfurization, FCC, isomerization, catalytic reforming, alkylation, scanfiner, diesel hydrodesulfurization and sulfur units.

Markets and Competition

The primary markets for the El Dorado Refinery's refined products are Colorado and the Plains States, which include the Kansas City metropolitan area. The gasoline, diesel and jet fuel produced by the El Dorado Refinery are primarily shipped via pipeline to terminals for distribution by truck or rail. We ship product via the NuStar Pipeline Operating Partnership L.P. Pipeline to the northern Plains States, via the Magellan Pipeline Company, L.P. ("Magellan") mountain pipeline to Denver, Colorado, and on the Magellan mid-continent pipeline to the Plains States. Additionally, HEP's on-site truck and rail racks facilitate access to local refined product markets.

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The El Dorado Refinery faces competition from other Plains States and Mid-Continent refiners, but the principal competitors for the El Dorado Refinery are Gulf Coast refiners. Our Gulf Coast competitors typically have lower production costs due to greater economies of scale; however, they incur higher refined product transportation costs, which allows the El Dorado Refinery to compete effectively in the Plains States and Rocky Mountain region with Gulf Coast refineries.

The Tulsa Refineries serve the Mid-Continent region of the United States. Distillates and gasolines are primarily delivered from the Tulsa Refineries to market via pipelines owned and operated by Magellan. These pipelines connect the refinery to distribution channels throughout Colorado, Oklahoma, Kansas, Missouri, Illinois, Iowa, Minnesota, Nebraska and Arkansas. Additionally, HEP's on-site truck and rail racks facilitate access to local refined product markets.

We have an offtake agreement through November 2019 with an affiliate of Sinclair whereby Sinclair purchases 45,000 to 50,000 BPD of gasoline and distillate products at market prices from us to supply its branded and unbranded marketing network throughout the Midwest. Upon expiration, the offtake agreement can be renewed by Sinclair for an additional five-year term. For the year ended December 31, 2016, sales to Sinclair represented approximately 26% of the Tulsa Refineries' total sales and 9% of our total consolidated sales.

The Tulsa Refineries' principal customers for conventional gasoline include Sinclair, other refiners, convenience store chains, independent marketers and retailers. Sinclair, truck stop operators and railroads are the primary diesel customers. Jet fuel is sold primarily for commercial use. The refinery's asphalt and roofing flux products are sold via truck or railcar directly from the refineries or to customers throughout the Mid-Continent region primarily to paving contractors and manufacturers of roofing products.

For the year ended December 31, 2016, sales to Shell Oil represented approximately 10% of our Mid-Continent refineries' total sales and 10% of our total consolidated sales. We have a sales agreement with an affiliate of Shell Oil under which Shell Oil purchases gasoline and diesel production of the El Dorado Refinery and Tulsa Refineries at market prices through October 2018 primarily to support its branded marketing network.

Our Tulsa West facility also produces specialty lubricant products sold in both commercial and specialty markets throughout North America and to customers with operations in Central America and South America. The specialty lubricant products are high-value products that provide a significantly higher margin contribution to the refinery. Base oil customers include blender-compounders who prepare the various finished lubricant and grease products sold to end users. Agricultural products are formulated as supplemental carriers for herbicides and as Environmental Protection Agency ("EPA") registered pesticide oils, are sold to product formulators. Process oil customers include rubber and chemical industry customers. Specialty waxes are sold primarily to packaging customers as coating material for paper and cardboard, and to non-packaging customers in the construction materials, adhesive and candle-making markets. Our production represents approximately 5% of paraffinic oil capacity and 14% of wax production capacity in the United States market and is one of four refineries of specialty aromatic oils in North America.

Principal Products

Set forth below is information regarding the principal products produced at our El Dorado and Tulsa Refineries:

	Years Ended		
	December 31,		
	2016	2015	2014
Mid-Continent Region (El Dorado and Tulsa Refineries)			
Sales of produced refined products:			
Gasolines	50 %	50 %	47 %
Diesel fuels	33 %	33 %	33 %

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Jet fuels	7	%	7	%	7	%
Fuel oil	1	%	1	%	1	%
Asphalt	2	%	2	%	3	%
Lubricants	5	%	4	%	4	%
LPG and other	2	%	3	%	5	%
Total	100	%	100	%	100	%

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Crude Oil and Feedstock Supplies

Both of our Mid-Continent Refineries are connected via pipeline to Cushing, Oklahoma, a significant crude oil pipeline trading and storage hub. The El Dorado Refinery and the Tulsa Refineries are located approximately 125 miles and 50 miles, respectively, from Cushing, Oklahoma. Local pipelines provide direct access to regional Oklahoma crude production as well as access to United States onshore and Canadian crudes. The proximity of the refineries to the Cushing pipeline and storage hub provides the flexibility to optimize their crude slate with a wide variety of crude oil supply options. Additionally, we have transportation service agreements to transport Canadian crude oil on the Spearhead and Keystone Pipelines, enabling us to transport Canadian crude oil to Cushing for subsequent shipment to either of our Mid-Continent Refineries.

We also purchase isobutane, natural gasoline, butane and other feedstocks for processing at our Mid-Continent Refineries. The El Dorado Refinery is connected to Conway, Kansas, a major gas liquids trading and storage hub, via the Oneok Pipeline. From time to time, other feedstocks such as gas oil, naphtha and light cycle oil are purchased from other refiners for use at our refineries.

Southwest Region (Navajo Refinery)

Facilities

The Navajo Refinery has a crude oil processing capacity of 100,000 barrels per stream day and has the ability to process sour crude oils into high-value light products such as gasoline, diesel fuel and jet fuel. For 2016, gasoline and diesel fuel (excluding volumes purchased for resale) represented 54% and 40%, respectively, of our Southwest sales volumes.

The following table sets forth information about our Southwest region operations, including non-GAAP performance measures.

	Years Ended December 31,		
	2016	2015	2014
Southwest Region (Navajo Refinery)			
Crude charge (BPD) ⁽¹⁾	98,090	100,450	98,120
Refinery throughput (BPD) ⁽²⁾	107,690	111,840	110,250
Refinery production (BPD) ⁽³⁾	106,460	110,210	107,520
Sales of produced refined products (BPD)	108,280	111,580	106,870
Sales of refined products (BPD) ⁽⁴⁾	110,740	119,560	115,620
Refinery utilization ⁽⁵⁾	98.1 %	100.5 %	98.1 %
Average per produced barrel ⁽⁶⁾			
Net sales	\$57.87	\$69.76	\$110.54
Cost of products ⁽⁷⁾	48.68	53.57	94.58
Refinery gross margin ⁽⁸⁾	9.19	16.19	15.96
Refinery operating expenses ⁽⁹⁾	4.72	4.92	5.43
Net operating margin ⁽⁸⁾	\$4.47	\$11.27	\$10.53
Refinery operating expenses per throughput barrel ⁽¹⁰⁾	\$4.75	\$4.91	\$5.26
Feedstocks:			
Sweet crude oil	28 %	36 %	13 %
Sour crude oil	63 %	54 %	74 %
Heavy sour crude oil	— %	— %	2 %
Other feedstocks and blends	9 %	10 %	11 %

Total 100% 100% 100%

Footnote references are provided under our Consolidated Refinery Operating Data table on page 7.

The Navajo Refinery's Artesia, New Mexico facility is located on a 561-acre site and is a fully integrated refinery with crude distillation, vacuum distillation, FCC, ROSE (solvent deasphalter), HF alkylation, catalytic reforming, hydrodesulfurization, mild hydrocracking, isomerization, sulfur recovery and product blending units. The operating units at the Artesia facility include newly constructed units, older units that have been relocated from other facilities and upgraded and re-erected in Artesia, and units that have been operating as part of the Artesia facility (with periodic major maintenance) for many years, in some very limited cases since before 1970.

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The Artesia facility is operated in conjunction with a refining facility located in Lovington, New Mexico, approximately 65 miles east of Artesia. The principal equipment at the Lovington facility consists of a crude distillation unit and associated vacuum distillation units that were constructed after 1970. The Lovington facility processes crude oil into intermediate products that are transported to Artesia by means of three intermediate pipelines owned by HEP. These products are then upgraded into finished products at the Artesia facility. The combined crude oil capacity of the Navajo Refinery facilities is 100,000 BPSD and it typically processes or blends an additional 10,000 BPSD of natural gasoline, butane, gas oil and naphtha.

Markets and Competition

The Navajo Refinery primarily serves the southwestern United States market, including the metropolitan areas of El Paso, Texas; Albuquerque, Moriarty and Bloomfield, New Mexico; Phoenix and Tucson, Arizona; and portions of northern Mexico. Our products are shipped through HEP's pipelines from Artesia, New Mexico to El Paso, Texas and from El Paso to Albuquerque and to Mexico via products pipeline systems owned by Magellan and from El Paso to Tucson and Phoenix via a products pipeline system owned by Kinder Morgan's subsidiary, SFPP, L.P. ("SFPP"). In addition, petroleum products from the Navajo Refinery are transported to markets in northwest New Mexico, to Moriarty, New Mexico, near Albuquerque, via HEP's pipelines running from Artesia to San Juan County, New Mexico, and to Bloomfield, New Mexico. We have refined product storage through our pipelines and terminals agreement with HEP at terminals in El Paso, Texas; Tucson, Arizona; and Artesia and Moriarty, New Mexico.

El Paso Market

The El Paso market for refined products is currently supplied by a number of area and Gulf Coast refiners and pipelines. Area refiners include Navajo, WRB Refining, LLC ("WRB") (a joint venture between Phillips 66 and Cenovus Energy), Valero, Alon USA, Inc. ("Alon") and Western Refining. Pipelines serving this market are owned by Magellan, NuStar Energy L.P. and HEP. Refined products from the Gulf Coast are transported via Magellan pipelines.

Arizona Market

The Arizona market for refined products is currently supplied by a number of refiners via pipelines and trucks. Refiners include companies located in west Texas, eastern New Mexico, northern New Mexico, the Gulf Coast and the West Coast. Magellan's pipeline systems deliver refined products from the Texas Gulf Coast to El Paso and, through interconnections with third-party common carrier pipelines, into the Arizona market.

New Mexico Markets

The Artesia, Albuquerque, Moriarty and Bloomfield markets are supplied by a number of refiners via pipelines and trucks. Refiners include Navajo, Valero, Western Refining, Alon and WRB.

We use a common carrier pipeline out of El Paso to serve the Albuquerque market. In addition, HEP leases from Mid-America Pipeline Company, L.L.C., a pipeline between White Lakes, New Mexico and the Albuquerque vicinity and Bloomfield, New Mexico. The lease agreement currently runs through 2026, and HEP has options to renew for one additional ten-year period. HEP owns and operates a 12-inch pipeline from the Navajo Refinery to the leased pipeline as well as terminalling facilities in Moriarty, which is 40 miles east of Albuquerque. This facility permits us to ship light products to the Albuquerque and Santa Fe, New Mexico areas. In addition, we serve southern Colorado and northern Arizona primarily out of a terminal in Bloomfield, New Mexico, which is owned by Western Refining.

Principal Products

Set forth below is information regarding the principal products produced at our Navajo Refinery:

Years Ended
December 31,
2016 2015 2014

Southwest Region (Navajo Refinery)

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Sales of produced refined products:

Gasolines	54 %	55 %	54 %
Diesel fuels	40 %	39 %	38 %
Fuel oil	3 %	2 %	4 %
Asphalt	1 %	1 %	1 %
LPG and other	2 %	3 %	3 %
Total	100%	100%	100%

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Crude Oil and Feedstock Supplies

The Navajo Refinery is situated near the Permian Basin, an area that has historically, and continues to have, abundant supplies of crude oil available both for regional users and for export to other areas. We purchase crude oil from independent producers in southeastern New Mexico and west Texas as well as from major oil companies. The crude oil is gathered through HEP's pipelines and through third-party tank trucks and crude oil pipeline systems for delivery to the Navajo Refinery.

We also purchase volumes of isobutane, natural gasoline and other feedstocks to supply the Navajo Refinery from sources in Texas and the Mid-Continent area that are delivered to our region on a common carrier pipeline owned by Enterprise Products, L.P. Ultimately all volumes of these products are shipped to the Artesia refining facilities on HEP's intermediate pipelines running from Lovington to Artesia. From time to time, we purchase gas oil, naphtha and light cycle oil from other refiners for use as feedstock.

Rocky Mountain Region (Cheyenne and Woods Cross Refineries)

Facilities

The Cheyenne and the Woods Cross Refineries have crude oil processing capacities of 52,000 and 45,000 barrels per stream day, respectively. The Cheyenne Refinery processes heavy Canadian crudes as well as local sweet crudes such as that produced from the Bakken shale and similar resources. The Woods Cross Refinery processes regional sweet and black wax crude as well as Canadian sour crude oils into high-value light products. For 2016, gasoline and diesel fuel (excluding volumes purchased for resale) represented 60% and 33%, respectively, of our Rocky Mountain sales volumes.

The following table sets forth information about our Rocky Mountain region operations, including non-GAAP performance measures.

	Years Ended December 31,		
	2016	2015	2014
Rocky Mountain Region (Cheyenne and Woods Cross Refineries)			
Crude charge (BPD) ⁽¹⁾	63,650	68,770	64,820
Refinery throughput (BPD) ⁽²⁾	68,870	74,480	71,130
Refinery production (BPD) ⁽³⁾	65,810	70,180	68,140
Sales of produced refined products (BPD)	65,940	68,000	68,520
Sales of refined products (BPD) ⁽⁴⁾	69,160	73,320	72,390
Refinery utilization ⁽⁵⁾	65.6 %	82.9 %	78.1 %
Average per produced barrel ⁽⁶⁾			
Net sales	\$57.80	\$70.05	\$107.51
Cost of products ⁽⁷⁾	49.13	51.80	90.95
Refinery gross margin ⁽⁸⁾	8.67	18.25	16.56
Refinery operating expenses ⁽⁹⁾	10.45	9.89	10.20
Net operating margin ⁽⁸⁾	\$(1.78)	\$8.36	\$6.36
Refinery operating expenses per throughput barrel ⁽¹⁰⁾	\$10.01	\$9.03	\$9.83
Feedstocks:			
Sweet crude oil	39 %	42 %	44 %
Sour crude oil	— %	— %	2 %
Heavy sour crude oil	35 %	37 %	30 %

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Black wax crude oil	18	%	13	%	15	%
Other feedstocks and blends	8	%	8	%	9	%
Total	100	%	100	%	100	%

Footnote references are provided under our Consolidated Refinery Operating Data table on page 7.

The Cheyenne Refinery facility is located on a 255-acre site and is a fully integrated refinery with crude distillation, vacuum distillation, coking, FCC, HF alkylation, catalytic reforming, hydrodesulfurization of naphtha and distillates, butane isomerization, hydrogen production, sulfur recovery and product blending units. The operating units at the Cheyenne Refinery include both newly constructed units and older units that have been upgraded over the years.

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The Woods Cross Refinery facility is located on a 200-acre site and is a fully integrated refinery with crude distillation, solvent deasphalter, FCC, HF alkylation, catalytic reforming, hydrodesulfurization, isomerization, sulfur recovery and product blending units. The operating units at the Woods Cross Refinery include newly constructed units, older units that have been relocated from other facilities, upgraded and re-erected in Woods Cross, and units that have been operating as part of the Woods Cross facility (with periodic major maintenance) for many years, in some very limited cases since before 1950. The facility typically processes or blends an additional 2,000 BPSD of natural gasoline, butane and gas oil over its 45,000 BPSD capacity.

We have recently curtailed production at the Woods Cross refinery due to insufficient crude supply provided by the Plains Rocky Mountain Pipeline. We are unable to predict the duration of the supply disruption at this time, but are considering alternative solutions and working with Plains and others to rectify the situation.

We own and operate 4 miles of hydrogen pipeline that connects the Woods Cross Refinery to a hydrogen plant located on the property of Chevron's Salt Lake City Refinery. Additionally, HEP owns and operates 12 miles of crude oil and refined products pipelines that allows us to connect our Woods Cross Refinery to common carrier pipeline systems.

We have completed construction on our existing Woods Cross expansion project, increasing crude processing capacity to 45,000 BPSD, and providing greater crude slate flexibility, which we believe will increase capacity utilization and improve overall economic returns during periods when wax crudes are in short supply. The project also included construction of new refining facilities and a new rail loading rack for intermediates and finished products associated with refining waxy crude oil.

On November 18, 2013, the Utah Division of Air Quality issued a revised air quality permit (the "Approval Order") authorizing the expansion. On December 18, 2013, two local environmental groups filed an administrative appeal challenging the issuance of the Approval Order and seeking a stay of the Approval Order. Following an extended appeal process, the Executive Director of the Utah Department of Environmental Quality issued a final order in favor of Woods Cross on all claims on March 31, 2015, and dismissed the project opponents' arguments with prejudice. On April 27, 2015, the opponents filed a petition for review and notice of appeal with the Utah Court of Appeals challenging the agency's decision to uphold the permit and dismiss the project opponents' arguments. On August 4, 2016, the Utah Court of Appeals transferred the case to the Utah Supreme Court. The Utah Supreme Court established a supplemental briefing schedule, which ran through October 2016. Oral argument took place on December 14, 2016 and focused primarily on alleged procedural defects in the Petitioner's appeal. The Court took the matter under advisement and will issue a written decision. Our continued use of the expansion project facilities is subject to the Woods Cross Refinery successfully defending the Approval Order on appeal at the Utah Court of Appeals.

Markets and Competition

The Cheyenne Refinery primarily markets its products in eastern Colorado, including metropolitan Denver, eastern Wyoming and western Nebraska. Because of the location of the Cheyenne Refinery, we are able to sell a significant portion of its diesel directly from the truck rack at the refinery, therefore, eliminating transportation costs. The Cheyenne Refinery ships refined products via the Magellan pipeline serving Denver and Colorado Springs, Colorado.

Denver Market

The most competitive market for the Cheyenne Refinery is the Denver metropolitan area. Three other refineries supply the Denver market: Wyoming refineries near Rawlins and in Casper owned by Sinclair and a refinery in Denver owned by Suncor. Five product pipelines also supply Denver, including three from outside the region.

Utah Market

The Woods Cross Refinery's primary market is Utah, which is currently supplied by a number of local refiners and the Pioneer Pipeline. In addition to our Woods Cross Refinery, local area refiners include Chevron, Tesoro, Big West and

Silver Eagle. Other refiners that ship into the Woods Cross market via the Pioneer Pipeline include Sinclair, ExxonMobil, CHS and Phillips 66. We estimate the four local refineries that compete with our Woods Cross Refinery have a combined capacity to process approximately 165,000 BPD of crude oil. The five Utah refineries collectively supply an estimated 70% of the gasoline and distillate products consumed in the states of Utah and Idaho, with the remainder imported from refineries in Wyoming and Montana via the Pioneer Pipeline owned jointly by Sinclair and Phillips 66. Approximately 40% - 45% of the gasoline and diesel fuel produced by our Woods Cross Refinery is sold through a network of Phillips 66 branded marketers under a long-term supply agreement.

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Idaho, Wyoming, Eastern Washington and Nevada Markets

We supply a small percentage of the refined products consumed in the combined Idaho, Wyoming, eastern Washington and Nevada markets. Our Woods Cross Refinery ships refined products over a common carrier pipeline system owned by Tesoro Logistics Northwest Pipelines LLC (“Tesoro Logistics”) to numerous terminals, including HEP’s terminal at Spokane, Washington and to terminals at Pocatello and Boise, Idaho and Pasco, Washington that are owned by Tesoro Logistics. We sell to branded and unbranded customers in these markets. In 2012, we began shipping refined products to Cedar City, Utah and Las Vegas, Nevada via the UNEV Pipeline. The majority of the Las Vegas, Nevada market for refined products is supplied by various West Coast refiners and suppliers via Kinder Morgan’s CalNev common carrier pipeline system.

Principal Products

Set forth below is information regarding the principal products produced at our Cheyenne and Woods Cross Refineries:

	Years Ended December 31,		
	2016	2015	2014
Rocky Mountain Region (Cheyenne and Woods Cross Refineries)			
Sales of produced refined products:			
Gasolines	60 %	57 %	56 %
Diesel fuels	33 %	36 %	33 %
Fuel oil	2 %	3 %	1 %
Asphalt	3 %	2 %	5 %
LPG and other	2 %	2 %	5 %
Total	100%	100%	100%

Crude Oil and Feedstock Supplies

Crude oil is transported to the Cheyenne Refinery from suppliers in Canada, Colorado, Nebraska, North Dakota and Montana via common carrier pipelines owned by Spectra, Plains and Suncor Energy, as well as by truck. The Woods Cross Refinery currently obtains crude oil from suppliers in Canada, Wyoming, Utah and Colorado as delivered via common carrier pipelines that originate in Canada, Wyoming and Colorado. We also receive crude oil via the SLC Pipeline, a joint venture common carrier pipeline in which HEP owns a 25% interest. Supplies of black wax crude oil are shipped via truck.

HollyFrontier Asphalt Company

We manufacture commodity and modified asphalt products at our manufacturing facilities located in Glendale, Arizona; Albuquerque, New Mexico; Artesia, New Mexico and Catoosa, Oklahoma. Our Albuquerque and Artesia facilities manufacture modified hot asphalt products and commodity emulsions from base asphalt materials provided by our refineries and third-party suppliers. Our Glendale facility manufactures modified hot asphalt products from base asphalt materials provided by our refineries and third-party suppliers. Our Catoosa facility manufactures specialty modified asphalt and commodity asphalt products. We market these asphalt products in Arizona, New Mexico, Oklahoma, Kansas, Missouri, Texas and northern Mexico. Our products are shipped via third-party trucking companies to commercial customers that provide asphalt based materials for commercial and government projects.

HOLLY ENERGY PARTNERS, L.P.

HEP is a Delaware limited partnership that trades on the New York Stock Exchange under the trading symbol “HEP.” HEP owns and operates logistic assets consisting of petroleum product and crude oil pipelines, terminals, tankage, loading rack facilities and refinery processing units that principally support our refining and marketing operations in the Mid-Continent, Southwest and Rocky Mountain regions of the United States and Alon's refinery in Big Spring, Texas. Additionally, HEP owns a 75% interest in UNEV Pipeline, LLC (“UNEV”), the owner of a pipeline running from Woods Cross, Utah to Las Vegas, Nevada (the “UNEV Pipeline”) and associated product terminals; a 50% interest in Frontier Aspen LLC, the owner of a pipeline running from Wyoming to Frontier Station, Utah (the “Frontier Pipeline”); a 50% interest in Osage Pipe Line Company, LLC, the owner of a pipeline running from Cushing, Oklahoma to El Dorado, Kansas (the “Osage Pipeline”); a 50% interest in Cheyenne Pipeline, LLC, the owner of a pipeline running from Fort Laramie, Wyoming to Cheyenne, Wyoming (the “Cheyenne Pipeline”); and a 25% interest in SLC Pipeline, LLC, the owner of a pipeline (the “SLC Pipeline”) that serves refineries in the Salt Lake City, Utah area.

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HEP generates revenues by charging tariffs for transporting petroleum products and crude oil through its pipelines, by leasing certain pipeline capacity to Alon, by charging fees for terminalling and storing refined products and other hydrocarbons and providing other services at its storage tanks, terminals and refinery processing units. HEP does not take ownership of products that it transports, terminals, stores or refines; therefore, it is not directly exposed to changes in commodity prices.

HEP's recent acquisitions (2012 through present) are summarized below:

Woods Cross Assets

On October 3, 2016, HEP acquired from us all the membership interests of Woods Cross Operating LLC, which owns the crude unit, FCCU and polymerization unit of the first phase of our Woods Cross Refinery expansion project that was completed in the second quarter of 2016, for cash consideration of approximately \$278.0 million. In connection with this transaction, we entered into 15-year tolling agreements containing minimum quarterly throughput commitments that provide minimum annualized payments to HEP of \$56.7 million.

Cheyenne Pipeline

On June 3, 2016, HEP acquired a 50% interest in Cheyenne Pipeline LLC, owner of the Cheyenne Pipeline, in exchange for a contribution of \$42.6 million in cash to Cheyenne Pipeline LLC. Cheyenne Pipeline will continue to be operated by an affiliate of Plains All American Pipeline, L.P. ("Plains"), which owns the remaining 50% interest. The 87-mile crude oil pipeline runs from Fort Laramie, Wyoming to Cheyenne, Wyoming and has an 80,000 BPD capacity.

Tulsa Tanks

On March 31, 2016, HEP acquired crude oil tanks located at our Tulsa Refineries from Plains for \$39.5 million. Previously in 2009, we sold these tanks to Plains and leased them back, and due to our continuing interest in the tanks, we accounted for the transaction as a financing arrangement. Accordingly, the tanks remained on our balance sheet and were depreciated for accounting purposes, and the proceeds received from Plains were recorded as a financing obligation and presented as a component of outstanding debt.

In accounting for HEP's March 2016 purchase from Plains, the amount paid was recorded against our outstanding financing obligation balance of \$30.8 million, with the excess \$8.7 million payment resulting in a loss on early extinguishment of debt.

Magellan Asset Exchange

On February 22, 2016, we obtained a 50% membership interest in Osage Pipe Line Company, LLC ("Osage") in exchange for a 20-year terminalling services agreement, whereby, a subsidiary of Magellan Midstream Partners ("Magellan Midstream") will provide terminalling services for all of our products originating in Artesia, New Mexico that require terminalling in or through El Paso, Texas. Under the agreement, we will be charged tariffs based on the volumes of refined product processed. Osage is the owner of the Osage pipeline, a 135-mile pipeline that transports crude oil from Cushing, Oklahoma to our El Dorado Refinery in Kansas and also has a connection to the Jayhawk pipeline that services the CHS refinery in McPherson, Kansas. The Osage pipeline is the primary pipeline that supplies our El Dorado Refinery with crude oil.

Also on February 22, 2016, we contributed the 50% membership interest in Osage to HEP, and in exchange received HEP's El Paso terminal. Pursuant to this exchange, HEP agreed to build two connections to Magellan Midstream's El Paso terminal. In addition, HEP agreed to become operator of the Osage Pipeline.

El Dorado Asset Transaction

On November 1, 2015, HEP acquired from us newly constructed naphtha fractionation and hydrogen generation units at our El Dorado Refinery for cash consideration of \$62.0 million. In connection with this transaction, we entered into

15-year tolling agreements containing minimum quarterly throughput commitments that provide minimum annualized payments to HEP of \$15.1 million.

Frontier Pipeline Transaction

On August 31, 2015, HEP purchased a 50% interest in Frontier Aspen LLC (previously known as Frontier Pipeline Company), owner of the Frontier Pipeline, from an affiliate of Enbridge, Inc. for \$55.0 million. Frontier Pipeline will continue to be operated by an affiliate of Plains, which owns the remaining 50% interest. The 289-mile crude oil pipeline runs from Casper, Wyoming to Frontier Station, Utah and has a 72,000 BPD capacity, and supplies Canadian and Rocky Mountain crudes to Salt Lake City area refiners through a connection to the SLC Pipeline.

Crude Tank Farm Asset Transaction

On March 6, 2015, HEP purchased an existing crude tank farm adjacent to our El Dorado Refinery from an unrelated third-party for \$27.5 million in cash. We are the main customer of this crude tank farm.

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UNEV Interest Transaction

On July 12, 2012, HEP acquired from us our 75% interest in UNEV. We received consideration consisting of \$260.0 million in cash and 1.0 million HEP common units. UNEV owns the UNEV Pipeline, a 12-inch refined products pipeline running from Salt Lake City, Utah to Las Vegas, Nevada together with terminal facilities in Cedar City, Utah and North Las Vegas.

Transportation Agreements

Agreements with HEP

HEP serves our refineries under long-term pipeline, terminal and tankage throughput agreements and refinery processing tolling agreements expiring from 2019 through 2036. Under these agreements, we pay HEP fees to transport, store and process throughput volumes of refined products, crude oil and feedstocks on HEP's pipelines, terminals, tankage, loading rack facilities and refinery processing units that result in minimum annual payments to HEP, including UNEV (a consolidated subsidiary of HEP). Under these agreements, the agreed upon tariff rates are subject to annual tariff rate adjustments on July 1 at a rate based upon the percentage change in Producer Price Index ("PPI") or Federal Energy Regulatory Commission index. As of December 31, 2016, these agreements result in minimum annualized payments to HEP of \$321.0 million.

Our transactions with HEP including the transactions discussed above and fees paid under our transportation agreements with HEP and UNEV are eliminated and have no impact on our consolidated financial statements.

