

SOUTHWESTERN ENERGY CO

Form 10-K

February 23, 2017

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

Form 10-K

Annual Report pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934  
For the fiscal year ended December 31, 2016  
Commission file number 001-08246

Southwestern Energy Company  
(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation or organization)	71-0205415 (I.R.S. Employer Identification No.)
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10000 Energy Drive,

Spring, Texas (Address of principal executive offices)	77389 (Zip Code)
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(832) 796-1000  
(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Common Stock, Par Value \$0.01	New York Stock Exchange
Depositary Shares, each representing a 1/20th ownership interest in a share of 6.25% Series B Mandatory Convertible Preferred Stock	New York Stock Exchange

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

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

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

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or

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for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes No

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company  
Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

The aggregate market value of the voting stock held by non-affiliates of the registrant was \$4,913,492,123 based on the New York Stock Exchange – Composite Transactions closing price on June 30, 2016 of \$12.58. For purposes of this calculation, the registrant has assumed that its directors and executive officers are affiliates.

As of February 21, 2017, the number of outstanding shares of the registrant's Common Stock, par value \$0.01, was 497,953,968

Document Incorporated by Reference

Portions of the registrant's definitive proxy statement to be filed with respect to the annual meeting of stockholders to be held on or about May 23, 2017 are incorporated by reference into Part III of this Form 10-K.

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 ANNUAL REPORT ON FORM 10-K  
 For Fiscal Year Ended December 31, 2016

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This Annual Report on Form 10-K includes certain statements that may be deemed to be “forward-looking” within the meaning of Section 27A of the Securities Act of 1933, or the Securities Act, and Section 21E of the Securities Exchange Act of 1934, or the Exchange Act. We refer you to “Risk Factors” in Item 1A of Part I and to “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Cautionary Statement about Forward-Looking Statements” in Item 7 of Part II of this Annual Report for a discussion of factors that could cause actual results to differ materially from any such forward-looking statements. The electronic version of this Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and amendments to those forms filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act are available free of charge as soon as reasonably practicable after they are filed with the Securities and Exchange Commission, or SEC, on our website at [www.swn.com](http://www.swn.com). Our corporate governance guidelines and the charters of the Audit, the Compensation, the Health, Safety, Environment and Corporate Responsibility and the Nominating and Governance Committees of our Board of Directors are available on our website, and, upon request, in print free of charge to any stockholder. Information on our website is not incorporated into this report.

We file periodic reports, current reports and proxy statements with the SEC electronically. The SEC maintains an internet website that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC. The address of the SEC’s website is [www.sec.gov](http://www.sec.gov). The public may also read and copy any materials we file with the SEC at the SEC’s Public Reference Room at 100 F Street N.E., Washington, D.C. 20549. The public may obtain information about the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330.

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ITEM 1. BUSINESS

Southwestern Energy Company (including its subsidiaries, collectively, “we”, “Southwestern” or the “Company”) is an independent natural gas and oil company engaged in development and production activities, including related natural gas gathering and marketing. Southwestern is a holding company whose assets consist of direct and indirect ownership interests in, and whose business is conducted substantially through, its subsidiaries. Currently we operate only in the United States. Southwestern’s common and preferred stock are listed and traded on the NYSE under the ticker symbols “SWN” and “SWNC”, respectively.

Southwestern, which was incorporated in Arkansas in 1929 and reincorporated in Delaware in 2006, has its executive offices located at 10000 Energy Drive, Spring, Texas 77389, and can be reached by phone at 832-796-1000. The Company also maintains offices in Conway, Arkansas; Tunkhannock, Pennsylvania; and Jane Lew, West Virginia.

Our Business Strategy

We aim to deliver sustainable and assured industry-leading returns through excellence in exploration and production and midstream performance from our extensive resource base and targeted expansion of our activities and assets along the hydrocarbon value chain. Our Company’s formula embodies our corporate philosophy and guides how we operate our business:

Our formula, “The Right People doing the Right Things, wisely investing the cash flow from our underlying Assets will create Value+,” also guides our business strategy. We always strive to attract and retain strong talent, to work safely and act ethically with unwavering vigilance for the environment and the communities in which we operate, and to creatively apply technical and financial skills, which we believe will grow long-term value. The arrow in our formula is not a straight line: we acknowledge that factors may adversely affect quarter-by-quarter results, but the path over time points to value creation.

In applying these core principles, we concentrate on:

- Financial Strength. We are committed to rigorously managing our balance sheet and risks. We budget to invest only from our net cash flow (along with the remaining portion of proceeds from our equity issuance in 2016 that we previously earmarked for capital investment), protect our projected cash flows through hedging, and continue to ensure strong liquidity while de-levering the Company.
- Increasing Margins. We apply strong technical, operational, commercial and marketing skills to reduce cost, improve the productivity of our wells and pursue commercial arrangements that extract greater value from them. We believe our demonstrated ability to improve margins, especially by leveraging the scale of our large assets,

gives us a competitive advantage as we move into the future.

- **Dynamic Management of Assets Throughout Life Cycle.** We own large-scale, long-life assets in various phases of development. In early stages, we ramp up development through technical, operational and commercial skills, and as they grow we look for ways to maximize their value, through efficient operating practices along with commercial and marketing expertise.
- **Deepening Our Inventory.** We continue to expand the inventory of properties that we can develop profitably by converting our extensive resources into proved reserves, targeting additions whose productivity largely has been demonstrated and improving efficiencies in production.
- **The Hydrocarbon Value Chain.** We often expand our activities vertically when we believe this will enhance our margins or otherwise provide us competitive advantages. For example, the Company developed and operates the largest gathering system in the Fayetteville Shale area. We operate drilling rigs and own a sand mine that provides a low cost proppant in hydraulic fracturing. These activities help protect our margin, minimize the risk of unavailability of these resources from third parties, diversify our cash flows and capture additional value.
  - **The Next Chapter of Unconventionals.** Our company grew dramatically in the 2000s by harnessing and enhancing the newfound combination of hydraulic fracturing and horizontal drilling technologies. Our people constantly search for the next revolutionary technology and other operational advancements to capture greater value in unconventional hydrocarbon resource development. These developments – whether single, step-changing technologies or a combination of several incremental ones – can reduce finding and development costs and thus increase our margins.

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- Innovative Environmental Solutions and Policy Formation. Our Company is a leader in identifying and implementing innovative solutions to unconventional hydrocarbon development to minimize the environmental and community impacts of our activities. We work extensively with governmental, non-governmental and industry stakeholders to develop responsible and cost-effective programs. We demonstrate that a company can operate responsibly and profitably, putting us in a better position to comply with new regulations as they evolve.

During 2016, we executed on our business strategy by:

- Investing within our cash flow plus a portion of the proceeds from our successful equity offering earmarked for this purpose, with the remainder to debt reduction
- Investing in only those projects that meet our rigorous economic hurdles at strip pricing
- Rearranging and extending our bank credit facilities and successfully tendering for approximately \$700 million of near-term senior notes, which enhanced and stabilized our liquidity and eliminated the overhang of near-term debt maturities
- Generating cash flow from operations of about \$500 million, which reflects the impact of an aggressive assault on costs and improved drilling and completion performance
- Intelligently managing our portfolio, including disposing of acreage we were not planning to develop until well into the next decade and using the over \$400 million of proceeds to reduce debt

Our predominant operations, which we refer to as Exploration and Production (“E&P”), are focused on the finding and development of natural gas, oil and natural gas liquid (“NGL”) reserves. We are also focused on creating and capturing additional value through our natural gas gathering and marketing segment, which we refer to as Midstream Services. We conduct substantially all of our business through subsidiaries.

Exploration and Production – Our largest business is the exploration for and production of natural gas, oil and NGLs, with our current operations principally focused within the United States on development of unconventional natural gas reservoirs located in Pennsylvania, West Virginia and Arkansas. Our operations in northeast Pennsylvania are primarily focused on the unconventional natural gas reservoir known as the Marcellus Shale (herein referred to as “Northeast Appalachia”), our operations in West Virginia are also focused on the Marcellus Shale, the Utica and the Upper Devonian unconventional natural gas, oil and NGL reservoirs (herein referred to as “Southwest Appalachia”) and our operations in Arkansas are primarily focused on an unconventional natural gas reservoir known as the Fayetteville Shale. Collectively, our properties located in Pennsylvania and West Virginia are herein referred to as the “Appalachian Basin.” We have smaller holdings in Colorado and Louisiana along with other areas in which we are testing potential new resources, including New Brunswick, Canada whose development is subject to a moratorium. We also have drilling rigs located in Pennsylvania, West Virginia and Arkansas and provide oilfield products and services, principally serving our production operations.

Midstream Services – Through our affiliated midstream subsidiaries, we engage in natural gas gathering activities in Arkansas and Louisiana. These activities primarily support our E&P operations and generate revenue from the



gathering of natural gas. Our marketing activities capture opportunities that arise through the marketing and transportation of the natural gas, oil and NGLs produced in our E&P operations.

Historically, the vast majority of our cash flow from operations has been derived from our E&P business. In 2016 and 2015, depressed commodity prices significantly decreased our E&P results. In 2016, our E&P segment generated cash flow from operations of \$297 million, which constituted 60% of our total cash flow from operations. This compares to E&P-generated cash flow from operations of \$1.1 billion and \$2.1 billion in 2015 and 2014, respectively. Our E&P segment constituted 71% and 89% of our total cash flow from operations in 2015 and 2014, respectively. The remainder of our consolidated cash flow from operations in each of these years was primarily generated from our Midstream Services segment.

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Exploration and Production

Overview

Operations in our E&P segment are primarily in the Appalachian Basin and Arkansas. We also are conducting activities in other basins targeting various formations as potential new resources.

Our E&P segment recorded operating losses of \$2.4 billion and \$7.1 billion in 2016 and 2015, respectively, and operating income of \$1.0 billion in 2014. The operating losses in 2016 and 2015 were primarily the result of \$2.3 billion, or \$1.4 billion net of taxes, and \$7.0 billion, or \$4.3 billion net of taxes, respectively, of non-cash impairments of natural gas and oil properties due to decreased commodity prices. In May 2015, we divested of our East Texas and Arkoma properties, previously referred to as the Ark-La-Tex division.

Cash flow from operations from our E&P segment was \$297 million in 2016, compared to \$1.1 billion in 2015 and \$2.1 billion in 2014. Our cash flow from operations decreased in 2016 as the effects of lower realized natural gas prices and decreased natural gas production more than offset our reduction in operating expenses. Our cash flow from operations decreased in 2015 as lower realized natural gas prices and increased total operating costs and expenses, due to increased activity levels, more than offset the revenue impacts of higher production volumes.

Oilfield Services Vertical Integration

We provide some oilfield services that are strategic and economically beneficial for our E&P operations when our E&P activity levels and market pricing support these activities and we can do so more efficiently or cost-effectively. This vertical integration lowers our net well costs, allows us to operate efficiently and helps us to mitigate certain operational environmental risks. Among others, these services have included drilling, hydraulic fracturing and the mining of sand used as proppant for certain of our well completions in the Fayetteville Shale from a 570-acre complex in Arkansas.

We have conducted drilling operations for a majority of our operated wells. As of December 31, 2016, we had a total of five rigs drilling in Pennsylvania, West Virginia and Arkansas. In 2016, we provided drilling services for all of the wells that we operate in Northeast Appalachia, Southwest Appalachia and the Fayetteville Shale. Our drilling and

completion services, along with our sand mine servicing our operated wells in the Fayetteville Shale, were inactive during our suspension of drilling and completion activities in the first half of 2016, but resumed, in part, as these activities were reinitiated during the third quarter of 2016.

We ceased providing hydraulic fracturing services in early 2016 at the same time as we suspended drilling and completion activities. To date, we have not resumed the provision of hydraulic fracturing services ourselves and instead are utilizing third parties who are offering lower costs. This may change as industry activity resumes, should that lead to higher prices or lower dependability from third-party providers of these services.

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Our Proved Reserves

Our estimated proved natural gas, oil and NGL reserves were 5,253 Bcfe at year-end 2016, compared to 6,215 Bcfe at year-end 2015 and 10,747 Bcfe at year-end 2014. The decrease in our reserves in 2016 was primarily due to our production in 2016 and downward price revisions associated with decreased commodity prices, partially offset by upward performance revisions in Northeast Appalachia, Southwest Appalachia and the Fayetteville Shale. The significant decrease in our reserves in 2015 was primarily due to downward price revisions in our proved undeveloped reserves associated with decreased commodity prices and our production, partially offset by upward performance revisions in Northeast Appalachia and Southwest Appalachia and our successful development programs in the Northeast Appalachia, Southwest Appalachia and the Fayetteville Shale. The significant increase in our reserves in 2014 was primarily due to the acquisition of approximately 413,000 net acres in Southwest Appalachia, our successful development drilling programs in Northeast Appalachia and the Fayetteville Shale and upward performance revisions in Northeast Appalachia. Because our proved reserves are primarily natural gas, our reserve estimates and the after-tax PV-10 measure, or standardized measure of discounted future net cash flows relating to proved natural gas, oil and NGL reserve quantities, are highly dependent upon the natural gas price used in our reserve and after-tax PV-10 calculations. In order to value our estimated proved natural gas, oil and NGL reserves as of December 31, 2016, we utilized average prices from the first day of each month from the previous 12 months for Henry Hub natural gas of \$2.48 per MMBtu for natural gas, West Texas Intermediate oil of \$39.25 per barrel for oil and \$6.74 per barrel for NGLs, compared to \$2.59 per MMBtu for natural gas, \$46.79 per barrel for oil and \$6.82 per barrel for NGLs at December 31, 2015 and \$4.35 per MMBtu for natural gas, \$91.48 per barrel for oil and \$23.79 per barrel for NGLs at December 31, 2014.

Our after-tax PV-10 was \$1.7 billion at year-end 2016, \$2.4 billion at year-end 2015 and \$7.5 billion at year-end 2014. The decrease in our after-tax PV-10 value in 2016 compared to 2015 was primarily due to lower reserve levels. The decrease in 2015 compared to 2014 was primarily due to comparatively lower average commodity prices. The difference in after-tax PV-10 and pre-tax PV-10 (a non-GAAP measure which is reconciled in the 2016 Proved Reserves by Category and Summary Operating Data table below) is the discounted value of future income taxes on the estimated cash flows. Our year-end 2016 estimated proved reserves had a present value of estimated future net cash flows before income tax, or pre-tax PV-10, of \$1.7 billion, compared to \$2.4 billion at year-end 2015 and \$9.5 billion at year-end 2014. Our year-end 2016 and 2015 after-tax PV-10 computations do not have future income taxes because our tax basis in the associated oil and gas properties exceeded expected pre-tax cash inflows, and thus do not differ from the pre-tax values.

We believe that the pre-tax PV-10 value of the estimated cash flows related to our estimated proved reserves is a useful supplemental disclosure to the after-tax PV-10 value. Pre-tax PV-10 is based on prices, costs and discount factors that are comparable from company to company, while the after-tax PV-10 is dependent on the unique tax situation of each individual company. We understand that securities analysts use pre-tax PV-10 as one measure of the value of a company's current proved reserves and to compare relative values among peer companies without regard to income taxes. We refer you to "Supplemental Oil and Gas Disclosures" in Item 8 of Part II of this Annual Report for a

discussion of our standardized measure of discounted future cash flows related to our proved natural gas, oil and NGL reserves, to the risk factor “Our proved natural gas, oil and NGL reserves are estimates. Any material inaccuracies in our reserve estimates or underlying assumptions could cause the quantities and net present value of our reserves to be overstated or understated” in Item 1A of Part I of this Annual Report, and to “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Cautionary Statement about Forward-Looking Statements” in Item 7 of Part II of this Annual Report for a discussion of the risks inherent in utilization of standardized measures and estimated reserve data.

At year-end 2016, 93% of our estimated proved reserves were natural gas and 99% of total estimated proved reserves were classified as proved developed, compared to 95% and 93%, respectively, in 2015 and 91% and 55%, respectively in 2014. We operate, or if operations have not commenced, plan to operate, approximately 98% of our reserves, based on the pre-tax PV-10 value of our proved developed producing reserves, and our reserve life index approximated 6.0 years at year-end 2016. In 2016, natural gas sales accounted for 89% of total operating revenues, compared to 93% and nearly 100% in 2015 and 2014, respectively.

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The following table provides an overall and categorical summary of our natural gas, oil and NGL reserves, as of fiscal year-end 2016 based on average fiscal year prices, and our well count, net acreage and PV-10 as of December 31, 2016, and sets forth 2016 annual information related to production and capital investments for each of our operating areas:

## 2016 PROVED RESERVES BY CATEGORY AND SUMMARY OPERATING DATA

	Appalachia		Fayetteville Shale	Other (1)	Total
	Northeast	Southwest			
Estimated Proved Reserves:					
Natural Gas (Bcf):					
Developed (Bcf)	1,540	293	2,954	2	4,789
Undeveloped (Bcf)	34	–	43	–	77
	1,574	293	2,997	2	4,866
Crude Oil (MMBbls):					
Developed (MMBbls)	–	10.2	–	0.3	10.5
Undeveloped (MMBbls)	–	–	–	–	–
	–	10.2	–	0.3	10.5
Natural Gas Liquids (MMBbls):					
Developed (MMBbls)	–	53.8	–	0.1	53.9
Undeveloped (MMBbls)	–	–	–	–	–
	–	53.8	–	0.1	53.9
Total Proved Reserves (Bcfe) (2):					
Developed (Bcfe)	1,540	677	2,954	5	5,176
Undeveloped (Bcfe)	34	–	43	–	77
	1,574	677	2,997	5	5,253
Percent of Total	30%	13%	57%	0%	100%
Percent Proved Developed	98%	100%	99%	100%	99%
Percent Proved Undeveloped	2%	0%	1%	0%	1%
Production (Bcfe)	350	148	375	2	875
Capital Investments (in millions)					
(3)	\$ 204	\$ 288	\$ 86	\$ 19	\$ 597
Total Gross Producing Wells (4)	820	306	4,217	16	5,359
Total Net Producing Wells (4)	439	216	2,932	13	3,600
Total Net Acreage	245,805 (5)	321,563 (6)	918,535 (7)	3,023,386 (8)	4,509,289
Net Undeveloped Acreage	146,096 (5)	161,607 (6)	285,692 (7)	3,010,908 (8)	3,604,303

PV-10:

Pre-Tax (in millions) (9)	\$ 183	\$ 163	\$ 1,325	\$ (6)	\$ 1,665
PV of Taxes (in millions) (9)	—	—	—	—	—
After-Tax (in millions) (9)	\$ 183	\$ 163	\$ 1,325	\$ (6)	\$ 1,665
Percent of Total	11%	10%	79%	0%	100%
Percent Operated (10)	95%	100%	99%	100%	98%

(1) Other consists primarily of properties in Canada, Colorado and Louisiana.

(2) We have no reserves from synthetic gas, synthetic oil or nonrenewable natural resources intended to be upgraded into synthetic gas or oil. We used standard engineering and geoscience methods, or a combination of methodologies in determining estimates of material properties, including performance and test date analysis offset statistical analogy of performance data, volumetric evaluation, including analysis of petrophysical parameters (including porosity, net pay, fluid saturations (i.e., water, oil and gas) and permeability) in combination with estimated reservoir parameters (including reservoir temperature and pressure, formation depth and formation volume factors), geological analysis, including structure and isopach maps and seismic analysis, including review of 2-D and 3-D data to ascertain faults, closure and other factors.

(3) Total and Other capital investments excludes \$26 million related to our E&P service companies.

(4) Represents all producing wells, including wells in which we only have an overriding royalty interest, as of December 31, 2016.

(5) Assuming successful wells are not drilled to develop the acreage and leases are not extended in Northeast Appalachia, leasehold expiring over the next three years will be 63,900 net acres in 2017, 16,066 net acres in 2018 and 11,413 net acres in 2019.

(6) Assuming successful wells are not drilled to develop the acreage and leases are not extended in Southwest Appalachia, leasehold expiring over the next three years will be 39,429 net acres in 2017, 12,267 net acres in 2018 and 10,824 net acres in 2019. Of this acreage, 21,760 net acres in 2017, 3,767 net acres in 2018 and 8,150 net acres in 2019 can be extended for an average of 4.8 years.

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(7) Assuming successful wells are not drilled to develop the acreage and leases are not extended in the Fayetteville Shale, leasehold expiring over the next three years will be 453 net acres in 2017, 60 net acres in 2018 and 432 net acres in 2019 (excluding 158,231 net acres held on federal lands which are currently suspended by the Bureau of Land Management).

(8) Assuming successful wells are not drilled to develop the acreage and leases are not extended, our leasehold expiring over the next three years, excluding the Lower Smackover Brown Dense area, the Sand Wash Basin and New Brunswick, Canada, will be 68,556 net acres in 2017, 21,982 net acres in 2018 and 103,172 net acres in 2019. With regard to our acreage in the Lower Smackover Brown Dense, assuming successful wells are not drilled and leases are not extended, leasehold expiring over the next three years will be 50,778 net acres in 2017, 83,021 net acres in 2018 and 5,793 net acres in 2019. With regard to our acreage in the Sand Wash Basin, assuming successful wells are not drilled and leases are not extended, leasehold expiring over the next three years will be 36,527 net acres in 2017, 51,260 net acres in 2018, and 12,810 net acres in 2019. With regard to our acreage in New Brunswick, Canada, exploration licenses for 2,518,519 net acres were extended through 2021.

(9) Pre-tax PV-10 (a non-GAAP measure) is one measure of the value of a company's proved reserves that we believe is used by securities analysts to compare relative values among peer companies without regard to income taxes. The reconciling difference in pre-tax PV-10 and the after-tax PV-10, or standardized measure, is the discounted value of future income taxes on the estimated cash flows from our proved natural gas, oil and NGL reserves.

(10) Based upon pre-tax PV-10 of proved developed producing activities.

We refer you to “Supplemental Oil and Gas Disclosures” in Item 8 of Part II of this Annual Report for a more detailed discussion of our proved natural gas, oil and NGL reserves as well as our standardized measure of discounted future net cash flows related to our proved natural gas, oil and NGL reserves. We also refer you to the risk factor “Our proved natural gas, oil and NGL reserves are estimates. Any material inaccuracies in our reserve estimates or underlying assumptions could cause the quantities and net present value of our reserves to be overstated or understated” in Item 1A of Part I of this Annual Report and to “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Cautionary Statement about Forward-Looking Statements” in Item 7 of Part II of this Annual Report for a discussion of the risks inherent in utilization of standardized measures and estimated reserve data.