Agreement with Alon

HEP has a 15-year pipelines and terminals agreement with Alon expiring in 2020, under which Alon has agreed to transport on HEP's pipelines and throughput through its terminals, volumes of refined products that results in a minimum level of annual revenue. The agreed upon tariff rates are increased or decreased annually at a rate equal to the percentage change in PPI, but will not decrease below the initial tariff rate. Also, HEP has a capacity lease agreement with Alon under which Alon leases space on HEP's Orla to El Paso pipeline for the shipment of up to 15,000 barrels of refined product per day. The terms under this agreement expire in 2018 through 2022.

As of December 31, 2016, HEP's assets include:

Pipelines

approximately 810 miles of refined product pipelines, including 340 miles of leased pipelines, that transport gasoline, diesel and jet fuel principally from our Navajo Refinery in New Mexico to our customers in the metropolitan and rural areas of Texas, New Mexico, Arizona, Colorado, Utah and northern Mexico;

approximately 510 miles of refined product pipelines that transport refined products from Alon's Big Spring refinery in Texas to its customers in Texas and Oklahoma;

two 65-mile pipelines that transport intermediate feedstocks and crude oil from our Navajo Refinery crude oil distillation and vacuum facilities in Lovington, New Mexico to our petroleum refinery facilities in Artesia, New Mexico;

one 65-mile intermediate pipeline that is used for the shipment of crude oil from the gathering systems in Barnsdall and Beeson, New Mexico to our Navajo Refinery.

approximately 940 miles of crude oil trunk, gathering and connection pipelines located in west Texas, New Mexico and Oklahoma that primarily deliver crude oil to our Navajo Refinery;

approximately 8 miles of refined product pipelines that support our Woods Cross Refinery located near Salt Lake City, Utah;

gasoline and diesel connecting pipelines that support our Tulsa East facility;

five intermediate product and gas pipelines between our Tulsa East and Tulsa West facilities;
• crude receiving assets located at our Cheyenne Refinery;
• a 75% interest in the UNEV Pipeline, a 427-mile, 12-inch refined products pipeline running from Woods Cross, Utah to Las Vegas, Nevada;
• a 50% interest in the Osage Pipeline, a 135-mile pipeline that transports crude oil from Cushing, Oklahoma to our El Dorado Refinery and also has a connection to the Jayhawk pipeline that services the CHS refinery in McPherson, Kansas;
• a 50% interest in the Cheyenne Pipeline, an 87-mile crude oil pipeline running from Fort Laramie, Wyoming to Cheyenne, Wyoming;
• a 50% interest in the Frontier Pipeline, a 289-mile crude oil pipeline running from Casper, Wyoming to Frontier Station, Utah through a connection to the SLC Pipeline; and
• a 25% interest in the SLC Pipeline, a 95-mile intrastate crude oil pipeline system that transports crude oil into the Salt Lake City, Utah area from the Utah terminus of the Frontier Pipeline, as well as crude oil flowing from Wyoming and Utah via Plains Rocky Mountain Pipeline.

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Refined Product Terminals and Refinery Tankage

- three refined product terminals located in Moriarty and Bloomfield, New Mexico; and Tucson, Arizona, with an aggregate capacity of approximately 600,000 barrels, that are integrated with HEP's refined product pipeline system that serves our Navajo Refinery;
- one refined product terminal located in Spokane, Washington, with a capacity of approximately 400,000 barrels, that serves third-party common carrier pipelines;
- one refined product terminal near Mountain Home, Idaho, with a capacity of 120,000 barrels, that serves a nearby United States Air Force Base;
- two refined product terminals, located in Wichita Falls and Abilene, Texas, and one tank farm in Orla, Texas with aggregate capacity of approximately 500,000 barrels, that are integrated with HEP's refined product pipelines that serve Alon's Big Spring, Texas refinery;
- a refined product loading rack facility at each of our El Dorado, Tulsa, Navajo, Cheyenne and Woods Cross Refineries, heavy product / asphalt loading rack facilities at our Tulsa East facility, Navajo Refinery Lovington facility and Cheyenne Refinery, LPG loading rack facilities at our El Dorado Refinery, Tulsa West facility and Cheyenne Refinery, lube oil loading racks at our Tulsa West facility and crude oil Leased Automatic Custody Transfer units located at our Cheyenne Refinery;
- on-site crude oil tankage at our Tulsa, El Dorado, Navajo, Cheyenne and Woods Cross Refineries having an aggregate storage capacity of approximately 1,350,000 barrels;
- on-site refined and intermediate product tankage at our El Dorado, Tulsa and Cheyenne Refineries having an aggregate storage capacity of approximately 8,800,000 barrels;
- eleven crude oil tanks adjacent to our El Dorado Refinery with a capacity of approximately 1,200,000 barrels that primarily serve our El Dorado Refinery;
- a 75% interest in UNEV Pipeline's product terminals near Cedar City, Utah and Las Vegas, Nevada with an aggregate capacity of approximately 615,000 barrels; and
- a 50% interest in Frontier Pipeline's tankage with an aggregate capacity of approximately 72,000 barrels.

Refinery Processing Units

- a naphtha fractionation tower at our El Dorado Refinery, with a capacity of 50,000 BPD of desulfurized naphtha;
- a hydrogen generation unit at our El Dorado Refinery, with a capacity of 6.1 million standard cubic feet per day of natural gas.
- a crude unit, which is primarily an atmospheric distillation tower, a desalter and heat exchangers, at our Woods Cross Refinery, with a feedstock capacity of 15,000 BPD of crude oil;
- An FCC unit at our Woods Cross Refinery, which converts crude oil to high-value refined products such as gasoline, diesel and liquefied petroleum gases, with a capacity of 8,000 BPD; and
- a polymerization unit at our Woods Cross Refinery, that uses the output of the fluid cracking unit and converts them into gasoline blendstock, with a capacity of 2,500 BPD.

ADDITIONAL OPERATIONS AND OTHER INFORMATION

Corporate Offices

We lease approximately 60,000 square feet for our principal corporate offices in Dallas, Texas. The lease for our principal corporate offices expires in 2021. Functions performed in the Dallas office include overall corporate management, refinery and HEP management, planning and strategy, corporate finance, crude acquisition, logistics, contract administration, marketing, investor relations, governmental affairs, accounting, tax, treasury, information technology, legal and human resources support functions.

Employees and Labor Relations

As of December 31, 2016, we had 2,676 employees, of which 908 are currently covered by collective bargaining agreements having various expiration dates between 2017 and 2020. We consider our employee relations to be good.

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Environmental Regulation

Refinery and pipeline operations are subject to numerous federal, state, provincial and local laws regulating the discharge of substances into the environment or otherwise relating to the protection of the environment. Permits or other authorizations are required under these laws for the operation of our refineries, pipelines and related facilities, which can result in the imposition of costly reporting and maintenance obligations, and these permits and authorizations are subject to revocation, modification and renewal. Over the years, there have been ongoing communications, including notices of violations, about environmental matters between us and governmental authorities, some of which have resulted or will result in changes to operating procedures and in capital expenditures. Compliance with applicable environmental laws, regulations and permits will continue to have an impact on our operations, the results of our operations, and our capital requirements.

Failure to comply with these laws and regulations may result in the assessment of sanctions, including administrative, civil and criminal penalties; the imposition of investigatory, remedial or corrective action obligations or the incurrence of capital expenditures; the occurrence of delays in the permitting, development or expansion of projects, and the issuance of injunctive relief limiting or prohibiting certain operations. The following is a description of the principal environmental laws applicable to our operations.

Clean Air Act - Our operations and many of the products we manufacture are subject to certain requirements of the Federal Clean Air Act (“CAA”) as well as related state and local laws and regulations. Certain CAA regulatory programs applicable to our refineries require capital expenditures for the installation of certain air pollution control devices. Additionally, the EPA has the authority under the CAA to modify the formulation of the refined transportation fuel products we manufacture in order to limit the emissions associated with their final use. Also, in October 2015, the EPA lowered the National Ambient Air Quality Standard (“NAAQS”) for ozone from 75 to 70 parts per billion for both the 8-hour primary and secondary standards. State implementation of the revised NAAQS could result in stricter permitting requirements, delay or prohibit our ability to obtain such permits, and result in increased expenditures for pollution control equipment, the costs of which could be significant. Also, in February 2016, a new EPA rule became effective that amends three refinery standards already in effect, imposing additional or, in some cases, new emission control requirements on subject refineries. The final rule requires, among other things, benzene monitoring at the refinery fence line and submittal of fence line monitoring data to the EPA on a quarterly basis; upgraded storage tank controls requirements, including new applicability thresholds; enhanced performance requirements for flares, continuous monitoring of flares and pressure release devices and analysis and remedy of flare release events; and compliance with emissions standards for delayed coking units. Refineries have up to three years from the effective date of the final rule to come into compliance with certain requirements of the rule, such as the performance requirements for flares, while other aspects of the rule require compliance to be achieved at a sooner date. In July 2016, the EPA issued a final rule providing refiners an additional 18 months to comply with a small subset of the rules related to air emissions resulting from startup, shutdown and maintenance events. More recently, in December 2016, the EPA granted petitions for reconsideration from industry and environmental organizations on aspects of the rule related to work practice standards for certain process units and equipment, as well as fence line monitoring requirements. To date, EPA has not published revised rules. These new rules, as well as subsequent rulemaking under the CAA or similar laws, or new agency interpretations of existing laws and regulations, may necessitate additional expenditures in future years and result in increased costs on our operations.

Fuel Quality Regulation - Also, we are subject to the EPA's Control of Hazardous Air Pollutants from Mobile Sources (“MSAT2”) regulations that impose reductions in the benzene content of our produced gasoline. Our refineries currently purchase a portion of their benzene credits to meet these requirements. If economically justified or otherwise determined to be beneficial, we could implement additional benzene reduction projects to eliminate the need to purchase benzene credits.

The Energy Policy Act of 2005 and the Energy Independence and Security Act of 2007 (“EISA”) prescribe certain percentages of renewable fuels (e.g., ethanol and biofuels) that, where required, must be blended into our produced gasoline and diesel. The Renewable Fuel Standard 2 (“RFS2”) regulations, finalized by the EPA in 2010 to implement the EISA, requires that most refiners blend increasing amounts of biofuels with refined products through 2022. Because the EISA requires specified volumes of biofuels, if the demand for motor fuels decreases in future years, even higher percentages of biofuels may be required. Alternatively, credits called Renewable Identification Numbers (“RINs”) can be used instead of physically blending biofuels. The price of RINs has been subject to extreme volatility over the years and costs to purchase RINs can be significant.

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In November 2016, the EPA issued final volume requirements and associated percentage standards under the RFS2 for cellulosic biofuel, advanced biofuel, and total renewable fuel for 2017 and the biomass-based diesel requirement for 2018. The final rule increases the total renewable fuel volume by 6 percent from 2016 to 2017. While these volume mandates are generally lower than the statutory mandates, they represent a slight increase over the volumes initially proposed by the EPA for this three-year period and such volume mandates could be increased in the future. There continues to be a shortage of advanced biofuel production resulting in increased difficulties meeting RFS2 mandates. It is possible we could find ourselves unable to blend sufficient quantities of ethanol and biodiesel to meet our requirements and would, therefore, have to purchase an increasing number of RINs. It is not possible at this time to predict with certainty what those volumes or costs may be, but given the potential increase in volumes and the volatile price of RINs, increases in renewable volume requirements could have an adverse impact on our results of operations.

Finally, while there is no current regulatory standard that authenticates RINs that may be purchased on the open market from third parties, we believe that the RINs we purchase are from reputable sources, are valid and serve to demonstrate compliance with applicable RFS2 requirements. However, if any of the RINs purchased by us on the open market are subsequently found by EPA to be invalid, we could secure significant costs, penalties, or other liabilities in connection with replacing any invalid RINs.

Additional changes in fuel standards with respect to sulfur content of gasoline, called Tier 3 standards, to reduce vehicle emissions were finalized in 2014. These new requirements, other requirements of the CAA, and other presently existing or future environmental regulations may cause us to make substantial capital expenditures and purchase credits at significant cost to enable our refineries to produce products that meet applicable requirements.

Climate Change - In recent years, various legislative and regulatory measures to address climate change and greenhouse gas (“GHG”) emissions (including carbon dioxide, methane and nitrous oxides) have been discussed or implemented. They include proposed and enacted federal regulation and state actions to develop statewide, regional or nationwide programs designed to control and reduce GHG emissions from fixed sources, such as our refineries, as well as power plants, mobile transportation sources and fuels. Although it is not possible to predict the requirements of any GHG legislation that may be enacted, any laws or regulations that may be adopted to restrict or reduce GHG emissions will likely require us to incur increased operating and capital costs. In August 2015, the EPA finalized the “Clean Power Plan” requiring states to reduce carbon dioxide emissions from coal fired power plants that will likely result in a combination of plant closures, switching to renewable energy and natural gas, and demand reduction. In February 2016, the U.S. Supreme Court stayed implementation of the rule pending judicial challenges to the rule. At this time, we cannot predict the outcome of this litigation. In any event, this rule would not directly affect our operations, but it could result in increased power costs for our refineries in future years.

EPA rules require us to report GHG emissions from our refinery operations and consumer use of fuel products produced at our refineries on an annual basis. While the cost of compliance with the reporting rule is not material, data gathered under the rule may be used in the future to support additional regulation of GHG. Moreover, the EPA directly regulates GHG emissions from refineries and other major sources through the Prevention of Significant Deterioration (“PSD”) and Federal Operating Permit programs and may require Best Available Control Technology (“BACT”) for GHG emissions above a certain threshold if emissions of other pollutants would otherwise require PSD permitting. While this does not impose any limits or controls on GHG emissions from current operations, GHG emission increases from future projects or operational changes, such as capacity increases, may be impacted and required to meet emission limits or technological requirements pertaining to GHG emissions, such as BACT. Severe limitations on GHG emissions could also adversely affect demand for the gasoline that we produce. Finally, it should be noted that some scientists have concluded that increasing concentrations of GHGs in the Earth’s atmosphere may produce climate changes that have significant physical effects, such as increased frequency and severity of storms, floods and other climatic events; if any such effects were to occur, they could have an adverse effect on our

operations.

Water Discharges - Our operations are also subject to the Federal Clean Water Act (“CWA”), the Federal Safe Drinking Water Act (“SDWA”) and comparable state and local requirements. The CWA, the SDWA and analogous laws prohibit any discharge into surface waters, ground waters, injection wells and publicly-owned treatment works except in conformance with legal authorization, such as pre-treatment permits and National Pollutant Discharge Elimination System (“NPDES”) permits, issued by federal, state and local governmental agencies. NPDES permits and analogous water discharge permits are valid for a maximum of five years and must be renewed. In September 2015, new EPA and U.S. Army Corps of Engineers (“Corps”) rules defining the scope of the EPA’s and the Corps’ jurisdiction became effective. To the extent the rule expands the scope of the CWA’s jurisdiction, we could face increased costs and delays with respect to obtaining permits for dredge and fill activities in wetland areas. The rule has been challenged in court on the grounds that it unlawfully expands the reach of CWA programs, and implementation of the rule has been stayed pending resolution of the court challenge. Also, pursuant to the CWA and its implementing regulations, we may be required to obtain and maintain approvals or permits for the discharge of wastewater or storm water and are required to develop and implement spill prevention, control and countermeasure plans, also referred to as “SPCC plans,” in connection with on site storage of significant quantities of oil.

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Hazardous Substances and Wastes - We generate wastes that may be subject to the Resource Conservation and Recovery Act and comparable state and local requirements. The EPA and various state agencies have limited the approved methods of disposal for certain hazardous and non-hazardous wastes. The EPA is currently working on several rulemakings that could impact how our refineries manage various waste streams. While these rulemakings are still in development, it does not appear that these rules will significantly impact our refineries.

The Comprehensive Environmental Response, Compensation and Liability Act (“CERCLA”), also known as “Superfund,” imposes liability, without regard to fault or the legality of the original conduct, on certain classes of persons, including the current and past owner or operator of the disposal site or sites from which there is a release of a “hazardous substance,” as well as persons that disposed of or arranged for the disposal or treatment of the hazardous substances at the site or sites. Under CERCLA, such persons may be subject to strict joint and several liability for such costs as the cost of cleaning up the hazardous substances that have been released into the environment and for damages to natural resources. In the course of our historical operations, as well as in our current normal operations, we have generated waste, some of which falls within the statutory definition of a “hazardous substance” and some of which may have been disposed of at sites that may be subject to cleanup and cost recovery actions under CERCLA by a government entity or other third party. Similarly, locations now owned or operated by us, where third parties have disposed such hazardous substances in the past, may also be subject to cleanup and cost recovery actions under CERCLA. Under CERCLA, liable parties may seek contribution from other liable parties to share in the costs of cleanup. Some states have enacted laws similar to CERCLA which impose similar responsibilities and liabilities on responsible parties. It is also not uncommon for neighboring landowners and other third parties to file claims under state law for personal injury and property damage allegedly caused by hazardous substances or other pollutants released into the environment.

Oil Pollution Act - The Oil Pollution Act of 1990 (“OPA”) and regulations thereunder impose a variety of requirements on “responsible parties” related to the prevention of oil spills and liability for damages resulting from such spills in United States waters. A “responsible party” includes the owner or operator of an onshore facility. OPA assigns liability to each responsible party for oil cleanup costs and a variety of public and private damages. While liability limits apply in some circumstances, a party cannot take advantage of liability limits if the spill was caused by gross negligence or willful misconduct or resulted from violation of a federal safety, construction or operating regulation. If the party fails to report a spill or to cooperate fully in the cleanup, liability limits likewise do not apply. Few defenses exist to the liability imposed by OPA. OPA imposes ongoing requirements on a responsible party, including the preparation of oil spill response plans and proof of financial responsibility to cover environmental cleanup and restoration costs that could be incurred in connection with an oil spill.

As is the case with all companies engaged in industries similar to ours, we face potential exposure to future claims and lawsuits involving environmental matters. These matters include soil and water contamination, air pollution, personal injury and property damage allegedly caused by substances that we manufactured, handled, used, released or disposed of. We currently have environmental remediation projects that relate to recovery, treatment and monitoring activities resulting from past releases of refined product and crude oil into the environment. As of December 31, 2016, we had an accrual of \$96.4 million related to such environmental liabilities.

We are and have been the subject of various state, federal and private proceedings and inquiries relating to compliance with environmental regulations and conditions, including those discussed above. Compliance with current and future environmental regulations is expected to require additional expenditures, including expenditures for investigation and remediation, which may be significant, at our refineries and at pipeline transportation facilities. To the extent that future expenditures for these purposes are material and can be reasonably determined, these costs are disclosed and accrued, if applicable.

Occupational Health and Safety - Our operations are also subject to various laws and regulations relating to occupational health and safety. We maintain a myriad of safety programs, safety-related maintenance programs, implement a regiment of training requirements and otherwise comply with a host of occupational safety and health standards and regulations as part of our ongoing efforts to ensure compliance with all applicable laws and regulations in this area. As part of our compliance efforts, we have established hazard communications programs pursuant to the Occupational Safety and Health Administration's ("OSHA") hazard communication standard, and state right-to-know standards where applicable, which require the communication of information regarding chemical hazards in the workplace associated with chemicals manufactured or handled in our facilities. EPA regulations under Title III of the Federal Superfund Amendment and Reauthorization Act and related federal or comparable state statutes also require that information be maintained concerning hazardous materials used in or released from our operations and that this information be provided to state and local government authorities and citizens under certain circumstances. Our operations are also subject to OSHA Process Safety Management ("PSM") regulations, which are designed to prevent or minimize the consequences of catastrophic releases of toxic, reactive, flammable or explosive chemicals. The EPA has imposed substantially similar requirements under its Risk Management Plan ("RMP") regulations. In January 2017, the EPA finalized revisions to the RMP, significantly expanding its requirements with respect to enhanced requirements for incident investigation and accident history reporting, emergency preparedness, and the performance process hazard analyses and third party compliance audits.

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Although, to date, OSHA has not proposed any revisions expanding or imposing new PSM requirements, in January 2017, OSHA announced changes to its National Emphasis Program and specifically identified oil refineries as facilities for increased inspections. The changes also instruct inspectors to use data gathered from EPA RMP inspections to identify refiners for additional PSM inspections. Compliance with applicable state and federal occupational health and safety laws and regulations, as well as environmental regulations, has required, and continues to require, substantial expenditures.

Occupational health and environmental legislation, regulations and regulatory programs change frequently. We cannot predict what additional occupational health and environmental legislation or regulations will be enacted or become effective in the future or how existing or future laws or regulations will be administered or interpreted with respect to our operations. Compliance with more stringent laws or regulations or adverse changes in the interpretation of existing laws or regulations by government agencies could have an adverse effect on our financial position and the results of our operations and could require substantial expenditures for the installation and operation of systems and equipment that we do not currently possess.

Insurance

Our operations are subject to hazards of operations, including fire, explosion and weather-related perils. We maintain various insurance coverages, including business interruption insurance, subject to certain deductibles. We are not fully insured against certain risks because such risks are not fully insurable, coverage is unavailable, or premium costs, in our judgment, do not justify such expenditures.

We have a risk management oversight committee consisting of members from our senior management. This committee oversees our risk enterprise program, monitors our risk environment and provides direction for activities to mitigate identified risks that may adversely affect the achievement of our goals.

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Item 1A. Risk Factors

Investing in us involves a degree of risk, including the risks described below. Our operating results have been, and will continue to be, affected by a wide variety of risk factors, many of which are beyond our control, that could have adverse effects on profitability during any particular period. You should carefully consider the following risk factors together with all of the other information included in this Annual Report on Form 10-K, including the financial statements and related notes, when deciding to invest in us. Additional risks and uncertainties not currently known to us or that we currently deem to be immaterial may also materially and adversely affect our business operations. If any of the following risks were to actually occur, our business, financial condition or results of operations could be materially and adversely affected.

The headings provided in this Item 1A. are for convenience and reference purposes only and shall not affect or limit the extent or interpretation of the risk factors.

The availability and cost of renewable identification numbers and other required credits could have an adverse effect on our financial condition and results of operations.

Pursuant to the 2007 Energy Independence and Security Act, the EPA promulgated the RFS2 regulations reflecting the increased volume of renewable fuels mandated to be blended into the nation's fuel supply. The regulations, in part, require refiners to add annually increasing amounts of “renewable fuels” to their petroleum products or purchase credits, known as RINs, in lieu of such blending. We currently purchase RINs for some fuel categories on the open market in order to comply with the quantity of renewable fuels we are required to blend under the RFS2 regulations. Recently, due in part to the nation's fuel supply approaching the “blend wall” (the 10% ethanol limit prescribed by most automobile warranties), the price of RINs has been extremely volatile with the price dramatically increasing in recognition of the decrease in RINs availability. While we cannot predict the future prices of RINs, the costs to obtain the necessary number of RINs could be material. If we are unable to pass the costs of compliance with the RFS2 regulations on to our customers, if sufficient RINs are unavailable for purchase, if we have to pay a significantly higher price for RINs or if we are otherwise unable to meet the RFS2 mandates, our financial condition and results of operations could be adversely affected.

In addition, the RFS2 regulations are highly complex and evolving, requiring us to periodically update our compliance systems. The RFS2 regulations require the EPA to determine and publish the applicable annual volume and percentage standards for each compliance year by November 30 for the forthcoming year, and such blending percentages could be higher or lower than amounts estimated and accrued for in our consolidated financial statements. The future cost of RINs is difficult to estimate until such time as the EPA finalizes the applicable standards for the forthcoming compliance year. Moreover, in addition to increased price volatility in the RIN market, there have been multiple instances of RINs fraud occurring in the marketplace over the past several years. The EPA has initiated several enforcement actions against refiners who purchase fraudulent RINs, resulting in substantial costs to the refiner. We cannot predict with certainty our exposure to increased RINs costs in the future, nor can we predict the extent by which costs associated with RFS2 regulations will impact our future results of operations.

The prices of crude oil and refined products materially affect our profitability, and are dependent upon many factors that are beyond our control, including general market demand and economic conditions, seasonal and weather-related factors, regional and grade differentials and governmental regulations and policies.

Among these factors is the demand for crude oil and refined products, which is largely driven by the conditions of local and worldwide economies as well as by weather patterns and the taxation of these products relative to other energy sources. Governmental regulations and policies, particularly in the areas of taxation, energy and the

environment, also have a significant impact on our activities. Operating results can be affected by these industry factors, product and crude pipeline capacities, crude oil differentials (including regional and grade differentials), changes in transportation costs, accidents or interruptions in transportation, competition in the particular geographic areas that we serve, and factors that are specific to us, such as the success of particular marketing programs and the efficiency of our refinery operations. The demand for crude oil and refined products can also be reduced due to a local or national recession or other adverse economic condition that results in lower spending by businesses and consumers on gasoline and diesel fuel, higher gasoline prices due to higher crude oil prices, a shift by consumers to more fuel-efficient vehicles or alternative fuel vehicles (such as ethanol or wider adoption of gas/electric hybrid vehicles), or an increase in vehicle fuel economy, whether as a result of technological advances by manufacturers, legislation mandating or encouraging higher fuel economy or the use of alternative fuel.

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We do not produce crude oil and must purchase all our crude oil, the price of which fluctuates based upon worldwide and local market conditions. Our profitability depends largely on the spread between market prices for refined petroleum products and crude oil prices. This margin is continually changing and may fluctuate significantly from time to time. Crude oil and refined products are commodities whose price levels are determined by market forces beyond our control. For example, the reversal of certain existing pipelines or the construction of certain new pipelines transporting additional crude oil or refined products to markets that serve competing refineries could affect the market dynamic that has allowed us to take advantage of favorable pricing. Also, in December 2015, the U.S. Congress lifted the ban on the ability of producers to export domestic crude oil. This could potentially impact crack spreads and price differentials between domestic and foreign crude oils. A deterioration of crack spreads or price differentials between domestic and foreign crude oils could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Additionally, due to the seasonality of refined products markets and refinery maintenance schedules, results of operations for any particular quarter of a fiscal year are not necessarily indicative of results for the full year and can vary year to year in the event of unseasonably cool weather in the summer months and / or unseasonably warm weather in the winter months in the markets in which we sell our petroleum products. In general, prices for refined products are influenced by the price of crude oil. Although an increase or decrease in the price for crude oil may result in a similar increase or decrease in prices for refined products, there may be a time lag in the realization of the similar increase or decrease in prices for refined products. The effect of changes in crude oil prices on operating results, therefore, depends in part on how quickly refined product prices adjust to reflect these changes. A substantial or prolonged increase in crude oil prices without a corresponding increase in refined product prices, a substantial or prolonged decrease in refined product prices without a corresponding decrease in crude oil prices, or a substantial or prolonged decrease in demand for refined products could have a significant negative effect on our earnings and cash flow. Also, crude oil supply contracts are generally short-term contracts with market-responsive pricing provisions. We purchase our refinery feedstocks weeks before manufacturing and selling the refined products. Price level changes during the period between purchasing feedstocks and selling the manufactured refined products from these feedstocks could have a significant effect on our financial condition and results of operations. Also, our crude oil and refined products inventories are valued at the lower of cost or market under the last-in, first-out (“LIFO”) inventory valuation methodology. If the market value of our inventory were to decline to an amount less than our LIFO cost, we would record a write-down of inventory and a non-cash charge to cost of products sold even when there is no underlying economic impact at that point in time. For example, we recorded a non-cash decrease to cost of products sold in the amount of \$291.9 million and an increase of \$227.0 million for the years ended December 31, 2016 and 2015, respectively. Continued volatility in crude oil and refined products prices could result in additional lower of cost or market inventory charges in the future, or in reversals reducing cost of products sold in subsequent periods should prices recover.

A material decrease in the supply of crude oil or other raw materials available to our refineries could significantly reduce our production levels and negatively affect our operations.

To maintain or increase production levels at our refineries, we must continually contract for crude oil supplies from third parties. A material decrease in crude oil production from the fields that supply our refineries, as a result of depressed commodity prices, lack of drilling activity, natural production declines or otherwise, could result in a decline in the volume of crude oil available to our refineries. In addition, any prolonged disruption of a significant pipeline that is used in supplying crude oil to our refineries or the potential operation of a new, converted or expanded crude oil pipeline that transports crude oil to other markets could result in a decline in the volume of crude oil available to our refineries. Such an event could result in an overall decline in volumes of refined products processed at our refineries and therefore a corresponding reduction in our cash flow. In addition, the future growth of our operations will depend in part upon whether we can contract for additional supplies of crude oil at a greater rate than the rate of natural decline in our currently connected supplies. If we are unable to secure additional crude oil supplies

of sufficient quality or crude pipeline expansion to our refineries, we will be unable to take full advantage of current and future expansion of our refineries' production capacities.

For certain raw materials and utilities used by our refineries, there are a limited number of suppliers and, in some cases, the supplies are specific to the particular geographic region in which a facility is located. It is also common in the refining industry for a facility to have a sole, dedicated source for its utilities, such as steam, electricity, water and gas. Having a sole or limited number of suppliers may limit our negotiating power, particularly in the case of rising raw material costs. Any new supply agreements we enter into may not have terms as favorable as those contained in our current supply agreements.

Additionally, there is growing concern over the reliability of water sources. The decreased availability or less favorable pricing for water as a result of population growth, drought or regulation could negatively impact our operations.

If our raw material, utility or water supplies were disrupted, our businesses may incur increased costs to procure alternative supplies or incur excessive downtime, which would have a direct negative impact on our operations.

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We may not be able to successfully execute our business strategies to grow our business. Further, if we are unable to complete capital projects at their expected costs or in a timely manner, if we are unsuccessful in integrating the operations of assets we acquire, or if the market conditions assumed in our project economics deteriorate, our financial condition, results of operations, or cash flows could be materially and adversely affected.

One of the ways we may grow our business is through the construction of new refinery processing units (or the purchase and refurbishment of used units from another refinery) and the expansion of existing ones. Projects are generally initiated to increase the yields of higher-value products, increase the amount of lower cost crude oils that can be processed, increase refinery production capacity, meet new governmental requirements, or maintain the operations of our existing assets. Additionally, our growth strategy includes projects that permit access to new and/or more profitable markets. The construction process involves numerous regulatory, environmental, political, and legal uncertainties, most of which are not fully within our control, including:

- denial or delay in issuing requisite regulatory approvals and/or obtaining or renewing permits, licenses, registrations and other authorizations;
- societal and political pressures and other forms of opposition;
- compliance with or liability under environmental regulations;
- unplanned increases in the cost of construction materials or labor;
- disruptions in transportation of modular components and/or construction materials;
- severe adverse weather conditions, natural disasters, or other events (such as equipment malfunctions, explosions, fires, spills) affecting our facilities, or those of vendors and suppliers;
- shortages of sufficiently skilled labor, or labor disagreements resulting in unplanned work stoppages;
- market-related increases in a project's debt or equity financing costs; and/or
- nonperformance or force majeure by, or disputes with, vendors, suppliers, contractors, or sub-contractors involved with a project.

If we are unable to complete capital projects at their expected costs or in a timely manner our financial condition, results of operations, or cash flows could be materially and adversely affected. Delays in making required changes or upgrades to our facilities could subject us to fines or penalties as well as affect our ability to supply certain products we make. In addition, our revenues may not increase immediately upon the expenditure of funds on a particular project. For instance, if we build a new refinery processing unit, the construction will occur over an extended period of time and we will not receive any material increases in revenues until after completion of the project. Moreover, we may construct facilities to capture anticipated future growth in demand for refined products in a region in which such growth does not materialize. As a result, new capital investments may not achieve our expected investment return, which could adversely affect our financial condition or results of operations.

Our forecasted internal rates of return are also based upon our projections of future market fundamentals which are not within our control, including changes in general economic conditions, available alternative supply and customer demand.

An additional component of our growth strategy is to selectively acquire complementary assets or businesses for our refining operations in order to increase earnings and cash flow. Our ability to do so will be dependent upon a number of factors, including our ability to identify attractive acquisition candidates, consummate acquisitions on favorable terms, successfully integrate acquired assets and obtain financing to fund acquisitions and to support our growth, and other factors beyond our control. Risks associated with acquisitions include those relating to:

- diversion of management time and attention from our existing business;
- challenges in managing the increased scope, geographic diversity and complexity of operations and inefficiencies that may result therefrom;

difficulties in integrating the financial, technological and management standards, processes, procedures and controls of an acquired business with those of our existing operations;

liability for known or unknown environmental conditions or other contingent liabilities not covered by indemnification or insurance;

greater than anticipated expenditures required for compliance with environmental or other regulatory standards or for investments to improve operating results;

difficulties or delays in achieving anticipated operational improvements or benefits;

incurrence of additional indebtedness to finance acquisitions or capital expenditures relating to acquired assets; and

issuance of additional equity, which could result in further dilution of the ownership interest of existing stockholders.

Any acquisitions that we do consummate may have adverse effects on our business and operating results.

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The anticipated benefits of our PCLI acquisition may not be realized fully or at all or may take longer to realize than expected.

The PCLI acquisition will require management to devote significant attention and resources to integrating the PCLI business with our business, and involves the operation of businesses in other countries. Delays in this process could adversely affect our business, financial results, financial condition and stock price. Even if we are able to integrate our business operations successfully, there can be no assurance that this integration will result in the realization of the full benefits of synergies, cost savings, innovation and operational efficiencies that we currently expect from this integration or that these benefits will be achieved within the anticipated time frame.

We may incur significant costs to comply with new or changing environmental, energy, health and safety laws and regulations, and face potential exposure for environmental matters.

Our refinery and pipeline operations are subject to federal, state and local laws regulating, among other things, the generation, storage, handling, use, transportation and distribution of petroleum and hazardous substances by pipeline, truck, rail and barge, the emission and discharge of materials into the environment, waste management, and characteristics and composition of gasoline and diesel fuels, and other matters otherwise relating to the protection of the environment. In addition, as a result of our recent acquisition of PCLI and its subsidiaries, we have manufacturing and distribution operations in Canada that are subject to Canadian national and provincial environmental laws and regulations and similar laws in other foreign countries. Permits or other authorizations are required under these laws for the operation of our refineries, pipelines and related operations, and these permits and authorizations are subject to revocation, modification and renewal or may require operational changes, which may involve significant costs. Furthermore, a violation of permit conditions or other legal or regulatory requirements could result in substantial fines, criminal sanctions, permit revocations, injunctions, and/or refinery shutdowns. In addition, major modifications of our operations due to changes in the law could require changes to our existing permits or expensive upgrades to our existing pollution control equipment, which could have a material adverse effect on our business, financial condition, or results of operations. For example, in October 2015, the EPA lowered the NAAQS for ozone from 75 to 70 parts per billion for both the 8-hour primary and secondary standards. State implementation of the revised NAAQS could result in stricter permitting requirements, delay or prohibit our ability to obtain such permits, and result in increased expenditures for pollution control equipment, the costs of which could be significant. Also, in February 2016, a new EPA rule became effective that amends three refinery standards already in effect, imposing additional or, in some cases, new emission control requirements on subject refineries. The final rule requires, among other things, benzene monitoring at the refinery fence line and submittal of fence line monitoring data to the EPA on a quarterly basis; upgraded storage tank controls requirements, including new applicability thresholds; enhanced performance requirements for flares, continuous monitoring of flares and pressure release devices and analysis and remedy of flare release events; and compliance with emissions standards for delayed coking units. Refineries have up to three years from the effective date of the final rule to come into compliance with certain requirements of the rule, such as the performance requirements for flares, while other aspects of the rule require compliance to be achieved at a sooner date. In July 2016, the EPA issued a final rule providing refiners an additional 18 months to comply with a small subset of the rules related to air emissions resulting from startup, shutdown and maintenance events. More recently, in December 2016, the EPA granted petitions for reconsideration from industry and environmental organizations on aspects of the rule related to work practice standards for certain process units and equipment, as well as fence line monitoring requirements. To date, EPA has not published revised rules. These new rules, as well as subsequent rulemaking under the CAA or similar laws, or new agency interpretations of existing laws and regulations, may necessitate additional expenditures in future years and result in increased costs on our operations. Compliance with applicable environmental laws, regulations and permits will continue to have an impact on our operations, results of our operations and capital requirements.

As is the case with all companies engaged in industries similar to ours, we face potential exposure to future claims and lawsuits involving environmental matters. The matters include, but are not limited to, soil, groundwater and waterway contamination, air pollution, personal injury and property damage allegedly caused by substances which we manufactured, handled, used, released or disposed.

We are and have been the subject of various local, state, provincial, federal and private proceedings relating to environmental regulations, conditions and inquiries. Current and future environmental regulations are expected to require additional expenditures, including expenditures for investigation and remediation, which may be significant, at our facilities. To the extent that future expenditures for these purposes are material and can be reasonably determined, these costs are disclosed and accrued.

Our operations are also subject to various laws and regulations relating to occupational health and safety. We maintain safety, training and maintenance programs as part of our ongoing efforts to ensure compliance with applicable laws and regulations. Compliance with applicable health and safety laws and regulations has required and continues to require substantial expenditures. Failure to appropriately manage occupational health and safety risks associated with our business could also adversely impact our employees, communities, stakeholders, reputation and results of operations.

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The costs of environmental and safety regulations are already significant and compliance with more stringent laws or regulations or adverse changes in the interpretation of existing regulations by government agencies could have an adverse effect on the financial position and the results of our operations and could require substantial expenditures for the installation and operation of systems and equipment that we do not currently possess.

From time to time, new federal energy policy legislation is enacted by the U.S. Congress or the Government of Canada. For example, in December 2007, the U.S. Congress passed the Energy Independence and Security Act, which, among other provisions, mandates annually increasing levels for the use of renewable fuels such as ethanol, commencing in 2008 and escalating for 15 years, as well as increasing energy efficiency goals, including higher fuel economy standards for motor vehicles, among other steps. In Canada, fuel content legislation also exists at the federal and provincial level. These statutory mandates may have the impact over time of offsetting projected increases in the demand for refined petroleum products in certain markets, particularly gasoline. In the near term, the new renewable fuel standard presents ethanol production and logistics challenges for both the ethanol and refining industries and may require additional capital expenditures or expenses by us to accommodate increased ethanol use. Other legislative changes may similarly alter the expected demand and supply projections for refined petroleum products in ways that cannot be predicted.

For additional information on regulations and related liabilities or potential liabilities affecting our business, see “Regulation” under Items 1 and 2, “Business and Properties,” and Item 3, “Legal Proceedings.”

The adoption of climate change legislation or regulations could result in increased operating costs and reduced demand for the refined products we produce.

The EPA has determined that emissions of carbon dioxide, methane and other greenhouse gas emissions, or “GHGs,” present an endangerment to public health and the environment because emissions of such gases are, according to the EPA, contributing to warming of the earth's atmosphere and other climatic changes. Based on these findings, the EPA has begun adopting and implementing regulations to restrict emissions of GHGs under existing provisions of the federal CAA. For example, the EPA adopted rules that require certain large stationary sources to obtain permits to authorize emissions of GHGs. The EPA has also adopted rules requiring the reporting of GHG emissions from specified large GHG emission sources in the United States, including petroleum refineries, on an annual basis. Both the EPA and Environment and Climate Change Canada have adopted regulations that limit GHG emissions from automobiles and light-duty trucks, which may result in a reduction in demand for the refined products that we produce.

In addition, the U.S. Congress has from time to time considered adopting legislation to reduce emissions of GHGs and almost one-half of the states have established cap and trade programs. These cap and trade programs generally work by requiring major sources of emissions, such as electric power plants, or major producers of fuels, such as refineries and gas processing plants, to acquire and on an annual basis surrender emission allowances. The number of allowances available for purchase is reduced over time in an effort to achieve the overall GHG emission reduction goal.

In Canada, the federal and provincial governments have also considered, and in some cases adopted, legislation to reduce GHG emissions. To date, two provinces (Quebec and Ontario) have also adopted cap and trade programs.

The adoption of legislation or regulatory programs to reduce emissions of GHGs could require us to incur increased operating costs, such as costs to purchase and operate emissions control systems, to acquire emissions allowances or comply with new regulatory or reporting requirements. Any such legislation or regulatory programs could also increase the cost of consuming, and thereby reduce demand for, the refined products that we produce. Consequently, legislation and regulatory programs to reduce emissions of GHGs could have an adverse effect on our business,

financial condition and results of operations.

In addition, some scientists have concluded that increasing concentrations of GHGs in the Earth's atmosphere may produce climate changes that have significant physical effects, such as increased frequency and severity of storms, droughts, floods and other climatic events. If any such events were to occur, they could have an adverse effect on our financial condition and results of operations.

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Our operations are subject to catastrophic losses, operational hazards and unforeseen interruptions for which we may not be adequately insured.

Our operations are subject to catastrophic losses, operational hazards and unforeseen interruptions such as natural disasters, adverse weather, accidents, maritime disasters (including those involving marine vessels/terminals), fires, explosions, hazardous materials releases, cyber-attacks, power failures, mechanical failures and other events beyond our control. These events could result in an injury, loss of life, property damage or destruction, as well as a curtailment or an interruption in our operations and may affect our ability to meet marketing commitments.

We may not be able to maintain or obtain insurance of the type and amount we desire at reasonable rates and exclusions from coverage may limit our ability to recover the amount of the full loss in all situations. As a result of market conditions, premiums and deductibles for certain of our insurance policies could increase. In some instances, certain insurance could become unavailable or available only for reduced amounts of coverage. We are not fully insured against all risks incident to our business and therefore, we self-insure certain risks. 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.

The energy industry is highly capital intensive, and the entire or partial loss of individual facilities can result in significant costs to both industry companies, such as us, and their insurance carriers. In recent years, several large energy industry claims have resulted in significant increases in the level of premium costs and deductible periods for participants in the energy industry. As a result of large energy industry claims, insurance companies that have historically participated in underwriting energy-related facilities may discontinue that practice or demand significantly higher premiums or deductible periods to cover these facilities. If significant changes in the number or financial solvency of insurance underwriters for the energy industry occur, or if other adverse conditions over which we have no control prevail in the insurance market, we may be unable to obtain and maintain adequate insurance at reasonable cost. In addition, we cannot assure you that our insurers will renew our insurance coverage on acceptable terms, if at all, or that we will be able to arrange for adequate alternative coverage in the event of non-renewal. Further, our underwriters could have credit issues that affect their ability to pay claims. If a significant accident or event occurs that is self-insured or not fully insured, it could have a material adverse effect on our business, financial condition and results of operations.

An impairment of our long-lived assets or goodwill could reduce our earnings or negatively impact our financial condition and results of operations.

An impairment of our long-lived assets or goodwill could reduce our earnings or negatively impact our results of operations and financial condition. We continually monitor our business, the business environment and the performance of our operations to determine if an event has occurred that indicates that a long-lived asset or goodwill may be impaired. If a triggering event occurs, which is a determination that involves judgment, we may be required to utilize cash flow projections to assess our ability to recover the carrying value based on the ability to generate future cash flows. We may also conduct impairment testing based on both the guideline public company and guideline transaction methods. Our long-lived assets and goodwill impairment analyses are sensitive to changes in key assumptions used in our analysis, estimates of future crack spreads, forecasted production levels, operating costs and capital expenditures. If the assumptions used in our analysis are not realized, it is possible a material impairment charge may need to be recorded in the future. We cannot accurately predict the amount and timing of any additional impairments of long-lived assets or goodwill in the future.

As market prices for refined products and market prices for crude oil continue to fluctuate, we will need to continue to evaluate the carrying value of our refinery reporting units. During the year ended December 31, 2016, we recorded goodwill and long-lived asset impairment charges of \$309.3 million and \$344.8 million, respectively, on the carrying value of our Cheyenne Refinery. Additionally, the fair value of our El Dorado reporting unit currently exceeds its

carrying value by approximately 20%. A reasonable expectation exists that future deterioration in gross margins could result in an impairment of goodwill and the long-lived assets of the El Dorado reporting unit at some point in the future. Any additional impairment charges that we may take in the future could be material to our results of operations and financial condition.

Competition in the refining and marketing industry is intense, and an increase in competition in the markets in which we sell our products could adversely affect our earnings and profitability.

We compete with a broad range of refining and marketing companies, including certain multinational oil companies. Because of their geographic diversity, larger and more complex refineries, integrated operations and greater resources, some of our competitors may be better able to withstand volatile market conditions, to obtain crude oil in times of shortage and to bear the economic risks inherent in all areas of the refining industry.

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We are not engaged in petroleum exploration and production activities and do not produce any of the crude oil feedstocks used at our refineries. We do not have a retail business and therefore are dependent upon others for outlets for our refined products. Certain of our competitors, however, obtain a portion of their feedstocks from company-owned production and have retail outlets. Competitors that have their own production or extensive retail outlets, with brand-name recognition, 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.

In recent years there have been several refining and marketing consolidations or acquisitions between entities competing in our geographic market. These transactions could increase the future competitive pressures on us.

The markets in which we compete may be impacted by competitors' plans for expansion projects and refinery improvements that could increase the production of refined products in our areas of operation and significantly affect our profitability.

Also, the potential operation of new or expanded refined product transportation pipelines, or the conversion of existing pipelines into refined product transportation pipelines, could impact the supply of refined products to our existing markets and negatively affect our profitability.

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. The more successful these alternatives become as a result of governmental regulations, technological advances, consumer demand, improved pricing or otherwise, the greater the impact on pricing and demand for our products and our profitability. There are presently significant governmental and consumer pressures to increase the use of alternative fuels in the United States.

A disruption to or proration of the refined product distribution systems we utilize could negatively impact our profitability.

We utilize various common carrier or other third party pipeline systems to deliver our products to market. The key systems utilized by the Cheyenne, El Dorado, Navajo, Woods Cross, and Tulsa Refineries are Rocky Mountain, NuStar Energy, SFPP and Plains, Chevron, and Magellan, respectively. All five refineries also utilize systems owned by HEP. If these key pipelines or their associated tanks and terminals become inoperative or decrease the capacity available to us, we may not be able to sell our product, or we may be required to hold our product in inventory or supply products to our customers through an alternative pipeline or by rail or additional tanker trucks from the refinery, all of which could increase our costs and result in a decline in profitability.

We may be subject to information technology system failures, network disruptions and breaches in data security.

Information technology system failures, network disruptions (whether intentional by a third party or due to natural disaster), breaches of network or data security, or disruption or failure of the network system used to monitor and control pipeline operations could disrupt our operations by impeding our processing of transactions, our ability to protect customer or company information and our financial reporting. Our computer systems, including our back-up systems, could be damaged or interrupted by power outages, computer and telecommunications failures, computer viruses, internal or external security breaches, events such as fires, earthquakes, floods, tornadoes and hurricanes, and/or errors by our employees. There can be no assurance that a system failure or data security breach will not have a material adverse effect on our financial condition and results of operations.

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We may not be able to obtain funding on acceptable terms or at all because of volatility and uncertainty in the credit and capital markets. This may hinder or prevent us from meeting our future capital needs.

The domestic and global financial markets and economic conditions are disrupted and volatile from time to time due to a variety of factors, including low consumer confidence, high unemployment, geoeconomic and geopolitical issues, weak economic conditions and uncertainty in the financial services sector. In addition, the fixed-income markets have experienced periods of extreme volatility, which negatively impacted market liquidity conditions. Recently, the equity and debt markets for many energy industry companies have been adversely affected by low oil prices. As a result, the cost of raising money in the debt and equity capital markets has increased substantially at times while the availability of funds from these markets diminished significantly. In particular, as a result of concerns about the stability of financial markets generally and the solvency of lending counterparties specifically, the cost of obtaining money from the credit markets may increase as many lenders and institutional investors increase interest rates, enact tighter lending standards, refuse to refinance existing debt on similar terms or at all and reduce, or in some cases cease, to provide funding to borrowers. In addition, lending counterparties under any existing revolving credit facility and other debt instruments may be unwilling or unable to meet their funding obligations, or we may experience a decrease in our capacity to issue debt or obtain commercial credit or a deterioration in our credit profile, including a rating agency lowering or withdrawing of our credit ratings if, in its judgment, the circumstances warrant. Due to these factors, we cannot be certain that new debt or equity financing will be available on acceptable terms. If funding is not available when needed, or is available only on unfavorable terms, we may be unable to meet our obligations as they come due or we may be required to sell assets. Moreover, without adequate funding, we may be unable to execute our growth strategy, complete future acquisitions or construction projects, take advantage of other business opportunities or respond to competitive pressures, comply with regulatory requirements, or meet our short-term or long-term working capital requirements, any of which could have a material adverse effect on our revenues and results of operations. Failure to comply with regulatory requirements in a timely manner or meet our short-term or long-term working capital requirements could subject us to regulatory action.

We depend upon HEP for a substantial portion of the crude supply and distribution network that serve our refineries, and we own a significant equity interest in HEP.

We currently own a 37% interest in HEP, including the 2% general partner interest. HEP operates a system of crude oil and petroleum product pipelines; distribution terminals and refinery tankage in Arizona, Idaho, Kansas, Nevada, New Mexico, Oklahoma, Texas, Utah, Washington and Wyoming and refinery units in Kansas and Utah. HEP generates revenues by charging tariffs for transporting petroleum products and crude oil through its pipelines, leasing certain pipeline capacity to Alon, charging fees for terminalling refined products and other hydrocarbons and storing and providing other services at its terminals. HEP serves the Cheyenne, El Dorado, Navajo, Woods Cross and Tulsa Refineries under several long-term pipeline and terminal, tankage and throughput agreements expiring in 2019 through 2026, serves the El Dorado Refinery under long-term tolling agreements expiring in 2030 and serves the Woods Cross Refinery under long-term tolling agreements expiring in 2031. Furthermore, our financial statements include the consolidated results of HEP. HEP is subject to its own operating and regulatory risks, including, but not limited to:

- its reliance on its significant customers, including us;
- competition from other pipelines;
- environmental regulations affecting pipeline operations;
- operational hazards and risks;
- pipeline tariff regulations affecting the rates HEP can charge;
- limitations on additional borrowings and other restrictions due to HEP's debt covenants; and
- other financial, operational and legal risks.

The occurrence of any of these risks could directly or indirectly affect HEP's as well as our financial condition, results of operations and cash flows as HEP is a consolidated VIE. Additionally, these risks could affect HEP's ability to continue operations which could affect their ability to serve our supply and distribution network needs.

For additional information about HEP, see "Holly Energy Partners, L.P." under Items 1 and 2, "Business and Properties." For risks related to HEP's business, see Item 1A of HEP's Annual Report on Form 10-K for the fiscal year ended December 31, 2016.

We are exposed to the credit risks, and certain other risks, of our key customers and vendors.

We are subject to risks of loss resulting from nonpayment or nonperformance by our customers. We derive a significant portion of our revenues from contracts with key customers.

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If any of our key customers default on their obligations to us, our financial results could be adversely affected. Furthermore, some of our customers may be highly leveraged and subject to their own operating and regulatory risks. In addition, nonperformance by vendors who have committed to provide us with products or services could result in higher costs or interfere with our ability to successfully conduct our business.

Any substantial increase in the nonpayment and/or nonperformance by our customers or vendors could have a material adverse effect on our results of operations and cash flows.

Terrorist attacks (including cyber-attacks), and the threat of terrorist attacks or domestic vandalism, have resulted in increased costs to our business. Continued global hostilities or other sustained military campaigns may adversely impact our results of operations.

The long-term impacts of terrorist attacks, such as the attacks that occurred on September 11, 2001, and the threat of future terrorist attacks (including cyber-attacks) on the energy transportation industry in general, and on us in particular, are unknown. Increased security measures taken by us as a precaution against possible terrorist attacks or vandalism have resulted in increased costs to our business. Uncertainty surrounding continued global hostilities or other sustained military campaigns, and the possibility that infrastructure facilities could be direct targets of, or indirect casualties of, an act of terror, may affect our operations in unpredictable ways, including disruptions of crude oil supplies and markets for refined products. In addition, disruption or significant increases in energy prices could result in government-imposed price controls. Any one of, or a combination of, these occurrences could have a material adverse effect on our business, financial condition and results of operations.

Changes in the insurance markets attributable to terrorist attacks could make certain types of insurance more difficult for us to obtain. Moreover, the insurance that may be available to us may be significantly more expensive than our existing insurance coverage. Instability in the financial markets as a result of terrorism or war could also affect our ability to raise capital including our ability to repay or refinance debt.

Increases in required fuel economy and regulation of CO₂ emissions from motor vehicles may reduce demand for transportation fuels.

In 2010, the EPA and the National Highway Traffic Safety Administration (“NHTSA”) finalized new standards, raising the required Corporate Average Fuel Economy (“CAFE”) of the nation's passenger fleet by 40% to approximately 35 miles per gallon (“m.p.g.”) by 2016 and imposing the first-ever federal GHG emissions standards on cars and light trucks. In September 2011, the EPA and the Department of Transportation finalized first-time standards for fuel economy of medium and heavy duty trucks. On August 28, 2012, the EPA and NHTSA adopted standards through model year 2025 in two phases. The first phase establishes final standards for 2017-2021 model year vehicles that are projected to require 40.3 - 41.0 m.p.g. in model year 2021 on an average industry fleet-wide basis. The second phase of the CAFE program represents non-final “augural” standards for 2022-2025 model year vehicles that are projected to require 48.7 - 49.7 m.p.g. in model year 2025, on an average industry fleet-wide basis. Such increases in fuel economy standards, along with mandated increases in use of renewable fuels discussed above, could result in decreasing demand for petroleum fuels. Decreasing demand for petroleum fuels could have a material effect on our financial condition and results of operation.

To successfully operate our petroleum refining facilities, we are required to expend significant amounts for capital outlays and operating expenditures.

The refining business is characterized by high fixed costs resulting from the significant capital outlays associated with refineries, terminals, pipelines and related facilities. We are dependent on the production and sale of quantities of refined products at refined product margins sufficient to cover operating costs, including any increases in costs

resulting from future inflationary pressures or market conditions and increases in costs of fuel and power necessary in operating our facilities. Furthermore, future major capital investment, various environmental compliance related projects, regulatory requirements or competitive pressures could result in additional capital expenditures, which may not produce a return on investment. Such capital expenditures may require significant financial resources that may be contingent on our access to capital markets and commercial bank loans. Additionally, other matters, such as regulatory requirements or legal actions, may restrict our access to funds for capital expenditures.

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Our refineries consist of many processing units, a number of which have been in operation for many years. One or more of the units may require unscheduled downtime for unanticipated maintenance or repairs that are more frequent than our scheduled turnaround for such units. Scheduled and unscheduled maintenance could reduce our revenues during the period of time that the units are not operating. We have taken significant measures to expand and upgrade units in our refineries by installing new equipment and redesigning older equipment to improve refinery capacity. The installation and redesign of key equipment at our refineries involves significant uncertainties, including the following: our upgraded equipment may not perform at expected throughput levels; operating costs of the upgraded equipment may be higher than expected; the yield and product quality of new equipment may differ from design and/or specifications and redesign, modification or replacement of the equipment may be required to correct equipment that does not perform as expected, which could require facility shutdowns until the equipment has been redesigned or modified. Any of these risks associated with new equipment, redesigned older equipment, or repaired equipment could lead to lower revenues or higher costs or otherwise have a negative impact on our future financial condition and results of operations.

In addition, we expect to execute turnarounds at our refineries, which involve numerous risks and uncertainties. These risks include delays and incurrence of additional and unforeseen costs. The turnarounds allow us to perform maintenance, upgrades, overhaul and repair of process equipment and materials, during which time all or a portion of the refinery will be under scheduled downtime.

We may be unable to pay future dividends.

We will only be able to pay dividends from our available cash on hand, cash from operations or borrowings under our credit agreement. The declaration of future dividends on our common stock will be at the discretion of our board of directors and will depend upon many factors, including our results of operations, financial condition, earnings, capital requirements, and restrictions in our debt agreements and legal requirements. We cannot assure you that any dividends will be paid or the frequency or amounts of such payments.

Product liability claims and litigation could adversely affect our business and results of operations.

A significant portion of our operating responsibility on refined product pipelines is to insure the quality and purity of the products loaded at our loading racks. If our quality control measures were to fail, we may have contaminated or off-specification commingled pipelines and storage tanks or off-specification product could be sent to public gasoline stations. These types of incidents could result in product liability claims from our customers.

Product liability is a significant commercial risk. Substantial damage awards have been made in certain jurisdictions against manufacturers and resellers based upon claims for injuries caused by the use of or exposure to various products. There can be no assurance that product liability claims against us would not have a material adverse effect on our business or results of operations or our ability to maintain existing customers or retain new customers.

Our hedging transactions may limit our gains and expose us to other risks.

We periodically enter into derivative transactions as it relates to inventory levels and/or future production to manage the risks from changes in the prices of crude oil, refined products and other feedstocks. These transactions limit our potential gains if commodity prices move above or below the certain price levels established by our hedging instruments. We hedge price risk on inventories above our target levels to minimize the impact these price fluctuations have on our earnings and cash flows. Consequently, our hedging results may fluctuate significantly from one reporting period to the next depending on commodity price fluctuations and our relative physical inventory positions. These transactions may also expose us to risks of financial losses; for example, if our production is less than we anticipated at the time we entered into a hedge agreement or if a counterparty to our hedge agreements fails to perform its

obligations under the agreements.