Proved Undeveloped Reserves

Presented below is a summary of changes in our proved undeveloped reserves for 2014, 2015 and 2016:



## CHANGES IN PROVED UNDEVELOPED RESERVES (BCFE)

	Appalachia		Fayetteville	Other (1)	Total
	Northeast	Southwest	Shale		
December 31, 2013	1,075	–	1,655	7	2,737
Extensions, discoveries and other additions (2)	589	–	573	–	1,162
Total revision attributable to performance and production (3)	307	–	(130)	(6)	171
Price revisions	11	–	24	–	35
Developed	(384)	–	(406)	–	(790)
Disposition of reserves in place	–	–	–	–	–
Acquisition of reserves in place (4)	–	1,481	–	–	1,481
December 31, 2014	1,598	1,481	1,716	1	4,796
Extensions, discoveries and other additions	138	4	34	–	176
Total revision attributable to performance and production (3)	513	158	62	–	733
Price revisions	(1,447)	(1,413)	(1,357)	–	(4,217)
Developed	(488)	(226)	(330)	–	(1,044)
Disposition of reserves in place	–	–	–	(1)	(1)
Acquisition of reserves in place	–	–	–	–	–
December 31, 2015	314	4	125	–	443
Extensions, discoveries and other additions	–	–	25	–	25
Total revision attributable to performance and production (3)	204	–	(1)	–	203
Price revisions	(303)	(4)	(67)	–	(374)
Developed	(181)	–	(39)	–	(220)
Disposition of reserves in place	–	–	–	–	–
Acquisition of reserves in place	–	–	–	–	–
December 31, 2016	34	–	43	–	77

- (1) Other includes properties principally in Colorado and Louisiana along with Ark-La-Tex properties divested in May 2015.
- (2) Primarily associated with the undeveloped locations that were added throughout the year in 2014 due to our successful drilling program.
- (3) Primarily due to changes associated with the analysis of updated data collected in the year and decreases related to current year production.
- (4) Our acquisition of reserves in place is attributable to the purchase of undeveloped locations in West Virginia and southwest Pennsylvania.

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As of December 31, 2016, we had 77 Bcfe of proved undeveloped reserves, all of which we expect will be developed within five years of the initial disclosure as the starting reference date. During 2016, we invested \$103 million in connection with converting 220 Bcfe, or 50%, of our proved undeveloped reserves as of December 31, 2015 into proved developed reserves and added 25 Bcfe of proved undeveloped reserve additions in the Fayetteville Shale. As a result of the commodity price environment in 2016, we had downward price revisions of 374 Bcfe which were slightly offset by a 203 Bcfe increase due to performance revisions. As of December 31, 2015, we had 443 Bcfe of proved undeveloped reserves. During 2015, we invested \$869 million in connection with converting 1,044 Bcfe, or 22%, of our proved undeveloped reserves as of December 31, 2014 into proved developed reserves and added 176 Bcfe of proved undeveloped reserve additions in the Appalachian Basin and the Fayetteville Shale. As a result of the depressed commodity price environment in 2015, we had downward price revisions of 4,217 Bcfe which were slightly offset by a 733 Bcfe increase due to performance revisions. As of December 31, 2014, we had 4,796 Bcfe of proved undeveloped reserves. During 2014, we invested \$767 million in connection with converting 790 Bcfe, or 29%, of our proved undeveloped reserves as of December 31, 2013 into proved developed reserves and added 2,643 Bcfe of proved undeveloped reserve additions in the Appalachian Basin and the Fayetteville Shale.

Our December 31, 2016 proved reserves include 77 Bcfe of proved undeveloped reserves from 15 locations that have a positive present value on an undiscounted basis in compliance with proved reserve requirements but do not have a positive present value when discounted at 10%. These properties have a negative present value of \$11 million when discounted at 10%. We have made a final investment decision and are committed to developing these reserves within five years from the date of initial booking.

We expect that the development costs for our proved undeveloped reserves of 77 Bcfe as of December 31, 2016 will require us to invest an additional \$42 million for those reserves to be brought to production. Our ability to make the necessary investments to generate these cash inflows is subject to factors that may be beyond our control. The decreased commodity price environment has resulted, and could continue to result, in certain reserves no longer being economic to produce, leading to both lower proved reserves and cash flows. We refer you to the risk factors “Natural gas, oil and natural gas liquids prices greatly affect our business, including our revenues, profits, liquidity, growth, ability to repay our debt and the value of our assets” and “Significant capital expenditures are required to replace our reserves and conduct our business” in Item 1A of Part I of this Annual Report and to “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Cautionary Statement about Forward-Looking Statements” in Item 7 of Part II of this Annual Report for a more detailed discussion of these factors and other risks.

Our Reserve Replacement

Since 2005, the substantial majority of our reserve additions have been generated from our Fayetteville Shale division. However, over the past several years, Northeast Appalachia has also contributed to an increasing amount of our reserve additions as a result of increased development activity, totaling 81 Bcf, 420 Bcf and 835 Bcf in 2016, 2015 and 2014, respectively. Additionally, we added 157 Bcfe and 123 Bcfe of reserves in 2016 and 2015, respectively, as a result of our drilling program in Southwest Appalachia, which was acquired in December 2014. We expect our drilling programs in Northeast Appalachia, Southwest Appalachia and the Fayetteville Shale to continue to be the primary source of our reserve additions in the future; however, our ability to add reserves depends upon many factors that are beyond our control. We refer you to the risk factors “Significant capital expenditures are required to replace our reserves and conduct our business” and “If we are not able to replace reserves, we may not be able to grow or sustain production.” in Item 1A of Part I of this Annual Report and to “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Cautionary Statement about Forward-Looking Statements” in Item 7 of Part II of this Annual Report for a more detailed discussion of these factors and other risks.

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## Our Operations

## Northeast Appalachia

We began leasing acreage in northeast Pennsylvania in 2007 in an effort to participate in the emerging Marcellus Shale. As of December 31, 2016, we had approximately 245,805 net acres in Northeast Appalachia and had spud or acquired 568 operated wells, 447 of which were on production and 536 of which are horizontal wells. Northeast Appalachia represents 40% of our total net production and 30% of our total reserves as of December 31, 2016. Below is a summary of Northeast Appalachia's operating results for the last three years:

	For the years ended December 31,			
	2016	2015	2014	
Acreage				
Net undeveloped acres	146,096 (1)	174,826	205,491	
Net developed acres	99,709	95,509	60,582	
Total net acres	245,805	270,335	266,073	
Net Production (Bcf)				
	350	360	254	
Reserves				
Reserves (Bcf)	1,574	2,319	3,192	
Locations:				
Proved developed	820	767	524	
Proved developed non-producing	39	23	13	
Proved undeveloped	2	36	200	
Total locations	861	826	737	
Gross Operated Well Count Summary				
Spud or acquired	32	177	(2) 106	(3)
Completed	33	92	104	
Wells to sales	24	100	88	
Capital Investments (in millions)				
Exploratory and development drilling, including workovers	\$ 160	\$ 472	\$ 571	

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Acquisition and leasehold	3	172	28
Seismic and other	2	8	30
Capitalized interest and expense	39	58	66
Total capital investments	\$ 204	\$ 710	\$ 695
Average completed well cost (in millions)	\$ 5.3	\$ 5.4	\$ 6.1
Average lateral length (feet)	6,142	5,403	4,752

(1) Our undeveloped acreage position as of December 31, 2016 had an average royalty interest of 14% and was obtained at an average cost of approximately \$1,127 per acre.

(2) Includes 86 horizontal and 2 vertical acquired wells.

(3) Includes 5 horizontal and 2 vertical acquired wells.

In 2016, our reserves in Northeast Appalachia decreased by 745 Bcf, which included net downward price revisions of 794 Bcf and production of 350 Bcf, partially offset by net upward performance revisions of 318 Bcf and additions of 81 Bcf.

Our ability to bring our Northeast Appalachia production to market depends on a number of factors including the construction of and/or the availability of capacity on gathering systems and pipelines that we do not own. We refer you to “Midstream Services” in Item 1 of Part I of this Annual Report for a discussion of our gathering and transportation arrangements for Northeast Appalachia production.

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## Southwest Appalachia

In late 2014 and early 2015, we closed two transactions to acquire natural gas and oil assets in West Virginia and southwest Pennsylvania for approximately \$5.4 billion. This acreage has at least three drilling objectives, namely the Marcellus, Utica and Upper Devonian Shales. In 2016 we disposed of a portion of this acreage that we did not expect to drill for several years. As of December 31, 2016, we had approximately 321,563 net acres in Southwest Appalachia and had a total of 299 horizontal and 4 vertical wells that we operated and that were on production. Southwest Appalachia represents 17% of our total net production and 13% of our total reserves as of December 31, 2016. Below is a summary of Southwest Appalachia's operating results for the last three years:

	For the years ended December 31,		
	2016	2015	2014
Acreage			
Net undeveloped acres	161,607 (1)	193,582	188,244
Net developed acres	159,956	231,516	225,132
Total net acres	321,563	425,098	413,376
Net Production (Bcfe)			
	148	143	3
Reserves			
Reserves (Bcfe)	677	611	2,297
Locations:			
Proved developed	306 (2)	1,028	1,034
Proved developed non-producing	44 (2)	400	124
Proved undeveloped	–	1	344
Total locations	350 (2)	1,429	1,502
Gross Operated Well Count Summary			
Spud or acquired	17	48	1,334 (3)
Completed	17	38	–
Wells to sales	18	47	–
Capital Investments (in millions)			
Exploratory and development drilling, including workovers	\$ 111	\$ 248	\$ 3
Acquisition and leasehold	18	409	5,007
Seismic and other	1	2	–
Capitalized interest and expense	158	198	2
Total capital investments	\$ 288	\$ 857	\$ 5,012

Average completed well cost (in millions) (4)	\$ 6.5	\$ 6.9	\$ –
Average lateral length (feet) (4)	5,499	6,985	–

- (1) Our undeveloped acreage position as of December 31, 2016 had an average royalty interest of 14%.
- (2) Includes the impact of legacy assets divested in 2016.
- (3) Includes 323 horizontal and 1,011 vertical wells acquired in CHK and STO acquisitions.
- (4) Includes wells only drilled by SWN.

In 2016, our reserves in Southwest Appalachia increased by 66 Bcfe, which included 199 Bcfe of net upward performance revisions and additions of 157 Bcfe, partially offset by production of 148 Bcfe, net downward price revisions of 127 Bcfe and dispositions of 15 Bcfe.

Our ability to bring our Southwest Appalachia production to market will depend on a number of factors including the construction of and/or the availability of capacity on gathering systems and pipelines that we do not own. We refer you to “Midstream Services” within Item 1 of Part I of this Annual Report for a discussion of our gathering and transportation arrangements for Southwest Appalachia production.

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## Fayetteville Shale

As of December 31, 2016, we held leases for approximately 918,535 net acres in the Fayetteville Shale, an unconventional gas reservoir located on the Arkansas side of the Arkoma Basin, and had spud a total of 4,741 wells in the play since our commencement of activities there in 2004, of which 4,161 were operated by us and 580 were outside-operated wells. At year-end 2016, 4,037 wells operated by the Company had been drilled and completed overall, including 3,946 horizontal wells. The Fayetteville Shale represents 43% of our total net production and 57% of our total reserves as of December 31, 2016. Below is a summary of the Fayetteville Shale's operating results for the last three years:

	For the years ended December 31,		
	2016	2015	2014
Acreage			
Net undeveloped acres (2)	285,692 (1)	288,569	267,888
Net developed acres (3)	632,843	669,072	620,273
Total net acres	918,535	957,641	888,161
Net Production (Bcf)			
	375	465	494
Reserves			
Reserves (Bcf)	2,997	3,281	5,069
Locations:			
Proved developed	4,217	4,268	4,045
Proved developed non-producing	311	231	187
Proved undeveloped	13	61	1,213
Total locations	4,541	4,560	5,445
Gross Operated Well Count Summary			
Spud or acquired	4	155	465
Completed	34	262	458
Wells to sales	43	260	455
Capital Investments (in millions)			
Exploratory and development drilling, including workovers	\$ 63	\$ 484	\$ 838
Acquisition and leasehold	2	4	7
Seismic and other	–	8	4
Capitalized interest and expense	21	69	95
Total capital investments	\$ 86	\$ 565	\$ 944



Average completed well cost (in millions)	\$ 3.2	\$ 2.8	\$ 2.6
Average lateral length (feet)	5,717	5,729	5,440

- (1) Our undeveloped acreage position as of December 31, 2016 had an average royalty interest of 13% and was obtained at an average cost of approximately \$335 per acre.
- (2) Includes 86,631, 31,413 and 432 net undeveloped acres in the Arkoma Basin that have been previously reported as a component of our conventional Arkoma acreage as of December 31, 2016, 2015 and 2014, respectively. We sold our conventional Arkoma properties in 2015 but retained the acreage located within the Fayetteville Shale area.
- (3) Includes 141,025, 170,743 and 123,442 net developed acres in the Arkoma Basin that have been previously reported as a component of our conventional Arkoma acreage as of December 31, 2016, 2015 and 2014, respectively. We sold our conventional Arkoma properties in 2015 but retained the acreage located within the Fayetteville Shale area.

In 2016, our reserves in the Fayetteville Shale decreased by 284 Bcf, which included production of 375 Bcf and net downward price revisions of 116 Bcf, partially offset by 163 Bcf of net upward revisions due to well performance and reserve additions of 44 Bcf.

Of the acreage we hold in the Fayetteville Shale, the Ozark Highlands Unit accounts for 158,231 acres and lies entirely within the Ozark National Forest. Following the commencement of two court actions, now consolidated, alleging deficiencies in the Environmental Impact Statement issued in connection with the grant of the leases by the Bureau of Land Management (BLM) in the Ozark National Forest, the BLM has discontinued approval of operational permits in the forest, including permits to drill, pending resolution of the litigation. Although we are not a party to the litigation and the plaintiffs' complaints do not seek invalidation of the leases, we currently are unable to obtain permits to drill on the 158,231 acres we have leased in the unit and the national forest. At year-end 2016, after excluding our acreage in the conventional Arkoma Basin and the federal acreage we hold in the Ozark Highlands Unit, approximately 87% of our 532,648 total net leasehold acres remaining in the Fayetteville Shale was held by production. For more information about our acreage and well count,

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we refer you to “Properties” in Item 2 of Part I of this Annual Report. We refer you to the risk factor “Certain of our undeveloped assets are subject to leases that will expire over the next several years unless production is established on units containing the acreage” in Item 1A of Part I of this Annual Report.

Other

As of December 31, 2016, we held 3,010,908 net undeveloped acres for the potential development of new resources, of which 2,518,519 net acres were located in New Brunswick, Canada. This compares to 3,661,375 net undeveloped acres held at year-end 2015 and 4,170,687 net undeveloped acres held at year-end 2014.

We limited our activities in areas beyond our assets in the Appalachian Basin and the Fayetteville Shale during 2016 and 2015 as a result of the commodity price environment as we focused on these more proven development plays.

There can be no assurance that any prospects outside of our development plays will result in viable projects or that we will not abandon our initial investments.

Sand Wash Basin. In 2014, we acquired acreage in northwest Colorado targeting crude oil, NGLs and natural gas contained in the Sand Wash Basin, with the target zone ranging in vertical depth from 6,500 to 12,500 feet. Our leases currently have an approximate 83% average net revenue interest. As of December 31, 2016, we held approximately 127,943 net acres in the area.

Lower Smackover Brown Dense. In July 2011, we announced that we would begin testing a new unconventional liquids rich play targeting the Lower Smackover Brown Dense formation, an unconventional reservoir that ranges in vertical depths from 8,500 to 11,400 feet and appears to be laterally extensive over a large area ranging in thickness from 450 to 700 feet. As of December 31, 2016, we held approximately 146,677 net acres in the area, obtained at an average cost of \$466 per acre. Our leases currently have an approximate 80% average net revenue interest. As of December 31, 2016, we had drilled 14 operated wells in the area, 6 of which were currently producing.

New Brunswick, Canada. In March 2010, we successfully bid for exclusive licenses from the Department of Natural Resources of New Brunswick to search and conduct an exploration program covering 2,518,519 net acres in the province in order to test new hydrocarbon basins. In 2015, the provincial government in New Brunswick imposed a moratorium on hydraulic fracturing until it is satisfied with a list of conditions. In response to this moratorium, the Company requested and was granted an extension of its licenses to March 2021. In May 2016, the provincial government announced that the moratorium would continue indefinitely. Unless and until the moratorium is lifted, we

will not be able to develop these assets. Given this development, we recognized an impairment of \$39 million, net of tax, associated with our investment in New Brunswick in the second quarter of 2016.

#### Acquisitions and Divestitures

In September 2016, the Company sold approximately 55,000 net acres in West Virginia for approximately \$422 million, subject to customary post-closing adjustments. As of December 2015, these assets included approximately 11 Bcfe of proved reserves.

In May 2015, the Company sold conventional oil and gas assets located in East Texas and the Arkoma Basin for approximately \$211 million. As of December 2014, these assets included approximately 184 Bcf of proved reserves.

In April 2015, the Company sold its gathering assets located in Bradford and Lycoming counties in northeast Pennsylvania for approximately \$489 million. The assets included approximately 100 miles of natural gas gathering pipelines with nearly 600 million cubic feet per day of capacity.

In January 2015, we acquired approximately 46,700 net acres in northeast Pennsylvania for \$270 million. As part of this transaction, we also received firm transportation capacity of 260 million cubic feet per day predominately on the Millennium pipeline.

In December 2014, we acquired approximately 413,000 net acres in West Virginia and southwest Pennsylvania with plans to target the Marcellus, Utica and Upper Devonian Shales for approximately \$5.0 billion. Additionally, in January 2015, we acquired an additional approximate 30,000 net acres in this area for \$357 million.

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## Capital Investments

During 2016, we invested a total of approximately \$623 million in our E&P business, including \$239 million in capital interest and expenses. In 2016, we spudded 53 wells, completed 84 wells, placed 85 wells to sales and had 135 wells in progress at year-end. Of the 135 wells in progress at year-end, 73, 42 and 20 were located in our Northeast Appalachia, Southwest Appalachia and Fayetteville Shale operating areas, respectively, and 35 of these wells are waiting on pipeline or production facilities.

	For the years ended December 31,		
	2016	2015	2014
	(in millions)		
E&P Capital Investments by Type			
Exploratory and development drilling, including workovers	\$ 358	\$ 1,226	\$ 1,514
Acquisition and leasehold	23	607	5,328
Seismic expenditures	1	6	56
Drilling rigs, sand facility and other	2	40	116
Capitalized interest and other expenses	239	379	240
Total E&P capital investments	\$ 623	\$ 2,258	\$ 7,254
E&P Capital Investments by Area			
Northeast Appalachia	\$ 165	\$ 652	\$ 629
Southwest Appalachia	130	659	5,010
Fayetteville Shale	65	496	849
Other	24	72	526
Capitalized interest and other expenses	239	379	240
Total E&P capital investments	\$ 623	\$ 2,258	\$ 7,254

We refer you to “Management’s Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital Resources – Capital Investments” within Item 7 of Part II of this Annual Report for additional discussion of the factors that could impact our planned capital investments in 2017.

## Sales, Delivery Commitments and Customers

Sales. Our daily natural gas equivalent production averaged 2,391 MMcfe in 2016, compared to 2,675 MMcfe in 2015 and 2,105 MMcfe in 2014. Total natural gas equivalent production was 875 Bcfe in 2016, down from 976 Bcfe in 2015 and up from 768 Bcfe in 2014. Our natural gas production was 788 Bcf in 2016, compared to 899 Bcf in 2015 and 766 Bcf in 2014. The decrease in production in 2016 resulted primarily from normal declines in production from existing wells that were not fully offset by production from new wells, given our reduced drilling activities. In particular, we experienced a 90 Bcf decrease in net production from our Fayetteville Shale properties, a 10 Bcf decrease in net production from our Northeast Appalachia properties and a 6 Bcfe decrease in other properties, which was partially offset by a 5 Bcfe increase in net production from our Southwest Appalachia properties. The increase in production in 2015 resulted primarily from a 106 Bcf increase in net production from our Northeast Appalachia properties and a 140 Bcfe increase in net production from our Southwest Appalachia properties, which more than offset a 29 Bcf decrease in net production from our Fayetteville Shale properties and a combined 9 Bcfe decrease in net production from our East Texas and Arkoma Basin properties, which were divested in the first half of 2015. We produced 2,192 MBbls of oil in 2016, compared to 2,265 MBbls of oil in 2015 and 235 MBbls of oil in 2014. Our oil production has increased from 2014 levels primarily due to the acquisition of natural gas and oil properties in Southwest Appalachia in December 2014. In 2016, we produced 12,372 MBbls of NGLs, compared to 10,702 MBbls and 231 MBbls of NGLs in 2015 and 2014, respectively, primarily due to the December 2014 acquisition of natural gas and oil properties in Southwest Appalachia.

Sales of natural gas, oil and NGL production are conducted under contracts that reflect current prices and are subject to seasonal price swings. We are unable to predict changes in the market demand and price for natural gas, including changes that may be induced by the effects of weather on demand for our production. We regularly enter into various derivative and other financial arrangements with respect to a portion of our projected natural gas production to support certain desired levels of cash flow and to minimize the impact of price fluctuations. Our policies prohibit speculation with derivatives and limit swap agreements to counterparties with appropriate credit standings. As of December 31, 2016, we had New York Mercantile Exchange, or NYMEX, commodity price derivatives in place on 560 Bcf, 240 Bcf and 62 Bcf of our targeted 2017, 2018 and 2019 natural gas production, respectively. We also had commodity derivatives in places on 365 MBbls of our targeted ethane production for 2017 through 2018. As of February 21, 2017, we had NYMEX commodity price derivatives in place on 515 Bcf, 272 Bcf and 80 Bcf of our targeted 2017, 2018 and 2019 natural gas production, respectively. We intend to financially protect pricing on a large portion of expected future production volumes designed to assure certain desired levels

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of cash flow. We refer you to Item 7A of Part II of this Annual Report, “Quantitative and Qualitative Disclosures about Market Risks,” for further information regarding our derivatives and risk management as of December 31, 2016.

Including the effect of settled derivatives, we realized an average price of \$1.64 per Mcf for our natural gas production in 2016, compared to \$2.37 per Mcf in 2015 and \$3.72 per Mcf in 2014. Our derivative activities increased our average realized natural gas sales price by \$0.05 per Mcf in 2016, compared to an increase of \$0.46 per Mcf in 2015 and a decrease of \$0.02 per Mcf in 2014. Our average oil price realized was \$31.20 per barrel in 2016, compared to \$33.25 per barrel in 2015 and \$79.91 per barrel in 2014. Our average realized NGL price was \$7.46 per barrel in 2016, compared to \$6.80 per barrel in 2015 and \$15.72 per barrel in 2014. We did not use derivatives to financially protect our 2016, 2015 or 2014 oil and NGL production.