Changes in our credit profile, or a significant increase in the price of crude oil, may affect our relationship with our suppliers, which could have a material adverse effect on our liquidity and limit our ability to purchase sufficient quantities of crude oil to operate our refineries at desired capacity.

An unfavorable credit profile, or a significant increase in the price of crude oil, could affect the way crude oil suppliers view our ability to make payments and induce them to shorten the payment terms of their invoices with us or require credit enhancement. Due to the large dollar amounts and volume of our crude oil and other feedstock purchases, any imposition by our suppliers of more burdensome payment terms or credit enhancement requirements on us may have a material adverse effect on our liquidity and our ability to make payments to our suppliers. This in turn could cause us to be unable to operate our refineries at desired capacity. A failure to operate our refineries at desired capacity could adversely affect our profitability and cash flow.

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Our credit facility contains certain covenants and restrictions that may constrain our business and financing activities.

The operating and financial restrictions and covenants in our credit facility and any future financing agreements could adversely affect our ability to finance future operations or capital needs or to engage, expand or pursue our business activities. For example, our revolving credit facility imposes usual and customary requirements for this type of credit facility, including: (i) limitations on liens and indebtedness; (ii) a prohibition on changes in control and (iii) restrictions on engaging in mergers and consolidations. If we fail to satisfy the covenants set forth in the credit facility or another event of default occurs under the credit facility, the maturity of the loan could be accelerated or we could be prohibited from borrowing for our future working capital needs and issuing letters of credit. We might not have, or be able to obtain, sufficient funds to make these immediate payments. If we desire to undertake a transaction that is prohibited by the covenants in our credit facility, we will need to obtain consent under our credit facility. Such refinancing may not be possible or may not be available on commercially acceptable terms.

Our business may suffer due to a departure of any of our key senior executives or other key employees. Furthermore, a shortage of skilled labor or disruptions in our labor force may make it difficult for us to maintain labor productivity.

Our future performance depends to a significant degree upon the continued contributions of our senior management team and key technical personnel. We do not currently maintain key man life insurance, non-compete agreements, or employment agreements with respect to any member of our senior management team. The loss or unavailability to us of any member of our senior management team or a key technical employee could significantly harm us. We face competition for these professionals from our competitors, our customers and other companies operating in our industry. To the extent that the services of members of our senior management team and key technical personnel would be unavailable to us for any reason, we may be required to hire other personnel to manage and operate our company. We may not be able to locate or employ such qualified personnel on acceptable terms, or at all.

Furthermore, our operations require skilled and experienced laborers with proficiency in multiple tasks. A shortage of trained workers due to retirements or otherwise could have an adverse impact on our labor productivity and costs and our ability to expand production in the event there is an increase in the demand for our products and services, which could adversely affect our operations.

As of December 31, 2016, approximately 34% of our employees were represented by labor unions under collective bargaining agreements with various expiration dates. We may not be able to renegotiate our collective bargaining agreements when they expire on satisfactory terms or at all. A failure to do so may increase our costs. In addition, our existing labor agreements may not prevent a strike or work stoppage at any of our facilities in the future, and any work stoppage could negatively affect our results of operations and financial condition.

The market price of our common stock may fluctuate significantly, and the value of a stockholder's investment could be impacted.

The market price of our common stock may be influenced by many factors, some of which are beyond our control, including:

- our quarterly or annual earnings or those of other companies in our industry;
- changes in accounting standards, policies, guidance, interpretations or principles;
- general economic, industry and stock market conditions;
- the failure of securities analysts to cover our common stock or changes in financial estimates by analysts;
- future sales of our common stock;
- announcements by us or our competitors of significant contracts or acquisitions;
- sales of common stock by us, our senior officers or our affiliates; and/or

the other factors described in these Risk Factors.

In recent years, the stock market has experienced extreme price and volume fluctuations. This volatility has had a significant impact on the market price of securities issued by many companies, including companies in our industry. The price of our common stock could fluctuate based upon factors that have little or nothing to do with our company, and these fluctuations could materially reduce our stock price.

Item 1B. Unresolved Staff Comments

We do not have any unresolved staff comments.

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Item 3. Legal Proceedings

Commitment and Contingency Reserves

We periodically establish reserves for certain legal proceedings. The establishment of a reserve involves an estimation process that includes the advice of legal counsel and subjective judgment of management. While management believes these reserves to be adequate, future changes in the facts and circumstances could result in the actual liability exceeding the estimated ranges of loss and amounts accrued.

While the outcome and impact on us cannot be predicted with certainty, based on advice of counsel, management believes that the resolution of these proceedings through settlement or adverse judgment will not either individually or in the aggregate have a materially adverse effect on our financial condition, results of operations or cash flows.

Environmental Matters

We are reporting the following proceedings to comply with SEC regulations which require us to disclose proceedings arising under federal, state or local provisions regulating the discharge of materials into the environment or protecting the environment if we reasonably believe that such proceedings may result in monetary sanctions of \$100,000 or more. Our respective subsidiaries have or will develop corrective action plans regarding these disclosures that will be implemented in consultation with the respective federal and state agencies. It is not possible to predict the ultimate outcome of these proceedings, although none are currently expected to have a material effect on our financial condition, results of operations or cash flows.

Cheyenne

HollyFrontier Cheyenne Refining LLC (“HFCR”), our wholly-owned subsidiary, completed certain environmental audits at the Cheyenne Refinery regarding compliance with federal and state environmental requirements. By letters dated October 5, 2012, November 7, 2012, and January 10, 2013, and pursuant to the EPA's audit policy to the extent applicable, HFCR submitted reports to the EPA voluntarily disclosing non-compliance with certain emission limitations, reporting requirements, and provisions of a 2009 federal consent decree. By letters dated October 31, 2012; February 6, 2013; June 21, 2013; July 9, 2013 and July 25, 2013, and pursuant to applicable Wyoming audit statutes, HFCR submitted environmental audit reports to the Wyoming Department of Environmental Quality (“WDEQ”) voluntarily disclosing non-compliance with certain notification, reporting, and other provisions of the refinery's state air permit and other environmental regulatory requirements. No further action has been taken by either agency at this time.

El Dorado

The El Dorado Refinery has been engaged in discussions with the EPA regarding potential Clean Air Act violations relating to flaring devices at the refinery as well as other equipment. The El Dorado Refinery has responded to two separate information requests covering air emissions for a time frame from January 1, 2009 through May 31, 2014. The EPA also conducted an on-site Clean Air Act - Sec. 112r Risk Management Program (“RMP”) compliance audit at the El Dorado Refinery and notified the El Dorado Refinery of 20 alleged “deficiencies” related to that inspection. Although no Notice or Finding of Violation has been issued by the EPA in connection with either the Clean Air Act inquiry or the 112r inspection, the EPA and the U.S. Department of Justice have indicated that the federal government believes it has claims for civil penalties relating to the information provided in response to the information requests and the RMP inspection. We have had a preliminary discussion with the government parties, are continuing to evaluate the relevant law and facts and will continue to work with the EPA regarding these matters.

Tulsa

HollyFrontier Tulsa Refining LLC (“HFTR”) manufactures paraffin and hydrocarbon waxes at its Tulsa West facility. On March 11, 2014, the EPA issued a notice to HFTR of possible violations of certain provisions of the federal Toxic Substances Control Act in connection with the manufacture of certain of these products. HFTR and the EPA met and are working productively towards a settlement of this matter.

Other

We are a party to various other litigation and proceedings that we believe, based on advice of counsel, will not either individually or in the aggregate have a materially adverse impact on our financial condition, results of operations or cash flows.

Item 4. Mine Safety Disclosures

Not Applicable.

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PART II

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

Our common stock is traded on the New York Stock Exchange under the trading symbol "HFC." The following table sets forth the range of the daily high and low sales prices per share of common stock, dividends declared per share and the trading volume of common stock for the periods indicated:

Years Ended December 31,	High	Low	Dividends	Trading Volume
2016				
Fourth quarter	\$34.13	\$22.63	\$ 0.33	227,228,500
Third quarter	\$27.98	\$22.07	\$ 0.33	263,014,600
Second quarter	\$37.98	\$22.53	\$ 0.33	201,750,800
First quarter	\$41.29	\$29.00	\$ 0.33	197,404,600
2015				
Fourth quarter	\$52.30	\$39.00	\$ 0.33	153,988,900
Third quarter	\$54.73	\$42.68	\$ 0.33	213,026,200
Second quarter	\$43.71	\$35.89	\$ 0.33	157,763,200
First quarter	\$45.05	\$30.15	\$ 0.32	210,069,400

In May 2015, our Board of Directors approved a \$1 billion share repurchase program authorizing us to repurchase common stock in the open market or through privately negotiated transactions based on market conditions, securities law limitations and other relevant considerations. The following table includes repurchases made under this program during the fourth quarter of 2016.

Period	Total Number of Shares Purchased	Average Price Paid Per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Maximum Dollar Value of Shares that May Yet Be Purchased under the Plans or Programs
October 2016	—	\$	—	\$ 178,811,213
November 2016	—	\$	—	\$ 178,811,213
December 2016	—	\$	—	\$ 178,811,213
Total for October to December 2016	—	—	—	—

As of February 13, 2017, we had approximately 98,039 stockholders, including beneficial owners holding shares in street name.

We intend to consider the declaration of a dividend on a quarterly basis, although there is no assurance as to future dividends since they are dependent upon future earnings, capital requirements, our financial condition and other factors.

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Item 6. Selected Financial Data

The following table shows our selected financial information as of the dates or for the periods indicated. This table should be read in conjunction with Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and related notes thereto included elsewhere in this Annual Report on Form 10-K.

	Years Ended December 31,				
	2016	2015	2014	2013	2012
	(In thousands, except per share data)				
FINANCIAL DATA					
For the period					
Sales and other revenues	\$ 10,535,700	\$ 13,237,920	\$ 19,764,327	\$ 20,160,560	\$ 20,090,724
Income (loss) before income taxes ^(1,2)	(171,534)	1,208,568	467,500	1,159,399	2,787,995
Income tax provision	19,411	406,060	141,172	391,576	1,027,962
Net income (loss)	(190,945)	802,508	326,328	767,823	1,760,033
Less net income attributable to noncontrolling interest	69,508	62,407	45,036	31,981	32,861
Net income (loss) attributable to HollyFrontier stockholders	\$(260,453)	\$ 740,101	\$ 281,292	\$ 735,842	\$ 1,727,172
Earnings (loss) per share attributable to HollyFrontier stockholders - basic	\$(1.48)	\$ 3.91	\$ 1.42	\$ 3.66	\$ 8.41
Earnings (loss) per share attributable to HollyFrontier stockholders - diluted	\$(1.48)	\$ 3.90	\$ 1.42	\$ 3.64	\$ 8.38
Cash dividends declared per common share	\$ 1.32	\$ 1.31	\$ 3.26	\$ 3.20	\$ 3.10
Average number of common shares outstanding:					
Basic	176,101	188,731	197,243	200,419	204,379
Diluted	176,101	188,940	197,428	201,234	205,274
Net cash provided by operating activities	\$ 602,271	\$ 979,626	\$ 758,596	\$ 869,174	\$ 1,662,687
Net cash used for investing activities	\$(801,597)	\$(381,748)	\$(292,322)	\$(526,735)	\$(711,104)
Net cash provided by (used for) financing activities	\$ 843,372	\$(1,099,330)	\$(838,392)	\$(1,160,035)	\$(772,788)
At end of period					
Cash, cash equivalents and investments in marketable securities	\$ 1,134,727	\$ 210,552	\$ 1,042,095	\$ 1,665,263	\$ 2,393,401
Working capital	\$ 1,767,780	\$ 587,450	\$ 1,549,004	\$ 2,445,953	\$ 2,961,037
Total assets	\$ 9,435,661	\$ 8,388,299	\$ 9,230,047	\$ 10,055,763	\$ 10,326,628
Total debt ⁽³⁾	\$ 2,235,137	\$ 1,040,040	\$ 1,054,297	\$ 996,543	\$ 1,333,869
Total equity	\$ 5,301,985	\$ 5,809,773	\$ 6,100,719	\$ 6,609,398	\$ 6,642,658

Reflects non-cash lower of cost or market inventory valuation adjustments that increased pre-tax earnings by (1)\$291.9 million for the year ended December 31, 2016 and decreased pre-tax earnings by \$227.0 million and \$397.5 million for the years ended December 31, 2015 and 2014, respectively.

(2)

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Includes goodwill and long-lived asset impairment charges of \$309.3 million and \$344.8 million, respectively, that relate to our Cheyenne Refinery, for the year ended December 31, 2016.

(3) Includes total HEP debt of \$1,243.9 million, \$1,008.8 million, \$867.0 million, \$806.7 million and \$863.5 million, respectively, which is non-recourse to HollyFrontier.

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

This Item 7 contains “forward-looking” statements. See “Forward-Looking Statements” at the beginning of this Annual Report on Form 10-K. In this document, the words “we,” “our,” “ours” and “us” refer only to HollyFrontier and its consolidated subsidiaries or to HollyFrontier or an individual subsidiary and not to any other person with certain exceptions. Generally, the words “we,” “our,” “ours” and “us” include HEP and its subsidiaries as consolidated subsidiaries of HollyFrontier, unless when used in disclosures of transactions or obligations between HEP and HollyFrontier or its other subsidiaries. This document contains certain disclosures of agreements that are specific to HEP and its consolidated subsidiaries and do not necessarily represent obligations of HollyFrontier. When used in descriptions of agreements and transactions, “HEP” refers to HEP and its consolidated subsidiaries.

Overview

We are principally an independent petroleum refiner that produces high-value refined products such as gasoline, diesel fuel, jet fuel, specialty lubricant products, and specialty and modified asphalt. We own and operate refineries having a combined nameplate crude oil processing capacity of 457,000 barrels per day that serve markets throughout the Mid-Continent, Southwest and Rocky Mountain regions of the United States. Our refineries are located in El Dorado, Kansas (the El Dorado Refinery), Tulsa, Oklahoma (the Tulsa Refineries), which comprise two production facilities, the Tulsa West and East facilities, Artesia, New Mexico, which operates in conjunction with crude, vacuum distillation and other facilities situated 65 miles away in Lovington, New Mexico (collectively, the Navajo Refinery), Cheyenne, Wyoming (the Cheyenne Refinery) and Woods Cross, Utah (the Woods Cross Refinery).

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc. (“Purchaser”), entered into a share purchase agreement with Suncor Energy Inc. (“Suncor”) to acquire 100% of the outstanding capital stock of Petro-Canada Lubricants Inc. (“PCLI”) that closed on February 1, 2017. Cash consideration paid was CAD \$1.125 billion, including working capital with an estimated value of CAD \$342 million. The PCLI plant, located in Mississauga, Ontario, is the largest producer of base oils in Canada with 15,600 BPD of lubricant production capacity, and is the only North American producer of high margin Group III base oils.

For the year ended December 31, 2016, net loss attributable to HollyFrontier stockholders was \$260.5 million compared to net income of \$740.1 million and \$281.3 million for the years ended December 31, 2015, and 2014, respectively. Overall gross refining margins per produced product sold for 2016 decreased 48% over the year ended December 31, 2015, which was due principally to lower crack spreads throughout 2016. Included in our financial results for the current year were non-cash items consisting of goodwill and long-lived asset impairment charges, offset by an inventory reserve adjustment.

Pursuant to the 2007 Energy Independence and Security Act, the EPA promulgated the RFS2 regulations, which increased the volume of renewable fuels mandated to be blended into the nation's fuel supply. The regulations, in part, require refiners to add annually increasing amounts of “renewable fuels” to their petroleum products or purchase credits, known as RINs, in lieu of such blending. Compliance with RFS2 regulations significantly increases our cost of products sold, with RINs costs totaling \$242.0 million for the year ended December 31, 2016. Year-over-year increased costs of ethanol blended into our petroleum products, which exceeded the cost of crude oil, also contributed to lower refining margins for the year.

OUTLOOK

Our profitability is affected by the spread, or differential, between the market prices for crude oil on the world market (which is based on the price for Brent, North Sea Crude) and the price for inland U.S. crude oil (which is based on the price for WTI). We expect continued volatility in the pricing relationship between inland and coastal crude, currently averaging in the range of \$1.00 to \$2.00 per barrel.

We have recently curtailed production at the Woods Cross refinery due to insufficient crude supply provided by the Plains Rocky Mountain Pipeline. We are unable to predict the duration of the supply disruption at this time, but are considering alternative solutions and working with Plains and others to rectify the situation.

Our RINs costs are material and represent a cost of products sold. The price of RINs may be extremely volatile due to real or perceived future shortages in RINs. As of December 31, 2016, we are purchasing RINs in order to meet approximately half of our renewable fuel requirements.

A more detailed discussion of our financial and operating results for the years ended December 31, 2016, 2015 and 2014 is presented in the following sections.

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Results Of Operations

Financial Data

	Years Ended December 31,		
	2016	2015	2014
	(In thousands, except per share data)		
Sales and other revenues	\$ 10,535,700	\$ 13,237,920	\$ 19,764,327
Operating costs and expenses:			
Cost of products sold (exclusive of depreciation and amortization):			
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	8,765,927	10,239,218	17,228,385
Lower of cost or market inventory valuation adjustment	(291,938)	226,979	397,478
	8,473,989	10,466,197	17,625,863
Operating expenses (exclusive of depreciation and amortization)	1,018,839	1,060,373	1,144,940
General and administrative expenses (exclusive of depreciation and amortization)	125,648	120,846	114,609
Depreciation and amortization	363,027	346,151	363,381
Goodwill and asset impairment	654,084	—	—
Total operating costs and expenses	10,635,587	11,993,567	19,248,793
Income (loss) from operations	(99,887)	1,244,353	515,534
Other income (expense):			
Earnings (loss) of equity method investments	14,213	(3,738)	(2,007)
Interest income	2,491	3,391	4,430
Interest expense	(72,192)	(43,470)	(43,646)
Loss on early extinguishment of debt	(8,718)	(1,370)	(7,677)
Other, net	(7,441)	9,402	866
	(71,647)	(35,785)	(48,034)
Income (loss) before income taxes	(171,534)	1,208,568	467,500
Income tax provision	19,411	406,060	141,172
Net income (loss)	(190,945)	802,508	326,328
Less net income attributable to noncontrolling interest	69,508	62,407	45,036
Net income (loss) attributable to HollyFrontier stockholders	\$(260,453)	\$ 740,101	\$ 281,292
Earnings (loss) per share attributable to HollyFrontier stockholders:			
Basic	\$(1.48)	\$ 3.91	\$ 1.42
Diluted	\$(1.48)	\$ 3.90	\$ 1.42
Cash dividends declared per common share	\$ 1.32	\$ 1.31	\$ 3.26
Average number of common shares outstanding:			
Basic	176,101	188,731	197,243
Diluted	176,101	188,940	197,428

Other Financial Data

	Years Ended December 31,		
	2016	2015	2014
	(In thousands)		
Net cash provided by operating activities	\$602,271	\$979,626	\$758,596
Net cash used for investing activities	\$(801,597)	\$(381,748)	\$(292,322)
Net cash provided by (used for) financing activities	\$843,372	\$(1,099,330)	\$(838,392)
Capital expenditures	\$479,790	\$676,155	\$564,821

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EBITDA ⁽¹⁾	\$200,404	\$1,533,761	\$832,738
Adjusted EBITDA ⁽²⁾	\$575,956	\$1,760,740	\$1,230,216

Earnings before interest, taxes, depreciation and amortization, which we refer to as “EBITDA,” is calculated as net (1) income (loss) plus (i) interest expense, net of interest income, (ii) income tax provision, and (iii) depreciation and amortization.

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"Adjusted EBITDA" is calculated as EBITDA plus or minus (i) lower of cost or market inventory valuation adjustment and (ii) goodwill and asset impairment charges. EBITDA and Adjusted EBITDA are not calculations provided for under GAAP; however, the amounts included in these calculations are derived from amounts included in our consolidated financial statements. EBITDA and Adjusted EBITDA should not be considered as alternatives to net income or operating income as an indication of our operating performance or as an alternative to operating (2) cash flow as a measure of liquidity. EBITDA and Adjusted EBITDA are not necessarily comparable to similarly titled measures of other companies. They are presented here because they are widely used financial indicators used by investors and analysts to measure performance. EBITDA and Adjusted EBITDA are also used by our management for internal analysis and as a basis for financial covenants. EBITDA and Adjusted EBITDA presented above are reconciled to net income under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 7A of Part II of this Form 10-K.

Our operations are organized into two reportable segments, Refining and HEP. See Note 20 "Segment Information" in the Notes to Consolidated Financial Statements for additional information on our reportable segments.

Refining Operating Data

Our refinery operations include the El Dorado, Tulsa, Navajo, Cheyenne and Woods Cross Refineries. The following tables set forth information, including non-GAAP performance measures about our consolidated refinery operations. The cost of products and refinery gross and net operating margins do not include the non-cash effects of goodwill and asset impairments charges, lower of cost or market inventory valuation adjustments and depreciation and amortization. Reconciliations to amounts reported under GAAP are provided under "Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles" following Item 7A of Part II of this Form 10-K.

	Years Ended December 31,		
	2016	2015	2014
Consolidated			
Crude charge (BPD) ⁽¹⁾	423,910	432,560	406,180
Refinery throughput (BPD) ⁽²⁾	457,480	463,580	436,400
Refinery production (BPD) ⁽³⁾	442,110	446,560	425,010
Sales of produced refined products (BPD)	435,420	438,000	420,990
Sales of refined products (BPD) ⁽⁴⁾	464,980	488,350	461,640
Refinery utilization ⁽⁵⁾	92.8	% 97.6	% 91.7
Average per produced barrel ⁽⁶⁾			
Net sales	\$58.02	\$71.32	\$110.19
Cost of products ⁽⁷⁾	49.64	55.25	96.21
Refinery gross margin ⁽⁸⁾	8.38	16.07	13.98
Refinery operating expenses ⁽⁹⁾	5.57	5.71	6.38
Net operating margin ⁽⁸⁾	\$2.81	\$10.36	\$7.60
Refinery operating expenses per throughput barrel ⁽¹⁰⁾	\$5.30	\$5.39	\$6.16

(1) Crude charge represents the barrels per day of crude oil processed at our refineries.

(2) Refinery throughput represents the barrels per day of crude and other refinery feedstocks input to the crude units and other conversion units at our refineries.

(3) Refinery production represents the barrels per day of refined products yielded from processing crude and other refinery feedstocks through the crude units and other conversion units at our refineries.

(4) Includes refined products purchased for resale.

(5)

Represents crude charge divided by total crude capacity (BPSD). Effective July 1, 2016, our consolidated crude capacity increased from 443,000 BPSD to 457,000 BPSD upon completion of our Woods Cross Refinery expansion project.

Represents average per barrel amount for produced refined products sold, which is a non-GAAP measure.

(6) Reconciliations to amounts reported under GAAP are provided under “Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles” following Item 7A of Part II of this Form 10-K.

(7) Transportation, terminal and refinery storage costs billed from HEP are included in cost of products.

Excludes lower of cost or market inventory valuation adjustments of that increased refinery gross margin by

(8) \$291.9 million for the year ended December 31, 2016 and decreased refinery gross margin by \$227.0 million and \$397.5 million for the years ended December 31, 2015 and 2014, respectively.

(9) Represents operating expenses of our refineries, exclusive of depreciation and amortization.

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(10) Represents refinery operating expenses, exclusive of depreciation and amortization, divided by refinery throughput.

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Results of Operations – Year Ended December 31, 2016 Compared to Year Ended December 31, 2015

Summary

Net loss attributable to HollyFrontier stockholders for the year ended December 31, 2016 was \$260.5 million (\$1.48 per basic and diluted share), a \$1,000.6 million decrease compared to net income attributable to HollyFrontier stockholders of \$740.1 million (\$3.91 per basic and \$3.90 per diluted share) for the year ended December 31, 2015. Net income decreased due principally to non-cash goodwill and long-lived asset impairment charges of \$309.3 million and \$344.8 million, respectively, and a year-over-year decrease in refining margins and sales volumes, net of the effects of a year-over-year change in lower of cost or market inventory reserve adjustments. For the year ended December 31, 2016, lower of cost or market inventory reserve adjustments increased pre-tax earnings by \$291.9 million compared to a pre-tax earnings decrease of \$227.0 million for the year ended December 31, 2015. Collectively, the impairment charges, net of the lower of cost or market valuation benefit, reduced 2016 pre-tax income by \$362.1 million. Refinery gross margins for the year ended December 31, 2016 decreased to \$8.38 per produced barrel from \$16.07 for the year ended December 31, 2015.

Sales and Other Revenues

Sales and other revenues decreased 20% from \$13,237.9 million for the year ended December 31, 2015 to \$10,535.7 million for the year ended December 31, 2016 due to a year-over-year decrease in sales prices and lower refined product sales volumes. The average sales price we received per produced barrel sold decreased 19% from \$71.32 for the year ended December 31, 2015 to \$58.02 for the year ended December 31, 2016. Sales and other revenues for the years ended December 31, 2016 and 2015 include \$68.9 million and \$66.7 million, respectively, in HEP revenues attributable to pipeline and transportation services provided to unaffiliated parties.

Cost of Products Sold

Total cost of products sold decreased 19% from \$10,466.2 million for the year ended December 31, 2015 to \$8,474.0 million for the year ended December 31, 2016, due principally to lower crude oil costs and lower sales volumes of refined products. Additionally, this decrease reflects a \$291.9 million benefit that is attributable to a reduction in the lower of cost or market reserve for the year ended December 31, 2016, a \$518.9 million increase compared to a charge of \$227.0 million for the same period of last year. The reserve at December 31, 2016 is based on market conditions and prices at that time. Excluding this non-cash adjustment, the average price we paid per barrel for crude oil and feedstocks and the transportation costs of moving the finished products to the market place decreased 10% from \$55.25 for the year ended December 31, 2015 to \$49.64 for the year ended December 31, 2016.

Gross Refinery Margins

Gross refinery margin per produced barrel decreased 48% from \$16.07 for the year ended December 31, 2015 to \$8.38 for the year ended December 31, 2016. This was due to the effects of a decrease in the average per barrel sales price for refined products sold, partially offset by decreased crude oil and feedstock prices during the current year. Gross refinery margin does not include the non-cash effects of lower of cost or market inventory valuation adjustments goodwill and asset impairment charges or depreciation and amortization. See “Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles” following Item 7A of Part II of this Form 10-K for a reconciliation to the income statement of prices of refined products sold and cost of products purchased.

Operating Expenses

Operating expenses, exclusive of depreciation and amortization, decreased 4% from \$1,060.4 million for the year ended December 31, 2015 to \$1,018.8 million for the year ended December 31, 2016 due principally to lower natural gas fuel and maintenance costs compared to 2015. For the years ended December 31, 2016 and 2015, operating expenses include \$90.4 million and \$102.3 million, respectively, in costs attributable to HEP operations.

General and Administrative Expenses

General and administrative expenses increased 4% from \$120.8 million for the year ended December 31, 2015 to \$125.6 million for the year ended December 31, 2016, due principally to PCLI acquisition costs. For the years ended December 31, 2016 and 2015, general and administrative expenses include \$10.1 million and \$10.2 million, respectively, in costs attributable to HEP operations.

Depreciation and Amortization Expenses

Depreciation and amortization increased 5% from \$346.2 million for the year ended December 31, 2015 to \$363.0 million for the year ended December 31, 2016. This increase was due principally to depreciation and amortization attributable to capitalized improvement projects and capitalized refinery turnaround costs. For the years ended December 31, 2016 and 2015, depreciation and amortization expenses include \$68.8 million and \$61.7 million, respectively, in costs attributable to HEP operations.

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Goodwill and Asset Impairment

During the year ended December 31, 2016, we recorded goodwill and long-lived asset impairment charges of \$309.3 million and \$344.8 million, respectively, that relate to our Cheyenne Refinery. See Note 10 "Goodwill" in the Notes to Consolidated Financial Statements for additional information on the Cheyenne impairment.

Interest Income

Interest income for the year ended December 31, 2016 was \$2.5 million compared to \$3.4 million for the year ended December 31, 2015. This decrease was due to lower investment levels in marketable debt securities during 2015.

Interest Expense

Interest expense was \$72.2 million for the year ended December 31, 2016 compared to \$43.5 million for the year ended December 31, 2015. This increase was due to interest attributable to higher debt levels during the current year relative to 2015. For the years ended December 31, 2016 and 2015, interest expense included \$52.6 million and \$36.9 million, respectively, in interest costs attributable to HEP operations.

Loss on Early Extinguishment of Debt

In March 2016, we recognized an \$8.7 million loss on the early retirement of a financing obligation, a component of outstanding debt, upon HEP's purchase of crude oil tanks from an affiliate of Plains. See Note 12 "Debt" in the Notes to Consolidated Financial Statements for additional information on this financing obligation.

In June 2015, we recognized a \$1.4 million early extinguishment loss on the redemption of our \$150.0 million aggregate principal amount of 6.875% senior notes maturing November 2018.

Income Taxes

For the year ended December 31, 2016, we recorded income tax expense of \$19.4 million compared to \$406.1 million for the year ended December 31, 2015. This decrease was due principally to a pre-tax loss during the year ended December 31, 2016 compared to pre-tax earnings during the year ended 2015. Our effective tax rates, before consideration of earnings attributable to the noncontrolling interest, were (11.3)% and 33.6% for the years ended December 31, 2016 and 2015, respectively. Our current year effective tax rate reflects the effects of the \$309.3 million goodwill impairment charge, a significant driver of our \$171.5 million loss before income taxes for the year ended December 31, 2016, that is not deductible for income tax purposes.

Results of Operations – Year Ended December 31, 2015 Compared to Year Ended December 31, 2014

Summary

Net income attributable to HollyFrontier stockholders for the year ended December 31, 2015 was \$740.1 million (\$3.91 per basic and \$3.90 per diluted share), a \$458.8 million increase compared to \$281.3 million (\$1.42 per basic and diluted share) for the year ended December 31, 2014. Net income increased due principally to a year-over-year increase in refining margins and sales volumes, improved operational reliability and lower operating expenses. Additionally, non-cash lower of cost or market inventory valuation adjustments reduced 2015 pre-tax income by \$227.0 million, compared to \$397.5 million in 2014. Refinery gross margins for the year ended December 31, 2015 increased to \$16.07 per produced barrel from \$13.98 for the year ended December 31, 2014.

Sales and Other Revenues

Sales and other revenues decreased 33% from \$19,764.3 million for the year ended December 31, 2014 to \$13,237.9 million for the year ended December 31, 2015 due to a year-over-year decrease in sales prices, partially offset by higher refined product sales volumes. The average sales price we received per produced barrel sold decreased 35%

from \$110.19 for the year ended December 31, 2014 to \$71.32 for the year ended December 31, 2015. Sales and other revenues for the years ended December 31, 2015 and 2014 include \$66.7 million and \$57.3 million, respectively, in HEP revenues attributable to pipeline and transportation services provided to unaffiliated parties.

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Cost of Products Sold

Total cost of products sold decreased 41% from \$17,625.9 million for the year ended December 31, 2014 to \$10,466.2 million for the year ended December 31, 2015, due principally to lower crude oil costs, partially offset by higher sales volumes of refined products. Additionally, cost of products sold reflects a \$227.0 million charge that is attributable to the lower of cost or market reserve for the year ended December 31, 2015, a \$170.5 million decrease compared to \$397.5 million for the year ended December 31, 2014. The reserve at December 31, 2015 was based on market conditions and prices at that time. Excluding this non-cash adjustment, the average price we paid per barrel for crude oil and feedstocks and the transportation costs of moving the finished products to the market place decreased 43% from \$96.21 for the year ended December 31, 2014 to \$55.25 for the year ended December 31, 2015.

Gross Refinery Margins

Gross refinery margin per produced barrel increased 15% from \$13.98 for the year ended December 31, 2014 to \$16.07 for the year ended December 31, 2015. This was due to the effects of decreased crude oil and feedstock prices, partially offset by a decrease in the average per barrel sales price for refined products sold during the current year. Gross refinery margin does not include the non-cash effects of lower of cost or market inventory valuation adjustments or depreciation and amortization. See “Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles” following Item 7A of Part II of this Form 10-K for a reconciliation to the income statement of prices of refined products sold and cost of products purchased.

Operating Expenses

Operating expenses, exclusive of depreciation and amortization, decreased 7% from \$1,144.9 million for the year ended December 31, 2014 to \$1,060.4 million for the year ended December 31, 2015 due principally to a year-over-year decrease in repair and maintenance and natural gas fuel costs and lower environmental accruals compared to 2014. For the years ended December 31, 2015 and 2014, operating expenses include \$102.3 million and \$104.8 million, respectively, in costs attributable to HEP operations.

General and Administrative Expenses

General and administrative expenses increased 5% from \$114.6 million for the year ended December 31, 2014 to \$120.8 million for the year ended December 31, 2015. This is attributable to overall higher incentive compensation and legal costs in 2015, net of the effects of state high-wage credits recognized during the second quarter of 2015. For the years ended December 31, 2015 and 2014, general and administrative expenses include \$10.2 million and \$8.5 million, respectively, in costs attributable to HEP operations.

Depreciation and Amortization Expenses

Depreciation and amortization decreased 5% from \$363.4 million for the year ended December 31, 2014 to \$346.2 million for the year ended December 31, 2015. This decrease was due principally to the recognition of higher accelerated depreciation levels of assets no longer in operation during 2014, partially offset by depreciation and amortization during 2015 attributable to capitalized improvement projects and capitalized refinery turnaround costs. For the years ended December 31, 2015 and 2014, depreciation and amortization expenses include \$61.7 million and \$60.9 million, respectively, in costs attributable to HEP operations.

Interest Income

Interest income for the year ended December 31, 2015 was \$3.4 million compared to \$4.4 million for the year ended December 31, 2014. This decrease was due to lower investment levels in marketable debt securities during 2015.

Interest Expense

Interest expense was \$43.5 million for the year ended December 31, 2015 compared to \$43.6 million for the year ended December 31, 2014. This slight decrease is due principally to the effects of lower HollyFrontier interest expense as a result of the June 2015 redemption of the \$150.0 million HollyFrontier senior notes, net of increased

HEP interest expense attributable to higher year-over-year HEP debt levels. For the years ended December 31, 2015 and 2014, interest expense included \$36.9 million and \$36.1 million, respectively, in interest costs attributable to HEP operations.

Loss on Early Extinguishment of Debt

In June 2015, we redeemed our \$150.0 million aggregate principal amount of 6.875% senior notes maturing November 2018 at a redemption cost of \$155.2 million, at which time we recognized a \$1.4 million early extinguishment loss consisting of a \$5.2 million debt redemption premium, net of an unamortized premium of \$3.8 million.

In March 2014, HEP redeemed its \$150.0 million aggregate principal amount of 8.25% senior notes maturing March 2018 at a redemption cost of \$156.2 million, at which time it recognized a \$7.7 million early extinguishment loss consisting of a \$6.2 million debt redemption premium and unamortized discount and financing costs of \$1.5 million.

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Income Taxes

For the year ended December 31, 2015, we recorded income tax expense of \$406.1 million compared to \$141.2 million for the year ended December 31, 2014. This increase was due principally to higher pre-tax earnings during the year ended December 31, 2015 compared to 2014. Our effective tax rates, before consideration of earnings attributable to the noncontrolling interest, were 33.6% and 30.2% for the years ended December 31, 2015 and 2014, respectively.

LIQUIDITY AND CAPITAL RESOURCES

HollyFrontier Credit Agreement

We have a \$1 billion senior unsecured revolving credit facility maturing in July 2019 (the “HollyFrontier Credit Agreement”) that was amended in February 2017, increasing the size of the credit facility to \$1.35 billion and extending the maturity to February 2022. The HollyFrontier Credit Agreement may be used for revolving credit loans and letters of credit from time to time and is available to fund general corporate purposes. During the year ended December 31, 2016, we received advances totaling \$315.0 million and repaid \$315.0 million under the HollyFrontier Credit Agreement. At December 31, 2016, we were in compliance with all covenants, had no outstanding borrowings and had outstanding letters of credit totaling \$4.4 million under the HollyFrontier Credit Agreement.

HollyFrontier Senior Notes

In March 2016 and November 2016, we issued \$250 million and \$750 million, respectively, in aggregate principal amount of 5.875% senior notes (the “HollyFrontier Senior Notes”) maturing April 2026. The HollyFrontier Senior Notes are unsecured and unsubordinated obligations of ours and rank equally with all our other existing and future unsecured and unsubordinated indebtedness.

HollyFrontier Term Loan

In April 2016, we entered into a \$350 million senior unsecured term loan (the “HollyFrontier Term Loan”) maturing in April 2019. The HollyFrontier Term Loan was fully repaid with proceeds received upon the November 2016 issuance of the HollyFrontier Senior Notes.

HEP Credit Agreement

HEP has a \$1.2 billion senior secured revolving credit facility maturing in November 2018 (the “HEP Credit Agreement”) and is available to fund capital expenditures, investments, acquisitions, distribution payments and working capital and for general partnership purposes. It is also available to fund letters of credit up to a \$50 million sub-limit. During the year ended December 31, 2016, HEP received advances totaling \$554.0 million and repaid \$713.0 million under the HEP Credit Agreement. At December 31, 2016, HEP was in compliance with all of its covenants, had outstanding borrowings of \$553.0 million and no outstanding letters of credit under the HEP Credit Agreement.

HEP Senior Notes

On January 4, 2017, HEP redeemed its \$300 million aggregate principal amount of 6.50% senior notes maturing March 2020 at a redemption cost of \$316.4 million, at which time HEP recognized a \$12.2 million early extinguishment loss. HEP funded the redemption with borrowings under the HEP Credit Agreement.

HEP Debt Offering

In July 2016, HEP issued \$400 million in aggregate principal amount of 6.0% HEP unsecured senior notes maturing in 2024 in a private placement. HEP used the net proceeds to repay indebtedness under the HEP Credit Agreement.

See Note 12 "Debt" in the Notes to Consolidated Financial Statements for additional information on our debt instruments.

HEP Common Unit Continuous Offering Program

On May 10, 2016, HEP established a continuous offering program under which HEP may issue and sell common units from time to time, representing limited partner interests, up to an aggregate gross sales amount of \$200 million. As of December 31, 2016, HEP has issued 703,455 units under this program, providing \$23.0 million in net proceeds. In connection with this program and to maintain the 2% general partner interest, we made capital contributions totaling \$0.5 million as of December 31, 2016.

HEP intends to use the net proceeds for general partnership purposes, which may include funding working capital, repayment of debt, acquisitions and capital expenditures. Amounts repaid under HEP's credit facility may be reborrowed from time to time.

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HEP Private Placement Agreement

On September 16, 2016, HEP entered into a common unit purchase agreement in which certain purchasers agreed to purchase in a private placement 3,420,000 HEP common units, representing limited partnership interests, at a price of \$30.18 per common unit. The private placement closed on October 3, 2016, at which time HEP received proceeds of \$103.0 million, which were used to finance a portion of the Woods Cross assets acquisition. In connection with this private placement and to maintain our 2% general partner interest in HEP, we made capital contributions totaling \$2.1 million to HEP in October 2016. After this common unit issuance, our interest in HEP is 37%, including the 2% general partner interest.

Liquidity

We believe our current cash and cash equivalents, along with future internally generated cash flow and funds available under our credit facilities will provide sufficient resources to fund currently planned capital projects and our liquidity needs for the foreseeable future. In addition, components of our growth strategy include construction of new refinery processing units and the expansion of existing units at our facilities and selective acquisition of complementary assets for our refining operations intended to increase earnings and cash flow.

As of December 31, 2016, our cash, cash equivalents and investments in marketable securities totaled \$1.1 billion. We consider all highly-liquid instruments with a maturity of three months or less at the time of purchase to be cash equivalents. Cash equivalents are stated at cost, which approximates market value. These primarily consist of investments in conservative, highly-rated instruments issued by financial institutions, government and corporate entities with strong credit standings and money market funds.

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor to acquire 100% of the outstanding capital stock of PCLI that closed on February 1, 2017. Cash consideration paid was \$862.1 million, or \$1.125 billion in Canadian dollars.

In May 2015, our Board of Directors approved a \$1 billion share repurchase program, which replaced all existing share repurchase programs, authorizing us to repurchase common stock in the open market or through privately negotiated transactions. The timing and amount of stock repurchases will depend on market conditions and corporate, regulatory and other relevant considerations. This program may be discontinued at any time by our Board of Directors. As of December 31, 2016, we had remaining authorization to repurchase up to \$178.8 million under this stock repurchase program. In addition, we are authorized by our Board of Directors to repurchase shares in an amount sufficient to offset shares issued under our compensation programs.

Cash and cash equivalents increased \$644.0 million for the year ended December 31, 2016. Net cash provided by operating and financing activities of \$602.3 million and \$843.4 million, respectively, exceeded net cash used for investing activities of \$801.6 million. Working capital increased by \$1,180.3 million during the year ended December 31, 2016.

Cash Flows – Operating Activities

Year Ended December 31, 2016 Compared to Year Ended December 31, 2015

Net cash flows provided by operating activities were \$602.3 million for the year ended December 31, 2016 compared to \$979.6 million for the year ended December 31, 2015, a decrease of \$377.4 million. Net loss for the year ended December 31, 2016 was \$190.9 million, a decrease of \$993.5 million compared to net income of \$802.5 million for the year ended December 31, 2015. Non-cash adjustments to net income consisting of depreciation and amortization, goodwill and asset impairment, lower of cost or market inventory valuation adjustment, net loss of equity method investments, inclusive of distributions, gain on sale of assets, gain or loss on extinguishment of debt, deferred income

taxes, equity-based compensation expense, fair value changes to derivative instruments and excess tax expense from equity-based compensation totaled \$846.8 million for the year ended December 31, 2016 compared to \$492.0 million for the same period in 2015. Changes in working capital items increased cash flows by \$74.7 million for the year ended December 31, 2016 compared to a decrease of \$195.1 million for the year ended December 31, 2015. For the year ended December 31, 2016, turnaround expenditures increased to \$125.3 million from \$89.4 million for the same period of 2015.

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Year Ended December 31, 2015 Compared to Year Ended December 31, 2014

Net cash flows provided by operating activities were \$979.6 million for the year ended December 31, 2015 compared to \$758.6 million for the year ended December 31, 2014, an increase of \$221.0 million. Net income for the year ended December 31, 2015 was \$802.5 million, an increase of \$476.2 million compared to \$326.3 million for the year ended December 31, 2014. Non-cash adjustments to net income consisting of lower of cost or market inventory valuation adjustment, depreciation and amortization, net loss of equity method investments, inclusive of distributions, gain on sale of assets, unamortized premium / discount on early extinguishment of debt, deferred income taxes, equity-based compensation expense and fair value changes to derivative instruments totaled \$492.0 million for the year ended December 31, 2015 compared to \$580.0 million for the same period in 2014. Changes in working capital items decreased cash flows by \$195.1 million for the year ended December 31, 2015 compared to \$64.1 million for the year ended December 31, 2014. For the year ended December 31, 2015, turnaround expenditures decreased to \$89.4 million from \$96.8 million for the same period of 2014.

Cash Flows – Investing Activities and Planned Capital Expenditures

Year Ended December 31, 2016 Compared to Year Ended December 31, 2015

Net cash flows used for investing activities were \$801.6 million for the year ended December 31, 2016 compared to \$381.7 million for the year ended December 31, 2015, an increase of \$419.8 million. Cash expenditures for properties, plants and equipment for 2016 decreased to \$479.8 million from \$676.2 million for the same period in 2015. These include HEP capital expenditures of \$107.6 million and \$193.1 million for the years ended December 31, 2016 and 2015, respectively. In addition, in 2016, HEP purchased a 50% interest in Cheyenne Pipeline for \$42.6 million, and in 2015, a 50% interest in Frontier Pipeline for \$55.0 million. We received proceeds of \$0.8 million and \$19.3 million from the sale of assets during the years ended December 31, 2016 and 2015, respectively. For the years ended December 31, 2016 and 2015, we invested \$546.6 million and \$509.3 million, respectively, in marketable securities and received proceeds of \$266.6 million and \$839.5 million, respectively, from the sale or maturity of marketable securities.

Year Ended December 31, 2015 Compared to Year Ended December 31, 2014

Net cash flows used for investing activities were \$381.7 million for the year ended December 31, 2015 compared to \$292.3 million for the year ended December 31, 2014, an increase of \$89.4 million. Cash expenditures for properties, plants and equipment for 2015 increased to \$676.2 million from \$564.8 million for the same period in 2014. These include HEP capital expenditures of \$193.1 million and \$198.7 million for the years ended December 31, 2015 and 2014, respectively. We received proceeds of \$19.3 million and \$16.6 million from the sale of assets during the years ended December 31, 2015 and 2014, respectively. For the years ended December 31, 2015 and 2014, we invested \$509.3 million and \$1,025.6 million, respectively, in marketable securities and received proceeds of \$839.5 million and \$1,276.4 million, respectively, from the sale or maturity of marketable securities. Additionally, HEP purchased a 50% interest in Frontier Pipeline for \$55.0 million.

Planned Capital Expenditures

HollyFrontier Corporation

Each year our Board of Directors approves our annual capital budget which includes specific projects that management is authorized to undertake. Additionally, when conditions warrant or as new opportunities arise, additional projects may be approved. The funds appropriated for a particular capital project may be expended over a period of several years, depending on the time required to complete the project. Therefore, our planned capital expenditures for a given year consist of expenditures appropriated in that year's capital budget plus expenditures for projects appropriated in prior years which have not yet been completed. During 2017, we expect to spend approximately \$275.0 million to \$300.0 million in cash for capital projects appropriated in 2017 and prior years. In addition, we expect to spend approximately \$150.0 million to \$165.0 million on refinery turnarounds. Refinery

turnaround spending is amortized over the useful life of the turnaround. Our expected capital and turnaround cash spending for 2017 is as follows:

	Expected Cash Spending Range (In millions)	
Type:		
Sustaining	\$75.0	\$85.0
Reliability and Growth	100.0	115.0
Compliance and Safety	90.0	100.0
Turnarounds	135.0	150.0
Total	\$400.0	\$450.0

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The refining industry is capital intensive and requires on-going investments to sustain our refining operations. This includes replacement of, or rebuilding, refinery units and components that extend the useful life. We also invest in projects that improve operational reliability and profitability via enhancements that improve refinery processing capabilities as well as production yield and flexibility. Our capital expenditures also include projects related to environmental, health and safety compliance and include initiatives as a result of federal and state mandates.

A significant portion of our current capital spending is associated with compliance-oriented capital improvements. This spending is required due to existing consent decrees (for projects including FCC unit flue gas scrubbers and tail gas treatment units), federal fuels regulations (particularly, Tier 3 which mandates a reduction in the sulfur content of blended gasoline), refinery waste water treatment improvements and other similar initiatives. Our refinery operations and related emissions are highly regulated at both federal and state levels, and we invest in our facilities as needed to remain in compliance with these standards. Additionally, when faced with new emissions or fuels standards, we seek to execute projects that facilitate compliance and also improve the operating costs and / or yields of associated refining processes.

HEP

Each year the Holly Logistic Services, L.L.C. board of directors approves HEP's annual capital budget, which specifies capital projects that HEP management is authorized to undertake. Additionally, at times when conditions warrant or as new opportunities arise, special projects may be approved. The funds allocated for a particular capital project may be expended over a period in excess of a year, depending on the time required to complete the project. Therefore, HEP's planned capital expenditures for a given year consist of expenditures approved for capital projects included in its current year capital budget as well as, in certain cases, expenditures approved for capital projects in capital budgets for prior years. The 2017 HEP capital budget is comprised of \$9.0 million for maintenance capital expenditures and \$30.0 million for expansion capital expenditures. HEP expects the majority of the expansion capital budget to be invested in refined product pipeline expansions, crude system enhancements, new storage tanks, and enhanced blending capabilities at our racks.

Cash Flows – Financing Activities**Year Ended December 31, 2016 Compared to Year Ended December 31, 2015**

Net cash flows provided by financing activities were \$843.4 million for the year ended December 31, 2016 compared to cash flows used for financing activities of \$1,099.3 million for the year ended December 31, 2015, an increase of \$1,942.7 million. During the year ended December 31, 2016, we received \$992.6 million in net proceeds upon issuance of our 5.875% senior notes, received \$350.0 million and repaid \$350.0 million under a term loan, received \$315.0 million and repaid \$315.0 million under the HollyFrontier Credit Agreement, purchased \$133.4 million in common stock and paid \$234.0 million in dividends. In addition, we extinguished our financing obligation with Plains for \$39.5 million. Also during this period, HEP received \$869.0 million and repaid \$1,028.0 million under the HEP Credit Agreement, received \$394.0 million in net proceeds from issuance of HEP 6.0% senior notes, received \$125.9 million in net proceeds from the issuance of its common units and paid distributions of \$92.6 million to noncontrolling interests. During the year ended December 31, 2015, we purchased \$742.8 million in common stock, paid \$246.9 million in dividends and paid \$155.2 million upon the redemption of our 6.875% senior notes. Also during this period, HEP received \$973.9 million and repaid \$832.9 million under the HEP Credit Agreement and paid distributions of \$83.3 million to noncontrolling interests.

Year Ended December 31, 2015 Compared to Year Ended December 31, 2014

Net cash flows used for financing activities were \$1,099.3 million for the year ended December 31, 2015 compared to \$838.4 million for the year ended December 31, 2014, an increase of \$260.9 million. During the year ended December 31, 2015, we purchased \$742.8 million in common stock, paid \$246.9 million in dividends and paid \$155.2 million upon the redemption of our 6.875% senior notes. Also during this period, HEP received \$973.9 million and

repaid \$832.9 million under the HEP Credit Agreement and paid distributions of \$83.3 million to noncontrolling interests. During the year ended December 31, 2014, we purchased \$158.8 million in common stock, paid \$647.2 million in dividends and recognized \$2.0 million excess tax benefits on our equity-based compensation. Also during this period, HEP received \$642.3 million and repaid \$434.3 million under the HEP Credit Agreement, paid \$156.2 million upon the redemption of HEP's 8.25% senior notes and paid distributions of \$78.2 million to noncontrolling interests.

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Contractual Obligations and Commitments

The following table presents our long-term contractual obligations as of December 31, 2016 in total and by period due beginning in 2017. The table below does not include our contractual obligations to HEP under our long-term transportation agreements as these related-party transactions are eliminated in the Consolidated Financial Statements. A description of these agreements is provided under “Holly Energy Partners, L.P.” under Items 1 and 2, “Business and Properties.” Also, the table below does not reflect renewal options on our operating leases that are likely to be exercised.

Contractual Obligations and Commitments	Total	Payments Due by Period			
		Less than 1 Year	1-3 Years	3-5 Years	Over 5 Years
	(In thousands)				
HollyFrontier Corporation					
Long-term debt - principal	\$1,000,000	\$—	\$—	\$—	\$1,000,000
Long-term debt - interest ⁽¹⁾	548,333	58,750	117,500	117,500	254,583
Supply agreements ⁽²⁾	2,931,355	462,877	786,286	638,463	1,043,729
Transportation and storage agreements ⁽³⁾	1,498,001	136,052	258,153	209,763	894,033
Other long-term obligations	27,387	11,347	11,455	2,085	2,500
Operating leases	426,990	68,787	116,620	103,982	137,601
	6,432,066	737,813	1,290,014	1,071,793	3,332,446
Holly Energy Partners					
Long-term debt - principal ⁽⁴⁾	1,253,000	—	553,000	300,000	400,000
Long-term debt - interest ⁽⁵⁾	274,978	59,988	101,740	51,250	62,000
Pipeline operating leases	66,868	6,368	12,737	12,737	35,026
Other agreements	9,632	4,023	4,003	508	1,098
	1,604,478	70,379	671,480	364,495	498,124
Total	\$8,036,544	\$808,192	\$1,961,494	\$1,436,288	\$3,830,570

(1) Interest payments consist of interest on our 5.875% senior notes.

We have long-term supply agreements to secure certain quantities of crude oil, feedstock and other resources used in the production process at market prices. We have estimated future payments under these fixed-quantity agreements expiring between 2017 and 2030 using current market rates. Additionally, commitments include purchases of 20,000 BPD of crude oil under a 10-year agreement to supply our Woods Cross Refinery.

(2) Consists of contractual obligations under agreements with third parties for the transportation of crude oil, natural gas and feedstocks to our refineries and for terminal and storage services under contracts expiring between 2017 and 2030.

HEP's long-term debt consists of the \$400.0 million principal balance on the 6% HEP senior notes, \$300.0 million principal balance on the 6.5% HEP senior notes and \$553.0 million of outstanding borrowings under the HEP Credit Agreement. The \$300 million 6.5% HEP senior notes were redeemed on January 4, 2017. The HEP Credit Agreement expires in 2018.

(3) Interest payments consist of interest on the 6% HEP senior notes, the 6.5% HEP senior notes and interest on long-term debt under the HEP Credit Agreement. Interest on the HEP Credit Agreement debt is based on the weighted average rate of 2.98% at December 31, 2016.

CRITICAL ACCOUNTING POLICIES

Our discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities as of the date of the financial statements. Actual results may differ from these estimates under different assumptions or conditions. We consider the following policies to be the most critical to understanding the judgments that are involved and the uncertainties that could impact our results of operations, financial condition and cash flows. For additional information, see Note 1 “Description of Business and Summary of Significant Accounting Policies” in the Notes to Consolidated Financial Statements.

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Inventory Valuation

Inventories are stated at the lower of cost, using the LIFO method for crude oil, unfinished and finished refined products and the average cost method for materials and supplies, or market. In periods of rapidly declining prices, LIFO inventories may have to be written down to market value due to the higher costs assigned to LIFO layers in prior periods. In addition, the use of the LIFO inventory method may result in increases or decreases to cost of sales in years that inventory volumes decline as the result of charging cost of sales with LIFO inventory costs generated in prior periods. At December 31, 2016 and 2015, market values had fallen below historical LIFO inventory costs and, as a result, we recorded lower of cost or market inventory valuation reserves of \$332.5 million and \$624.5 million, respectively.

At December 31, 2016, our lower of cost or market inventory valuation reserve was \$332.5 million. This amount, or a portion thereof, is subject to reversal as a reduction to cost of products sold in subsequent periods as inventories giving rise to the reserve are sold, and a new reserve is established. Such a reduction to cost of products sold could be significant if inventory values return to historical cost price levels. Additionally, further decreases in overall inventory values could result in additional charges to cost of products sold should the lower of cost or market inventory valuation reserve be increased.

Goodwill and Long-lived Assets

As of December 31, 2016, our goodwill balance was \$2.0 billion, with goodwill assigned to our refining and HEP segments of \$1.7 billion and \$0.3 billion, respectively.

During the second quarter of 2016, we performed interim goodwill impairment and related long-lived asset impairment testing of our El Dorado and Cheyenne Refinery reporting units after identifying a combination of events and circumstances that are indicators of potential goodwill and long-lived asset impairment. The indicators included lower than typical gross margins during the summer driving season, a decrease in the gross margin outlook and decrease in our market capitalization due to a decline in our common share price.

Our testing first assessed the carrying values of our refining long-lived asset groups for recoverability. This entailed a comparison of our reporting unit fair values relative to their respective carrying values. If carrying value exceeds fair value for a reporting unit, we measure goodwill impairment as the excess of the carrying amount of reporting unit goodwill over the implied fair value of that goodwill based on estimates of the fair value of all assets and liabilities in the reporting unit.

The estimated fair values of our goodwill reporting units and long-lived asset groups were derived using a combination of both income and market approaches. The income approach reflects expected future cash flows based on estimates of future crack spreads, forecasted production levels, operating costs and capital expenditures. Our market approaches include both the guideline public company and guideline transaction methods. Both methods utilize pricing multiples derived from historical market transactions of other like-kind assets. These fair value measurements involve significant unobservable inputs (Level 3 inputs).

As a result of our impairment testing during the second quarter of 2016, we determined that the carrying value of the long-lived assets of the Cheyenne Refinery had been impaired and recorded long-lived asset impairment charges of \$344.8 million. Additionally, the carrying value of the Cheyenne Refinery's goodwill was fully impaired and a goodwill impairment charge of \$309.3 million was also recorded, representing all of the goodwill allocated to our Cheyenne Refinery. Our interim testing did not identify any other impairment.

We performed our annual goodwill impairment testing at July 1, 2016 and determined that the fair value of our El Dorado reporting unit exceeded its carrying value by approximately 4%. Additionally, testing indicated no impairment of goodwill attributable to our HEP reporting unit. The market outlook for future crack spreads has since improved and based on subsequent testing, the fair value of the El Dorado reporting unit exceeded its carrying value by approximately 20% at December 31, 2016. A reasonable expectation exists that future deterioration in gross margins could result in an impairment of goodwill and the long-lived assets of the El Dorado reporting unit at some point in

the future and such impairment charges could be material.