During 2016, the average price we received for our natural gas production, excluding the impact of derivatives, was approximately \$0.87 per Mcf lower than average NYMEX prices. Differences between NYMEX and price realized are due primarily to locational differences and transportation cost. As of December 31, 2016, we have partially mitigated the volatility of basis differentials by protecting basis on approximately 277 Bcf and 78 Bcf of our expected 2017 and 2018 natural gas production, respectively, through physical sales arrangements and financial derivatives at a basis differential to NYMEX natural gas prices of approximately (\$0.50) per Mcf and (\$0.34) per Mcf for 2017 and 2018, respectively. We refer you to Note 4 to our consolidated financial statements for additional discussion about our derivatives and risk management activities.

Delivery Commitments. As of December 31, 2016, we had natural gas delivery commitments of 394 Bcf in 2017 and 126 Bcf in 2018 under existing agreements. These amounts are well below our expected 2017 natural gas production from our Northeast Appalachia, Southwest Appalachia and Fayetteville Shale divisions and expected 2018 production from our available reserves, which are not subject to any priorities or curtailments that may affect quantities delivered to our customers or any priority allocations or price limitations imposed by federal or state regulatory agencies, or any other factors beyond our control that may affect our ability to meet our contractual obligations other than those discussed in Item 1A “Risk Factors” of Part I of this Annual Report. We expect to be able to fulfill all of our short-term and long-term contractual obligations to provide natural gas from our own production of available reserves; however, if we are unable to do so, we may have to purchase natural gas at market to fulfill our obligations.

Customers. Our customers include major energy companies, utilities and industrial purchasers of natural gas. During the years ended December 31, 2016, 2015 and 2014, no single third-party purchaser accounted for 10% or more of our consolidated revenues.

Competition

All phases of the natural gas and oil industry are highly competitive. We compete in the acquisition of properties, the search for and development of reserves, the production and sale of natural gas and oil, its gathering and transportation (whether we are shipping or operate the transmission facilities) and the securing of labor and equipment required to conduct our operations. Our competitors include major oil and natural gas companies, other independent oil and natural gas companies, individual producers and operators and developers of gathering and transportation systems. Many of these competitors have financial and other resources that substantially exceed those available to us. Consequently, we will encounter competition that may affect both the price we receive and contract terms we must offer. We also face competition in accessing pipeline and other services to transport our product to market, particularly in the northeastern United States, where potential production levels exceed currently available capacity.

We cannot predict whether and to what extent any market reforms initiated by the Federal Energy Regulatory Commission, or the FERC, or any new energy legislation or regulations will achieve the goal of increasing competition, lessening preferential treatment and enhancing transparency in markets in which our natural gas production is sold. Similarly, we cannot predict whether legal constraints that have hindered the development of new transportation infrastructure, particularly in the northeastern United States, will continue. However, we do not believe that we will be disproportionately affected as compared to other natural gas and oil producers and marketers by any action taken by the FERC or any other legislative or regulatory body or the status of the development of transportation facilities.

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Regulation

Producing natural gas and oil resources and transporting and selling production historically have been heavily regulated. For example, state governments regulate the location of wells and establish the minimum size for spacing units. Permits typically are required before drilling. State and local government zoning and land use regulations may also limit the locations for drilling and production. Similar regulations can also affect the location, construction and operation of gathering and other pipelines needed to transport production to market. In addition, various suppliers of goods and services may require licensing.

Currently in the United States, the price at which natural gas or oil may be sold is not regulated. Congress has imposed price regulation from time to time, and there can be no assurance that the current, less stringent regulatory approach will continue. In December 2015, the federal government repealed a 40-year ban on the export of crude oil. The export of natural gas continues to require federal permits. Broader freedom to export could lead to higher prices. In addition, the Dodd-Frank Wall Street Reform and Consumer Protection Act (the “Dodd-Frank Act”) and the rules that the U.S. Commodity Futures Trading Commission, or the CFTC, the SEC, and certain other regulators have issued thereunder regulate certain swaps, futures, and options contracts in the major energy markets, including for natural gas and oil.

Producing and transporting natural gas and oil is also subject to extensive environmental regulation. We refer you to “Other — Environmental Regulation” in Item 1 of Part 1 of this Annual Report and the risk factor “We are subject to complex federal, state and local laws and regulations that could adversely affect the cost, manner or feasibility of conducting our operations or expose us to significant liabilities” in Item 1A of Part I of this Annual Report for a discussion of the impact of environmental regulation on our business.

Midstream Services

Our Midstream Services segment complements our E&P initiatives and, in some areas, competes with other midstream providers for unaffiliated business. We generate revenue from gathering fees associated with the transportation of natural gas to market and through the marketing of natural gas, oil and NGLs. Our gathering assets support our E&P operations and are currently concentrated in the Fayetteville Shale in Arkansas since the sale of our gathering assets in northeast Pennsylvania and Texas in 2015.



Our operating income from this segment was \$209 million on revenues of \$2.6 billion in 2016, compared to \$583 million on revenues of \$3.1 billion in 2015 and \$361 million on revenues of \$4.4 billion in 2014. Operating income in 2015 includes a \$277 million net gain related to the sale of our northeast Pennsylvania and East Texas gathering assets. Excluding the gain on sales, operating income decreased \$97 million in 2016 primarily due to a decrease in volumes gathered, resulting from lower production volumes in the Fayetteville Shale and the sale of our northeast Pennsylvania and East Texas gathering assets in 2015. Revenues decreased in 2016 primarily due to a decrease in the price received for volumes marketed, a decrease in volumes marketed and a decrease in volumes gathered. Excluding the gains on sales, operating income decreased to \$306 million in 2015 primarily due to a decrease in volumes gathered resulting from lower production volumes in the Fayetteville Shale and the sale of our northeast Pennsylvania gathering assets in 2015. Revenues decreased in 2015 from 2014 levels primarily due to the prices received for volumes marketed. Cash flow from operations generated by our Midstream Services segment was \$222 million in 2016, compared to \$540 million in 2015 and \$172 million in 2014. The decrease in 2016 was primarily due to decreased revenues, partially offset by a decrease in operating costs and expenses. During the years ended December 31, 2016, 2015 and 2014, no single third-party customer in our Midstream Services segment accounted for 10% or more of our consolidated revenues.

#### Gas Gathering

Currently, our gas gathering activities are located predominantly in Arkansas and are related to the operation of our Fayetteville Shale asset. We invested approximately \$21 million related to our gathering activities in 2016 and had gathering revenues of \$378 million, compared to \$58 million invested and revenues of \$491 million in 2015 and \$144 million invested and revenues of \$562 million in 2014. During 2015, we divested our gathering assets in northeast Pennsylvania and East Texas. The divested gathering assets accounted for \$21 million and \$67 million of our gathering revenues for the years ended December 31, 2015 and 2014, respectively.

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In 2016, we gathered approximately 600 Bcf of natural gas in the Fayetteville Shale area, including 42 Bcf of natural gas from third-party operated wells. During 2015, we gathered approximately 750 Bcf of natural gas in the Fayetteville Shale area, including 55 Bcf of natural gas from third-party operated wells. In 2014, we gathered approximately 812 Bcf of natural gas volumes in the Fayetteville Shale area, including 62 Bcf of natural gas from third-party operated wells. At the end of 2016, we had approximately 2,045 miles of pipe from the individual wellheads to the transmission lines and compression equipment representing in aggregate approximately 477,095 horsepower had been installed at 58 central point gathering facilities in the Fayetteville Shale.

Marketing

We attempt to capture opportunities related to the marketing and transportation of natural gas, oil and NGLs primarily involving the marketing of our own natural gas production and that of royalty owners in our wells. Additionally, we manage portfolio and basis risk, acquire transportation rights on third-party pipelines and in limited circumstances, purchase third-party natural gas to fulfill commitments specific to a geographic location. During 2016, we marketed 1,062 Bcfe, compared to 1,127 Bcfe in 2015 and 904 Bcf in 2014. Of the total gas volumes marketed, production from our affiliated E&P operations accounted for 93% in 2016, compared to 97% in 2015 and 2014. Our Midstream Services segment also marketed approximately 65% of our combined oil and NGL production for the year ended December 31, 2016, compared to 60% in 2015.

Northeast Appalachia

In January 2015, we completed the purchase of certain natural gas and oil assets in northeast Pennsylvania and assumed short and long-term natural gas transportation agreements with Millennium Pipeline Company, L.L.C. with a total capacity of approximately 260,000 Mcf per day.

In January 2014, we entered into a precedent agreement with Transcontinental Gas Pipeline Company LLC that will provide additional firm transportation capacity for supplies of natural gas from northern Pennsylvania to markets along the Transco pipeline system stretching from the northeastern US in Transco's Zone 6, to Zone 5 and terminating in Zone 4. Subject to the receipt of regulatory approvals and satisfaction of other conditions, we agreed to enter a 15-year firm transportation agreement with a total capacity of approximately 44,000 Mcf per day on this project which is expected to be in service by mid-2018.

In May 2013, we entered into a precedent agreement with Columbia Gas Transmission, LLC for a project that expanded their existing system from Chester County, Pennsylvania to various interconnects throughout Pennsylvania, New Jersey, Maryland, and Virginia. Our volume on this project, which was placed in service October 2015, is 72,000 Mcf per day.

In March 2012, we entered into a precedent agreement with Constitution Pipeline Co. LLC for a proposed 121-mile pipeline connecting to the Iroquois Gas Transmission and Tennessee Gas Pipeline systems in Schoharie County, New York. Subject to the receipt of regulatory approvals and satisfaction of other conditions, we agreed to enter a 15-year firm transportation agreement with a total capacity of approximately 150,000 Mcf per day on this project. Constitution Pipeline Co. LLC has extended the range for the pipeline's target in-service date to late 2018 as a result of a longer than expected regulatory and permitting process.

During 2011 and 2012, we entered into a number of short- and long-term firm transportation service agreements in support of our growing Northeast Appalachia operations in Pennsylvania. In March 2011, we entered into a precedent agreement with Millennium Pipeline Company, L.L.C. pursuant to which we entered into short- and long-term firm natural gas transportation services on Millennium's existing system. Expansions of the system were placed in-service in the second quarter of 2013 and the second quarter of 2014.

We have also executed firm transportation agreements with Tennessee Gas Pipeline Company ("TGP"), a subsidiary of Kinder Morgan Energy Partners, L.P., that increase our ability to move our Northeast Appalachia natural gas production in the short term to market as well as a precedent agreement for an expansion project that was placed in-service in November 2013 pursuant to which we have subscribed for approximately 100,000 Mcf per day of capacity. TGP's expansion project will expand its 300 Line in Pennsylvania to provide natural gas transportation from the Northeast Appalachia supply area to existing delivery points on the TGP system.

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Southwest Appalachia

As part of our December 2014 acquisition of natural gas and oil assets in West Virginia and southwest Pennsylvania, we were assigned approximately 92,000 Mcf per day of capacity on the Columbia Gas Transmission pipeline, which was later reduced to 76,900 Mcf per day as a result of the sale of a portion of our West Virginia assets. Additionally, we were assigned a precedent agreement with ET Rover Pipeline LLC for approximately 200,000 Mcf per day of capacity. ET Rover Pipeline LLC is constructing a new interstate pipeline to receive and transport natural gas from Marcellus and Utica production outlets to points of interconnection with Panhandle Eastern Pipe Line Company and ANR Pipeline, to interconnections in Michigan, to the Union Gas Dawn Hub and to certain off-system delivery points on Trunkline Zone 1A, and is anticipated to be in service by mid to late 2017.

In December 2014, we also were assigned certain ethane transportation agreements that allow for the transport of our ethane production to both domestic and international markets.

In March 2015, we entered into a precedent agreement with Columbia Pipeline Group, Inc. that secured capacity of 500,000 Mcf per day on the Mountaineer XPress pipeline, with a portion of these volumes going to the Gulf Coast on the Gulf Xpress pipeline. The project is expected to be in service by late 2018 and will be routed through much of our core Southwest Appalachia acreage located in West Virginia.

At December 31, 2016, we had 475,000 Mcf per day of firm processing capacity with multiple processing providers located near our core acreage position in West Virginia. In the future, we have the option to increase our firm processing capacity by exercising options for the construction of incremental processing trains, the use of interruptible processing capacity, or consummating new processing agreements with new or existing service providers.

Fayetteville Shale

We are a “foundation shipper” on two pipeline projects serving the Fayetteville Shale. The Fayetteville Express Pipeline LLC, or FEP, is a 2.0 Bcf per day pipeline that is jointly owned by Kinder Morgan Energy Partners, L.P. and Energy Transfer Partners, L.P. FEP was placed in service in January 2011. We have a maximum aggregate commitment of approximately 1,200,000 Mcf per day for an initial term of ten years from the in-service date. Texas Gas Transmission, LLC or Texas Gas, a subsidiary of Boardwalk Pipeline Partners, LP, constructed two pipeline laterals called the Fayetteville and Greenville Laterals, which also provide transportation for our Fayetteville Shale gas. We have maximum aggregate commitments of approximately 800,000 Mcf per day on the Fayetteville Lateral

and 640,000 Mcf per day on the Greenville Lateral, with initial terms ending in 2019 and 2020, respectively.

The Fayetteville and the Greenville Laterals and the FEP allow us to transport our natural gas to interconnecting pipelines that offer connectivity and marketing options to premium Gulf Coast and southeastern United States markets. These interconnecting pipelines include Natural Gas Pipeline, Mississippi River Transmission, Texas Gas, Tennessee Gas Pipeline, Trunkline, ANR, Columbia Gulf, Texas Eastern and Sonat. We rely in part upon the Fayetteville and Greenville Laterals and the FEP to service our production from the Fayetteville Shale.

#### Demand Charges

As of December 31, 2016, our obligations for demand and similar charges under the firm transportation agreements and gathering agreements totaled approximately \$8.4 billion, \$3.4 billion of which related to access capacity on future pipeline and gathering infrastructure projects that still require the granting of regulatory approvals and additional construction efforts. We also have guarantee obligations of up to \$862 million of that amount.

We refer you to Note 8, “Commitments and Contingencies” in the consolidated financial statements for further details on our demand charges and the risk factor “We have made significant investments in pipelines and gathering systems and contracts and in oilfield service businesses, including our drilling rigs, pressure pumping equipment and sand mine operations, to lower costs and secure inputs for our operations and transportation for our production. If our exploration and production activities are curtailed or disrupted, we may not recover our investment in these activities, which could adversely impact our results of operations. In addition, our continued expansion of these operations may adversely impact our relationships with third-party providers” in Item 1A of Part I of this Annual Report.

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Competition

Our marketing activities compete with numerous other companies offering the same services, many of which possess larger financial and other resources than we have. Some of these competitors are other producers and affiliates of companies with extensive pipeline systems that are used for transportation from producers to end-users. Other factors affecting competition are the cost and availability of alternative fuels, the level of consumer demand and the cost of and proximity to pipelines and other transportation facilities. We believe that our ability to compete effectively within the marketing segment in the future depends upon establishing and maintaining strong relationships with producers and end-users.

Regulation

The transportation of natural gas and oil are heavily regulated. Interstate pipelines must obtain authorization from the FERC to operate in interstate commerce, and state governments typically must authorize the construction of pipelines for intrastate service. The FERC currently allows interstate pipelines to adopt market-based rates; however, in the past the FERC has regulated pipeline tariffs and could do so again in the future. State tariff regulations vary. Currently, all pipelines we own are intrastate.

State and local permitting, zoning and land use regulations can affect the location, construction and operation of gathering and other pipelines needed to transport production to market. In addition, various suppliers of goods and services to our midstream business may require licensing.

The transportation of natural gas and oil is also subject to extensive environmental regulation. We refer you to “Other – Environmental Regulation” in Item 1 of Part I of this Annual Report and the risk factor “We are subject to complex federal, state and local laws and regulations that could adversely affect the cost, manner or feasibility of conducting our operations or expose us to significant liabilities” in Item 1A of Part I of this Annual Report for a discussion of the impact of environmental regulation on our business.

Other

Our other operations have historically consisted of limited real estate development activities and a natural gas vehicles (“NGV”) fueling station in Damascus, Arkansas, which was sold in May 2016. We currently have no significant business activity outside of our E&P and Midstream Services segments.

## Environmental Regulation

General. Our operations are subject to environmental regulation in the jurisdictions in which we operate. These laws and regulations require permits for drilling wells and the maintenance of bonding requirements to drill or operate wells and also regulate the spacing and location of wells, the method of drilling and casing wells, the surface use and restoration of properties upon which wells are drilled, the plugging and abandoning of wells and the prevention and cleanup of pollutants and other matters. We maintain insurance against costs of clean-up operations, but we are not fully insured against all such risks. Although future environmental obligations are not expected to have a material impact on the results of our operations or financial condition, there can be no assurance that future developments, such as increasingly stringent environmental laws or enforcement thereof, will not cause us to incur material environmental liabilities or costs.

Failure to comply with these laws and regulations may result in the assessment of administrative, civil and criminal fines and penalties and the imposition of injunctive relief. Changes in environmental laws and regulations occur frequently, and any changes may result in more stringent and costly waste handling, storage, transport, disposal or cleanup requirements. We do not expect continued compliance with existing requirements to have a material adverse impact on us, but there can be no assurance that this will continue in the future.

The following is a summary of the more significant existing environmental and worker health and safety laws and regulations to which we are subject.

Certain U.S. Statutes. CERCLA, also known as the “Superfund law,” imposes liability, without regard to fault or the legality of the original conduct, on certain classes of persons that are considered to be responsible for the release of a “hazardous substance” into the environment. These persons include the owner or operator of the disposal site or sites where the release occurred and companies that transported or disposed or arranged for the transport or disposal of the hazardous substances found at the site. Persons who are or were responsible for releases of hazardous substances under CERCLA may be subject to joint and several liability for the costs of cleaning up the hazardous substances that have been released into the environment and for damages to natural resources, and it is not uncommon for neighboring landowners and other third parties

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to file claims for personal injury and property damage allegedly caused by the hazardous substances released into the environment.

The Resource Conservation and Recovery Act, as amended, or RCRA, generally does not regulate wastes generated by the exploration and production of natural gas and oil. RCRA specifically excludes from the definition of hazardous waste “drilling fluids, produced waters and other wastes associated with the exploration, development or production of oil, natural gas or geothermal energy.” However, legislative and regulatory initiatives have been considered from time to time that would reclassify certain natural gas and oil exploration and production wastes as “hazardous wastes,” which would make the reclassified wastes subject to much more stringent handling, disposal and clean-up requirements. If such measures were to be enacted, it could have a significant impact on our operating costs. Moreover, ordinary industrial wastes, such as paint wastes, waste solvents, laboratory wastes and waste oils, may be regulated as hazardous waste.

The Clean Water Act, as amended, or CWA, and analogous state laws, impose restrictions and strict controls regarding the discharge of produced waters and other natural gas and oil waste into regulated waters. Permits must be obtained to discharge pollutants to regulated waters and to conduct construction activities in waters and wetlands. The CWA and similar state laws provide for civil, criminal and administrative penalties for any unauthorized discharges of pollutants and unauthorized discharges of reportable quantities of oil and other hazardous substances. The EPA has adopted regulations requiring certain natural gas and oil exploration and production facilities to obtain permits for storm water discharges. Costs may be associated with the treatment of wastewater or developing and implementing storm water pollution prevention plans.

The Oil Pollution Act, as amended, or the 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 regulated waters. A “responsible party” includes the owner or operator of an onshore facility, pipeline or vessel, or the lessee or permittee of the area in which an offshore facility is located. OPA assigns liability to each responsible party for oil cleanup costs and a variety of public and private damages. Although 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. In 2016 oil accounted for 2% of our total production, compared to less than 1% of our total production for 2015 and 2014, although we expect this percentage to increase as we continue to develop our Southwest Appalachia assets.



We own or lease, and have in the past owned or leased, onshore properties that for many years have been used for or associated with the exploration for and production of natural gas and oil. Although we have utilized operating and disposal practices that were standard in the industry at the time, hydrocarbons or other wastes may have been disposed of or released on or under the properties owned or leased by us on or under other locations where such wastes have been taken for disposal. In addition, some of these properties have been operated by third parties whose treatment and disposal or release of wastes was not under our control. These properties and the wastes disposed on them may be subject to CERCLA, the Clean Water Act, RCRA and analogous state laws. Under such laws, we could be required to remove or remediate previously disposed wastes (including waste disposed of or released by prior owners or operators) or property contamination (including groundwater contamination by prior owners or operators), or to perform remedial plugging or closure operations to prevent future contamination.

The Clean Air Act, as amended, restricts emissions into the atmosphere. Various activities in our operations, such as drilling, pumping and the use of vehicles, can release matter subject to regulation. We must obtain permits, typically from local authorities, to conduct various activities. Federal and state governmental agencies are looking into the issues associated with methane and other emissions from oil and natural gas activities, and further regulation could increase our costs or restrict our ability to produce. Although methane emissions are not currently regulated at the federal level, we are required to report emissions of various greenhouse gases, including methane.

The Endangered Species Act and comparable state laws protect species threatened with possible extinction. Protection of threatened and endangered species may have the effect of prohibiting or delaying us from obtaining drilling and other permits and may include restrictions on road building and other activities in areas containing the affected species or their habitats. Based on the species that have been identified to date, we do not believe there are any species protected under the Endangered Species Act that would materially and adversely affect our operations at this time.

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Hydraulic Fracturing. We utilize hydraulic fracturing in drilling wells as a means of maximizing their productivity. It is an essential and common practice in the oil and gas industry used to stimulate production of oil, natural gas, and associated liquids from dense and deep rock formations. The knowledge and expertise in fracturing techniques we have developed through our operations in the Fayetteville Shale and Northeast Appalachia are being utilized in our other operating areas, including Southwest Appalachia, the Sand Wash Basin and our Lower Smackover Brown Dense acreage and, in the future, may include our exploration program in New Brunswick, Canada. Successful hydraulic fracturing techniques are also expected to be critical to the development of other New Venture areas. Hydraulic fracturing involves using water, sand, and certain chemicals to fracture the hydrocarbon-bearing rock formation to allow the flow of hydrocarbons into the wellbore.

In the past few years, there has been an increased focus on environmental aspects of hydraulic fracturing practice, both in the United States and abroad. In the United States, hydraulic fracturing is typically regulated by state oil and natural gas commissions, but federal agencies have started to assert regulatory authority over certain aspects of the process. For example, the Environmental Protection Agency, or EPA, issued final rules effective as of October 15, 2012 that subject oil and gas operations (production, processing, transmission, storage and distribution) to regulation under the New Source Performance Standards, or NSPS, and National Emission Standards for Hazardous Air Pollutants, or NESHAPS programs. In May 2016, the EPA finalized additional regulations to control methane and volatile organic compound emissions from certain oil and gas equipment and operations. The EPA also recently finalized pretreatment standards that would prohibit the indirect discharge of wastewater from onshore unconventional oil and gas extraction facilities to publicly owned treatment works. Based on our current operations and practices, management believes, such newly promulgated rules will not have a material adverse impact on our financial position, results of operations or cash flows but these matters are subject to inherent uncertainties and management's view may change in the future.