Contingencies

We are subject to proceedings, lawsuits and other claims related to environmental, labor, product and other matters. We are required to assess the likelihood of any adverse judgments or outcomes to these matters as well as potential ranges of probable losses. A determination of the amount of reserves required, if any, for these contingencies is made after careful analysis of each individual issue. The required reserves may change in the future due to new developments in each matter or changes in approach such as a change in settlement strategy in dealing with these matters.

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RISK MANAGEMENT

We use certain strategies to reduce some commodity price and operational risks. We do not attempt to eliminate all market risk exposures when we believe that the exposure relating to such risk would not be significant to our future earnings, financial position, capital resources or liquidity or that the cost of eliminating the exposure would outweigh the benefit.

Commodity Price Risk Management

Our primary market risk is commodity price risk. We are exposed to market risks related to the volatility in crude oil and refined products, as well as volatility in the price of natural gas used in our refining operations. We periodically enter into derivative contracts in the form of commodity price swaps and futures contracts to mitigate price exposure with respect to:

- our inventory positions;
- natural gas purchases;
- costs of crude oil and related grade differentials;
- prices of refined products; and
- our refining margins.

As of December 31, 2016, we have the following notional contract volumes related to all outstanding derivative contracts used to mitigate commodity price risk (all maturing in 2017):

Contract Description	Total Outstanding Notional	Unit of Measure
Natural gas price swaps - long	19,200,000	MMBTU
Natural gas price swaps - short	9,600,000	MMBTU
Natural gas price swaps (basis spread) - long	10,308,000	MMBTU
Crude price swaps (basis spread) - long	3,645,000	Barrels
WTI crude oil price swaps - long	829,000	Barrels
WTI crude oil price swaps - short	310,000	Barrels
Sub-octane gasoline price swaps - short	829,000	Barrels
Sub-octane gasoline price swaps - long	310,000	Barrels
NYMEX futures (WTI) - short	755,000	Barrels
Forward gasoline and diesel contracts - long	1,225,000	Barrels
Forward gasoline and diesel contracts - short	175,000	Barrels
Physical crude contracts - short	150,000	Barrels

At December 31, 2016, we had Canadian currency swap contracts that effectively fixed the conversion rate on \$1.125 billion Canadian dollars (the PCLI purchase price) at a USD / CAD exchange rate of 1.33. These swap contracts were settled on February 1, 2017, in connection with the closing of the PCLI acquisition.

The following sensitivity analysis provides the hypothetical effects of market price fluctuations to the commodity positions hedged under our derivative contracts:

Estimated
Change in Fair
Value at
December 31,

Commodity-based Derivative Contracts	2016	2015
	(In thousands)	
Hypothetical 10% change in underlying commodity prices	\$2,272	\$23,130

Interest Rate Risk Management

HEP uses interest rate swaps to manage its exposure to interest rate risk.

As of December 31, 2016, HEP had two interest rate swap contracts with identical terms that hedge its exposure to the cash flow risk caused by the effects of LIBOR changes on \$150.0 million in credit agreement advances. The swaps effectively convert \$150.0 million of LIBOR based debt to fixed rate debt having an interest rate of 0.74% plus an applicable margin of 2.25% as of

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December 31, 2016, which equaled an effective interest rate of 2.99%. Both of these swap contracts mature in July 2017 and have been designated as cash flow hedges.

The market risk inherent in our fixed-rate debt is the potential change arising from increases or decreases in interest rates as discussed below.

For the fixed rate HollyFrontier Senior Notes and HEP Senior Notes, changes in interest rates will generally affect fair value of the debt, but not earnings or cash flows. The outstanding principal, estimated fair value and estimated change in fair value (assuming a hypothetical 10% change in the yield-to-maturity rates) for this debt as of December 31, 2016 is presented below:

	Outstanding Principal	Estimated Fair Value	Estimated Change in Fair Value
	(In thousands)		
HollyFrontier Senior Notes	\$ 1,000,000	\$ 1,022,500	\$ 40,022
HEP Senior Notes	\$ 700,000	\$ 723,750	\$ 18,662

For the variable rate HEP Credit Agreement, changes in interest rates would affect cash flows, but not the fair value. At December 31, 2016, outstanding borrowings under the HEP Credit Agreement were \$553.0 million. By means of its cash flow hedges, HEP has effectively converted the variable rate on \$150.0 million of outstanding principal to a weighted average fixed rate of 2.99%. For the remaining unhedged Credit Agreement borrowings of \$403.0 million, a hypothetical 10% change in interest rates applicable to the HEP Credit Agreement would not materially affect cash flows.

At December 31, 2016, our marketable securities included investments in investment grade, highly-liquid investments with maturities generally not greater than one year from the date of purchase and hence the interest rate market risk implicit in these investments is low. Due to the short-term nature of our cash and cash equivalents, a hypothetical 10% increase in interest rates would not have a material effect on the fair market value of our portfolio. Since we have the ability to liquidate this portfolio, we do not expect our operating results or cash flows to be materially affected by the effect of a sudden change in market interest rates on our investment portfolio.

Our operations are subject to hazards of petroleum processing operations, including fire, explosion and weather-related perils. We maintain various insurance coverages, including business interruption insurance, subject to certain deductibles. We are not fully insured against certain risks because such risks are not fully insurable, coverage is unavailable, or premium costs, in our judgment, do not justify such expenditures.

Financial information is reviewed on the counterparties in order to review and monitor their financial stability and assess their ongoing ability to honor their commitments under the derivative contracts. We have not experienced, nor do we expect to experience, any difficulty in the counterparties honoring their commitments.

We have a risk management oversight committee consisting of members from our senior management. This committee oversees our risk enterprise program, monitors our risk environment and provides direction for activities to mitigate identified risks that may adversely affect the achievement of our goals.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

See “Risk Management” under “Management’s Discussion and Analysis of Financial Condition and Results of Operations.”

Reconciliations to Amounts Reported Under Generally Accepted Accounting Principles

Reconciliations of earnings before interest, taxes, depreciation and amortization (“EBITDA”) and EBITDA excluding “non-cash” lower of cost or market inventory valuation adjustments and goodwill and asset impairment charges (“Adjusted EBITDA”) to amounts reported under generally accepted accounting principles in financial statements.

Earnings before interest, taxes, depreciation and amortization, which we refer to as EBITDA, is calculated as net income (loss) attributable to HollyFrontier stockholders plus (i) interest expense, net of interest income, (ii) income tax provision, and (iii) depreciation and amortization. Adjusted EBITDA is calculated as EBITDA plus or minus (i) lower of cost or market inventory valuation adjustment and (ii) goodwill and asset impairment charges. EBITDA and Adjusted EBITDA are not calculations provided for under GAAP; however, the amounts included in these calculations are derived from amounts included in our consolidated financial statements. EBITDA and Adjusted EBITDA should not be considered as alternatives to net income or operating income as an indication of our operating performance or as an alternative to operating cash flow as a measure of liquidity. EBITDA and Adjusted EBITDA are not necessarily comparable to similarly titled measures of other companies. They are presented here because they are widely used financial indicators used by investors and analysts to measure performance. EBITDA and Adjusted EBITDA are also used by our management for internal analysis and as a basis for financial covenants.

Set forth below is our calculation of EBITDA and Adjusted EBITDA.

	Years Ended December 31,		
	2016	2015	2014
	(In thousands)		
Net income attributable to HollyFrontier stockholders	\$ (260,453)	\$ 740,101	\$ 281,292
Add income tax provision	19,411	406,060	141,172
Add interest expense ⁽¹⁾	80,910	44,840	51,323
Subtract interest income	(2,491)	(3,391)	(4,430)
Add depreciation and amortization	363,027	346,151	363,381
EBITDA	\$ 200,404	\$ 1,533,761	\$ 832,738
Add (subtract) lower of cost or market inventory adjustment	(291,938)	226,979	397,478
Add goodwill and asset impairment	654,084	—	—
PCLI pre-acquisition costs	13,406	—	—
Adjusted EBITDA	\$ 575,956	\$ 1,760,740	\$ 1,230,216

(1) Includes loss on early extinguishment of debt of \$8.7 million, \$1.4 million and \$7.7 million for the years ended December 31, 2016, 2015 and 2014, respectively.

Reconciliations of refinery operating information (non-GAAP performance measures) to amounts reported under generally accepted accounting principles in financial statements.

Refinery gross margin and net operating margin are non-GAAP performance measures that are used by our management and others to compare our refining performance to that of other companies in our industry. We believe these margin measures are helpful to investors in evaluating our refining performance on a relative and absolute basis.

Refinery gross margin per barrel is the difference between average net sales price and average cost of products per barrel of produced refined products. Net operating margin per barrel is the difference between refinery gross margin and refinery operating expenses per barrel of produced refined products. These two margins do not include the non-cash effects of lower of cost or market inventory valuation adjustments, goodwill and asset impairment charges or depreciation and amortization. Each of these component performance measures can be reconciled directly to our consolidated statements of income.

Other companies in our industry may not calculate these performance measures in the same manner.

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Refinery Gross and Net Operating Margins

Below are reconciliations to our consolidated statements of income for (i) net sales, cost of products (exclusive of lower of cost or market inventory valuation adjustment) and operating expenses, in each case averaged per produced barrel sold, and (ii) net operating margin and refinery gross margin. Due to rounding of reported numbers, some amounts may not calculate exactly.

Reconciliation of produced product sales to total sales and other revenues

	Years Ended December 31,		
	2016	2015	2014
	(Dollars in thousands, except per barrel amounts)		
Consolidated			
Average sales price per produced barrel sold	\$58.02	\$71.32	\$110.19
Times sales of produced refined products (BPD)	435,420	438,000	420,990
Times number of days in period	366	365	365
Produced refined product sales	\$9,246,283	\$11,401,928	\$16,931,944
Total produced refined product sales	\$9,246,283	\$11,401,928	\$16,931,944
Add refined product sales from purchased products and rounding ⁽¹⁾	624,233	1,214,920	1,566,925
Total refined product sales	9,870,516	12,616,848	18,498,869
Add direct sales of excess crude oil ⁽²⁾	436,974	352,113	1,060,354
Add other refining segment revenue ⁽³⁾	159,700	202,222	147,002
Total refining segment revenue	10,467,190	13,171,183	19,706,225
Add HEP segment sales and other revenues	402,043	358,875	332,626
Add corporate and other revenues	168	663	2,103
Subtract consolidations and eliminations	(333,701)	(292,801)	(276,627)
Sales and other revenues	\$10,535,700	\$13,237,920	\$19,764,327

Reconciliation of average cost of products per produced barrel sold to cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)

	Years Ended December 31,		
	2016	2015	2014
	(Dollars in thousands, except per barrel amounts)		
Consolidated			
Average cost of products per produced barrel sold	\$49.64	\$55.25	\$96.21
Times sales of produced refined products (BPD)	435,420	438,000	420,990
Times number of days in period	366	365	365
Cost of products for produced products sold	\$7,910,815	\$8,832,818	\$14,783,758
Total cost of products for produced products sold	\$7,910,815	\$8,832,818	\$14,783,758
Add refined product costs from purchased products and rounding ⁽¹⁾	638,540	1,245,451	1,572,944
Total cost of refined products sold	8,549,355	10,078,269	16,356,702
Add crude oil cost of direct sales of excess crude oil ⁽²⁾	441,180	348,362	1,030,235
Add other refining segment cost of products sold ⁽⁴⁾	72,222	98,979	113,664

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Total refining segment cost of products sold	9,062,757	10,525,610	17,500,601
Subtract consolidations and eliminations	(296,830)	(286,392)	(272,216)
Costs of products sold (exclusive of lower of cost or market inventory valuation adjustment and depreciation and amortization)	\$8,765,927	\$10,239,218	\$17,228,385

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Reconciliation of average refinery operating expenses per produced barrel sold to total operating expenses

	Years Ended December 31,		
	2016	2015	2014
	(Dollars in thousands, except per barrel amounts)		
Consolidated			
Average refinery operating expenses per produced barrel sold	\$5.57	\$5.71	\$6.38
Times sales of produced refined products (BPD)	435,420	438,000	420,990
Times number of days in period	366	365	365
Refinery operating expenses for produced products sold	\$887,656	\$912,858	\$980,359
Total refinery operating expenses for produced products sold	\$887,656	\$912,858	\$980,359
Add other refining segment operating expenses and rounding ⁽⁵⁾	35,934	41,813	41,426
Total refining segment operating expenses	923,590	954,671	1,021,785
Add HEP segment operating expenses	123,985	105,554	106,185
Add corporate and other costs	4,893	3,433	18,402
Subtract consolidations and eliminations	(33,629)	(3,285)	(1,432)
Operating expenses (exclusive of depreciation and amortization)	\$1,018,839	\$1,060,373	\$1,144,940

Reconciliation of net operating margin per barrel to refinery gross margin per barrel to total sales and other revenues

	Years Ended December 31,		
	2016	2015	2014
	(Dollars in thousands, except per barrel amounts)		
Consolidated			
Net operating margin per barrel	\$2.81	\$10.36	\$7.60
Add average refinery operating expenses per produced barrel	5.57	5.71	6.38
Refinery gross margin per barrel	8.38	16.07	13.98
Add average cost of products per produced barrel sold	49.64	55.25	96.21
Average sales price per produced barrel sold	\$58.02	\$71.32	\$110.19
Times sales of produced refined products sold (BPD)	435,420	438,000	420,990
Times number of days in period	366	365	365
Produced refined product sales	\$9,246,283	\$11,401,928	\$16,931,944
Total produced refined product sales	\$9,246,283	\$11,401,928	\$16,931,944
Add refined product sales from purchased products and rounding ⁽¹⁾	624,233	1,214,920	1,566,925
Total refined product sales	9,870,516	12,616,848	18,498,869
Add direct sales of excess crude oil ⁽²⁾	436,974	352,113	1,060,354
Add other refining segment revenue ⁽³⁾	159,700	202,222	147,002
Total refining segment revenue	10,467,190	13,171,183	19,706,225
Add HEP segment sales and other revenues	402,043	358,875	332,626
Add corporate and other revenues	168	663	2,103
Subtract consolidations and eliminations	(333,701)	(292,801)	(276,627)
Sales and other revenues	\$10,535,700	\$13,237,920	\$19,764,327

(1) We purchase finished products to facilitate delivery to certain locations or to meet delivery commitments.

We purchase crude oil that at times exceeds the supply needs of our refineries. Quantities in excess of our needs are sold at market prices to purchasers of crude oil that are recorded on a gross basis with the sales price recorded (2) as revenues and the corresponding acquisition cost as inventory and then upon sale as cost of products sold.

Additionally, at times we enter into buy/sell exchanges of crude oil with certain parties to facilitate the delivery of quantities to certain locations that are netted at cost.

Other refining segment revenue includes the incremental revenues associated with HFC Asphalt, product (3) purchased and sold forward for profit as market conditions and available storage capacity allows and miscellaneous revenue.

Other refining segment cost of products sold includes the incremental cost of products for HFC Asphalt, the (4) incremental cost associated with storing product purchased and sold forward as market conditions and available storage capacity allows and miscellaneous costs.

Other refining segment operating expenses include the marketing costs associated with our refining segment and (5) the operating expenses of HFC Asphalt.

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Item 8. Financial Statements and Supplementary Data

MANAGEMENT'S REPORT ON ITS ASSESSMENT OF THE COMPANY'S INTERNAL CONTROL OVER FINANCIAL REPORTING

Management of HollyFrontier Corporation (the "Company") is responsible for establishing and maintaining adequate internal control over financial reporting.

All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

Management assessed the Company's internal control over financial reporting as of December 31, 2016 using the criteria for effective control over financial reporting established in "Internal Control - Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework). Based on this assessment, management concludes that, as of December 31, 2016, the Company maintained effective internal control over financial reporting.

The Company's independent registered public accounting firm has issued an attestation report on the effectiveness of the Company's internal control over financial reporting as of December 31, 2016. That report appears on page 58.

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors
and Stockholders of HollyFrontier Corporation

We have audited HollyFrontier Corporation's internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the "COSO criteria"). HollyFrontier Corporation's management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on its Assessment of the Company's Internal Control over Financial Reporting. Our responsibility is to express an opinion on the company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

In our opinion, HollyFrontier Corporation maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of HollyFrontier Corporation as of December 31, 2016 and 2015, and the related consolidated statements of income, comprehensive income, cash flows and equity for each of the three years in the period ended December 31, 2016 of HollyFrontier Corporation and our report dated February 22, 2017 expressed an unqualified opinion thereon.

/s/ ERNST & YOUNG LLP

Dallas, Texas
February 22, 2017

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Consolidated Balance Sheets at December 31, 2016 and 2015	<u>59</u>
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Consolidated Statements of Comprehensive Income for the years ended December 31, 2016, 2015 and 2014	<u>61</u>
Consolidated Statements of Cash Flows for the years ended December 31, 2016, 2015 and 2014	<u>62</u>
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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

The Board of Directors
and Stockholders of HollyFrontier Corporation

We have audited the accompanying consolidated balance sheets of HollyFrontier Corporation (the “Company”) as of December 31, 2016 and 2015, and the related consolidated statements of income, comprehensive income, cash flows and equity for each of the three years in the period ended December 31, 2016. These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of HollyFrontier Corporation at December 31, 2016 and 2015, and the consolidated results of its operations and its cash flows for each of the three years in the period ended December 31, 2016, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), HollyFrontier Corporation's internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control - Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 22, 2017 expressed an unqualified opinion thereon.

/s/ ERNST & YOUNG LLP

Dallas, Texas
February 22, 2017

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HOLLYFRONTIER CORPORATION
CONSOLIDATED BALANCE SHEETS

(In thousands, except share data)

	December 31,	
	2016	2015
ASSETS		
Current assets:		
Cash and cash equivalents (HEP: \$3,657 and \$15,013, respectively)	\$710,579	\$66,533
Marketable securities	424,148	144,019
Total cash, cash equivalents and short-term marketable securities	1,134,727	210,552
Accounts receivable: Product and transportation (HEP: \$7,846 and \$8,593, respectively)	449,036	323,858
Crude oil resales	30,163	28,120
	479,199	351,978
Inventories: Crude oil and refined products	970,361	712,865
Materials, supplies and other (HEP: \$1,402 and \$1,972, respectively)	165,315	129,004
	1,135,676	841,869
Income taxes receivable	68,371	—
Prepayments and other (HEP: \$1,486 and \$3,082, respectively)	33,036	43,666
Total current assets	2,851,009	1,448,065
Properties, plants and equipment, at cost (HEP: \$1,702,703 and \$1,631,845, respectively)	5,546,856	5,490,189
Less accumulated depreciation (HEP: \$(337,135) and \$(298,282), respectively)	(1,538,408)	(1,374,527)
	4,008,448	4,115,662
Other assets: Turnaround costs	217,340	231,873
Goodwill (HEP: \$288,991 and \$288,991, respectively)	2,022,463	2,331,781
Intangibles and other (HEP: \$208,975 and \$128,583, respectively)	336,401	260,918
	2,576,204	2,824,572
Total assets	\$9,435,661	\$8,388,299
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable (HEP: \$10,518 and \$10,948, respectively)	\$935,387	\$716,490
Income taxes payable	—	8,142
Accrued liabilities (HEP: \$37,793 and \$26,341, respectively)	147,842	135,983
Total current liabilities	1,083,229	860,615
Long-term debt (HEP: \$1,243,912 and \$1,008,752, respectively)	2,235,137	1,040,040
Deferred income taxes (HEP: \$509 and \$431, respectively)	620,414	497,906
Other long-term liabilities (HEP: \$62,971 and \$59,376, respectively)	194,896	179,965
Equity:		
HollyFrontier stockholders' equity:		
Preferred stock, \$1.00 par value – 5,000,000 shares authorized; none issued	—	—
Common stock \$.01 par value – 320,000,000 shares authorized; 255,962,866 shares issued as of December 31, 2016 and December 31, 2015	2,560	2,560
Additional capital	4,026,805	4,011,052
Retained earnings	2,776,728	3,271,189
Accumulated other comprehensive income (loss)	10,612	(4,155)
	(2,135,311)	(2,027,231)

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Common stock held in treasury, at cost – 78,617,600 and 75,728,478 shares as of December 31, 2016 and December 31, 2015, respectively

Total HollyFrontier stockholders' equity	4,681,394	5,253,415
Noncontrolling interest	620,591	556,358
Total equity	5,301,985	5,809,773
Total liabilities and equity	\$9,435,661	\$8,388,299

Parenthetical amounts represent asset and liability balances attributable to Holly Energy Partners, L.P. ("HEP") as of December 31, 2016 and December 31, 2015. HEP is a consolidated variable interest entity.

See accompanying notes.

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HOLLYFRONTIER CORPORATION
CONSOLIDATED STATEMENTS OF INCOME

(In thousands, except per share data)

	Years Ended December 31,		
	2016	2015	2014
Sales and other revenues	\$ 10,535,700	\$ 13,237,920	\$ 19,764,327
Operating costs and expenses:			
Cost of products sold (exclusive of depreciation and amortization):			
Cost of products sold (exclusive of lower of cost or market inventory valuation adjustment)	8,765,927	10,239,218	17,228,385
Lower of cost or market inventory valuation adjustment	(291,938)	) 226,979	397,478
	8,473,989	10,466,197	17,625,863
Operating expenses (exclusive of depreciation and amortization)	1,018,839	1,060,373	1,144,940
General and administrative expenses (exclusive of depreciation and amortization)	125,648	120,846	114,609
Depreciation and amortization	363,027	346,151	363,381
Goodwill and asset impairment	654,084	—	—
Total operating costs and expenses	10,635,587	11,993,567	19,248,793
Income (loss) from operations	(99,887)	) 1,244,353	515,534
Other income (expense):			
Earnings (loss) of equity method investments	14,213	(3,738)	) (2,007)
Interest income	2,491	3,391	4,430
Interest expense	(72,192)	) (43,470)	) (43,646)
Loss on early extinguishment of debt	(8,718)	) (1,370)	) (7,677)
Other, net	(7,441)	) 9,402	866
	(71,647)	) (35,785)	) (48,034)
Income (loss) before income taxes	(171,534)	) 1,208,568	467,500
Income tax provision:			
Current	(79,181)	) 552,196	334,834
Deferred	98,592	(146,136)	) (193,662)
	19,411	406,060	141,172
Net income (loss)	(190,945)	) 802,508	326,328
Less net income attributable to noncontrolling interest	69,508	62,407	45,036
Net income (loss) attributable to HollyFrontier stockholders	\$(260,453)	) \$740,101	\$281,292
Earnings (loss) per share attributable to HollyFrontier stockholders:			
Basic	\$(1.48)	) \$3.91	\$1.42
Diluted	\$(1.48)	) \$3.90	\$1.42
Average number of common shares outstanding:			
Basic	176,101	188,731	197,243
Diluted	176,101	188,940	197,428

See accompanying notes.

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HOLLYFRONTIER CORPORATION
 CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
 (In thousands)

	Years Ended December 31,		
	2016	2015	2014
Net income (loss)	\$(190,945)	\$802,508	\$326,328
Other comprehensive income (loss):			
Securities available-for-sale:			
Unrealized gain (loss) on marketable securities	81	29	(153)
Reclassification adjustments to net income on sale or maturity of marketable securities	23	9	(4)
Net unrealized gain (loss) on marketable securities	104	38	(157)
Hedging instruments:			
Change in fair value of cash flow hedging instruments	(17,625)	(5,847)	105,414
Reclassification adjustments to net income on settlement of cash flow hedging instruments	41,585	(47,492)	(50,682)
Amortization of unrealized loss attributable to discontinued cash flow hedges	1,080	1,080	1,080
Net unrealized gain (loss) on hedging instruments	25,040	(52,259)	55,812
Other post-retirement benefit obligations:			
Gain (loss) on post-retirement healthcare plan	2,363	3,278	(7,434)
Post-retirement healthcare plan gain reclassified to net income	(3,482)	(3,299)	(4,296)
Gain (loss) on retirement restoration plan	(9)	80	(615)
Retirement restoration plan loss reclassified to net income	15	20	920
Net change in other post-retirement benefit obligations	(1,113)	79	(11,425)
Other comprehensive income (loss) before income taxes	24,031	(52,142)	44,230
Income tax expense (benefit)	9,322	(20,237)	17,098
Other comprehensive income (loss)	14,709	(31,905)	27,132
Total comprehensive income (loss)	(176,236)	770,603	353,460
Less noncontrolling interest in comprehensive income (loss)	69,450	62,551	45,096
Comprehensive income (loss) attributable to HollyFrontier stockholders	\$(245,686)	\$708,052	\$308,364

See accompanying notes.

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HOLLYFRONTIER CORPORATION
 CONSOLIDATED STATEMENTS OF CASH FLOWS
 (In thousands)

	Years Ended December 31,		
	2016	2015	2014
Cash flows from operating activities:			
Net income (loss)	\$(190,945)	\$802,508	\$326,328
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation and amortization	363,027	346,151	363,381
Goodwill and asset impairment	654,084	—	—
Lower of cost or market inventory valuation adjustment	(291,938)	226,979	397,478
Net loss of equity method investments, inclusive of distributions	961	8,613	5,257
(Gain) loss on early extinguishment of debt	8,718	(3,788)	1,489
Gain on sale of assets	(72)	(8,677)	(866)
Deferred income taxes	98,592	(146,136)	(193,662)
Equity-based compensation expense	25,561	30,367	29,598
Change in fair value – derivative instruments	(12,155)	38,525	(22,668)
(Increase) decrease in current assets:			
Accounts receivable	(127,221)	238,392	108,876
Inventories	(1,869)	(33,717)	(78,842)
Income taxes receivable	(68,371)	11,719	94,237
Prepayments and other	16,555	13,291	1,486
Increase (decrease) in current liabilities:			
Accounts payable	247,603	(406,339)	(217,541)
Income taxes payable	(8,142)	(11,500)	19,642
Accrued liabilities	16,142	(6,924)	8,047
Turnaround expenditures	(125,254)	(89,365)	(96,803)
Other, net	(3,005)	(30,473)	13,159
Net cash provided by operating activities	602,271	979,626	758,596
Cash flows from investing activities:			
Additions to properties, plants and equipment	(372,195)	(483,034)	(366,135)
Additions to properties, plants and equipment – HEP	(107,595)	(193,121)	(198,686)
Purchase of equity method investment - HEP	(42,627)	(55,032)	—
Proceeds from sale of assets	849	19,264	16,633
Purchases of marketable securities	(546,632)	(509,338)	(1,025,602)
Sales and maturities of marketable securities	266,603	839,513	1,276,447
Other, net	—	—	5,021
Net cash used for investing activities	(801,597)	(381,748)	(292,322)
Cash flows from financing activities:			
Borrowings under credit agreements	869,000	973,900	642,300
Repayments under credit agreements	(1,028,000)	(832,900)	(434,300)
Net proceeds from issuance of senior notes – HFC	992,550	—	—
Net proceeds from issuance of senior notes – HEP	394,000	—	—
Net proceeds from issuance of term loan	350,000	—	—
Repayment of term loan	(350,000)	—	—
Redemption of senior notes	—	(155,156)	—

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Redemption of senior notes - HEP	—	—	(156,188)
Repayment of financing obligation	(39,500)	—	—
Net proceeds from common unit offerings - HEP	125,870	—	—
Purchase of treasury stock	(133,430)	(742,823)	(158,847)
Dividends	(234,004)	(246,908)	(647,197)
Distributions to noncontrolling interest	(92,607)	(83,268)	(78,202)
Excess tax benefit from equity-based compensation	—	—	2,040
Other, net	(10,507)	(12,175)	(7,998)
Net cash provided by (used for) financing activities	843,372	(1,099,330)	(838,392)
Cash and cash equivalents:			
Increase (decrease) for the period	644,046	(501,452)	(372,118)
Beginning of period	66,533	567,985	940,103
End of period	\$710,579	\$66,533	\$567,985
Supplemental disclosure of cash flow information:			
Cash paid during the period for:			
Interest	\$54,074	\$46,442	\$55,716
Income taxes	\$40,236	\$586,447	\$237,907
See accompanying notes.			