In addition, there are certain governmental reviews either underway or being proposed that focus on environmental aspects of hydraulic fracturing practices. A number of federal agencies are analyzing, or have been requested to review, a variety of environmental issues associated with hydraulic fracturing. For example, in December 2016, the EPA released its final report regarding the potential impacts of hydraulic fracturing on drinking water resources, concluding that "water cycle" activities associated with hydraulic fracturing may impact drinking water resources under certain circumstances such as water withdrawals for fracturing in times or areas of low water availability, surface spills during the management of fracturing fluids, chemicals or produced water, injection of fracturing fluids into wells with inadequate mechanical integrity, injection of fracturing fluids directly into groundwater resources, discharge of inadequately treated fracturing wastewater to surface waters and disposal or storage of fracturing wastewater in unlined pits. The results of these studies could lead federal and state governments and agencies to develop and implement additional regulations.

Some states in which we operate have adopted, and other states are considering adopting, regulations that could impose more stringent permitting, public disclosure, waste disposal and well construction requirements on hydraulic fracturing operations or otherwise seek to ban fracturing activities altogether. In addition to state laws, local land use restrictions, such as city ordinances, may restrict or prohibit the performance of well drilling in general and/or hydraulic fracturing in particular. In the event state, local, or municipal legal restrictions are adopted in areas where we are currently conducting, or in the future plan to conduct operations, we may incur additional costs to comply with such requirements that may be significant in nature, experience delays or curtailment in the pursuit of exploration,

development, or production activities, and perhaps even be precluded from the drilling and/or completion of wells. In 2015, the provincial government in New Brunswick announced a moratorium on hydraulic fracturing until it is satisfied with a list of conditions. In May 2016, the provincial government announced that the moratorium would continue in effect indefinitely. Unless and until the moratorium is lifted, we will not be able to continue our activities on our assets in New Brunswick.

Increased regulation and attention given to the hydraulic fracturing process has led to greater opposition, including litigation, to oil and gas production activities using hydraulic fracturing techniques. Additional legislation or regulation could also lead to operational delays or increased operating costs in the production of oil, natural gas, and associated liquids including from the development of shale plays, or could make it more difficult to perform hydraulic fracturing. The adoption of additional federal, state or local laws or the implementation of regulations regarding hydraulic fracturing could potentially cause a decrease in the completion of new oil and gas wells, increased compliance costs and time, which could adversely affect our financial position, results of operations and cash flows.

We refer you to the risk factor “We are subject to complex federal, state and local laws and regulations that could adversely affect the cost, manner or feasibility of conducting our operations or expose us to significant liabilities” in Item 1A of Part I of this Annual Report.

In addition, concerns have been raised about the potential for earthquakes to occur from the use of underground injection control wells, a predominant method for disposing of waste water from oil and gas activities. We operate injection wells and utilize injection wells owned by third parties to dispose of waste water associated with our operations, subject to regulatory restrictions relating to seismicity. New rules and regulations may be developed to address these concerns, possibly limiting or eliminating the ability to use disposal wells in certain locations and increasing the cost of disposal in others.

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Greenhouse Gas Emissions. In response to findings that emissions of carbon dioxide, methane and other greenhouse gases present an endangerment to human health and the environment, the EPA has adopted regulations under existing provisions of the federal Clean Air Act that, among other things, establish Prevention of Significant Deterioration, or PSD, construction and Title V operating permit reviews for certain large stationary sources. Facilities required to obtain PSD permits for their greenhouse gas emissions also will be required to meet “best available control technology” standards that will be established on a case-by case basis. One of our subsidiaries operates compressor stations, which are facilities that are required to adhere to the PSD or Title V permit requirements. EPA rulemakings related to greenhouse gas emissions could adversely affect our operations and restrict or delay our ability to obtain air permits for new or modified sources.

The EPA also has adopted rules requiring the monitoring and reporting of greenhouse gas emissions from specified onshore and offshore oil and gas production sources in the United States on an annual basis, which include certain of our operations. Although Congress from time to time has considered legislation to reduce emissions of greenhouse gases, there has not been significant activity in the form of adopted legislation to reduce greenhouse gas emissions at the federal level in recent years. In the absence of such federal climate legislation, a number of states, including states in which we operate, have enacted or passed measures to track and reduce emissions of greenhouse gases, primarily through the planned development of greenhouse gas emission inventories and regional greenhouse gas cap-and-trade programs. Most of these cap-and-trade programs require major sources of emissions or major producers of fuels to acquire and surrender emission allowances, with the number of allowances available for purchase reduced each year until the overall greenhouse gas emission reduction goal is achieved. These reductions may cause the cost of allowances to escalate significantly over time.

The adoption and implementation of regulations that require reporting of greenhouse gases or otherwise limit emissions of greenhouse gases from our equipment and operations could require us to incur costs to monitor and report on greenhouse gas emissions or install new equipment to reduce emissions of greenhouse gases associated with our operations. In addition, these regulatory initiatives could drive down demand for our products by stimulating demand for alternative forms of energy that do not rely on combustion of fossil fuels that serve as a major source of greenhouse gas emissions, which could have a material adverse effect on our business, financial condition, results of operations and cash flows. At the same time, new laws and regulations are prompting power producers to shift from coal to natural gas, which is increasing demand.

Further, in December 2015, over 190 countries, including the United States, reached an agreement to reduce global greenhouse gas emissions. The agreement entered into effect in November 2016 after more than 70 nations, including the United States, ratified or otherwise indicated their intent to be bound by the agreement. To the extent that the United States and other countries implement this agreement or impose other climate change regulations on the oil and gas industry, it could have an adverse effect on our business.

Employee health and safety. Our operations are subject to a number of federal and state laws and regulations, including the federal Occupational Safety and Health Act (“OSHA”) and comparable state statutes, whose purpose is to protect the health and safety of workers. In addition, the OSHA hazard communication standard, the EPA community right-to-know regulations under Title III of the federal Superfund Amendment and Reauthorization Act and

comparable state statutes require that information be maintained concerning hazardous materials used or produced in operations and that this information be provided to employees, state and local government authorities and citizens.

Canada. Our activities in Canada have, to date, been limited to certain geological and geophysical activities that are not subject to extensive environmental regulation. If and when we begin drilling and development activities in New Brunswick, we will be subject to federal, provincial and local environmental regulations.

## Employees

As of December 31, 2016, we had 1,469 total employees. None of our employees were covered by a collective bargaining agreement at year-end 2016. We believe that our relationships with our employees are good.

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Executive Officers of the Registrant

Name	Age (1)	Officer Position
William J. Way	57	President and Chief Executive Officer
Mark K. Boling	59	Executive Vice President and President V+ Development Solutions
R. Craig Owen	47	Senior Vice President and Chief Financial Officer
Jennifer N. McCauley	53	Senior Vice President – Administration
John C. Ale	62	Senior Vice President, General Counsel and Secretary
John E. Bergeron, Jr.	59	Senior Vice President – E&P Operations
Paul W. Geiger III	45	Senior Vice President – Corporate Development
Randy L. Curry	59	Senior Vice President – Midstream
James W. Vick	55	Senior Vice President – Business Information Systems
C. Greg Stoute	55	Vice President – Health, Safety, Environmental and Regulatory

(1) As of February 21, 2017

Mr. Way was appointed Chief Executive Officer in January 2016. Prior to that, he served as Chief Operating Officer since 2011, having also been appointed President in December 2014. Prior to joining the Company, he was Senior Vice President, Americas of BG Group plc with responsibility for E&P, Midstream and LNG operations in the United States, Trinidad and Tobago, Chile, Bolivia, Canada and Argentina since 2007.

Mr. Boling was appointed Executive Vice President and President, V+ Development Solutions in December 2012. Prior to that, he served as Senior Vice President, General Counsel and Secretary since January 2002.

Mr. Owen was appointed Senior Vice President in May 2012 and Chief Financial Officer in October 2012. Prior to October 2012, he served as Controller since 2008.

Ms. McCauley was appointed Senior Vice President – Administration in April 2016. Prior to that, she served as Senior Vice President – Human Resources since 2009.

Mr. Ale was appointed Senior Vice President, General Counsel and Secretary in November 2013. Prior to that, he was Vice President and General Counsel of Occidental Petroleum Corporation since April 2012. Prior to that, he was

a partner with Skadden, Arps, Slate, Meagher & Flom LLP since 2002.

Mr. Bergeron was appointed Senior Vice President – E&P in April 2016. From April 2014 to March 2016, he served as Senior Vice President, Northeast Appalachia Division. Since joining the Company in 2007, he served as Senior Vice President, Fayetteville Shale Division; Vice President and General Manager, Fayetteville Shale Division; Vice President, Economic Planning and Acquisitions; and as Vice President, Fayetteville Shale Planning and Technology.

Mr. Geiger was appointed Senior Vice President – Corporate Development in April 2016. Prior to that, he served as Senior Vice President of the West Virginia division in 2015 and of the Fayetteville Shale division since joining the Company in April 2014. Prior to joining Southwestern Energy Company, Mr. Geiger served as Senior Vice President of Operations at Quantum Resources Management and QR Energy since October 2012.

Mr. Curry as appointed Senior Vice President – Midstream in 2014. Beginning in January 2003, he served as President of Chevron Natural Gas. Prior to that, Mr. Curry held various management positions with Chevron's Global Gas and Midstream organizations.

Mr. Vick was appointed Senior Vice President – Business Information Services in November 2011. Prior to that he was a Principal with Deloitte Consulting's Information Management practice.

Mr. Stoute was appointed Vice President of Health, Safety, Environmental and Regulatory in January 2016. Since joining the Company in 2005 as a senior staff reservoir engineer, he has worked in various leadership positions within SWN and was most recently General Manager for the New Ventures team.

The Company's officers are elected each year at the first meeting of the Board of Directors following the annual meeting of stockholders, the next of which is expected to occur on May 23, 2017, and hold office until their successors are duly elected and qualified. There are no family relationships between any of the Company's directors or executive officers.

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GLOSSARY OF CERTAIN INDUSTRY TERMS

The definitions set forth below apply to the indicated terms as used in this Annual Report. All natural gas reserves reported in this Annual Report are stated at the legal pressure base of the state or area where the reserves exist and at 60 degrees Fahrenheit. All currency amounts are in U.S. dollars unless specified otherwise.

“Acquisition of properties” Costs incurred to purchase, lease or otherwise acquire a property, including costs of lease bonuses and options to purchase or lease properties, the portion of costs applicable to minerals when land including mineral rights is purchased in fee, brokers’ fees, recording fees, legal costs, and other costs incurred in acquiring properties. For additional information, see the SEC’s definition in Rule 4-10(a) (1) of Regulation S-X, a link for which is available at the SEC’s website.

“Available reserves” Estimates of the amounts of natural gas, oil and NGLs which the registrant can produce from current proved developed reserves using presently installed equipment under existing economic and operating conditions and an estimate of amounts that others can deliver to the registrant under long-term contracts or agreements on a per-day, per-month, or per-year basis. For additional information, see the SEC’s definition in Item 1207(d) of Regulation S-K, a link for which is available at the SEC’s website.

“Bbl” One stock tank barrel, or 42 U.S. gallons liquid volume, used in reference to oil or other liquid hydrocarbons.

“Bcf” One billion cubic feet of natural gas.

“Bcfe” One billion cubic feet of natural gas equivalent. Determined using the ratio of one barrel of oil or natural gas liquids to six Mcf of natural gas.

“Btu” One British thermal unit, which is the heat required to raise the temperature of a one-pound mass of water from 58.5 to 59.5 degrees Fahrenheit.



“Deterministic estimate” The method of estimating reserves or resources is called deterministic when a single value for each parameter (from the geoscience, engineering, or economic data) in the reserves calculation is used in the reserves estimation procedure. For additional information, see the SEC’s definition in Rule 4-10(a) (5) of Regulation S-X, a link for which is available at the SEC’s website.

“Developed oil and gas reserves” Developed oil and natural gas reserves are reserves of any category that can be expected to be recovered:

- (i) Through existing wells with existing equipment and operating methods or in which the cost of the required equipment is relatively minor compared to the cost of a new well; and
- (ii) Through installed extraction equipment and infrastructure operational at the time of the reserves estimate if the extraction is by means not involving a well.

For additional information, see the SEC’s definition in Rule 4-10(a) (6) of Regulation S-X, a link for which is available at the SEC’s website.

“Development costs” Costs incurred to obtain access to proved reserves and to provide facilities for extracting, treating, gathering and storing natural gas, oil and NGLs. More specifically, development costs, including depreciation and applicable operating costs of support equipment and facilities and other costs of development activities, are costs incurred to:

- (i) Gain access to and prepare well locations for drilling, including surveying well locations for the purpose of determining specific development drilling sites, clearing ground, draining, road building, and relocating public roads, gas lines, and power lines, to the extent necessary in developing the proved reserves.
- (ii) Drill and equip development wells, development-type stratigraphic test wells, and service wells, including the costs of platforms and of well equipment such as casing, tubing, pumping equipment, and the wellhead assembly.
- (iii) Acquire, construct, and install production facilities such as lease flow lines, separators, treaters, heaters, manifolds, measuring devices, and production storage tanks, natural gas cycling and processing plants, and central utility and waste disposal systems.
- (iv) Provide improved recovery systems.

For additional information, see the SEC’s definition in Rule 4-10(a) (7) of Regulation S-X, a link for which is available at the SEC’s website.

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“Development project” A development project is the means by which petroleum resources are brought to the status of economically producible. As examples, the development of a single reservoir or field, an incremental development in a producing field, or the integrated development of a group of several fields and associated facilities with a common ownership may constitute a development project. For additional information, see the SEC’s definition in Rule 4-10(a) (8) of Regulation S-X, a link for which is available at the SEC’s website.

“Development well” A well drilled within the proved area of an oil or gas reservoir to the depth of a stratigraphic horizon known to be productive. For additional information, see the SEC’s definition in Rule 4-10(a) (9) of Regulation S-X, a link for which is available at the SEC’s website.

“E&P” Exploration for and production of natural gas, oil and NGLs.

“Economically producible” The term economically producible, as it relates to a resource, means a resource which generates revenue that exceeds, or is reasonably expected to exceed, the costs of the operation. The value of the products that generate revenue shall be determined at the terminal point of oil and gas producing activities. For additional information, see the SEC’s definition in Rule 4-10(a) (10) of Regulation S-X, a link for which is available at the SEC’s website.

“Estimated ultimate recovery (EUR)” Estimated ultimate recovery is the sum of reserves remaining as of a given date and cumulative production as of that date. For additional information, see the SEC’s definition in Rule 4-10(a) (11) of Regulation S-X, a link for which is available at the SEC’s website.

“Exploitation” The development of a reservoir to extract its natural gas and/or oil.

“Exploratory well” An exploratory well is a well drilled to find a new field or to find a new reservoir in a field previously found to be productive of oil or gas in another reservoir. Generally, an exploratory well is any well that is not a development well, an extension well, a service well, or a stratigraphic test well as those items are defined in this section. For additional information, see the SEC’s definition in Rule 4-10(a) (13) of Regulation S-X, a link for which is available at the SEC’s website.

“Field” An area consisting of a single reservoir or multiple reservoirs all grouped on or related to the same individual geological structural feature and/or stratigraphic condition. There may be two or more reservoirs in a field that are separated vertically by intervening impervious, strata, or laterally by local geologic barriers, or by both. Reservoirs that are associated by being in overlapping or adjacent fields may be treated as a single or common operational field. The geological terms structural feature and stratigraphic condition are intended to identify localized geological features as opposed to the broader terms of basins, trends, provinces, plays, areas-of-interest, etc. For additional information, see the SEC’s definition in Rule 4-10(a) (15) of Regulation S-X, a link for which is available at the SEC’s website.

“Gross well or acre” A well or acre in which the registrant owns a working interest. The number of gross wells is the total number of wells in which the registrant owns a working interest. For additional information, see the SEC’s definition in Item 1208(c)(1) of Regulation S-K, a link for which is available at the SEC’s website.

“Gross working interest” Gross working interest is the working interest in a given property plus the proportionate share of any royalty interest, including overriding royalty interest, associated with the working interest.

“Hydraulic fracturing” A process whereby fluids mixed with proppants are injected into a wellbore under pressure in order to fracture, or crack open, reservoir rock, thereby allowing oil and/or natural gas trapped in the reservoir rock to travel through the fractures and into the well for production.

“Infill drilling” Drilling wells in between established producing wells to increase recovery of natural gas, oil and NGLs from a known reservoir.

“MBbls” One thousand barrels of oil or other liquid hydrocarbons.

“Mcf” One thousand cubic feet of natural gas.

“Mcf<sub>e</sub>” One thousand cubic feet of natural gas equivalent, with liquids converted to an equivalent volume of natural gas using the ratio of one barrel of oil to six Mcf of natural gas.

“MMBbls” One million barrels of oil or other liquid hydrocarbons.



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“MMBtu” One million British thermal units (Btus).

“MMcf” One million cubic feet of natural gas.

“MMcfe” One million cubic feet of natural gas equivalent, with liquids converted to an equivalent volume of natural gas using the ratio of one barrel of oil to six Mcf of natural gas.

“Mont Belvieu” A pricing point for North American NGLs.

“Net acres” The sum, for any area, of the products for each tract of the acres in that tract multiplied by the working interest in that tract. For additional information, see the SEC’s definition in Item 1208(c)(2) of Regulation S-K, a link for which is available at the SEC’s website.

“Net revenue interest” Economic interest remaining after deducting all royalty interests, overriding royalty interests and other burdens from the working interest ownership.

“Net well” The sum, for all wells being discussed, of the working interests in those wells. For additional information, see the SEC’s definition in Item 1208(c)(2) of Regulation S-K, a link for which is available at the SEC’s website.

“NGL” Natural gas liquids.

“NYMEX” The New York Mercantile Exchange.

“Operating interest” An interest in natural gas and oil that is burdened with the cost of development and operation of the property.

“Overriding royalty interest” A fractional, undivided interest or right to production or revenues, free of costs, of a lessee with respect to an oil or natural gas well, that overrides a working interest.

“Play” A term applied to a portion of the exploration and production cycle following the identification by geologists and geophysicists of areas with potential oil and natural gas reserves.

“Present Value Index” or “PVI” A measure that is computed for projects by dividing the dollars invested into the PV-10 resulting or expecting to result from the investment by the dollars invested.

“Pressure pumping spread” All of the equipment needed to carry out a hydraulic fracturing job.

“Probabilistic estimate” The method of estimation of reserves or resources is called probabilistic when the full range of values that could reasonably occur for each unknown parameter (from the geoscience and engineering data) is used to generate a full range of possible outcomes and their associated probabilities of occurrence. For additional information, see the SEC’s definition in Rule 4-10(a) (19) of Regulation S-X, a link for which is available at the SEC’s website.

“Producing property” A natural gas and oil property with existing production.

“Productive wells” Producing wells and wells mechanically capable of production. For additional information, see the SEC’s definition in Item 1208(c)(3) of Regulation S-K, a link for which is available at the SEC’s website.

“Proppant” Sized particles mixed with fracturing fluid to hold fractures open after a hydraulic fracturing treatment. In addition to naturally occurring sand grains, man-made or specially engineered proppants, such as resin-coated sand or high-strength ceramic materials like sintered bauxite, may also be used. Proppant materials are carefully sorted for size and sphericity to provide an efficient conduit for production of fluid from the reservoir to the wellbore.

“Proved developed producing” Proved developed reserves that can be expected to be recovered from a reservoir that is currently producing through existing wells.

“Proved developed reserves” Proved natural gas, oil and NGLs that are also developed natural gas, oil and NGL reserves.

“Proved oil and gas reserves” Proved natural gas, oil and NGL reserves are those quantities of natural gas, oil and NGLs, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible – from a given date forward, from known reservoirs, and under existing economic conditions, operating methods,

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and government regulations – prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time. Also referred to as “proved reserves.” For additional information, see the SEC’s definition in Rule 4-10(a) (22) of Regulation S-X, a link for which is available at the SEC’s website.

“Proved reserves” See “proved natural gas, oil and NGL reserves.”

“Proved undeveloped reserves” Proved natural gas, oil and NGL reserves that are also undeveloped natural gas, oil and NGL reserves.

“PV-10” When used with respect to natural gas, oil and NGL reserves, PV-10 means the estimated future gross revenue to be generated from the production of proved reserves, net of estimated production and future development costs, using prices and costs in effect as of the date of the report or estimate, without giving effect to non-property related expenses such as general and administrative expenses, debt service and future income tax expense or to depreciation, depletion and amortization, discounted using an annual discount rate of 10%. Also referred to as “present value.” After-tax PV-10 is also referred to as “standardized measure” and is net of future income tax expense.

“Reserve life index” The quotient resulting from dividing total reserves by annual production and typically expressed in years.

“Reserve replacement ratio” The sum of the estimated net proved reserves added through discoveries, extensions, infill drilling and acquisitions (which may include or exclude reserve revisions of previous estimates) for a specified period of time divided by production for that same period of time.

“Reservoir” A porous and permeable underground formation containing a natural accumulation of producible oil and/or gas that is confined by impermeable rock or water barriers and is individual and separate from other reservoirs. For additional information, see the SEC’s definition in Rule 4-10(a) (27) of Regulation S-X, a link for which is available at the SEC’s website.



“Royalty interest” An interest in a natural gas and oil property entitling the owner to a share of natural gas, oil or NGL production free of production costs.

“Tcfe” One trillion cubic feet of natural gas equivalent, with liquids converted to an equivalent volume of natural gas using the ratio of one barrel of oil to six Mcf of natural gas.

“Unconventional play” A play in which the targeted reservoirs generally fall into one of three categories: (1) tight sands, (2) coal beds, or (3) shales. The reservoirs tend to cover large areas and lack the readily apparent traps, seals and discrete hydrocarbon-water boundaries that typically define conventional reservoirs. These reservoirs generally require fracture stimulation treatments or other special recovery processes in order to produce economic flow rates.

“Undeveloped acreage” Those leased acres on which wells have not been drilled or completed to a point that would permit the production of economic quantities of oil or gas regardless of whether such acreage contains proved reserves. For additional information, see the SEC’s definition in Item 1208(c)(4) of Regulation S-K, a link for which is available at the SEC’s website.

“Undeveloped natural gas, oil and NGL reserves” Undeveloped natural gas, oil and NGL reserves are reserves of any category that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion. Also referred to as “undeveloped reserves.” For additional information, see the SEC’s definition in Rule 4-10(a) (31) of Regulation S-X, a link for which is available at the SEC’s website.