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HOLLYFRONTIER CORPORATION
CONSOLIDATED STATEMENTS OF EQUITY

(In thousands)

	HollyFrontier Stockholders' Equity							Total Equity
	Common Stock	Additional Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Non-controlling Interest		
Balance at December 31, 2013	\$2,560	\$3,990,630	\$3,144,480	\$ 822	\$(1,138,872)	\$ 609,778	\$6,609,398	
Net income	—	—	281,292	—	—	45,036	326,328	
Dividends	—	—	(647,195)	—	—	—	(647,195)	
Distributions to noncontrolling interest holders	—	—	—	—	—	(78,202)	(78,202)	
Other comprehensive income, net of tax	—	—	—	27,072	—	60	27,132	
Issuance of common stock under incentive compensation plans, net of forfeitures	—	(15,101)	—	—	15,101	—	—	
Equity-based compensation, inclusive of tax benefit	—	28,099	—	—	—	3,539	31,638	
Purchase of treasury stock	—	—	—	—	(165,304)	—	(165,304)	
Purchase of HEP units for restricted grants	—	—	—	—	—	(3,577)	(3,577)	
Other	—	—	—	—	—	501	501	
Balance at December 31, 2014	\$2,560	\$4,003,628	\$2,778,577	\$ 27,894	\$(1,289,075)	\$ 577,135	\$6,100,719	
Net income	—	—	740,101	—	—	62,407	802,508	
Dividends	—	—	(247,489)	—	—	—	(247,489)	
Distributions to noncontrolling interest holders	—	—	—	—	—	(83,268)	(83,268)	
Other comprehensive income (loss), net of tax	—	—	—	(32,049)	—	144	(31,905)	
Issuance of common stock under incentive compensation plans, net of forfeitures	—	(14,958)	—	—	14,958	—	—	
Equity-based compensation, inclusive of tax benefit	—	22,382	—	—	—	3,483	25,865	
Purchase of treasury stock	—	—	—	—	(753,114)	—	(753,114)	
Purchase of HEP units for restricted grants	—	—	—	—	—	(3,555)	(3,555)	

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Other	—	—	—	—	—	12	12
Balance at December 31, 2015	\$2,560	\$4,011,052	\$3,271,189	\$ (4,155)	\$(2,027,231)	\$ 556,358	\$5,809,773
Net income (loss)	—	—	(260,453)	—	—	69,508	(190,945)
Dividends	—	—	(234,008)	—	—	—	(234,008)
Distributions to noncontrolling interest holders	—	—	—	—	—	(92,607)	(92,607)
Other comprehensive income (loss), net of tax	—	—	—	14,767	—	(58)	14,709
Equity attributable to HEP common unit issuances, net of tax	—	23,110	—	—	—	88,166	111,276
Issuance of common stock under incentive compensation plans, net of forfeitures	—	(25,982)	—	—	25,982	—	—
Equity-based compensation, inclusive of tax benefit	—	18,625	—	—	—	2,727	21,352
Purchase of treasury stock	—	—	—	—	(134,062)	—	(134,062)
Purchase of HEP units for restricted grants	—	—	—	—	—	(3,521)	(3,521)
Other	—	—	—	—	—	18	18
Balance at December 31, 2016	\$2,560	\$4,026,805	\$2,776,728	\$ 10,612	\$(2,135,311)	\$ 620,591	\$5,301,985

See accompanying notes.

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HOLLYFRONTIER CORPORATION
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1: Description of Business and Summary of Significant Accounting Policies

Description of Business: References herein to HollyFrontier Corporation (“HollyFrontier”) include HollyFrontier and its consolidated subsidiaries. In accordance with the Securities and Exchange Commission’s (“SEC”) “Plain English” guidelines, this Annual Report on Form 10-K has been written in the first person. In these financial statements, the words “we,” “our,” “ours” and “us” refer only to HollyFrontier and its consolidated subsidiaries or to HollyFrontier or an individual subsidiary and not to any other person, with certain exceptions. Generally, the words “we,” “our,” “ours” and “us” include Holly Energy Partners, L.P. (“HEP”) and its subsidiaries as consolidated subsidiaries of HollyFrontier, unless when used in disclosures of transactions or obligations between HEP and HollyFrontier or its other subsidiaries. These financial statements contain certain disclosures of agreements that are specific to HEP and its consolidated subsidiaries and do not necessarily represent obligations of HollyFrontier. When used in descriptions of agreements and transactions, “HEP” refers to HEP and its consolidated subsidiaries.

We are principally an independent petroleum refiner that produces high-value light products such as gasoline, diesel fuel, jet fuel, specialty lubricant products, and specialty and modified asphalt. We own and operate petroleum refineries that serve markets throughout the Mid-Continent, Southwest and Rocky Mountain regions of the United States. As of December 31, 2016, we:

- owned and operated a petroleum refinery in El Dorado, Kansas (the “El Dorado Refinery”), two refinery facilities located in Tulsa, Oklahoma (collectively, the “Tulsa Refineries”), a refinery in Artesia, New Mexico that is operated in conjunction with crude oil distillation and vacuum distillation and other facilities situated 65 miles away in Lovington, New Mexico (collectively, the “Navajo Refinery”), a refinery located in Cheyenne, Wyoming (the “Cheyenne Refinery”) and a refinery in Woods Cross, Utah (the “Woods Cross Refinery”);
- owned and operated HollyFrontier Asphalt Company (“HFC Asphalt”) which operates various asphalt terminals in Arizona, New Mexico and Oklahoma; and
- owned a 37% interest in HEP, a consolidated variable interest entity (“VIE”), which includes our 2% general partner interest.

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor Energy Inc. (“Suncor”) to acquire 100% of the outstanding capital stock of Petro-Canada Lubricants Inc. (“PCLI”) that closed on February 1, 2017. See Note 2 for additional information.

Principles of Consolidation: Our consolidated financial statements include our accounts and the accounts of partnerships and joint ventures that we control through an ownership interest greater than 50% or through a controlling financial interest with respect to variable interest entities. All significant intercompany transactions and balances have been eliminated.

Variable Interest Entities: HEP is a VIE as defined under U.S. generally accepted accounting principles (“GAAP”). A VIE is a legal entity whose equity owners do not have sufficient equity at risk for the entity to finance its activities without additional subordinated financial support or, as a group, the equity holders lack the power, through voting rights, to direct the activities that most significantly impact the entity's financial performance, the obligation to absorb the entity's expected losses or rights to expected residual returns. As the general partner of HEP, we have the sole ability to direct the activities of HEP that most significantly impact HEP's financial performance, and therefore we consolidate HEP.

Use of Estimates: The preparation of financial statements in accordance with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Cash Equivalents: We consider all highly liquid instruments with a maturity of three months or less at the date of purchase to be cash equivalents. Cash equivalents are stated at cost, which approximates market value and are primarily invested in highly-rated instruments issued by government or municipal entities with strong credit standings.

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HOLLYFRONTIER CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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Marketable Securities: We consider all marketable debt securities with maturities greater than three months at the date of purchase to be marketable securities. Our marketable securities consist of certificates of deposit, commercial paper, corporate debt securities and government and municipal debt securities with the maximum maturity or put date of any individual issue generally not more than two years, while the maximum duration of the portfolio of investments is not greater than one year. These instruments are classified as available-for-sale, and as a result, are reported at fair value. Unrealized gains and losses, net of related income taxes, are reported as a component of accumulated other comprehensive income.

Balance Sheet Offsetting: We purchase and sell inventories of crude oil with certain same-parties that are net settled in accordance with contractual net settlement provisions. Our policy is to present such balances on a net basis because it more appropriately presents our economic resources (accounts receivable) and claims against us (accounts payable) and the future cash flows associated with such assets and liabilities.

Accounts Receivable: Our accounts receivable consist of amounts due from customers that are primarily companies in the petroleum industry. Credit is extended based on our evaluation of the customer's financial condition, and in certain circumstances collateral, such as letters of credit or guarantees, is required. We reserve for doubtful accounts based on our historical loss experience as well as specific accounts identified as high risk, which historically have been minimal. Credit losses are charged to the allowance for doubtful accounts when an account is deemed uncollectible. Our allowance for doubtful accounts was \$2.3 million at both December 31, 2016 and 2015.

Accounts receivable attributable to crude oil resales generally represent the sell side of excess crude oil sales to other purchasers and / or users in cases when our crude oil supplies are in excess of our immediate needs as well as certain reciprocal buy / sell exchanges of crude oil. At times we enter into such buy / sell exchanges to facilitate the delivery of quantities to certain locations. In many cases, we enter into net settlement agreements relating to the buy / sell arrangements, which may mitigate credit risk.

Inventories: Inventories are stated at the lower of cost, using the last-in, first-out ("LIFO") method for crude oil and unfinished and finished refined products, or market. Cost, consisting of raw material, transportation and conversion costs, is determined using the LIFO inventory valuation methodology and market is determined using current replacement costs. Under the LIFO method, the most recently incurred costs are charged to cost of sales and inventories are valued at the earliest acquisition costs. In periods of rapidly declining prices, LIFO inventories may have to be written down to market value due to the higher costs assigned to LIFO layers in prior periods. In addition, the use of the LIFO inventory method may result in increases or decreases to cost of sales in years that inventory volumes decline as the result of charging cost of sales with LIFO inventory costs generated in prior periods. An actual valuation of inventory under the LIFO method is made at the end of each year based on the inventory levels at that time. Accordingly, interim LIFO calculations are based on management's estimates of expected year-end inventory levels and are subject to the final year-end LIFO inventory valuation.

Inventories consisting of process chemicals, materials and maintenance supplies and RINs are stated at the lower of weighted-average cost or market.

At December 31, 2016, and 2015, market values had fallen below historical LIFO inventory costs and, as a result, we recorded lower of cost or market inventory valuation reserves of \$332.5 million and \$624.5 million, respectively.

Derivative Instruments: All derivative instruments are recognized as either assets or liabilities in our consolidated balance sheets and are measured at fair value. Changes in the derivative instrument's fair value are recognized in earnings unless specific hedge accounting criteria are met. See Note 13 for additional information.

Properties, plants and equipment: Properties, plants and equipment are stated at cost. Depreciation is provided by the straight-line method over the estimated useful lives of the assets, primarily 15 to 32 years for refining, pipeline and terminal facilities, 10 to 40 years for buildings and improvements, 5 to 30 years for other fixed assets and 5 years for vehicles.

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HOLLYFRONTIER CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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Asset Retirement Obligations: We record legal obligations associated with the retirement of long-lived assets that result from the acquisition, construction, development and / or the normal operation of long-lived assets. The fair value of the estimated cost to retire a tangible long-lived asset is recorded as a liability with the associated retirement costs capitalized as part of the asset's carrying amount in the period in which it is incurred and when a reasonable estimate of the fair value of the liability can be made. If a reasonable estimate cannot be made at the time the liability is incurred, we record the liability when sufficient information is available to estimate the liability's fair value. Certain of our refining assets have no recorded liability for asset retirement obligations since the timing of any retirement and related costs are currently indeterminable.

Our asset retirement obligations were \$22.1 million and \$20.7 million at December 31, 2016 and 2015, respectively, which are included in "Other long-term liabilities" in our consolidated balance sheets. Accretion expense was insignificant for the years ended December 31, 2016, 2015 and 2014.

Intangibles, Goodwill and long-lived assets: Intangible assets are assets (other than financial assets) that lack physical substance, and goodwill represents the excess of the cost of an acquired entity over the fair value of the assets acquired less liabilities assumed. Goodwill acquired in a business combination and intangibles with indefinite useful lives are not amortized while, intangible assets with finite useful lives are amortized on a straight-line basis. Goodwill and intangible assets not subject to amortization are tested for impairment annually or more frequently if events or changes in circumstances indicate the asset might be impaired. Our analysis entails a comparison of the estimated fair value of these assets that are derived using a combination of both income (discounted future expected net cash flows) and comparable market approaches against their respective carrying values. Estimates of future cash flows and fair value of assets require subjective assumptions with regard to future operating results and actual results could differ from those estimates.

Our long-lived assets principally consist of our refining assets that are organized as refining asset groups. These refinery asset groups also constitute our individual refinery reporting units that are used for testing and measuring goodwill impairments. Our long-lived assets are evaluated for impairment by identifying whether indicators of impairment exist and if so, assessing whether the long-lived assets are recoverable from estimated future undiscounted cash flows. The actual amount of impairment loss measured, if any, is equal to the amount by which the asset group's carrying value exceeds its fair value.

See Note 10 for information regarding goodwill and long-lived asset impairment charges recorded during the year ended December 31, 2016.

Our consolidated HEP assets include a third-party transportation agreement, an intangible asset, that currently generates minimum annual cash inflows of \$26.0 million and has an expected remaining term through 2035. The transportation agreement is being amortized on a straight-line basis through 2035 that results in annual amortization expense of \$2.0 million. The balance of this transportation agreement was \$36.5 million and \$38.5 million at December 31, 2016, and 2015, respectively, and is presented net of accumulated amortization of \$23.7 million and \$21.7 million respectively, in "Intangibles and other" in our consolidated balance sheets.

Investments in Joint Ventures: We consolidate the financial and operating results of joint ventures in which we have an ownership interest of greater than 50% or a controlling interest with respect to VIE's, and use the equity method of accounting for investments in which we have a noncontrolling interest, yet have significant influence over the entity. Under the equity method of accounting, we record our pro-rata share of earnings, and contributions to and

distributions from joint ventures as adjustments to our investment balance.

HEP has a 50% joint venture interest in Frontier Aspen LLC, the owner of a pipeline running from Wyoming to Frontier Station, Utah (the “Frontier Pipeline”); a 50% interest in Osage Pipe Line Company, LLC, the owner of a pipeline running from Cushing, Oklahoma to El Dorado, Kansas (the “Osage Pipeline”); a 50% interest in Cheyenne Pipeline, LLC, the owner of a pipeline running from Fort Laramie, Wyoming to Cheyenne, Wyoming (the “Cheyenne Pipeline”); and a 25% joint venture interest in SLC Pipeline, LLC, the owner of a pipeline (the “SLC Pipeline”) that serves refineries in the Salt Lake City, Utah area, that are accounted for using the equity method of accounting. As of December 31, 2016, HEP's underlying equity and recorded investment balances in the joint ventures are \$109.3 million and \$165.6 million, respectively. The differences are being amortized as adjustments to HEP's pro-rata share of earnings in the joint ventures.

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HOLLYFRONTIER CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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Revenue Recognition: Refined product sales and related cost of sales are recognized when products are shipped and title has passed to customers. HEP recognizes pipeline transportation revenues as products are shipped through its pipelines. All revenues are reported inclusive of shipping and handling costs billed and exclusive of any taxes billed to customers. Shipping and handling costs incurred are reported in cost of products sold.

Cost Classifications: Costs of products sold include the cost of crude oil, other feedstocks, blendstocks and purchased finished products, inclusive of transportation costs. We purchase crude oil that at times exceeds the supply needs of our refineries. Quantities in excess of our needs are sold at market prices to purchasers of crude oil that are recorded on a gross basis with the sales price recorded as revenues and the corresponding acquisition cost as cost of products sold. Additionally, we enter into buy / sell exchanges of crude oil with certain parties to facilitate the delivery of quantities to certain locations that are netted at cost. Operating expenses include direct costs of labor, maintenance materials and services, utilities, marketing expense and other direct operating costs. General and administrative expenses include compensation, professional services and other support costs.

Deferred Maintenance Costs: Our refinery units require regular major maintenance and repairs which are commonly referred to as “turnarounds.” Catalysts used in certain refinery processes also require regular “change-outs.” The required frequency of the maintenance varies by unit and by catalyst, but generally is every two to five years. Turnaround costs are deferred and amortized over the period until the next scheduled turnaround. Other repairs and maintenance costs are expensed when incurred. Deferred turnaround and catalyst amortization expense was \$110.6 million, \$107.8 million and \$96.9 million for the years ended December 31, 2016, 2015 and 2014, respectively.

Environmental Costs: Environmental costs are charged to operating expenses if they relate to an existing condition caused by past operations. We have ongoing investigations of environmental matters at various locations as part of our assessment process to determine the amount of environmental obligation we may have, if any, with respect to these matters for which we have recorded the estimated cost of the studies. Liabilities are recorded when site restoration and environmental remediation, cleanup and other obligations are either known or considered probable and can be reasonably estimated. Such estimates are undiscounted and require judgment with respect to costs, time frame and extent of required remedial and clean-up activities and are subject to periodic adjustments based on currently available information. Recoveries of environmental costs through insurance, indemnification arrangements or other sources are included in other assets to the extent such recoveries are considered probable.

Contingencies: We are subject to proceedings, lawsuits and other claims related to environmental, labor, product and other matters. We are required to assess the likelihood of any adverse judgments or outcomes to these matters as well as potential ranges of probable losses. A determination of the amount of reserves required, if any, for these contingencies is made after careful analysis of each individual issue. The required reserves may change in the future due to new developments in each matter or changes in approach such as a change in settlement strategy in dealing with these matters.

Income Taxes: Provisions for income taxes include deferred taxes resulting from temporary differences in income for financial and tax purposes, using the liability method of accounting for income taxes. The liability method requires the effect of tax rate changes on deferred income taxes to be reflected in the period in which the rate change was enacted. The liability method also requires that deferred tax assets be reduced by a valuation allowance unless it is more likely than not that the assets will be realized.

For the year ended December 31, 2016, we recorded an income tax expense of \$19.4 million compared \$406.1 million and \$141.2 million for the years ended December 31, 2015 and 2014, respectively. This decrease was due principally to a pre-tax loss during the year ended December 31, 2016 compared to pre-tax earnings in the same periods of 2015 and 2014. Our effective tax rates, before consideration of earnings attributable to the noncontrolling interest, were (11.3)%, 33.6% and 30.2% for the years ended December 31, 2016, 2015 and 2014, respectively. The year-over-year decrease in the effective tax rate in 2016 was due principally to the effects of the second quarter \$309.3 million goodwill impairment charge, a significant cause of our \$171.5 million loss before income taxes for the year ended December 31, 2016, that is not deductible for income tax purposes.

Potential interest and penalties related to income tax matters are recognized in income tax expense. We believe we have appropriate support for the income tax positions taken and to be taken on our income tax returns and that our accruals for tax liabilities are adequate for all open years based on an assessment of many factors, including past experience and interpretations of tax law applied to the facts of each matter.

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HOLLYFRONTIER CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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Inventory Repurchase Obligations: We periodically enter into same-party sell / buy transactions, whereby we sell certain refined product inventory and subsequently repurchase the inventory in order to facilitate delivery to certain locations. Such sell / buy transactions are accounted for as inventory repurchase obligations under which proceeds received under the initial sell is recognized as an inventory repurchase obligation that is subsequently reversed when the inventory is repurchased. For the years ended December 31, 2016, 2015 and 2014, we received proceeds of \$57.0 million, \$115.4 million and \$77.3 million and subsequently repaid \$58.0 million, \$115.3 million and \$78.1 million, respectively, under these sell / buy transactions.

New Accounting Pronouncements

Share-Based Compensation

In March 2016, Accounting Standard Update (“ASU”) 2016-09, “Improvements to Employee Share-Based Payment Accounting,” was issued which simplifies the accounting for employee share-based payment transactions, including the accounting for income taxes, forfeitures and statutory tax withholding requirements, as well as classification in the statement of cash flows. This standard is effective January 1, 2017. We do not expect this standard to have a material impact on our financial condition, results of operations and cash flows.

Leases

In February 2016, ASU 2016-02, “Leases,” was issued requiring leases to be measured and recognized as a lease liability, with a corresponding right-of-use asset on the balance sheet. This standard has an effective date of January 1, 2019, and we are evaluating the impact of this standard.

Consolidation

In February 2015, ASU 2015-02, “Consolidation,” was issued to improve consolidation guidance for certain legal entities. It modifies the evaluation of whether limited partnerships and similar legal entities are VIEs or voting interest entities, eliminates the presumption that a general partner should consolidate a limited partnership, affects the consolidation analysis of reporting entities involved with VIEs, particularly those that have fee arrangements and related party provisions and provides a scope exception from consolidation guidance for certain reporting entities that comply with or operate in accordance with requirements that are similar to those included in Rule 2a-7 of the Investment Company Act of 1940 for registered money market funds. We adopted this standard effective January 1, 2016, which had no affect our financial position or results of operations.

Revenue Recognition

In May 2014, ASU 2014-09, “Revenue from Contracts with Customers” was issued requiring revenue to be recognized when promised goods or services are transferred to customers in an amount that reflects the expected consideration for these goods or services. This standard has an effective date of January 1, 2018, and we anticipate to account for the new guidance using the modified retrospective implementation method, whereby a cumulative effect adjustment is recorded to retained earnings as of the date of initial application. Our preparation for adoption of this standard is in progress, and we are currently evaluating terms, conditions and our performance obligations of our existing contracts with customers. We are evaluating the effect of this standard on our revenue recognition policies and whether it will have a material impact on our financial condition, results of operations or cash flows.

NOTE 2: PCLI Acquisition

On October 29, 2016, our wholly-owned subsidiary, 9952110 Canada Inc., entered into a share purchase agreement with Suncor to acquire 100% of the outstanding capital stock of PCLI that closed on February 1, 2017. Cash consideration paid was \$862.1 million, or \$1.125 billion in Canadian dollars.

PCLI is located in Mississauga, Ontario and is a producer of base oils in Canada with a plant having 15,600 BPD of lubricant production capacity. The facility is downstream integrated from base oils to finished lubricants and produces a broad spectrum of specialty lubricants and white oils that are distributed to end customers worldwide.

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HOLLYFRONTIER CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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This acquisition will be accounted for as business combination, with the \$862.1 million cash purchase price plus the fair value of additional consideration allocated to the the acquisition date fair value of assets and liabilities acquired. Due to the short timeframe between the closing of this acquisition and filing of this Annual Report on Form 10-K, we have not completed the detailed valuation studies necessary to arrive at the required fair value estimates of the acquired PCLI assets, liabilities assumed and related purchase price allocations.

NOTE 3: Holly Energy Partners

HEP, a consolidated VIE, is a publicly held master limited partnership that owns and operates logistic assets consisting of petroleum product and crude oil pipelines, terminals, tankage, loading rack facilities and refinery processing units that principally support our refining and marketing operations in the Mid-Continent, Southwest and Rocky Mountain regions of the United States and Alon USA, Inc.'s ("Alon") refinery in Big Spring, Texas. Additionally, HEP owns a 75% interest in UNEV Pipeline, LLC ("UNEV"), the owner of pipeline running from Woods Cross, Utah to Las Vegas, Nevada (the "UNEV Pipeline") and associated product terminals; a 50% ownership interest in each of the Frontier Pipeline, the Osage Pipeline and the Cheyenne Pipeline; and a 25% interest in the SLC Pipeline.

As of December 31, 2016, we owned a 37% interest in HEP, including the 2% general partner interest. As the general partner of HEP, we have the sole ability to direct the activities that most significantly impact HEP's financial performance, and therefore we consolidate HEP.

HEP has two primary customers (including us) and generates revenues by charging tariffs for transporting petroleum products and crude oil through its pipelines, by charging fees for terminalling refined products and other hydrocarbons, and storing and providing other services at its storage tanks and terminals. Under our long-term transportation agreements with HEP (discussed further below), we accounted for 83% of HEP's total revenues for the year ended December 31, 2016. We do not provide financial or equity support through any liquidity arrangements and / or debt guarantees to HEP.

HEP has outstanding debt under a senior secured revolving credit agreement and its senior notes. HEP's creditors have no recourse to our assets. Furthermore, our creditors have no recourse to the assets of HEP and its consolidated subsidiaries. See Note 12 for a description of HEP's debt obligations.

HEP has risk associated with its operations. If a major customer of HEP were to terminate its contracts or fail to meet desired shipping or throughput levels for an extended period of time, revenue would be reduced and HEP could suffer substantial losses to the extent that a new customer is not found. In the event that HEP incurs a loss, our operating results will reflect HEP's loss, net of intercompany eliminations, to the extent of our ownership interest in HEP at that point in time.

Woods Cross Assets

On October 3, 2016, HEP acquired from us all the membership interests of Woods Cross Operating LLC, which owns the crude unit, FCCU and polymerization unit of the first phase of our Woods Cross Refinery expansion project that was completed in the second quarter of 2016, for cash consideration of approximately \$278.0 million.

In connection with this transaction, we entered into 15-year tolling agreements containing minimum quarterly throughput commitments that provide minimum annualized payments to HEP of \$56.7 million.

Cheyenne Pipeline

On June 3, 2016, HEP acquired a 50% interest in Cheyenne Pipeline LLC, owner of the Cheyenne Pipeline, in exchange for a contribution of \$42.6 million in cash to Cheyenne Pipeline LLC. Cheyenne Pipeline will continue to be operated by an affiliate of Plains All American Pipeline, L.P. (“Plains”), which owns the remaining 50% interest. The 87-mile crude oil pipeline runs from Fort Laramie, Wyoming to Cheyenne, Wyoming and has an 80,000 BPD capacity.

Tulsa Tanks

On March 31, 2016, HEP acquired crude oil tanks located at our Tulsa Refineries from Plains for \$39.5 million. Previously in 2009, we sold these tanks to Plains and leased them back, and due to our continuing interest in the tanks, we accounted for the transaction as a financing arrangement. Accordingly, the tanks remained on our balance sheet and were depreciated for accounting purposes, and the proceeds received from Plains were recorded as a financing obligation and presented as a component of outstanding debt.

In accounting for HEP’s March 2016 purchase from Plains, the amount paid was recorded against our outstanding financing obligation balance of \$30.8 million, with the excess \$8.7 million payment resulting in a loss on early extinguishment of debt.

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HOLLYFRONTIER CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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Magellan Asset Exchange

On February 22, 2016, we obtained a 50% membership interest in Osage Pipe Line Company, LLC (“Osage”) in exchange for a 20-year terminalling services agreement, whereby, a subsidiary of Magellan Midstream Partners (“Magellan Midstream”) will provide terminalling services for all of our products originating in Artesia, New Mexico that require terminalling in or through El Paso, Texas. Under the agreement, we will be charged tariffs based on the volumes of refined product processed. Osage is the owner of the Osage Pipeline, a 135-mile pipeline that transports crude oil from Cushing, Oklahoma to our El Dorado Refinery in Kansas and also has a connection to the Jayhawk pipeline that services the CHS refinery in McPherson, Kansas. This exchange was accounted for at fair value, whereby the 50% membership interest in the Osage Pipeline was recorded at appraised fair value and an offsetting residual deferred credit in the amount of \$38.9 million was recorded, which will be amortized to cost of products sold over the 20-year service period. No gain or loss was recorded for this exchange.

Also on February 22, 2016, we contributed the 50% membership interest in Osage to HEP, and in exchange received HEP's El Paso terminal. Pursuant to this exchange, HEP agreed to build two connections to Magellan Midstream's El Paso terminal. In addition, HEP agreed to become the operator of the Osage Pipeline. This exchange was accounted for at carry-over basis with no resulting gain or loss.

El Dorado Asset Transaction

On November 1, 2015, HEP acquired from us newly constructed naphtha fractionation and hydrogen generation units at our El Dorado Refinery for cash consideration of \$62.0 million. In connection with this transaction, we entered into 15-year tolling agreements containing minimum quarterly throughput commitments that provide minimum annualized payments to HEP of \$15.1 million.

Frontier Pipeline Transaction

On August 31, 2015, HEP purchased a 50% interest in Frontier Aspen LLC (previously known as Frontier Pipeline Company), owner of the Frontier Pipeline, from an affiliate of Enbridge, Inc. for \$55.0 million. Frontier Pipeline will continue to be operated by an affiliate of Plains, which owns the remaining 50% interest. The 289-mile crude oil pipeline runs from Casper, Wyoming to Frontier Station, Utah, has a 72,000 BPD capacity and supplies Canadian and Rocky Mountain crudes to Salt Lake City area refiners through a connection to the SLC Pipeline.

Transportation Agreements

HEP serves our refineries under long-term pipeline, terminal and tankage throughput agreements and refinery processing tolling agreements expiring from 2019 through 2036. Under these agreements, we pay HEP fees to transport, store and process throughput volumes of refined products, crude oil and feedstocks on HEP's pipelines, terminals, tankage, loading rack facilities and refinery processing units that result in minimum annual payments to HEP including UNEV (a consolidated subsidiary of HEP). Under these agreements, the agreed upon tariff rates are subject to annual tariff rate adjustments on July 1 at a rate based upon the percentage change in Producer Price Index or Federal Energy Regulatory Commission index. As of December 31, 2016, these agreements result in minimum annualized payments to HEP of \$321.0 million.

Our transactions with HEP including the acquisitions discussed above and fees paid under our transportation agreements with HEP and UNEV are eliminated and have no impact on our consolidated financial statements.