“Undeveloped reserves” See “undeveloped natural gas, oil and NGL reserves.”

“Wells to sales” Wells that have been placed on sales for the first time.

“Working interest” An operating interest that gives the owner the right to drill, produce and conduct operating activities on the property and to receive a share of production.

“Workovers” Operations on a producing well to restore or increase production.



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“WTI” West Texas Intermediate, the benchmark oil price in the United States.

ITEM 1A. RISK FACTORS

You should carefully consider the following risk factors in addition to the other information included in this Annual Report on Form 10-K. Each of these risk factors could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our common stock.

Natural gas, oil and natural gas liquids prices greatly affect our business, including our revenues, profits, liquidity, growth, ability to repay our debt and the value of our assets.

Our revenues, profitability, liquidity, growth, ability to repay our debt and the value of our assets greatly depend on prices for natural gas, oil and natural gas liquids. The markets for these commodities have been volatile, and we expect that volatility to continue. The prices of natural gas, oil and natural gas liquids fluctuate in response to changes in supply and demand (global, regional and local), transportation costs, market uncertainty and other factors that are beyond our control. Short- and long-term prices are subject to a myriad of factors such as:

- overall demand, including the relative cost of competing sources of energy or fuel;
- overall supply, including costs of production;
- the availability, proximity and capacity of pipelines, other transportation facilities and gathering, processing and storage facilities;
- regional basis differentials;
- national and worldwide economic and political conditions;
- weather conditions and seasonal trends;
- government regulations, such as regulation of natural gas transportation and price controls;
- inventory levels; and
- market perceptions of future prices, whether due to the foregoing factors or others.

For example, in 2016 and 2015, our production was approximately 90% and 92% natural gas, respectively, and during this period spot prices ranged from a low of \$1.49 per Mcf in March 2016 to a high of \$3.80 per Mcf in December 2016.

In our exploration and production business, lower natural gas, oil and NGL prices directly reduce our revenues and thus our operating income and cash flow. Lower prices also reduce the projected profitability of further drilling and therefore are likely to reduce our drilling activity, which in turn means we will have fewer wells on production in the future. Lower prices also reduce the value of our assets, both by a direct reduction in what the production would be worth and by making some properties uneconomic, resulting in impairments to the recorded value of our reserves and non-cash charges to earnings. For example, in 2016, we reported non-cash impairment charges on our natural gas and oil properties totaling \$2,321 million, primarily resulting from decreases in trailing 12-month average first-day-of-the-month natural gas prices throughout 2016, as compared to 2015, and the impairment of certain undeveloped leasehold interests. Further impairments in subsequent periods could occur if the trailing 12-month commodity prices continue to fall as compared to the average used in prior periods.

In our Midstream Services segment, lower production by us and others can mean reduced volumes being transported in the gathering systems we operate and thus lower revenues.

As of December 31, 2016, we had \$4.7 billion of debt outstanding, consisting principally of \$3.2 billion in senior notes maturing in various increments from 2017 to 2025 and \$1.5 billion in term loans due in 2020. At current commodity price levels, our net cash flow from operations is substantially higher than our interest obligations under this debt, but significant drops in realized prices could affect our ability to pay our current obligations or refinance our debt as it becomes due.

Moreover, general industry conditions may make it difficult or costly to refinance increments of this debt as it matures. While our indentures do not contain significant covenants restricting our operations and other activities, our 2016 credit agreement contains financial covenants with which we must comply. We refer you to the risk factor “Our current and future levels of indebtedness may adversely affect our results and limit our growth.” Our inability to pay our current obligations or refinance our debt as it becomes due could have a material and adverse effect on our company. The drop in prices in the past three years has reduced our revenues, profits and cash flow, caused us to record significant asset impairments and led us to reduce both our level of capital investing and our workforce, which has caused us to incur significant expenses relating

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to employee terminations. Further price decreases could have similar consequences. Similarly, a rise in prices to levels experienced into the middle of 2014 could significantly increase our revenues, profits and cash flow, which could be used to expand capital investments.

Significant capital investment is required to replace our reserves and conduct our business.

Our activities require substantial capital investment. We intend to fund our capital investing through net cash flows from operations, plus the uninvested amount of the proceeds from our July 2016 equity offering and West Virginia acreage sale earmarked for capital investment (approximately \$200 million remaining as of December 31, 2016). Our ability to generate operating cash flow is subject to many of the risks and uncertainties that exist in our industry, some of which we may not be able to anticipate at this time. Future cash flows from operations are subject to a number of risks and variables, such as the level of production from existing wells, prices of natural gas, oil and natural gas liquids, our success in developing and producing new reserves and the other risk factors discussed herein. If we are unable to fund capital investing, we could experience a further reduction in drilling new wells and acquiring new acreage, a loss of properties and a decline in our cash flow from operations and natural gas, oil and natural gas liquids production and reserves.

If we are not able to replace reserves, we may not be able to grow or sustain production.

Our future success depends largely upon our ability to find, develop or acquire additional natural gas, oil and NGL reserves that are economically recoverable. Unless we replace the reserves we produce through successful exploration, development or acquisition activities, our proved reserves and production will decline over time. Recovery of such reserves will require significant capital investment and successful drilling operations. Thus, our future natural gas, oil and NGL reserves and production, and therefore our cash flow and income, are highly dependent on our level of capital investments, our success in efficiently developing our current reserves and economically finding or acquiring additional recoverable reserves.

A further downgrade in our credit rating could negatively impact our cost of and ability to access capital and our liquidity.

Actual or anticipated changes or downgrades in our credit ratings, including any announcement that our ratings are under further review for a downgrade, could impact our ability to access debt markets in the future, affect the market value of our senior notes and increase our corporate borrowing costs. Such ratings are limited in scope, and do not

address all material risks relating to us, but rather reflect only the view of each rating agency at the time the rating is issued of the likelihood we will be able to repay our debt. An explanation of the significance of each rating may be obtained from the applicable rating agency. As of February 21, 2017, we were rated Ba3 by Moody's, BB- by Standard and Poor's and BB by Fitch Investor Services. There can be no assurance that such credit ratings will remain in effect for any given period of time or that such ratings will not be lowered, suspended or withdrawn entirely by the rating agencies, if, in each rating agency's judgment, circumstances so warrant.

Actual downgrades in our credit ratings may also impact our liquidity. Many of our existing commercial contracts contain, and future commercial contracts may contain, provisions permitting the counterparty to require increased security upon the occurrence of a downgrade in our credit rating. Providing additional security, such as posting letters of credit, could reduce our available cash or our liquidity under our revolving credit facility for other purposes. We had \$174 million of letters of credit outstanding at December 31, 2016. The amount of additional security would depend on the severity of the downgrade from the credit rating agencies, and a downgrade could result in a decrease in our liquidity.

Strategic determinations, including the allocation of capital and other resources to strategic opportunities, are challenging in the face of shifting market conditions, and our failure to appropriately allocate capital and resources among our strategic opportunities may adversely affect our financial condition and reduce our future growth rate.

We necessarily must consider future price and cost environments when deciding how much capital we are likely to have available from net cash flow and how best to allocate it. Our current philosophy is to generally operate within cash flow from operations and to invest capital in projects only if they are projected to generate a PVI of 1.3 or greater, allocating generally to the highest PVI projects. Volatility in prices and potential errors in estimating costs, reserves or timing of production of the reserves could result in uneconomic projects or economic projects generating less than 1.3 PVI.

Certain of our undeveloped assets are subject to leases that will expire over the next several years unless production is established on units containing the acreage.

Leases on approximately 159,176 net acres of our Fayetteville Shale acreage (including 158,231 net acres held on federal lands that are currently suspended by the Bureau of Land Management) will expire in the next three years if we do not drill

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successful wells to develop the acreage or otherwise take action to extend the leases. Approximately 91,379 and 62,520 net acres of our Northeast Appalachia and Southwest Appalachia acreage, respectively, will expire in the next three years if we do not drill successful wells to develop the acreage or otherwise take action to extend the leases. Our ability to drill wells depends on a number of factors, including certain factors that are beyond our control, such as the ability to obtain permits on a timely basis or to compel landowners or lease holders on adjacent properties to cooperate. Further, we may not have sufficient capital to drill all the wells necessary to hold the acreage without increasing our debt levels, or given price projections at the time, drilling may not be estimated to achieve a PVI of at least 1.3. To the extent we do not drill the wells, our rights to acreage can be lost.

Natural gas and oil drilling and producing operations and midstream operation can be hazardous and may expose us to liabilities.

Exploration and production operations are subject to many risks, including well blowouts, cratering and explosions, pipe failures, fires, formations with abnormal pressures, uncontrollable flows of oil, natural gas, brine or well fluids, severe weather, natural disasters, groundwater contamination and other environmental hazards and risks. Some of these risks or hazards could materially and adversely affect our revenues and expenses by reducing or shutting in production from wells, loss of equipment or otherwise negatively impacting the projected economic performance of our prospects. If any of these risks occurs, we could sustain substantial losses as a result of:

- injury or loss of life;
- severe damage to or destruction of property, natural resources or equipment;
- pollution or other environmental damage;
- clean-up responsibilities;
- regulatory investigations and administrative, civil and criminal penalties; and
- injunctions resulting in limitation or suspension of operations.

For our non-operated properties, we are dependent on the operator for operational and regulatory compliance.

Our midstream operations are subject to all of the risks and operational hazards inherent in transporting natural gas and ethane and natural gas compression, including:

- damages to pipelines, facilities and surrounding properties caused by third parties, severe weather, natural disasters, including hurricanes, and acts of terrorism;
- maintenance, repairs, mechanical or structural failures;
- damages to, loss of availability of and delays in gaining access to interconnecting third-party pipelines;
- disruption or failure of information technology systems and network infrastructure due to various causes, including unauthorized access or attack; and
- leaks of natural gas or ethane as a result of the malfunction of equipment or facilities.

A material event such as those described above could expose us to liabilities, monetary penalties or interruptions in our business operations. Although we may maintain insurance against some, but not all, of the risks described above, our insurance may not be adequate to cover casualty losses or liabilities, and our insurance does not cover penalties or fines that may be assessed by a governmental authority. Also, in the future we may not be able to obtain insurance at premium levels that justify its purchase.

Our current and future levels of indebtedness may adversely affect our results and limit our growth.

At December 31, 2016, we had long-term indebtedness of \$4.6 billion, including borrowings of \$327 million and \$1.2 billion under our term loan credit agreements. The terms of the indentures relating to our outstanding senior notes, our credit facilities, and the master lease agreements relating to our drilling rigs and other equipment, which we collectively refer to as our “financing agreements,” impose restrictions on our ability and, in some cases, the ability of our subsidiaries to take a number of actions that we may otherwise desire to take, which may include, without limitation, one or more of the following:

- incurring additional debt;
- redeeming stock or redeeming certain debt;
- making certain investments;

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- creating liens on our assets; and
- selling assets.

Under the 2013 revolving credit facility, we must keep our total debt at or below 60% of our total adjusted book capital. This financial covenant with respect to capitalization percentages excludes the effects of any non-cash impacts from any full cost ceiling impairments, certain non-cash hedging activities and our pension and other post-retirement liabilities. Therefore, under the 2013 revolving credit facility, our adjusted capital structure as of December 31, 2016 was 34% debt and 66% equity. Under our 2016 credit agreement, we must maintain certain covenants, including, among others, the following financial covenants:

- Minimum liquidity of \$300 million, subject to increase up to \$500 million upon certain conditions;
- Minimum interest coverage ratio of no less than (i) with respect to any fiscal quarter ended on or before December 31, 2016, 0.75x, (ii) with respect to any fiscal quarter ending on or after March 31, 2017 and on or before December 31, 2017, 1.00x, (iii) with respect to any fiscal quarter ending on or after March 31, 2018 and on or before December 31, 2018, 1.25x and (iv) with respect to any fiscal quarter ending on or after March 31, 2019, 1.50x, commencing with the fiscal quarter ending June 30, 2016; and
- With respect to the secured term loan, a minimum collateral coverage ratio of no less than 1.50x of the secured term loan. Currently this collateral consists of most of our interest in E&P properties in the Fayetteville Shale area, the equity in our subsidiaries and cash and marketable securities.

Although we do not anticipate any violations of our financial covenants, our ability to comply with these covenants are dependent upon the success of our exploration and development program and upon factors beyond our control, such as the market prices for natural gas, oil and NGLs.

Although the indentures governing the notes contain covenants that apply to us, covenants limiting liens and sale and leaseback covenants contain exceptions and limitations that would allow us, pursuant to the terms of the indenture, to create, grant or incur certain liens or security interests. Moreover, the indentures do not contain any limitations on the ability of us or our subsidiaries to incur debt, pay dividends, make investments, or limit the ability of our subsidiaries to make distributions to us. Such activities may, however, be limited by our other financing agreements in certain circumstances.

Our level of indebtedness and off-balance sheet obligations, and the covenants contained in our financing agreements, could have important consequences for our operations, including:

- requiring us to dedicate a substantial portion of our cash flow from operations to required payments, thereby reducing the availability of cash flow for working capital, capital investing and other general business activities;
- limiting our ability to obtain additional financing in the future for working capital, capital investing, acquisitions and general corporate and other activities;
- limiting our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate; and
- detracting from our ability to successfully withstand a downturn in our business or the economy generally.

Our ability to comply with the covenants and other restrictions in our financing agreements may be affected by events beyond our control, including prevailing economic and financial conditions.

If we fail to comply with the covenants and other restrictions, it could lead to an event of default and the acceleration of our obligations under the notes or our other financing agreements, and in the case of the lease agreements for drilling rigs, loss of use of our drilling rigs. In particular, a significant or extended decline in natural gas, oil or NGL prices would have a material adverse effect on our results of operations, our access to capital and the quantities of natural gas, oil and NGLs that we can produce economically. For example, the New York Mercantile Exchange, or NYMEX, natural gas prices traded at a low of \$1.71 in February 2016 and a high of \$3.23 in December 2016 based on the settlement price of the monthly contract at expiration. If we are unable to satisfy our obligations with cash on hand, we could attempt to refinance such debt, sell assets or repay such debt with the proceeds from an equity offering. We cannot assure that we will be able to generate sufficient cash flow to pay the interest on our debt, to meet our lease obligations, or that future borrowings, equity financings or proceeds from the sale of assets will be available to pay or refinance such debt or obligations. The terms of our financing agreements may also prohibit us from taking such actions. Factors that will affect our ability to raise cash through an offering of our capital stock, a refinancing of our debt or a sale of assets include financial market conditions and our market value and operating performance at the time of such offering or other financing. We cannot assure that any such proposed offering,

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refinancing or sale of assets can be successfully completed or, if completed, that the terms will be favorable to us.

We have made significant investments in pipelines and gathering systems and contracts and in oilfield service businesses, including our drilling rigs, pressure pumping equipment and sand mine operations, to lower costs and secure inputs for our operations and transportation for our production. If our exploration and production activities are curtailed or disrupted, we may not recover our investment in these activities, which could adversely impact our results of operations. In addition, our continued expansion of these operations may adversely impact our relationships with third-party providers.

Through December 31, 2016, we had invested approximately \$1.3 billion in our gas gathering system built for the Fayetteville Shale. We may make further substantial investments in the expansion of this system. Our ability to recover the costs of these investments depends on production from the Fayetteville Shale, and reduced production volumes, whether due to lower drilling activity due to lower prices or failure to produce significant quantities of gas in relevant timeframes, can adversely affect our ability to recover these investments.

We also have entered into gathering agreements in other producing areas and multiple long-term firm transportation agreements relating to natural gas volumes from all our producing areas. As of December 31, 2016, our aggregate demand charge commitments under these firm transportation agreements and gathering agreements were approximately \$8.4 billion. If our development programs fail to produce sufficient quantities of natural gas and ethane within expected timeframes, we could be forced to pay demand or other charges for transportation on pipelines and gathering systems that we would not be using.

We also have made significant investments to meet certain of our field services' needs, including establishing our own drilling rig operation, sand mine and pressure pumping capability. Reductions in our operating plans caused by the recent drop in commodity prices has caused us to take much of this equipment out of service and has reduced the need for sand and other services. If our level of operations is reduced for a long period, we may not be able to recover these investments. Further, our presence in these service and supply sectors, including competing with them for qualified personnel and supplies, may have an adverse effect on our relationships with our existing third-party service and resource providers or our ability to secure these services and resources from other providers.

Our business depends on access to natural gas, oil and NGL transportation systems and facilities.

The marketability of our natural gas, oil and NGL production depends in large part on the operation, availability, proximity, capacity and expansion of transportation systems and facilities owned by third parties. For example, we can provide no assurance that sufficient transportation capacity will exist for expected production from the Appalachian Basin or that we will be able to obtain sufficient transportation capacity on economic terms. During the past year, several planned pipelines intended to service production in the U.S. Northeast have had their in-service

dates delayed due to regulatory delays and litigation.

Producers compete by lowering their sales prices, resulting in the locational differences from NYMEX pricing. Further, a lack of available capacity on transportation systems and facilities or delays in their planned expansions could result in the shut-in of producing wells or the delay or discontinuance of drilling plans for properties. A lack of availability of these systems and facilities for an extended period of time could negatively affect our revenues. In addition, we have entered into contracts for firm transportation and any failure to renew those contracts on the same or better commercial terms could increase our costs and our exposure to the risks described above.

Our business depends on the availability of water and the ability to dispose of water. Limitations or restrictions on our ability to obtain or dispose of water may have an adverse effect on our financial condition, results of operations and cash flows.

With current technology, water is an essential component of drilling and hydraulic fracturing processes. Limitations or restrictions on our ability to secure sufficient amounts of water, or to dispose of or recycle water after use, could adversely impact our operations. In some cases, water may need to be obtained from new sources and transported to drilling sites, resulting in increased costs. Moreover, the introduction of new environmental initiatives and regulations related to water acquisition or waste water disposal, including produced water, drilling fluids and other wastes associated with the exploration, development or production of hydrocarbons, could limit or prohibit our ability to utilize hydraulic fracturing or waste water injection control wells.

In addition, concerns have been raised about the potential for earthquakes to occur from the use of underground injection control wells, a predominant method for disposing of waste water from natural gas and oil activities. New rules and

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regulations may be developed to address these concerns, possibly limiting or eliminating the ability to use disposal wells in certain locations and increasing the cost of disposal in others. We operate injection wells and utilize injection wells owned by third parties to dispose of waste water associated with our operations, subject to regulatory restrictions relating to seismic.

Compliance with environmental regulations and permit requirements governing the withdrawal, storage and use of water necessary for hydraulic fracturing of wells or the disposal of water may increase our operating costs or may cause us to delay, curtail or discontinue our exploration and development plans, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Our producing properties are concentrated in two regions, the Appalachian Basin and the Fayetteville Shale, making us vulnerable to risks associated with operating in limited geographic areas.

Our producing properties are geographically concentrated in the Fayetteville Shale in Arkansas and the Appalachian Basin in Pennsylvania and West Virginia. At December 31, 2016, 43% of our total estimated proved reserves were attributable to properties located in the Appalachian Basin and 57% in the Fayetteville Shale. As a result of this concentration in two primary regions, we may be disproportionately exposed to the impact of regional supply and demand factors, delays or interruptions of production from wells in this area caused by governmental regulation, state politics, processing or transportation capacity constraints, market limitations, availability of equipment and personnel, water shortages or interruption of the processing or transportation of natural gas, oil or natural gas liquids.

Competition in the oil and natural gas industry is intense, making it more difficult for us to market natural gas, oil and NGLs, to secure trained personnel and appropriate services, to obtain additional properties and to raise capital.

The cost of our operations is highly dependent on third-party services, and as activity in our industry increases, competition for these services may increase. Similarly, we must have trained, qualified personnel, and as commodity prices rise, competition for this talent also increases. Our ability to acquire and develop reserves in the future will depend on our ability to evaluate and select suitable properties and to consummate transactions in a highly competitive environment for acquiring properties, marketing natural gas, oil and NGLs and securing trained personnel. Also, there is substantial competition for capital available for investment in the oil and gas industry. Certain of our competitors may possess and employ financial, technical and personnel resources greater than ours. Those companies may be able to pay more for personnel, property and services and to attract capital at lower rates. This may become more likely if prices for oil and NGLs recover faster than prices for natural gas, as natural gas comprises a far greater percentage of our overall production than it does for most of the companies with whom we compete for talent.

Volatility in the financial markets or in global economic factors could adversely impact our business and financial condition.

Our business may be negatively impacted by adverse economic conditions or future disruptions in global financial markets. Included among these potential negative impacts are reduced energy demand and lower commodity prices, increased difficulty in collecting amounts owed to us by our customers and reduced access to credit markets. Our ability to access the capital markets may be restricted at a time when we would like, or need, to raise financing. If financing is not available when needed, or is available only on unfavorable terms, we may be unable to implement our business plans or otherwise take advantage of business opportunities or respond to competitive pressures.

We are subject to complex federal, state and local laws and regulations that could adversely affect the cost, manner or feasibility of conducting our operations or expose us to significant liabilities.

Our natural gas and oil exploration and production operations are subject to complex and stringent federal, state and local laws and regulations, including those governing environmental protection, the occupational health and safety aspects of our operations, the discharge of materials into the environment, and the protection of certain plant and animal species. See “Other — Environmental Regulation” in Item 1 of Part I of this Annual Report for a description of the laws and regulations that affect us. In order to conduct operations in compliance with these laws and regulations, we must obtain and maintain numerous permits, approvals and certificates from various federal, state and local governmental authorities. Environmental regulations may restrict the types, quantities and concentration of materials that can be released into the environment in connection with drilling and production activities, limit or prohibit drilling activities on certain lands lying within wilderness, wetlands and other protected areas, and impose substantial liabilities for pollution resulting from our operations. In addition, we may experience delays in obtaining or be unable to obtain required permits, which may delay or interrupt our operations and limit our growth and revenues.

Failure to comply with laws and regulations may trigger a variety of administrative, civil and criminal enforcement measures, including investigatory actions, the assessment of monetary penalties, the imposition of remedial requirements, or

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the issuance of orders or judgments limiting or enjoining future operations. Strict liability or joint and several liability may be imposed under certain laws, which could cause us to become liable for the conduct of others or for consequences of our own actions. Moreover, our costs of compliance with existing laws could be substantial and may increase or unforeseen liabilities could be imposed if existing laws and regulations are revised or reinterpreted, or if new laws and regulations become applicable to our operations. If we are not able to recover the increased costs through insurance or increased revenues, our business, financial condition, results of operations and cash flows could be adversely affected.

Climate change legislation or regulations governing the emissions of “greenhouse gases” could result in increased operating costs and reduce demand for the natural gas, oil and NGLs we produce.

In response to findings that emissions of carbon dioxide, methane and other greenhouse gases present an endangerment to human health and the environment, the EPA has adopted regulations under existing provisions of the federal Clean Air Act that, among other things, establish Prevention of Significant Deterioration, or PSD, construction and Title V operating permit reviews for certain large stationary sources. Facilities required to obtain PSD permits for their greenhouse gas emissions also will be required to meet “best available control technology” standards that will be established on a case-by-case basis. One of our subsidiaries operates compressor stations, which are facilities that are required to adhere to the PSD or Title V permit requirements. EPA rulemakings related to greenhouse gas emissions could adversely affect our operations and restrict or delay our ability to obtain air permits for new or modified sources.

The EPA also has adopted rules requiring the monitoring and reporting of greenhouse gas emissions from specified onshore and offshore natural gas and oil production sources in the United States on an annual basis, which include certain of our operations. More recently, in May 2016, the EPA finalized additional regulations to control methane and volatile organic compound emissions from certain oil and gas equipment and operations.

Although Congress from time to time has considered legislation to reduce emissions of greenhouse gases, there has not been significant activity in the form of adopted legislation to reduce greenhouse gas emissions at the federal level in recent years. In the absence of such federal climate legislation, a number of states, including states in which we operate, have enacted or passed measures to track and reduce emissions of greenhouse gases, primarily through the planned development of greenhouse gas emission inventories and regional greenhouse gas cap-and-trade programs. Most of these cap-and-trade programs require major sources of emissions or major producers of fuels to acquire and surrender emission allowances, with the number of allowances available for purchase reduced each year until the overall greenhouse gas emission reduction goal is achieved. These reductions may cause the cost of allowances to escalate significantly over time.

The adoption and implementation of regulations that require reporting of greenhouse gases or otherwise limit emissions of greenhouse gases from our equipment and operations could require us to incur costs to monitor and report on greenhouse gas emissions or install new equipment to reduce emissions of greenhouse gases associated with our operations. In addition, these regulatory initiatives could drive down demand for our products by stimulating demand for alternative forms of energy that do not rely on combustion of fossil fuels that serve as a major source of greenhouse gas emissions, which could have a material adverse effect on our business, financial condition, results of operations and cash flows. At the same time, new laws and regulations are prompting power producers to shift from coal to natural gas, which is increasing demand.

In December 2015, over 190 countries, including the United States, reached an agreement to reduce global greenhouse gas emissions. The agreement entered into force in November 2016 after more than 70 nations, including the United States, ratified or otherwise indicated their intent to be bound by the agreement. To the extent that the United States and other countries implement this agreement or impose other climate change regulations on the oil and natural gas industry, it could have an adverse effect on our business.

Our proved natural gas, oil and NGL reserves are estimates. Any material inaccuracies in our reserve estimates or underlying assumptions could cause the quantities and net present value of our reserves to be overstated or understated.

As described in more detail under “Critical Accounting Policies and Estimates – Natural Gas and Oil Properties” in Item 7 of Part II of this Annual Report, our reserve data represents the estimates of our reservoir engineers made under the supervision of our management, and our reserve estimates are audited each year by Netherland, Sewell & Associates, Inc., or NSAI, an independent petroleum engineering firm. Reserve engineering is a subjective process of estimating underground accumulations of natural gas, oil and NGLs that cannot be measured in an exact manner. The process of estimating quantities of proved reserves is complex and inherently imprecise, and the reserve data included in this document are only estimates. The process relies on interpretations of available geologic, geophysical, engineering and production data. The extent, quality and reliability of this technical data can vary. The process also requires certain economic assumptions, some of which are mandated by the SEC, such as natural gas, oil and NGL prices. Additional assumptions include drilling and operating expenses, capital investing, taxes and availability of funds. Furthermore, different reserve engineers may make different



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estimates of reserves and cash flows based on the same data.

Results of drilling, testing and production subsequent to the date of an estimate may justify revising the original estimate. Accordingly, initial reserve estimates often vary from the quantities of natural gas, oil and NGLS that are ultimately recovered, and such variances may be material. Any significant variance could reduce the estimated quantities and present value of our reserves.

You should not assume that the present value of future net cash flows from our proved reserves is the current market value of our estimated natural gas, oil and NGL reserves. In accordance with SEC requirements, we base the estimated discounted future net cash flows from our proved reserves on the 12-month average natural gas, oil and NGL index prices, calculated as the unweighted arithmetic average for the first day of the month price for each month and costs in effect on the date of the estimate, holding the prices and costs constant throughout the life of the properties. Actual future prices and costs may differ materially from those used in the net present value estimate, and future net present value estimates using then current prices and costs may be significantly less than the current estimate. In addition, the 10% discount factor we use when calculating discounted future net cash flows for reporting requirements in compliance with the applicable accounting standards may not be the most appropriate discount factor based on interest rates in effect from time to time and risks associated with us or the oil and gas industry in general.

Our commodity price risk management and measurement systems and economic hedging activities might not be effective and could increase the volatility of our results.

We currently seek to hedge the price of a significant portion of our estimated production, through swaps, collars, floors and other derivative instruments. The systems we use to quantify commodity price risk associated with our businesses might not always be followed or might not always be effective. Further, such systems do not in themselves manage risk, particularly risks outside of our control, and adverse changes in energy commodity market prices, volatility, adverse correlation of commodity prices, the liquidity of markets, changes in interest rates and other risks discussed in this report might still adversely affect our earnings, cash flows and balance sheet under applicable accounting rules, even if risks have been identified. Furthermore, no single hedging arrangement can adequately address all risks present in a given contract. For example, a forward contract that would be effective in hedging commodity price volatility risks would not hedge the contract's counterparty credit or performance risk. Therefore, unhedged risks will always continue to exist.

Our use of derivatives, through which we attempt to reduce the economic risk of our participation in commodity markets could result in increased volatility of our reported results. Changes in the fair values (gains and losses) of derivatives that qualify as hedges under GAAP to the extent that such hedges are not fully effective in offsetting

changes to the value of the hedged commodity, as well as changes in the fair value of derivatives that do not qualify or have not been designated as hedges under GAAP, must be recorded in our income. This creates the risk of volatility in earnings even if no economic impact to us has occurred during the applicable period.

The impact of changes in market prices for oil, natural gas and NGLs on the average prices paid or received by us may be reduced based on the level of our hedging activities. These hedging arrangements may limit or enhance our margins if the market prices for oil, natural gas or NGLs were to change substantially from the price established by the hedges. In addition, our hedging arrangements expose us to the risk of financial loss if our production volumes are less than expected.

We may be unable to dispose of assets on attractive terms, and may be required to retain liabilities for certain matters.

Various factors could materially affect our ability to dispose of assets or complete announced dispositions, including the availability of purchasers willing to purchase the assets at prices acceptable to us, particularly in times of reduced and volatile commodity prices. Sellers typically retain certain liabilities for certain matters. The magnitude of any such retained liability or indemnification obligation may be difficult to quantify at the time of the transaction and ultimately may be material. Also, as is typical in divestiture transactions, third parties may be unwilling to release us from guarantees or other credit support provided prior to the sale of the divested assets. As a result, after a sale, we may remain secondarily liable for the obligations guaranteed or supported to the extent that the buyer of the assets fails to perform these obligations.

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The implementation of derivatives legislation could have an adverse effect on our ability to use derivative instruments to reduce the effect of commodity price, interest rate and other risks associated with our business.

The Dodd-Frank Act established federal oversight and regulation of the over-the-counter (“OTC”) derivatives market and entities, including us, which participate in that market. The Dodd-Frank Act requires the CFTC, the SEC, and other regulatory authorities to promulgate rules and regulations implementing the Dodd-Frank Act. Although the CFTC has finalized most of its regulations under the Dodd-Frank Act, it continues to review and refine its initial rulemakings through additional interpretations and supplemental rulemakings. As a result, it is not possible at this time to predict the ultimate effect of the rules and regulations on our business and while most of the regulations have been adopted, any new regulations or modifications to existing regulations may increase the cost of derivative contracts, limit the availability of derivatives to protect against risks that we encounter, reduce our ability to monetize or restructure our existing derivative contracts, and increase our exposure to less creditworthy counterparties. If we reduce our use of derivatives as a result of the Dodd-Frank Act and the regulations thereunder, our results of operations may become more volatile and our cash flows may be less predictable, which could adversely affect our ability to plan for and fund capital investing.

In December 2016, the CFTC re-proposed new rules that would place federal limits on positions in certain core futures and equivalent swaps contracts for or linked to certain physical commodities, subject to exceptions for certain bona fide hedging transactions and finalized a companion rule on aggregation of positions among entities under common ownership or control. If finalized, the position limits rule may have an impact on our ability to hedge our exposure to certain enumerated commodities.

The CFTC has designated certain interest rate swaps and credit default swaps for mandatory clearing and mandatory trading on designated contract markets or swap execution facilities. The CFTC may designate additional classes of swaps as subject to the mandatory clearing requirement in the future, but has not yet proposed rules designating any other classes of swaps, including physical commodity swaps, for mandatory clearing. The CFTC and prudential banking regulators also adopted mandatory margin requirements on uncleared swaps between swap dealers and certain other counterparties. The margin requirements are currently effective with respect to certain market participants and will be phased in over time with respect to other market participants, based on the level of an entity’s swaps activity. We expect to qualify for and rely upon an end-user exception from the mandatory clearing and trade execution requirements for swaps entered to hedge our commercial risks. We also should qualify for an exception from the uncleared swaps margin requirements. However, the application of the mandatory clearing and trade execution requirements and the uncleared swaps margin requirement to other market participants, such as swap dealers, may adversely affect the cost and availability of the swaps that we use for hedging.

Certain U.S. federal income tax deductions currently available with respect to oil and natural gas exploration and production may be eliminated as a result of future legislation.

The elimination of certain key U.S. federal income tax deductions currently available to oil and natural gas exploration and production companies has been proposed in recent years by members of the U.S. Congress and by former President Obama in his fiscal year 2017 budget proposal. These changes have included, among other proposals:

- repeal of the percentage depletion allowance for natural gas and oil properties;
- elimination of current deductions for intangible drilling and development costs;
- elimination of the deduction for certain domestic production activities; and
- extension of the amortization period for certain geological and geophysical expenditures.

It is unclear whether these or similar changes will be enacted. The passage of these or any similar changes in U.S. federal income tax laws to eliminate or postpone certain tax deductions that are currently available with respect to oil and natural gas exploration and development could have an adverse effect on our financial position, results of operations and cash flows.

We may experience adverse or unforeseen tax consequences due to further developments affecting our deferred tax assets that could significantly affect our results.

Deferred tax assets, including net operating loss carryforwards, represent future savings of taxes that would otherwise be paid in cash. At December 31, 2016, the Company had substantial amounts of net operating loss carryforwards for U.S. federal and state income tax purposes. These loss carryforwards will eventually expire if not utilized. In addition, limitations may exist upon use of these carryforwards in the event that a change in control of the Company occurs. A valuation allowance for deferred tax assets, including net operating losses, is recognized when it is more likely than not that some or all of the benefit from the deferred tax asset will not be realized. At December 31, 2016, the Company recorded a valuation allowance

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against its entire deferred tax asset, including the portion related to the remaining net operating loss carryforwards. This allowance was recorded primarily as a result of cumulative book losses experienced over the three-year period ending December 31, 2016. If we experience additional book losses, we may be required to increase our valuation allowance against our deferred tax assets.

Our existing deferred tax asset valuation allowance may also be reversed if significant events occur or market conditions change materially, and our current or future earnings are, or are projected to be, significantly higher than we currently estimate. This reversal may result in a significant one-time favorable impact positively affecting our consolidated results of operations for the period of reversal and for the full fiscal year results.

A cyber incident could result in information theft, data corruption, operational disruption and/or financial loss.

Our business has become increasingly dependent on digital technologies to conduct day-to-day operations including certain exploration, development and production activities. We depend on digital technology, including information systems and related infrastructure as well as cloud applications and services, to process and record financial and operating data, analyze seismic and drilling information, conduct reservoir modeling and reserves estimation, communicate with employees and business associates, perform compliance reporting and in many other activities related to our business. Our business associates, including vendors, service providers, purchasers of our production, and financial institutions are also dependent on digital technology.

As dependence on digital technologies has increased, cyber incidents, including deliberate attacks or unintentional events, have also increased. Our technologies, systems, networks, and those of our business associates may become the target of cyber-attacks or information security breaches, which could lead to disruptions in critical systems, unauthorized release of confidential or protected information, corruption of data or other disruptions of our business operations. In addition, certain cyber incidents, such as surveillance, may remain undetected for an extended period.

A cyber-attack involving our information systems and related infrastructure, or that of our business associates, could disrupt our business and negatively impact our operations in a variety of ways, including:

- unauthorized access to seismic data, reserves information, strategic information or other sensitive or proprietary information could have a negative impact on our ability to compete for natural gas and oil resources;
- unauthorized access to personal identifying information of royalty owners, employees and vendors, which could expose us to allegations that we did not sufficiently protect that information;
- data corruption or operational disruption of production infrastructure could result in loss of production, or accidental discharge;

- a cyber-attack on a vendor or service provider could result in supply chain disruptions which could delay or halt our major development projects; and
- a cyber-attack on a third party gathering, pipeline or rail service provider could delay or prevent us from marketing our production, resulting in a loss of revenues.

These events could damage our reputation and lead to financial losses from remedial actions, loss of business or potential liability, which could have a material adverse effect on our financial condition, results of operations or cash flows.

To date we have not experienced any material losses relating to cyber-attacks; however, there can be no assurance that we will not suffer such losses in the future. As cyber threats continue to evolve, we may be required to expend significant additional resources to continue to modify or enhance our protective measures or to investigate and remediate any information security vulnerabilities.

Negative public perception regarding us and/or our industry could have an adverse effect on our operations.

Negative public perception regarding us and/or our industry resulting from, among other things, concerns raised by advocacy groups about hydraulic fracturing, seismicity, oil spills and explosions of natural gas transmission lines, may lead to regulatory scrutiny, which may, in turn, lead to new state and federal safety and environmental laws, regulations, guidelines and enforcement interpretations. These actions may cause operational delays or restrictions, increased operating costs, additional regulatory burdens and increased risk of litigation. Moreover, governmental authorities exercise considerable discretion in the timing and scope of permit issuance and the public may engage in the permitting process, including through intervention in the courts. Negative public perception could cause the permits we need to conduct our operations to be withheld, delayed, or burdened by requirements that restrict our ability to profitably conduct our business.

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Common stockholders will be diluted if additional shares are issued.

In July 2016, we consummated an underwritten offering of 98.9 million shares of our common stock pursuant to an effective registration statement filed with the Securities and Exchange Commission, with net proceeds of the offering totaling approximately \$1,247 million after underwriting discounts and offering expenses. The proceeds from the offering were used to repay \$375 million of the \$750 million term loan entered into in November 2015 and to settle certain tender offers by purchasing an aggregate principal amount of approximately \$700 million of our outstanding senior notes due in the first quarter of 2018. The remaining net proceeds of the offering have been and will be used for general corporate purposes, including the completion of wells already drilled or the funding of other capital projects.

In January 2015, we issued 30.0 million shares of common stock and 34.5 million depositary shares representing the 1/20th interest in our 6.25% Series B Mandatory Preferred Stock, which will convert into a minimum of approximately 64 million or a maximum of 75 million shares of common stock by January 2018, to refinance a portion of the debt we incurred to purchase acreage in West Virginia and southwest Pennsylvania. Dividends on our 6.25% Series B Mandatory Preferred Stock are payable quarterly until they convert to common stock in January 2018, which dividends we may pay in cash or shares of our common stock. During 2016, we issued approximately 6.9 million shares of our common stock to satisfy our dividend obligations, and we may continue to issue common stock in satisfaction of our dividend obligation in 2017. We also issue restricted stock, options and performance share units to our employees and directors as part of their compensation. In addition, we may issue additional shares of common stock, additional notes or other securities or debt convertible into common stock, to extend maturities or fund capital expenditures. If we issue additional shares of our common stock in the future, it may have a dilutive effect on our current outstanding stockholders.

Anti-takeover provisions in our organizational documents and under Delaware law may impede or discourage a takeover, which could cause the market price of our common stock to decline.

We are a Delaware corporation, and the anti-takeover provisions of Delaware law impose various impediments to the ability of a third party to acquire control of us, even if a change in control would be beneficial to our existing stockholders, which, under certain circumstances, could reduce the market price of our common stock. In addition, protective provisions in our Amended and Restated Certificate of Incorporation and Amended and Restated Bylaws or the implementation by our board of directors of a stockholder rights plan that could deter a takeover.

ITEM 1B. UNRESOLVED STAFF COMMENTS.

None.

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## ITEM 2. PROPERTIES

The summary of our oil and natural gas reserves as of fiscal year-end 2016 based on average fiscal-year prices, as required by Item 1202 of Regulation S-K, is included in the table headed “2016 Proved Reserves by Category and Summary Operating Data” in “Business – Exploration and Production – Our Proved Reserves” in Item 1 of this Annual Report and incorporated by reference into this Item 2.

The information regarding our proved undeveloped reserves required by Item 1203 of Regulation S-K is included under the heading “Proved Undeveloped Reserves” in “Business – Exploration and Production – Our Proved Reserves” in Item 1 of this Annual Report.

The information regarding delivery commitments required by Item 1207 of Regulation S-K is included under the heading “Sales, Delivery Commitments and Customers” in the “Business – Exploration and Production – Our Operations” in Item 1 of this Annual Report and incorporated by reference into this Item 2. For additional information about our natural gas and oil operations, we refer you to “Supplemental Oil and Gas Disclosures” in Item 8 of Part II of this Annual Report. For information concerning capital investments, we refer you to “Management’s Discussion and Analysis of Financial Condition and Results of Operations — Liquidity and Capital Resources — Capital Investments.” We also refer you to Item 6, “Selected Financial Data” in Part II of this Annual Report for information concerning natural gas, oil and NGLs produced.

The information regarding natural gas and oil properties, wells, operations and acreage required by Item 1208 of Regulation S-K is set forth below:

Leasehold acreage as of December 31, 2016

	Undeveloped		Developed		Total	
	Gross	Net	Gross	Net	Gross	Net
Appalachia:						
Northeast (1)	152,019	146,096	104,888	99,709	256,907	245,805
Southwest (2)	362,573	161,607	264,948	159,956	627,521	321,563

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Fayetteville Shale (3)	368,305	285,692	985,459	632,843	1,353,764	918,535
Other:						
US – Brown Dense (4)	190,638	142,184	4,903	4,493	195,541	146,677
US – Sand Wash Basin (5)	172,430	119,958	11,181	7,985	183,611	127,943
US – Other (6)	606,241	230,247	–	–	606,241	230,247
Canada – New Brunswick (7)	2,518,519	2,518,519	–	–	2,518,519	2,518,519
	4,370,725	3,604,303	1,371,379	904,986	5,742,104	4,509,289

- (1) Assuming successful wells are not drilled to develop the acreage and leases are not extended in Northeast Appalachia, leasehold expiring over the next three years will be 63,900 net acres in 2017, 16,066 net acres in 2018 and 11,413 net acres in 2019.
- (2) Assuming successful wells are not drilled to develop the acreage and leases are not extended in Southwest Appalachia, leasehold expiring over the next three years will be 39,429 net acres in 2017, 12,267 net acres in 2018 and 10,824 net acres in 2019. Of this acreage, 21,760 net acres in 2017, 3,767 net acres in 2018 and 8,150 net acres in 2019 can be extended for an average of 4.8 years.
- (3) Assuming successful wells are not drilled to develop the acreage and leases are not extended in the Fayetteville Shale, leasehold expiring over the next three years will be 453 net acres in 2017, 60 net acres in 2018 and 432 net acres in 2019 (excluding 158,231 net acres held on federal lands which are currently suspended by the Bureau of Land Management).
- (4) Assuming successful wells are not drilled to develop the acreage and leases are not extended in the Lower Smackover Brown Dense, leasehold expiring over the next three years will be 50,778 net acres in 2017, 83,021 net acres in 2018 and 5,793 net acres in 2019.
- (5) Assuming successful wells are not drilled to develop the acreage and leases are not extended in the Sand Wash Basin, leasehold expiring over the next three years will be 36,527 net acres in 2017, 51,260 net acres in 2018 and 12,810 net acres in 2019.
- (6) Assuming successful wells are not drilled to develop the acreage and leases are not extended, leasehold expiring over the next three years will be 68,556 net acres in 2017, 21,982 net acres in 2018 and 103,172 net acres in 2019.
- (7) Assuming successful wells are not drilled to develop the acreage and our exploration license agreements are not extended, the full acreage of 2,518,519 will expire in March 2021.

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Producing wells as of December 31, 2016

	Natural Gas		Oil		Total		Gross Wells Operated
	Gross	Net	Gross	Net	Gross	Net	
Appalachia:							
Northeast	506	446	–	–	506	446	453
Southwest	324	228	–	–	324	228	303
Fayetteville Shale	4,705	3,242	–	–	4,705	3,242	4,039
Other	11	8	14	14	25	22	25
	5,546	3,924	14	14	5,560	3,938	4,820

The information regarding drilling and other exploratory and development activities required by Item 1205 of Regulation S-K is set forth below:

Year	Exploratory Productive Wells		Dry Wells		Total	
	Gross	Net	Gross	Net	Gross	Net
2016						
Appalachia:						
Northeast	1.0	1.0	–	–	1.0	1.0
Southwest	–	–	–	–	–	–
Fayetteville Shale	–	–	–	–	–	–
Other	–	–	–	–	–	–
Total	1.0	1.0	–	–	1.0	1.0
2015						
Appalachia:						
Northeast	1.0	1.0	–	–	1.0	1.0
Southwest	–	–	–	–	–	–
Fayetteville Shale	–	–	–	–	–	–
Other	2.0	2.0	–	–	2.0	2.0
Total	3.0	3.0	–	–	3.0	3.0
2014						
Appalachia:						

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Northeast	3.0	2.9	–	–	3.0	2.9
Southwest	–	–	–	–	–	–
Fayetteville Shale	–	–	–	–	–	–
Other	9.0	9.0	–	–	9.0	9.0
Total	12.0	11.9	–	–	12.0	11.9

Year	Development					
	Productive		Dry Wells		Total	
	Gross	Net	Gross	Net	Gross	Net
2016						
Appalachia:						
Northeast	23.0	22.9	–	–	23.0	22.9
Southwest	18.0	13.4	–	–	18.0	13.4
Fayetteville Shale	43.0	35.2	–	–	43.0	35.2
Other	–	–	–	–	–	–
Total	84.0	71.5	–	–	84.0	71.5
2015						
Appalachia:						
Northeast	99.0	98.5	–	–	99.0	98.5
Southwest	63.0	36.6	–	–	63.0	36.6
Fayetteville Shale	265.0	209.4	–	–	265.0	209.4
Other	–	–	–	–	–	–
Total	427.0	344.5	–	–	427.0	344.5
2014						
Appalachia:						
Northeast	104.0	88.2	–	–	104.0	88.2
Southwest	–	–	–	–	–	–
Fayetteville Shale	468.0	377.9	–	–	468.0	377.9
Other	–	–	–	–	–	–
Total	572.0	466.1	–	–	572.0	466.1

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The following table presents the information regarding our present activities required by Item 1206 of Regulation S-K:

Wells in progress as of December 31, 2016

	Gross	Net
Drilling:		
Appalachia:		
Northeast	57.0	56.4
Southwest	20.0	14.9
Fayetteville Shale	17.0	16.6
Other	—	—
Total	94.0	87.9
Completing:		
Appalachia:		
Northeast	16.0	15.9
Southwest	22.0	16.9
Fayetteville Shale	3.0	2.9
Other	—	—
Total	41.0	(1) 35.7
Drilling & Completing:		
Appalachia:		
Northeast	73.0	72.3
Southwest	42.0	31.8
Fayetteville Shale	20.0	19.5
Other	—	—
Total	135.0	123.6

(1) Includes 35 gross wells that are waiting on pipeline or production facilities.