HEP's recent common unit issuances (2014 through present) are summarized below:

HEP Private Placement Agreement

On September 16, 2016, HEP entered into a common unit purchase agreement in which certain purchasers agreed to purchase in a private placement 3,420,000 HEP common units, representing limited partnership interests, at a price of \$30.18 per common unit. The private placement closed on October 3, 2016, at which time HEP received proceeds of approximately \$103 million, which were used to finance a portion of the Woods Cross assets acquisition. In connection with this private placement and to maintain our 2% general partner interest in HEP, we made capital contributions totaling \$2.1 million to HEP in October 2016. After this common unit issuance, our interest in HEP is 37%, including the 2% general partner interest.

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HEP Common Unit Continuous Offering Program

On May 10, 2016, HEP established a continuous offering program under which HEP may issue and sell common units from time to time, representing limited partner interests, up to an aggregate gross sales amount of \$200 million. As of December 31, 2016, HEP has issued 703,455 units under this program, providing \$23.0 million in net proceeds. In connection with this program and to maintain our 2% general partner interest in HEP, we made capital contributions totaling \$0.5 million as of December 31, 2016.

HEP intends to use the net proceeds for general partnership purposes, which may include funding working capital, repayment of debt, acquisitions and capital expenditures. Amounts repaid under HEP's credit facility may be reborrowed from time to time.

As a result of this transaction and resulting HEP ownership changes, we adjusted additional capital and equity attributable to HEP's noncontrolling interest holders to reallocate HEP's equity among its unitholders.

NOTE 4: Fair Value Measurements

Our financial instruments measured at fair value on a recurring basis consist of investments in marketable securities and derivative instruments.

Fair value measurements are derived using inputs (assumptions that market participants would use in pricing an asset or liability, including assumptions about risk). GAAP categorizes inputs used in fair value measurements into three broad levels as follows:

• (Level 1) Quoted prices in active markets for identical assets or liabilities.

• (Level 2) Observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, similar assets and liabilities in markets that are not active or can be corroborated by observable market data.

• (Level 3) Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. This includes valuation techniques that involve significant unobservable inputs.

The carrying values of marketable securities and derivative instruments at December 31, 2016 and December 31, 2015 were as follows:

Financial Instrument	Carrying Amount	Fair Value by Input Level		
		Level 1	Level 2	Level 3
(In thousands)				
December 31, 2016				
Assets:				
Marketable securities	\$424,148	\$—	\$424,148	\$—
Commodity price swaps	14,563	—	14,358	205
Commodity forward contracts	5,905	—	5,905	—
HEP interest rate swaps	91	—	91	—
Total assets	\$444,707	\$—	\$444,502	\$205

Liabilities:

NYMEX futures contracts	\$1,975	\$1,975	\$—	\$—
Commodity price swaps	26,845	—	24,086	2,759
Commodity forward contracts	8,316	—	8,316	—
Foreign currency forward contracts	6,519	—	6,519	—
Total liabilities	\$43,655	\$1,975	\$38,921	\$2,759

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Financial Instrument	Carrying Amount	Fair Value by Input Level		
		Level 1	Level 2	Level 3
December 31, 2015				
Assets:				
Marketable securities	\$144,019	\$—	\$144,019	\$—
NYMEX futures contract	3,469	3,469	—	—
Commodity price swaps	37,097	—	37,097	—
HEP interest rate swaps	304	—	304	—
Total assets	\$184,889	\$3,469	\$181,420	\$—
Liabilities:				
Commodity price swaps	\$98,930	\$—	\$98,930	\$—
HEP interest rate swaps	114	—	114	—
Total liabilities	\$99,044	\$—	\$99,044	\$—

Level 1 Financial Instruments

Our NYMEX futures contracts are exchange traded and are measured and recorded at fair value using quoted market prices, a Level 1 input.

Level 2 Financial Instruments

Investments in marketable securities, derivative instruments consisting of commodity price swaps and forward sales and purchase contracts and HEP's interest rate swaps are measured and recorded at fair value using Level 2 inputs. The fair values of the commodity price and interest rate swap contracts are based on the net present value of expected future cash flows related to both variable and fixed rate legs of the respective swap agreements. The measurements are computed using market-based observable inputs, quoted forward commodity prices with respect to our commodity price swaps and the forward London Interbank Offered Rate ("LIBOR") yield curve with respect to HEP's interest rate swaps. The fair value of the marketable securities is based on values provided by a third party, which were derived using market quotes for similar type instruments, a Level 2 input.

Level 3 Financial Instruments

We have commodity price swap contracts that relate to forecasted sales of unleaded gasoline, and at times have forward commodity sales and purchase contracts, for which quoted forward market prices are not readily available. The forward rate used to value these price swaps and forward sales and purchase contracts are derived using a projected forward rate using quoted market rates for similar products, adjusted for regional pricing and grade differentials, a Level 3 input.

The following table presents the changes in fair value of our Level 3 assets and liabilities (all related to derivative instruments) for the years ended December 31, 2016 and 2015:

Level 3 Financial Instruments	Years Ended	
	December 31, 2016	2015

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	(In thousands)	
Liability balance at beginning of period	\$—	\$ —
Change in fair value:		
Recognized in other comprehensive income	(1,460)	3,852
Recognized in cost of products sold	(1,094)	—
Settlement date fair value of contractual maturities:		
Recognized in sales and other revenues	—	(3,852)
Liability balance at end of period	\$(2,554)	\$ —

A hypothetical change of 10% to the estimated future cash flows attributable to our Level 3 commodity price swaps would result in an estimated fair value change of \$0.3 million.

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During the year ended December 31, 2016, we recognized goodwill and long-lived asset impairment charges based on fair value measurements (see Note 10). Also, we recognized a non-recurring fair value measurement of \$44.4 million that relates to HEP's equity interest in Osage in February 2016. The fair value measurements were based on a combination of valuation methods including discounted cash flows, and the guideline public company and guideline transaction methods, Level 3 inputs.

NOTE 5: Earnings Per Share

Basic earnings per share is calculated as net income (loss) attributable to HollyFrontier stockholders divided by the average number of shares of common stock outstanding. Diluted earnings per share assumes, when dilutive, the issuance of the net incremental shares from restricted shares and performance share units. The following is a reconciliation of the denominators of the basic and diluted per share computations for net income (loss) attributable to HollyFrontier stockholders:

	Years Ended December 31,		
	2016	2015	2014
	(In thousands, except per share data)		
Net income (loss) attributable to HollyFrontier stockholders	\$(260,453)	\$740,101	\$281,292
Participating securities' (restricted stock) share in earnings	1,003	2,306	820
Net income (loss) attributable to common shares	\$(261,456)	\$737,795	\$280,472
Average number of shares of common stock outstanding	176,101	188,731	197,243
Effect of dilutive variable restricted shares and performance share units ⁽¹⁾	—	209	185
Average number of shares of common stock outstanding assuming dilution	176,101	188,940	197,428
Basic earnings (loss) per share	\$(1.48)	\$3.91	\$1.42
Diluted earnings (loss) per share	\$(1.48)	\$3.90	\$1.42
(1) Excludes anti-dilutive restricted and performance share units of:	469	89	356

NOTE 6: Stock-Based Compensation

As of December 31, 2016, we have two principal share-based compensation plans (collectively, the "Long-Term Incentive Compensation Plan").

The compensation cost charged against income for these plans was \$22.8 million, \$26.9 million and \$26.1 million for the years ended December 31, 2016, 2015 and 2014, respectively. Our accounting policy for the recognition of compensation expense for awards with pro-rata vesting is to expense the costs ratably over the vesting periods.

Additionally, HEP maintains a share-based compensation plan for Holly Logistic Services, L.L.C.'s non-employee directors and certain executives and employees. Compensation cost attributable to HEP's share-based compensation plan was \$2.7 million, \$3.5 million and \$3.5 million for the years ended December 31, 2016, 2015 and 2014, respectively.

Restricted Stock and Restricted Stock Units

Under our Long-Term Incentive Compensation Plan, we grant certain officers and other key employees restricted stock and restricted stock unit awards with awards generally vesting over a period of one to three years. Restricted stock award recipients are generally entitled to all the rights of absolute ownership of the restricted shares from the date of grant including the right to vote the shares and to receive dividends. Upon vesting, restrictions on the restricted shares lapse at which time they convert to common shares. In addition, we grant non-employee directors restricted stock unit awards, which typically vest over a period of one year and are payable in stock. The fair value of each restricted stock and restricted stock unit award is measured based on the grant date market price of our common shares and is amortized over the respective vesting period.

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A summary of restricted stock and restricted stock unit activity and changes during the year ended December 31, 2016 is presented below:

Restricted Stock and Restricted Stock Units	Grants	Weighted Average Grant Date Fair Value	Aggregate Intrinsic Value (\$000)
Outstanding at January 1, 2016 (non-vested)	722,525	\$ 47.50	
Granted	894,879	21.66	
Vesting (transfer/conversion to common stock)	(409,016)	45.09	
Forfeited	(19,614)	48.02	
Outstanding at December 31, 2016 (non-vested)	1,188,774	\$ 28.87	\$ 37,426

For the years ended December 31, 2016, 2015 and 2014, restricted stock and restricted stock units vested having a grant date fair value of \$18.4 million, \$14.2 million and \$18.2 million, respectively. For the years ended December 31, 2015 and 2014, we granted restricted stock and restricted stock units having a weighted average grant date fair value of \$49.92 and \$42.03, respectively. As of December 31, 2016, there was \$24.2 million of total unrecognized compensation cost related to non-vested restricted stock and restricted stock unit grants. That cost is expected to be recognized over a weighted-average period of 2.5 years.

Performance Share Units

Under our Long-Term Incentive Compensation Plan, we grant certain officers and other key employees performance share units, which are payable in stock upon meeting certain criteria over the service period, and generally vest over a period of three years. Under the terms of our performance share unit grants, awards are subject to “financial performance” and “market performance” criteria. Financial performance is based on our financial performance compared to a peer group of independent refining companies, while market performance is based on the relative standing of total shareholder return achieved by HollyFrontier compared to peer group companies. The number of shares ultimately issued under these awards can range from zero to 200% of target award amounts. As of December 31, 2016, estimated share payouts for outstanding non-vested performance share unit awards averaged approximately 67% of target amounts.

A summary of performance share unit activity and changes during the year ended December 31, 2016 is presented below:

Performance Share Units	Grants
Outstanding at January 1, 2016 (non-vested)	637,938
Granted	376,275
Vesting and transfer of ownership to recipients	(161,610)
Forfeited	(148,664)
Outstanding at December 31, 2016 (non-vested)	703,939

For the year ended December 31, 2016, we issued 76,404 shares of common stock, representing a 47% payout on vested performance share units having a grant date fair value of \$7.4 million. For the years ended December 31, 2015 and 2014, we issued common stock upon the vesting of the performance share units having a grant date fair value of \$10.4 million and \$14.3 million, respectively. As of December 31, 2016, there was \$14.5 million of total

unrecognized compensation cost related to non-vested performance share units having a grant date fair value of \$33.79 per unit. That cost is expected to be recognized over a weighted-average period of 2.3 years.

NOTE 7: Cash and Cash Equivalents and Investments in Marketable Securities

Our investment portfolio at December 31, 2016 consisted of cash, cash equivalents and investments in marketable securities.

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We currently invest in marketable debt securities with the maximum maturity or put date of any individual issue generally not greater than one year from the date of purchase, which are usually held until maturity. All of these instruments are classified as available-for-sale and are reported at fair value. Interest income is recorded as earned. Unrealized gains and losses, net of related income taxes, are reported as a component of accumulated other comprehensive income. Upon sale or maturity, realized gains on our marketable debt securities are recognized as interest income. These gains are computed based on the specific identification of the underlying cost of the securities, net of unrealized gains and losses previously reported in other comprehensive income. Unrealized gains and losses on our available-for-sale securities are due to changes in market prices and are considered temporary.

The following is a summary of our marketable securities as of December 31, 2016 and 2015, respectively:

	Amortized Cost	Gross Unrealized Gain	Gross Unrealized Loss	Fair Value (Net Carrying Amount)
(In thousands)				
December 31, 2016				
Commercial paper	\$7,687	\$ 1	\$ (1)	\$7,687
Corporate debt securities	4,001	—	—	4,001
State and political subdivisions debt securities	412,462	1	(3)	412,460
Total marketable securities	\$424,150	\$ 2	\$ (4)	\$424,148
December 31, 2015				
Commercial paper	\$22,876	\$1	\$(2)	\$22,875
Corporate debt securities	32,311	—	(41)	32,270
State and political subdivisions debt securities	88,935	6	(67)	88,874
Total marketable securities	\$144,122	\$7	\$(110)	\$144,019

Interest income recognized on our marketable securities was \$0.8 million, \$1.9 million and \$2.2 million for the years ended December 31, 2016, 2015 and 2014, respectively.

NOTE 8: Inventories

Inventory consists of the following components:

	December 31, 2016	December 31, 2015
(In thousands)		
Crude oil	\$549,886	\$518,922
Other raw materials and unfinished products ⁽¹⁾	287,561	214,832
Finished products ⁽²⁾	465,432	603,568
Lower of cost or market reserve	(332,518)	(624,457)
Process chemicals ⁽³⁾	2,767	4,477
Repairs and maintenance supplies and other ⁽⁴⁾	162,548	124,527
Total inventory	\$1,135,676	\$841,869

- (1) Other raw materials and unfinished products include feedstocks and blendstocks, other than crude.
- (2) Finished products include gasolines, jet fuels, diesels, lubricants, asphalts, LPG's and residual fuels.
- (3) Process chemicals include additives and other chemicals.
- (4) Includes RINs

Inventories which are valued at the lower of LIFO cost or market reflect a valuation reserve of \$332.5 million and \$624.5 million at December 31, 2016 and 2015, respectively. The December 31, 2015 market reserve of \$624.5 million was reversed due to the sale of inventory quantities that gave rise to the 2015 reserve. A new market reserve of \$332.5 million was established as of December 31, 2016 based on market conditions and prices at that time. The effect of the change in the lower of cost or market reserve was a decrease to cost of goods sold of \$291.9 million for the year ended December 31, 2016 and an increase of \$227.0 million and \$397.5 million for the years ended December 31, 2015 and 2014, respectively.

At December 31, 2016, 2015 and 2014, the LIFO value of inventory, net of the lower of cost or market reserve, was equal to current costs.

NOTE 9: Properties, Plants and Equipment

The components of properties, plants and equipment are as follows:

	December 31,	
	2016	2015
	(In thousands)	
Land, buildings and improvements	\$ 326,097	\$ 305,712
Refining facilities	3,382,369	2,833,125
Pipelines and terminals	1,392,898	1,321,398
Transportation vehicles	18,841	21,289
Other fixed assets	153,463	158,401
Construction in progress	273,188	850,264
	5,546,856	5,490,189
Accumulated depreciation	(1,538,408)	(1,374,527)
	\$4,008,448	\$4,115,662

During the year ended December 31, 2016, we recorded impairment charges of \$308.3 million that are attributable to properties, plant and equipment of our Cheyenne reporting unit. See Note 10 for additional information.

We capitalized interest attributable to construction projects of \$8.0 million, \$5.5 million and \$11.8 million for the years ended December 31, 2016, 2015 and 2014, respectively.

Depreciation expense was \$247.9 million, \$233.3 million and \$261.8 million for the years ended December 31, 2016, 2015 and 2014, respectively. For the years ended December 31, 2016, 2015 and 2014, depreciation expense included \$62.7 million, \$58.7 million and \$58.1 million, respectively, attributable to HEP operations.

NOTE 10: Goodwill and Long-lived Asset Impairment

As of December 31, 2016, our goodwill balance was \$2.0 billion, with goodwill assigned to our refining and HEP segments of \$1.7 billion and \$0.3 billion, respectively.

During the second quarter of 2016, we performed interim goodwill impairment and related long-lived asset impairment testing of our El Dorado and Cheyenne Refinery reporting units after identifying a combination of events and circumstances that are indicators of potential goodwill and long-lived asset impairment. The indicators included lower than typical gross margins during the summer driving season, a decrease in the gross margin outlook and decrease in our market capitalization due to a decline in our common share price.

Our testing first assessed the carrying values of our refining long-lived asset groups for recoverability. This entailed a comparison of our reporting unit fair values relative to their respective carrying values. If carrying value exceeds fair value for a reporting unit, we measure goodwill impairment as the excess of the carrying amount of reporting unit goodwill over the implied fair value of that goodwill based on estimates of the fair value of all assets and liabilities in the reporting unit.

The estimated fair values of our goodwill reporting units and long-lived asset groups were derived using a combination of both income and market approaches. The income approach reflects expected future cash flows based on estimates of future crack spreads, forecasted production levels, operating costs and capital expenditures. Our market approaches include both the guideline public company and guideline transaction methods. Both methods utilize pricing multiples derived from historical market transactions of other like-kind assets. These fair value measurements involve significant unobservable inputs (Level 3 inputs).

As a result of our impairment testing during the second quarter of 2016, we determined that the carrying value of the long-lived assets of the Cheyenne Refinery had been impaired and recorded long-lived asset impairment charges of \$344.8 million that principally related to properties, plant and equipment. Additionally, the carrying value of the Cheyenne Refinery's goodwill was fully impaired and a goodwill impairment charge of \$309.3 million was also recorded, representing all of the goodwill allocated to our Cheyenne Refinery. Our interim testing did not identify any impairment related to our El Dorado reporting unit.

We performed our annual goodwill impairment testing at July 1, 2016 and determined that the fair value of our El Dorado reporting unit exceeded its carrying value by approximately 4%. Additionally, testing indicated no impairment of goodwill attributable to our HEP reporting unit. The market outlook for future crack spreads has since improved and based on subsequent testing, the fair value of the El Dorado reporting unit exceeded its carrying value by approximately 20% at December 31, 2016. A reasonable expectation exists that future deterioration in gross margins could result in an impairment of goodwill and the long-lived assets of the El Dorado reporting unit at some point in the future and such impairment charges could be material.

As of December 31, 2016, accumulated goodwill losses recognized totaled \$309.3 million, all of which relates to our Refining segment. There were no impairments of goodwill or long-lived assets during the years ended December 31, 2015 and 2014.

NOTE 11: Environmental

We expensed \$6.6 million, \$14.7 million and \$28.5 million for the years ended December 31, 2016, 2015 and 2014, respectively, for environmental remediation obligations. The accrued environmental liability reflected in our consolidated balance sheets was \$96.4 million and \$98.1 million at December 31, 2016 and 2015, respectively, of which \$82.9 million and \$83.5 million, respectively, were classified as other long-term liabilities. These accruals include remediation and monitoring costs expected to be incurred over an extended period of time (up to 30 years for certain projects). The amount of our accrued liability could increase in the future when the results of ongoing investigations become known, are considered probable and can be reasonably estimated.

NOTE 12: Debt

HollyFrontier Credit Agreement

We have a \$1 billion senior unsecured revolving credit facility maturing in July 2019 (the "HollyFrontier Credit Agreement") that was amended in February 2017, increasing the size of the credit facility to \$1.35 billion and

extending the maturity to February 2022. The HollyFrontier Credit Agreement may be used for revolving credit loans and letters of credit from time to time and is available to fund general corporate purposes. During the year ended December 31, 2016, we received advances totaling \$315.0 million and repaid \$315.0 million under the HollyFrontier Credit Agreement. At December 31, 2016, we were in compliance with all covenants, had no outstanding borrowings and had outstanding letters of credit totaling \$4.4 million under the HollyFrontier Credit Agreement.

Indebtedness under the HollyFrontier Credit Agreement bears interest, at our option at either a) an alternate base rate (as defined in the credit agreement) plus an applicable margin of (ranging from 0.125% - 1.000%), b) LIBOR plus an applicable margin (ranging from 1.125% to 2.000%), or c) Canadian Dealer Offered Rate plus an applicable margin (ranging from 1.125% to 2.000%) for Canadian dollar denominated borrowings.

HEP Credit Agreement

HEP has a \$1.2 billion senior secured revolving credit facility maturing in November 2018 (the “HEP Credit Agreement”) and is available to fund capital expenditures, investments, acquisitions, distribution payments and working capital and for general partnership purposes. It is also available to fund letters of credit up to a \$50 million sub-limit. During the year ended December 31, 2016, HEP received advances totaling \$554.0 million and repaid \$713.0 million under the HEP Credit Agreement. At December 31, 2016, HEP was in compliance with all of its covenants, had outstanding borrowings of \$553.0 million and no outstanding letters of credit under the HEP Credit Agreement.

Indebtedness under the HEP Credit Agreement bears interest, at HEP's option, at either a reference rate announced by the administrative agent plus an applicable margin or at a rate equal to LIBOR plus an applicable margin. In each case, the applicable margin is based upon the ratio of HEP's funded debt to earnings before interest, taxes, depreciation and amortization (as defined in the HEP Credit Agreement). The weighted average interest rates in effect on HEP's Credit Agreement borrowings were 2.98% and 2.572% at December 31, 2016 and 2015, respectively.

HEP's obligations under the HEP Credit Agreement are collateralized by substantially all of HEP's assets. Indebtedness under the HEP Credit Agreement involves recourse to HEP Logistics Holdings, L.P., its general partner, and is guaranteed by HEP's wholly-owned subsidiaries. Any recourse to the general partner would be limited to the extent of HEP Logistics Holdings, L.P.'s assets, which other than its investment in HEP, are not significant. HEP's creditors have no recourse to our other assets. Furthermore, our creditors have no recourse to the assets of HEP and its consolidated subsidiaries.

HollyFrontier Senior Notes

In March 2016 and November 2016, we issued \$250 million and \$750 million, respectively, in aggregate principal amount of 5.875% senior notes (the “HollyFrontier Senior Notes”) maturing April 2026. The HollyFrontier Senior Notes are unsecured and unsubordinated obligations of ours and rank equally with all our other existing and future unsecured and unsubordinated indebtedness.

In June 2015, we redeemed our \$150.0 million aggregate principal amount of 6.875% senior notes maturing November 2018 at a redemption cost of \$155.2 million at which time we recognized a \$1.4 million early extinguishment loss consisting of a \$5.2 million debt redemption premium, net of an unamortized premium of \$3.8 million.

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HollyFrontier Financing Obligation

In March 2016, we extinguished a financing obligation at a cost of \$39.5 million and recognized an \$8.7 million loss on the early termination. The financing obligation related to a sale and lease-back of certain crude oil tankage that we sold to an affiliate of Plains in October 2009 for \$40.0 million.

HollyFrontier Term Loan

In April 2016, we entered into a \$350 million senior unsecured term loan (the “HollyFrontier Term Loan”) maturing in April 2019. The HollyFrontier Term Loan was fully repaid with proceeds received upon the November 2016 issuance of the HollyFrontier Senior Notes.

HEP Senior Notes

On January 4, 2017, HEP redeemed its \$300 million aggregate principal amount of 6.50% senior notes maturing March 2020 at a redemption cost of \$316.4 million, at which time HEP recognized a \$12.2 million early extinguishment loss. HEP funded the redemption with borrowings under the HEP Credit Agreement.

In July 2016, HEP issued \$400 million in aggregate principal amount of 6.0% HEP senior notes maturing in 2024 in a private placement. HEP used the net proceeds to repay indebtedness under the HEP Credit Agreement.

The 6.0% HEP senior notes (the “HEP Senior Notes”) are unsecured and impose certain restrictive covenants, including limitations on HEP’s ability to incur additional indebtedness, make investments, sell assets, incur certain liens, pay distributions, enter into transactions with affiliates, and enter into mergers. At any time when the HEP Senior Notes are rated investment grade by both Moody’s and Standard & Poor’s and no default or event of default exists, HEP will not be subject to many of the foregoing covenants. Additionally, HEP has certain redemption rights under the HEP Senior Notes.

In March 2014, HEP redeemed its \$150.0 million aggregate principal amount of 8.25% senior notes maturing March 2018 at a redemption cost of \$156.2 million, at which time HEP recognized a \$7.7 million early extinguishment loss consisting of a \$6.2 million debt redemption premium and unamortized discount and financing cost of \$1.5 million. HEP funded the redemption with borrowings under the HEP Credit Agreement.

Indebtedness under the HEP Senior Notes is guaranteed by HEP’s wholly-owned subsidiaries. HEP’s creditors have no recourse to our other assets. Furthermore, our creditors have no recourse to the assets of HEP and its consolidated subsidiaries.

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The carrying amounts of long-term debt are as follows:

	December 31,	
	2016	2015
	(In thousands)	
HollyFrontier 5.875% Senior Notes		
Principal	\$1,000,000	\$—
Unamortized discount and debt issuance costs	(8,775)	—
	991,225	—
Financing Obligation	—	31,288
Total HollyFrontier long-term debt	991,225	31,288
HEP Credit Agreement	553,000	712,000
HEP 6% Senior Notes		
Principal	400,000	—
Unamortized discount and debt issuance costs	(6,607)	—
	393,393	—
HEP 6.5% Senior Notes		
Principal	300,000	300,000
Unamortized discount and debt issuance costs	(2,481)	(3,248)
	297,519	296,752
Total HEP long-term debt	1,243,912	1,008,752
Total long-term debt	\$2,235,137	\$1,040,040

The fair values of the senior notes are as follows:

	December 31,	
	2016	2015
	(In thousands)	
HollyFrontier 5.875% Senior Notes	\$1,022,500	\$—
HEP Senior Notes	\$723,750	\$295,500

These fair values are based on estimates provided by a third party using market quotes for similar type instruments, a Level 2 input. See Note 4 for additional information on Level 2 inputs.

Principal maturities of long-term debt are as follows:

Years Ending December 31,	(In thousands)
2017	\$—

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2018	553,000
2019	—
2020	300,000
2021	—
Thereafter	1,400,000
Total	\$2,253,000

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NOTE 13: Derivative Instruments and Hedging Activities

Commodity Price Risk Management

Our primary market risk is commodity price risk. We are exposed to market risks related to the volatility in crude oil and refined products, as well as volatility in the price of natural gas used in our refining operations. We periodically enter into derivative contracts in the form of commodity price swaps, forward purchase and sales and futures contracts to mitigate price exposure with respect to:

- our inventory positions;
- natural gas purchases;
- costs of crude oil and related grade differentials;
- prices of refined products; and
- our refining margins.

Accounting Hedges

We have swap contracts serving as cash flow hedges against price risk on forecasted purchases of natural gas. We also periodically have forward sales contracts that lock in the prices of future sales of crude oil and refined product and swap contracts serving as cash flow hedges against price risk on forecasted purchases of WTI crude oil and forecasted sales of refined product. These contracts have been designated as accounting hedges and are measured at fair value with offsetting adjustments (gains/losses) recorded directly to other comprehensive income. These fair value adjustments are later reclassified to earnings as the hedging instruments mature. On a quarterly basis, hedge ineffectiveness is measured by comparing the change in fair value of the swap contracts against the expected future cash inflows/outflows on the respective transaction being hedged. Any hedge ineffectiveness is also recognized in earnings.

The following table presents the pre-tax effect on other comprehensive income (“OCI”) and earnings due to fair value adjustments and maturities of commodity price swaps and forward sales under hedge accounting:

	Unrealized Gain (Loss) Recognized in OCI	Gain (Loss) Recognized in Earnings Due to Settlements Location (In thousands)	Amount	Gain (Loss) Attributable to Hedge Ineffectiveness Recognized in Earnings Location	Amount
Year Ended December 31, 2016					
Commodity price swaps					
Change in fair value	\$ (17,018)				
Loss reclassified to earnings due to settlements	41,077	Sales and other revenues	\$(20,293)		
Amortization of discontinued hedges reclassified to earnings	1,080	Operating expenses	(21,864)	Operating expenses	\$—
Total	\$ 25,139		\$(42,157)		\$—
Year Ended December 31, 2015					
Commodity price swaps					
Change in fair value	\$ (3,983)	Sales and other revenues	\$245,819	Sales and other revenues	\$(274)

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Gain reclassified to earnings due to settlements	(49,592)	Cost of products sold	(179,700)	Cost of products sold	4,376
Amortization of discontinued hedges reclassified to earnings	1,080	Operating expenses	(17,607)	Operating expenses	547
Total	\$ (52,495)		\$48,512		\$4,649

Year Ended December 31, 2014

Commodity price swaps

Change in fair value	\$ 107,518	Sales and other revenues	\$88,326	Sales and other revenues	\$274
Gain reclassified to earnings due to settlements	(52,884)	Cost of products sold	(37,313)	Cost of products sold	(4,377)
Amortization of discontinued hedges reclassified to earnings	1,080	Operating expenses	791	Operating expenses	(547)
Total	\$ 55,714		\$51,804		\$(4,650)

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HOLLYFRONTIER CORPORATION

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

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As of December 31, 2016, we have the following notional contract volumes related to outstanding derivative instruments serving as cash flow hedges against price risk on forecasted transactions (all maturing in 2017):

Derivative instruments	Total	Unit of Measure
	Outstanding Notional	