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The information regarding oil and gas production, production prices and production costs required by Item 1204 of Regulation S-K is set forth below:

## Production, Average Sales Price and Average Production Cost

	For the years ended December 31,		
	2016	2015	2014
Natural Gas			
Production (Bcf):			
Northeast Appalachia	350	360	254
Southwest Appalachia	62	67	2
Fayetteville Shale	375	465	494
Other	1	7	16
Total	788	899	766
Average realized gas price per Mcf, excluding derivatives:			
Northeast Appalachia	\$ 1.34	\$ 1.62	\$ 3.48
Southwest Appalachia	1.71	1.92	3.61
Fayetteville Shale	1.80	2.12	3.86
Total	\$ 1.59	\$ 1.91	\$ 3.74
Average realized gas price per Mcf, including derivatives	\$ 1.64	\$ 2.37	\$ 3.72
Oil			
Production (MBbls):			
Southwest Appalachia	2,041	2,036	45
Other	151	229	190
Total	2,192	2,265	235
Average realized oil price per Bbl:			
Southwest Appalachia	\$ 30.59	\$ 31.80	\$ 41.28
Other	39.44	46.21	89.04
Total	\$ 31.20	\$ 33.25	\$ 79.91
NGL			
Production (MBbls):			
Southwest Appalachia	12,317	10,640	182
Other	55	62	49
Total	12,372	10,702	231

## Average realized NGL price per Bbl:

Southwest Appalachia	\$ 7.41	\$ 6.76	\$ 10.44
Other	17.33	14.51	35.22
Total	\$ 7.46	\$ 6.80	\$ 15.72

## Total Production (Bcfe)

Northeast Appalachia	350	360	254
Southwest Appalachia	148	143	3
Fayetteville Shale	375	465	494
Other	2	8	17
Total	875	976	768

## Average Production Cost

Cost per Mcfe, excluding ad valorem and severance taxes:

Northeast Appalachia	\$ 0.76	\$ 0.71	\$ 0.83
Southwest Appalachia	1.05	1.39	1.17
Fayetteville Shale	0.89	0.91	0.92
Total	\$ 0.87	\$ 0.92	\$ 0.91

During 2016, we were required to file Form 23, "Annual Survey of Domestic Oil and Gas Reserves," with the U.S. Department of Energy. The basis for reporting reserves on Form 23 is not comparable to the reserve data included in "Supplemental Oil and Gas Disclosures" in Item 8 of Part II of this Annual Report. The primary differences are that Form 23 reports gross reserves, including the royalty owners' share, and includes reserves for only those properties of which we are the operator.

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Miles of Pipe

As of December 31, 2016, our Midstream Services segment had 2,045 miles and 16 miles of pipe in its gathering systems located in Arkansas and Louisiana, respectively.

Title to Properties

We believe that we have satisfactory title to substantially all of our active properties in accordance with standards generally accepted in the oil and natural gas industry. Our properties are subject to customary royalty and overriding royalty interests, certain contracts relating to the exploration, development, operation and marketing of production from such properties, consents to assignment and preferential purchase rights, liens for current taxes, applicable laws and other burdens, encumbrances and irregularities in title, which we believe do not materially interfere with the use of or affect the value of such properties. Substantially all our Fayetteville Shale properties are subject to liens securing our 2016 credit facility. Prior to acquiring undeveloped properties, we endeavor to perform a title investigation that is thorough but less vigorous than that we endeavor to conduct prior to drilling, which is consistent with standard practice in the oil and natural gas industry. Generally, before we commence drilling operations on properties that we operate, we conduct a title examination and perform curative work with respect to significant defects that we identify. We believe that we have performed title examination with respect to substantially all of our active properties that we operate.

ITEM 3. LEGAL PROCEEDINGS

We are subject to litigation, claims and proceedings that arise in the ordinary course of business, such as for alleged breaches of contract, miscalculation of royalties and pollution, contamination or nuisance. Management believes that such litigation, claims and proceedings, individually or in aggregate and after taking into account insurance, are not likely to have a material adverse impact on our financial position, results of operations or cash flows. Many of these matters are in early stages, so the allegations and the damage theories have not been fully developed, and are all subject to inherent uncertainties; therefore, management's view may change in the future. If an unfavorable final outcome were to occur, there exists the possibility of a material impact on our financial position, results of operations or cash flows for the period in which the effect becomes reasonably estimable. We accrue for such items when a liability is both probable and the amount can be reasonably estimated.



Berry-Helfand (Tovah Energy)

In February 2009, one of our subsidiaries was added as a defendant in a case then styled Tovah Energy, LLC and Toby Berry-Helfand v. David Michael Grimes, et al., then pending in the 273rd District Court in Shelby County, Texas. The plaintiff alleged that the subsidiary used information provided by the plaintiff under a confidentiality agreement, which she claimed, among other things, breached the agreement and constituted a trade secret. Following a trial in December 2010, the court awarded approximately \$11 million in actual damages and approximately \$24 million in disgorgement of profits, along with interest and attorneys' fees. Both sides appealed, and in July 2013 the Texas Court of Appeals for the Twelfth District reversed on all claims except misappropriation of trade secrets, reduced the judgment to the actual damages award, along with interest and attorneys' fees, and ordered the case remanded for an award of attorneys' fees to our subsidiary on one of the claims on which judgment was reversed. Both parties petitioned the Supreme Court of Texas for review. In June 2016, the Supreme Court ruled that insufficient evidence supported the damage award and remanded the case for a new trial. The parties subsequently reached a settlement, the amount of which is reflected in our financial statements as of, and for the period ended, December 31, 2016.

We are also subject to laws and regulations relating to the protection of the environment. Environmental and cleanup related costs of a non-capital nature are accrued when it is both probable that a liability has been incurred and when the amount can be reasonably estimated. Management believes any future remediation or other compliance related costs will not have a material effect on our financial position or results of operations.

See "Litigation" in Note 8, "Commitments and Contingencies" in the consolidated financial statements for further details on our current legal proceedings.

#### ITEM 4. MINE SAFETY DISCLOSURES

Our sand mining operations in support of our E&P business are subject to regulation by the Federal Mine Safety and Health Administration under the Federal Mine Safety and Health Act of 1977. Information concerning mine safety violations

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or other regulatory matters required by section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act and Item 104 of Regulation S-K is included in Exhibit 95.1 to this Annual Report.

## PART II

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

Our common stock is traded on the New York Stock Exchange (the "NYSE") under the symbol "SWN." On February 21, 2017, the closing price of our common stock trading under the symbol "SWN" was \$8.59 and we had 3,283 stockholders of record. The following table presents, for each of the periods indicated, the high and low reported sales prices for our common stock trading under the symbol "SWN" as reported on the NYSE:

Quarter Ended	Range of Market Prices					
	2016		2015		2014	
	High	Low	High	Low	High	Low
March 31	\$ 9.90	\$ 5.30	\$ 28.02	\$ 21.46	\$ 46.90	\$ 37.25
June 30	\$ 15.45	\$ 7.55	\$ 29.61	\$ 22.40	\$ 49.16	\$ 44.01
September 30	\$ 15.59	\$ 11.42	\$ 22.84	\$ 11.84	\$ 45.52	\$ 34.82
December 31	\$ 14.40	\$ 9.14	\$ 13.90	\$ 5.00	\$ 37.26	\$ 26.75

We do not currently pay dividends on our common stock.

## Issuer Purchases of Equity Securities

The table below sets forth information with respect to purchases of our common stock made by us or on our behalf during the quarter ended December 31, 2016:

Period	Total Number of Shares Purchased	Average Price	Total Number of Shares Purchased as Part of Publicly	Maximum Dollar Value of Shares that May Yet Be
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	(1)	Paid per Share	Announced Plans or Programs	Purchased Under the Plans or Programs
October 2016	–	\$ –	n/a	n/a
November 2016	–	\$ –	n/a	n/a
December 2016	265,058	\$ 11.71	n/a	n/a
Total fourth-quarter 2016:	265,058	\$ 11.71	n/a	n/a

(1) Reflects shares retired by us to satisfy applicable tax withholding obligations due on employee stock plan share issuances. All changes in common stock in treasury in 2016 were due to purchases and sales of shares held on behalf of participants in a non-qualified deferred compensation supplemental retirement savings plan.

Recent Sales of Unregistered Equity Securities

We did not sell any unregistered equity securities during 2016, 2015 or 2014. See [Item 12, “Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.”](#) in Part III of this Annual Report for information regarding our equity compensation plans as of December 31, 2016.

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## STOCK PERFORMANCE GRAPH

The following graph compares, for the last five years, the performance of our common stock to the S&P 500 Index and our peer group. Our peer group consists of Anadarko Petroleum Corporation, Apache Corporation, Cabot Oil & Gas Corporation, Chesapeake Energy Corporation, Cimarex Energy Co., Concho Resources Inc., Continental Resources Inc., Denbury Resources Inc., Devon Energy Corporation, EOG Resources, Inc., EQT Corporation, Newfield Exploration Company, Noble Energy, Inc., Pioneer Natural Resources Co., QEP Resources, Inc., Range Resources Corporation, Sandridge Energy, Inc., SM Energy Company, Ultra Petroleum Corp., Whiting Petroleum Corporation and WPX Energy, Inc. The chart assumes that the value of the investment in our common stock and each index was \$100 at December 31, 2011, and that all dividends were reinvested. The stock performance shown on the graph below is not indicative of future price performance:

	12/31/11	12/31/12	12/31/13	12/31/14	12/31/15	12/31/16
Southwestern Energy Company	\$ 100	\$ 105	\$ 123	\$ 85	\$ 22	\$ 34
S&P 500 Index	100	116	154	175	177	198
Peer Group	100	98	130	110	73	106



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## ITEM 6. SELECTED FINANCIAL DATA

The following table sets forth a summary of selected historical financial information for each of the years in the five-year period ended December 31, 2016. This information and the notes thereto are derived from our consolidated financial statements. We refer you to “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Financial Statements and Supplementary Data.”

	2016	2015	2014	2013	2012
	(in millions except shares, per share, stockholder data and percentages)				
Financial Review					
Operating revenues:					
Exploration and production	\$ 1,413	\$ 2,074	\$ 2,862	\$ 2,404	\$ 1,964
Midstream services	2,569	3,119	4,358	3,347	2,363
Other	–	–	–	–	3
Intersegment revenues	(1,546)	(2,060)	(3,182)	(2,380)	(1,600)
	2,436	3,133	4,038	3,371	2,730
Operating costs and expenses:					
Marketing purchases – midstream services	864	852	980	782	592
Operating and general and administrative expenses	839	935	648	519	420
Restructuring charges	78	–	–	–	–
Depreciation, depletion and amortization	436	1,091	942	787	811
Impairment of natural gas and oil properties	2,321	6,950	–	–	1,940
Gain on sale of assets, net	–	(283)	–	–	–
Taxes, other than income taxes	93	110	95	79	68
	4,631	9,655	2,665	2,167	3,831
Operating income (loss)	(2,195)	(6,522)	1,373	1,204	(1,101)
Interest expense, net	88	56	59	42	35
Gain (loss) on derivatives	(339)	47	139	26	(15)
Loss on early extinguishment of debt	(51)	–	–	–	–
Other income (loss), net	1	(30)	(4)	2	1
Income (loss) before income taxes	(2,672)	(6,561)	1,449	1,190	(1,150)
Provision (benefit) for income taxes:					

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Current	(7)	(2)	21	(11)	19
Deferred	(22)	(2,003)	504	497	(462)
	(29)	(2,005)	525	486	(443)
Net income (loss)	(2,643)	(4,556)	924	704	(707)
Mandatory convertible preferred stock dividend	108	106	–	–	–
Net income (loss) attributable to common stock	\$ (2,751)	\$ (4,662)	\$ 924	\$ 704	\$ (707)
Net cash provided by operating activities	\$ 498	\$ 1,580	\$ 2,335	\$ 1,909	\$ 1,654
Net cash used in investing activities	\$ (162)	\$ (1,638)	\$ (7,288)	\$ (2,216)	\$ (1,907)
Net cash provided by financing activities	\$ 1,072	\$ 20	\$ 4,983	\$ 277	\$ 291
Common Stock Statistics					
Earnings per share:					
Net income (loss) attributable to common stockholders – Basic	\$ (6.32)	\$ (12.25)	\$ 2.63	\$ 2.01	\$ (2.03)
Net income (loss) attributable to common stockholders – Diluted	\$ (6.32)	\$ (12.25)	\$ 2.62	\$ 2.00	\$ (2.03)
Book value per average diluted share	\$ 2.11	\$ 6.00	\$ 13.23	\$ 10.32	\$ 8.71
Market price at year-end	\$ 10.82	\$ 7.11	\$ 27.29	\$ 39.33	\$ 33.41
Number of stockholders of record at year-end	3,292	3,415	3,271	3,259	3,122
Average diluted shares outstanding	435,337,402	380,521,039	352,410,683	351,101,452	348,610,503

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	2016	2015	2014	2013	2012
Capitalization (in millions)					
Total debt	\$ 4,653	\$ 4,705	\$ 6,957	\$ 1,940	\$ 1,657
Total equity	917	2,282	4,662	3,622	3,036
Total capitalization	\$ 5,570	\$ 6,987	\$ 11,619	\$ 5,562	\$ 4,693
Total assets	\$ 7,076	\$ 8,086	\$ 14,915	\$ 8,037	\$ 6,726
Capitalization ratios:					
Debt	84%	67%	60%	35%	35%
Equity	16%	33%	40%	65%	65%
Capital Investments (in millions) (1)					
Exploration and production	623	2,258	7,254	2,052	1,861
Midstream services	21	167	144	158	165
Other	4	12	49	25	55
	\$ 648	\$ 2,437	\$ 7,447	\$ 2,235	\$ 2,081
Exploration and Production					
Natural gas:					
Production, Bcf	788	899	766	656	565
Average realized price per Mcf, including derivatives	\$ 1.64	\$ 2.37	\$ 3.72	\$ 3.65	\$ 3.44
Average realized price per Mcf, excluding derivatives	\$ 1.59	\$ 1.91	\$ 3.74	\$ 3.17	\$ 2.34
Oil:					
Production, MBbls	2,192	2,265	235	138	83
Average realized price per barrel	\$ 31.20	\$ 33.25	\$ 79.91	\$ 103.32	\$ 101.54
NGL:					
Production, MBbls	12,372	10,702	231	50	—
Average realized price per barrel	\$ 7.46	\$ 6.80	\$ 15.72	\$ 43.63	\$ —
Total production, Bcfe	875	976	768	657	565
Lease operating expenses per Mcfe	\$ 0.87	\$ 0.92	\$ 0.91	\$ 0.86	\$ 0.80
General and administrative expenses per Mcfe (2)	\$ 0.22	\$ 0.21	\$ 0.24	\$ 0.24	\$ 0.26
Taxes, other than income taxes per Mcfe (3)	\$ 0.10	\$ 0.10	\$ 0.11	\$ 0.10	\$ 0.10
Proved reserves at year-end:					
Natural gas, Bcf	4,866	5,917	9,809	6,974	4,017
Oil, MMBbls	10.5	8.8	37.6	0.4	0.2
NGLs, MMBbls	53.9	40.9	118.7	—	—
Total reserves, Bcfe	5,253	6,215	10,747	6,976	4,018
Midstream Services					



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Volumes marketed, Bcfe	1,062	1,127	904	786	676
Volumes gathered, Bcf	601	799	963	900	846

- (1) Capital investments include an increase of \$43 million for 2016, a decrease of \$33 million for 2015, an increase of \$155 million for 2014, and decreases of \$25 million and \$37 million for 2013 and 2012, respectively, related to the change in accrued expenditures between years.
- (2) Excludes \$83 million of restructuring and other one-time charges for 2016.
- (3) Excludes \$3 million of restructuring charges for 2016.

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

Management's Discussion and Analysis is the Company's analysis of its financial performance and of significant trends that may affect future performance. It should be read in conjunction with the financial statements and notes, and supplemental oil and gas disclosures included elsewhere in this report. It contains forward-looking statements including, without limitation, statements relating to the Company's plans, strategies, objectives, expectations and intentions that are made pursuant to the "safe harbor" provisions of the Private Securities Litigation Reform Act of 1995.

The words "anticipate," "intend," "plan," "project," "estimate," "continue," "potential," "should," "could," "may," "will," "ob," "guidance," "outlook," "effort," "expect," "believe," "predict," "budget," "projection," "goal," "forecast," "target" or similar words are used in the report to identify forward-looking statements. The Company does not undertake to update, revise or correct any of the forward-looking information unless required to do so under the federal securities laws. Readers are cautioned that such forward-looking statements should be read in conjunction with the Company's disclosures under the heading: "Cautionary Statement about Forward-Looking Statements."

OVERVIEW

Background

Southwestern Energy Company (including its subsidiaries, collectively, "we", "our", "us" or "Southwestern") is an independent energy company engaged in natural gas, oil and NGL exploration, development and production, which we refer to as "E&P." We are also focused on creating and capturing additional value through our natural gas gathering and marketing businesses, which we refer to as "Midstream Services." We conduct most of our businesses through subsidiaries and we operate principally in two segments: E&P and Midstream Services. Currently we operate only in the United States.

Exploration and Production. Our primary business is the exploration for and production of natural gas, oil and NGLs, with our current operations principally focused on the development of unconventional natural gas reservoirs located in Pennsylvania, West Virginia and Arkansas. Our operations in northeast Pennsylvania, which we refer to as "Northeast Appalachia," are primarily focused on the unconventional natural gas reservoir known as the Marcellus Shale. Our operations in West Virginia and southwest Pennsylvania, which we refer to as "Southwest Appalachia," are focused on the Marcellus Shale, the Utica and the Upper Devonian unconventional natural gas and oil reservoirs. Collectively, we refer to our properties located in Pennsylvania and West Virginia as the "Appalachian Basin." Our operations in Arkansas are primarily focused on an unconventional natural gas reservoir known as the Fayetteville Shale. We have smaller holdings in Colorado and Louisiana, along with other areas in which we are testing potential new

resources. We also have drilling rigs located in Pennsylvania, West Virginia and Arkansas and provide oilfield products and services, principally serving our E&P operations.

Midstream Services. Through our affiliated midstream subsidiaries, we engage in natural gas gathering activities in Arkansas and Louisiana. These activities primarily support our E&P operations and generate revenue from fees associated with the gathering of natural gas. Our marketing activities capture opportunities that arise through the marketing and transportation of natural gas, oil, and NGLs produced in our E&P operations.

We are focused on providing long-term growth in the net asset value per share of our business. Historically, the vast majority of our operating income and cash flow has been derived from the production associated with our E&P business. However, beginning in 2015 and continuing through 2016, depressed commodity prices significantly decreased our E&P results of operations. The price we expect to receive for our production is a critical factor in the capital investments we make to develop our properties. The current commodity price environment has resulted in the impairment of a significant portion of our natural gas and oil properties over recent reporting periods. Commodity prices fluctuate due to a variety of factors we cannot control or predict. These factors, which include increased supplies of natural gas, oil or NGLs due to greater exploration and development activities, weather conditions, political and economic events, and competition from other energy sources, impact supply and demand, which in turn determines the sales prices for our production. In addition to the factors identified above, the prices we realize for our production are affected by our hedging activities as well as locational differences in market prices, including basis differentials. Our 2016 results also reflect reduced costs of third-party services we were able to negotiate during the downturn in the industry. As industry activity increases, demand for these services also increases, and these service providers are likely to seek higher prices than we were able to obtain in 2016.

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Beginning in the fourth quarter of 2015, we decreased activity in the Appalachian Basin and the Fayetteville Shale as a result of the lower commodity price environment. During the first half of 2016, we took steps to refocus the Company through a 40% reduction in our workforce, executive management restructuring and a commitment to strengthen our balance sheet by addressing potential near-term liquidity challenges, as we waited for commodity prices to recover. With the successful implementation of our debt reduction strategy, along with improving forward pricing, we began increasing our activity in the third quarter of 2016, and expect to continue these operations in 2017. During the second half of 2016, we increased our hedging activity designed to assure certain desired levels of cash flow.

Recent Financial and Operating Results

In 2016, our net loss attributable to common stock was \$2,751 million, or (\$6.32) per diluted share, a decrease from a net loss of \$4,662 million, or (\$12.25) per diluted share, in 2015. Our net income was \$924 million, or \$2.62 per diluted share, in 2014. We incurred non-cash impairments of our natural gas and oil properties totaling \$2,321 million, or \$1,444 million net of taxes, in 2016 and \$6,950 million, or \$4,287 million net of taxes, in 2015, which resulted primarily from the significant decline in natural gas prices.

In 2016, our natural gas and liquids production totaled 875 Bcfe, a decrease of 10% from 976 Bcfe in 2015. The 101 Bcfe decrease in our 2016 production resulted from a 96 Bcfe decrease in net production from our Fayetteville Shale and other properties and a 10 Bcf decrease in net production from our Northeast Appalachia properties, partially offset by a 5 Bcfe increase in net production from our Southwest Appalachia properties. The reductions resulted primarily from the suspension of drilling activities in the first half of 2016. Our 2015 total natural gas and liquids production of 976 Bcfe increased 27% from 768 Bcfe in 2014. The 208 Bcfe increase in our 2015 production resulted from a 140 Bcfe increase in net production from our Southwest Appalachia properties, a 106 Bcf increase in net production from our Northeast Appalachia properties and was partially offset by a 38 Bcfe decrease in net production from our Fayetteville Shale and other properties.

Our year-end reserves decreased 15% in 2016 to 5,253 Bcfe from 6,215 Bcfe at the end of 2015 and 10,747 Bcfe at the end of 2014. The overall decrease in total estimated proved reserves in 2016 was primarily due to production and downward price revisions associated with decreased commodity prices, partially offset by upward performance revisions in Northeast and Southwest Appalachia and the Fayetteville Shale. The overall decrease in total estimated proved reserves in 2015 was primarily due to downward revisions associated with decreased commodity prices, partially offset by upward performance revisions in Northeast and Southwest Appalachia.

Our E&P segment operating loss was \$2,404 million in 2016, a decrease from an operating loss of \$7,104 million in 2015. The operating loss in 2016 included non-cash impairments of natural gas and oil properties totaling \$2,321 million. Excluding the non-cash impairments, our E&P segment operating loss decreased to \$83 million in 2016 from \$154 million in 2015 as the \$732 million decrease in operating costs and expenses and \$19 million increase in NGL revenues was only partially offset by a 31%, or \$0.73 per Mcf, decrease in our average realized natural gas price, a 12%, or 111 Bcf, decrease in natural gas production and a \$7 million decrease in oil revenues. Our E&P segment operating loss was \$7,104 million in 2015, a decrease from operating income of \$1,013 million in 2014. Excluding the non-cash impairments, operating income in 2015 decreased \$1,167 million over 2014 as the revenue impact of our 27%, or 208 Bcfe, increase in production was more than offset by a 36%, or \$1.35, decrease in our average realized natural gas price and a \$379 million increase in operating costs and expenses that resulted from our production growth. In May 2015, we sold our conventional oil and gas assets located in East Texas and the Arkoma Basin that accounted for \$27 million in operating income for the year ended December 31, 2014.

Operating income for our Midstream Services segment was \$209 million in 2016, a decrease from \$583 million in 2015 and \$361 million in 2014. Operating income in 2015 includes a \$277 million net gain related to the sale of our northeast Pennsylvania and East Texas gathering assets. Excluding the gain on sales, our Midstream Services segment operating income decreased \$97 million primarily due to decreased volumes gathered and decreased marketing margin, partially offset by a \$32 million decrease in operating costs and expenses, exclusive of marketing purchase costs. Volumes gathered decreased to 601 Bcf in 2016, compared to 799 Bcf in 2015. Excluding the gain on sales, operating income for our Midstream Services segment decreased in 2015 primarily due to a \$71 million decrease in gathering revenues, which resulted from decreased volumes gathered, partially offset by a \$13 million decrease in operating costs and expenses, exclusive of marketing purchase costs. Volumes gathered decreased to 799 Bcf in 2015, compared to 963 Bcf in 2014. In the second quarter of 2015, we sold our northeastern Pennsylvania and East Texas gathering assets that accounted for \$13 million and \$35 million in operating income for the years ended December 31, 2015 and 2014, respectively. A net gain of \$277 million was recognized and is included in gain on sale of assets, net in the consolidated statement of operations.

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We had total capital investments of \$648 million in 2016, compared to \$2.4 billion in 2015 and \$7.4 billion in 2014. Of our total capital investments for 2016, \$623 million was invested in our E&P segment, which included \$152 million related to capitalized interest and \$87 million in capitalized expenses. Of our total capital investments in 2015, \$2.3 billion was invested in our E&P segment, which included \$533 million related to acquisitions from WPX Energy, Inc. (“WPX” with acquisition called the “WPX Property Acquisition”) and Statoil ASA (“Statoil” with the acquisition called “Statoil Property Acquisition”), compared to \$7.3 billion in 2014, which included \$5.2 billion primarily related to the December 2014 acquisition of certain oil and natural gas assets in Southwest Appalachia from Chesapeake Energy Corporation (the “Chesapeake Property Acquisition”). Our Midstream Services capital investments for 2015 included \$109 million related to the WPX Property Acquisition.

Outlook

We expect to continue to exercise capital discipline by aligning our 2017 capital investing program with our expected cash flow from operations and the remaining funds from our equity offering and sale of West Virginia assets. We will also look for opportunities to further strengthen our balance sheet, maximize margins in each core area of our business and further develop our knowledge of our asset base. We believe that 2017 will continue to be a challenging year for our business due to the commodity price environment and continued uncertainty of natural gas, oil and NGL prices in the United States. However, we expect that our resource base, financial flexibility and disciplined investment of capital will position us for success in the current environment and any improvements thereto.

RESULTS OF OPERATIONS

The following discussion of our results of operations for our segments is presented before intersegment eliminations. We evaluate our segments as if they were stand-alone operations and accordingly discuss their results prior to any intersegment eliminations. Interest expense and income tax expense are discussed on a consolidated basis.

Exploration and Production

	For the years ended December		
	31,		
	2016	2015	2014
Revenues (in millions)	\$ 1,413	\$ 2,074	\$ 2,862

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Impairment of natural gas and oil properties (in millions)	\$ 2,321	\$ 6,950	\$ –
Operating costs and expenses (in millions) (1)	\$ 1,496	\$ 2,228	\$ 1,849
Operating income (loss) (in millions)	\$ (2,404)	\$ (7,104)	\$ 1,013
Gain on derivatives, settled (in millions) (2)	\$ 36	\$ 206	\$ 9
Gas production (Bcf)	788	899	766
Oil production (MBbls)	2,192	2,265	235
NGL production (MBbls)	12,372	10,702	231
Total production (Bcfe)	875	976	768
Average realized gas price per Mcf, including derivatives (3)	\$ 1.64	\$ 2.37	\$ 3.72
Average realized gas price per Mcf, excluding derivatives	\$ 1.59	\$ 1.91	\$ 3.74
Average realized oil price per Bbl	\$ 31.20	\$ 33.25	\$ 79.91
Average realized NGL price per Bbl	\$ 7.46	\$ 6.80	\$ 15.72
Average unit costs per Mcfe:			
Lease operating expenses	\$ 0.87	\$ 0.92	\$ 0.91
General & administrative expenses (4)	\$ 0.22	\$ 0.21	\$ 0.24
Taxes, other than income taxes (5)	\$ 0.10	\$ 0.10	\$ 0.11
Full cost pool amortization	\$ 0.38	\$ 1.00	\$ 1.10

(1) Includes \$86 million of restructuring and other one-time charges for the year ended December 31, 2016.

(2) Represents the gain (loss) on settled commodity derivatives.

(3) Includes the gain (loss) on settled commodity derivatives.

(4) Excludes \$83 million of restructuring and other one-time charges for the year ended December 31, 2016.

(5) Excludes \$3 million of restructuring charges for the year ended December 31, 2016.

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Revenues

Revenues for our E&P segment were \$1,413 million in 2016, a decrease of 32% compared to 2015. Revenues decreased by \$248 million as a result of decreased realized natural gas pricing, excluding the effects of derivatives, \$212 million as a result of decreased natural gas production, \$209 million as a result of decreased derivative settlement proceeds, \$7 million as a result of decreased oil production and realized price and \$4 million as a result of decreased other operating revenue. These decreases were partially offset by an increase of \$19 million in NGL sales resulting from increased production and realized price. Revenues for our E&P segment were \$2,074 million in 2015, a decrease of 28% compared to 2014. A decrease in the price realized from the sale of our natural gas production decreased revenue by \$1,647 million in 2015, partially offset by an increase of \$497 million due to higher natural gas production volumes and an increase of \$235 million in hedge settlement proceeds. Additionally, there was a \$328 million increase due to increased net NGL and oil production related to our Southwest Appalachia property acquisition partially offset by a \$201 million decrease due to decreased net NGL and oil pricing. Natural gas, oil and NGL prices are difficult to predict and are subject to wide price fluctuations. We refer you to Note 4 to the consolidated financial statements included in this Annual Report and to the discussion of “Commodity Prices” provided below for additional information. In May 2015, we sold our conventional oil and gas assets located in East Texas and the Arkoma Basin that accounted for \$15 million and \$70 million of our gas and oil revenues for the years ended December 31, 2015 and 2014, respectively.

Production

In 2016, our natural gas and liquids production totaled 875 Bcfe, a 10% decrease from 976 Bcfe in 2015, and was produced entirely by our properties in the United States. The 101 Bcfe decrease was primarily due to a 96 Bcfe decrease in net production from our Fayetteville Shale and other properties and a 10 Bcf decrease in net production from our Northeast Appalachia properties, partially offset by a 5 Bcfe increase in net production from our Southwest Appalachia properties. Net production from our Northeast Appalachia, Southwest Appalachia and Fayetteville Shale properties was 350 Bcf, 148 Bcfe and 375 Bcf, respectively, for the year ended 2016, compared to 360 Bcf, 143 Bcfe, and 465 Bcf, respectively, for 2015. The reductions resulted primarily from the suspension of drilling activities in the first half of 2016. Our 2015 total natural gas and liquids production of 976 Bcfe increased 27% from 768 Bcfe in 2014, and was also produced entirely by our properties in the United States. The 208 Bcfe increase in our 2015 production resulted from a 140 Bcfe increase in net production from our Southwest Appalachia properties and a 106 Bcf increase in net production from our Northeast Appalachia properties, partially offset by a 38 Bcfe decrease in net production in our Fayetteville Shale and other properties. Net production for 2014 from our Northeast Appalachia, Southwest Appalachia and Fayetteville Shale properties was 254 Bcf, 3 Bcfe and 494 Bcf, respectively.

Natural gas accounted for approximately 90%, 92% and 100% of our total production for the years ended December 31, 2016, 2015 and 2014, respectively. Oil accounted for 2% and 1% of our total production for the years ended



December 31, 2016 and 2015, respectively. NGLs accounted for 8% and 7% of our total production for the years ended December 31, 2016 and 2015, respectively.

Our ability to identify, develop and produce reserves is dependent upon a number of factors, many of which are beyond our control, including the availability of capital, availability of transportation, weather, the timing and extent of changes in natural gas, oil and NGL prices and competition. There are also many risks inherent in the discovery, development and production of natural gas, oil and NGLs. We refer you to “Risk Factors” in Item 1A of Part I of this Annual Report for a discussion of these risks and the impact they could have on our financial condition and results of operations.

### Commodity Prices

The average price realized for our natural gas production, after the effects of derivatives, decreased 31% to \$1.64 per Mcf in 2016, compared to a decrease of 36% to \$2.37 per Mcf in 2015 from 2014 levels. The decrease in 2016 was the result of a \$0.32 per Mcf decrease in the average natural gas price, excluding derivatives, and lower proceeds from our hedging program in 2016 as compared to 2015. The decrease in 2015 was the result of a \$1.83 per Mcf decrease in the average natural gas price, excluding derivatives, partially offset by higher proceeds from our hedging program in 2015 as compared to 2014. In 2016, our derivatives increased the average natural gas price we realized by \$0.05 per Mcf, compared to an increase of \$0.46 per Mcf in 2015 and a decrease of \$0.02 per Mcf in 2014.

Our E&P segment receives a sales price for our natural gas at a discount to average monthly NYMEX settlement prices due to heating content of the gas, locational basis differentials, transportation charges and fuel charges. Additionally, we receive a sales price for our oil and NGLs at a difference to average monthly West Texas Intermediate settlement and Mont Belvieu NGL composite prices, respectively, due to a number of factors including product quality, composition, and types of NGLs sold, locational basis differentials, transportation and fuel charges.

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We regularly enter into various hedging and other financial arrangements with respect to a portion of our projected natural gas production in order to ensure certain desired levels of cash flow and to minimize the impact of price fluctuations, including fluctuations in locational market differentials. We refer you to Item 7A of this Annual Report, Note 4 to the consolidated financial statements, and our hedge risk factor for additional discussion about our derivatives and risk management activities.

In 2016, the average price received, excluding the impact of derivatives, for our natural gas production was \$1.59 per Mcf, approximately \$0.87 per Mcf lower than the average monthly NYMEX settlement price, primarily due to locational basis differentials and transportation costs. We protected approximately 38% of our natural gas production in 2016 from the impact of widening basis differentials through our sales arrangements and financial derivatives. For the year ended December 31, 2016, we protected the basis differentials on approximately 277 Bcf and 78 Bcf of our 2017 and 2018 expected natural gas production through physical sales arrangements and financial derivatives at a basis differential to NYMEX natural gas prices of approximately (\$0.50) per Mcf and (\$0.34) per Mcf for 2017 and 2018, respectively. We refer you to Note 4 of the consolidated financial statements included in this Annual Report for additional details about our derivative instruments.

Our 2016 average realized sales price of \$31.20 per barrel for our oil production decreased approximately 6% from the prior year. The 2015 average realized price of \$33.25 per barrel decreased 58% from 2014. We did not use derivatives to financially protect our 2016, 2015 or 2014 oil production.

Our 2016 average realized sales price of \$7.46 per barrel for our NGL production increased approximately 10% from the prior year. The 2015 average realized price of \$6.80 per barrel decreased 57% from 2014. We did not use derivatives to financially protect our 2016, 2015 or 2014 NGL production.

Operating Income

Our E&P segment operating loss was \$2,404 million in 2016, a decrease from an operating loss of \$7,104 million in 2015. The E&P segment recorded a \$2,321 million impairment of natural gas and oil properties for the year ended December 31, 2016, compared to a \$6,950 million impairment for the same period in 2015. Excluding impairments, our E&P segment reported an operating loss of \$83 million for the year ended December 31, 2016, compared to an operating loss of \$154 million for the same period in 2015, primarily due to a \$732 million decrease in operating costs and expenses, consisting of a \$657 million decrease in depreciation, depletion and amortization, a \$138 million decrease in operating expenses and a \$12 million decrease in taxes other than income, partially offset by a \$69 million

increase in general and administrative expenses and a \$6 million decrease in gain on sale of assets, net. General and administrative expenses included \$83 million related to restructuring and other one-time charges. Taxes other than income taxes included \$3 million related to restructuring charges. Additionally, there was a \$19 million increase in NGL revenues resulting from increased production and realized price. The benefits of a net decrease in operating costs and expenses were largely offset by a 31%, or \$0.73 per Mcf, decrease in our realized natural gas price, after the effect of derivatives, a 111 Bcf decrease in natural gas production and decreased oil revenues due to decreased production and realized price.

Our E&P segment operating loss was \$7,104 million in 2015, a decrease from an operating income of \$1,013 million in 2014. The E&P segment recorded a \$6,950 million impairment of natural gas and oil properties for the year ended December 31, 2015. There was no impairment recorded in 2014. Excluding the impairments, our E&P segment reported an operating loss of \$154 million for the year ended December 31, 2015 compared to an operating income of \$1,013 million for the same period in 2014, primarily due to a 36%, or \$1.35, decrease in our realized natural gas price, including derivatives, and a \$379 million increase in operating costs and expenses that resulted from our production growth, partially offset by a 27%, or 208 Bcfe, increase in production. In May 2015, we sold our conventional oil and gas assets located in East Texas and the Arkoma Basin, which accounted for \$27 million of our operating income for the year ended December 31, 2014.

#### Operating Costs and Expenses

Lease operating expenses per Mcfe for the E&P segment were \$0.87 in 2016, compared to \$0.92 in 2015 and \$0.91 in 2014. Lease operating expenses per Mcfe decreased in 2016 compared to 2015 primarily due to successful renegotiations of our existing gathering and processing rates in our Southwest Appalachia operations and decreased workover activity and contract services. As industry activity increases, demand for third-party services also increases, and these service providers are likely to seek higher prices than we were able to obtain in 2016. Lease operating expenses per unit of production increased in 2015 compared to 2014 primarily due to an increase in gathering and compression charges in our Southwest Appalachia operations.

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In January 2016, as a result of lower anticipated drilling activity due to a prolonged depressed commodity price environment, we announced a workforce reduction of approximately 1,100 employees, which was substantially complete by the end of the first quarter of 2016. Excluding the restructuring charges associated primarily with our workforce reduction and other one-time charges, general and administrative expenses for the E&P segment increased to \$0.22 per Mcfe in 2016 compared to \$0.21 per Mcfe in 2015 and \$0.24 per Mcfe in 2014. The 2016 increase was a result of decreased production volumes. In total, excluding the restructuring and other one-time charges, general and administrative expenses for the E&P segment were \$193 million for the year ended December 31, 2016 compared to \$207 million in 2015 and \$182 million in 2014. Including the restructuring and other one-time charges, general and administrative costs for year ended December 31, 2016 were \$276 million for our E&P segment. The decrease in general and administrative costs excluding the restructuring and other one-time charges was primarily the result of decreased headcount due to the reduction in workforce and decreased discretionary spending. The increase in general and administrative expenses in 2015 was primarily a result of increased personnel and technological costs associated with the expansion of our E&P operations, due to the acquisition of our Southwest Appalachia assets, and accounted for \$21 million, or 85%, of the 2015 increase. Our E&P employees decreased by 930 during 2016 compared to a decrease of 155 in 2015. The decrease in 2016 was the result of the 40% workforce reduction during the first quarter as a result of lower anticipated drilling activity.

Taxes other than income taxes per Mcfe were \$0.10, \$0.10 and \$0.11 in 2016, 2015 and 2014, respectively, excluding \$3 million related to restructuring charges in 2016. Taxes other than income taxes per Mcfe vary from period to period due to changes in ad valorem and severance taxes that result from the mix of our production volumes and fluctuations in commodity prices.

Our full cost pool amortization rate averaged \$0.38 per Mcfe for 2016, \$1.00 per Mcfe for 2015 and \$1.10 per Mcfe for 2014. The decreases in the average amortization rates resulted primarily from our full cost ceiling impairments over the respective periods. The amortization rate is impacted by the timing and amount of reserve additions and the costs associated with those additions, revisions of previous reserve estimates due to both price and well performance, write-downs that result from full cost ceiling impairments, proceeds from the sale of properties that reduce the full cost pool and the levels of costs subject to amortization. We cannot predict our future full cost pool amortization rate with accuracy due to the variability of each of the factors discussed above, as well as other factors, including but not limited to the uncertainty of the amount of future reserve changes.

Unevaluated costs excluded from amortization were \$2.1 billion, \$3.7 billion and \$4.6 billion at December 31, 2016, 2015 and 2014, respectively. The decrease in unevaluated costs primarily resulted from the evaluation of a portion of our Southwest Appalachia assets of which 55,000 net acres were sold to Antero Resources Corporation during the third quarter of 2016, along with the evaluation of a portion of our New Venture assets. See “Supplemental Oil and Gas Disclosures” in Item 8 of Part II of this Annual Report for additional information regarding our unevaluated costs excluded from amortization.

The timing and amount of production and reserve additions could have a material impact on our per unit costs.

#### Midstream Services

	For the years ended		
	December 31,		
	2016	2015	2014
	(\$ in millions, except volumes)		
Marketing revenues	\$ 2,191	\$ 2,628	\$ 3,797
Gas gathering revenues	\$ 378	\$ 491	\$ 562
Marketing purchases	\$ 2,145	\$ 2,566	\$ 3,738
Operating costs and expenses (1)	\$ 215	\$ 247	\$ 260
Gain on sale of assets, net	\$ –	\$ 277	\$ –
Operating income	\$ 209	\$ 583	\$ 361
Volumes marketed (Bcfe)	1,062	1,127	904
Volumes gathered (Bcf)	601	799	963

(1) Includes \$3 million of restructuring charges for the year ended December 31, 2016.

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Revenues

Revenues from our marketing activities decreased 17% to \$2.2 billion for 2016 compared to 2015 due to a 12% decrease in the average price received for volumes marketed and a 6% decrease in volumes marketed. Revenues from our marketing activities decreased 31% to \$2.6 billion for 2015 compared to 2014 primarily due to a 45% decrease in the average price received for volumes marketed, partially offset by a 25% increase in volumes marketed. Increases and decreases in marketing revenues due to changes in commodity prices are largely offset by corresponding changes in marketing purchase expenses. Of the total natural gas volumes marketed, production from our affiliated E&P operated wells accounted for 93% in 2016, 97% in 2015 and 97% in 2014. Our Midstream Services segment marketed approximately 65% and 60% of our combined oil and NGL production for the years ended December 31, 2016 and 2015, respectively.

Revenues from our gathering activities decreased 23% to \$378 million for 2016 compared to 2015, primarily from a 25% decrease in natural gas volumes gathered in 2016. The decrease in gathering revenues for 2016 was primarily due to decreased volumes in the Fayetteville Shale and the divestiture of our northeastern Pennsylvania and East Texas gathering assets in 2015. Revenues from our gathering activities decreased 13% to \$491 million for 2015 compared to 2014, primarily due to a 17% decrease in natural gas volumes gathered in 2015. The decrease in gathering revenues for 2015 was primarily due to the divestiture of our northeastern Pennsylvania and East Texas gathering assets in 2015. The divested gathering assets accounted for \$21 million and \$67 million of our gathering revenues for the years ended December 31, 2015 and 2014, respectively.

Operating Income

Operating income from our Midstream Services segment decreased to \$209 million in 2016 and increased to \$583 million in 2015, compared to the prior year. The decrease in operating income in 2016 is primarily due to a \$277 million net gain on sale of assets in 2015 related to the sale of our northeastern Pennsylvania and East Texas gathering assets. Excluding the net gain on sale, operating income decreased 32% to \$209 million in 2016 primarily due to a decrease in volumes gathered resulting from lower production volumes in the Fayetteville Shale and the sale of our northeast Pennsylvania and East Texas gathering assets. Decreases of \$113 million in gas gathering revenues and \$16 million in marketing margin were partially offset by a \$32 million decrease in operating costs and expenses. Excluding the net gain on sale, our Midstream Services segment operating income decreased 15% to \$306 million in 2015 due to a decrease in volumes gathered resulting from lower production volumes in the Fayetteville Shale and the absence of income from the northeastern Pennsylvania and East Texas gathering assets that we sold. A decrease of \$71 million in gas gathering revenues was partially offset by a \$13 million decrease in operating costs and expenses and a \$3 million increase in marketing margin. The divested gathering assets accounted for \$13 million and \$35 million of our operating income for the years ended December 31, 2015 and 2014, respectively.

The margin generated from marketing activities was \$46 million for 2016, compared to \$62 million for 2015 and \$59 million for 2014. Margins are driven primarily by volumes marketed and may fluctuate depending on the prices paid for commodities and the ultimate disposition of those commodities. We enter into derivative contracts from time to time with respect to our natural gas marketing activities to provide margin protection. For more information about our derivatives and risk management activities, we refer you to [Item 7A](#) of Part II of this Annual Report and [Note 4](#) to the consolidated financial statements.

### Restructuring Charges

In January 2016, we announced a 40% workforce reduction, which was substantially concluded by the end of March 2016. In April 2016, we also partially restructured executive management. Affected employees were offered a severance package that included a one-time cash payment depending on length of service and, if applicable, accelerated vesting of outstanding stock-based equity awards. As a result of the workforce reduction and executive management restructuring, we recognized restructuring charges of \$78 million for the year ended December 31, 2016.

### Interest Expense

Interest expense, net of capitalization, was \$88 million in 2016, compared to \$56 million in 2015 and \$59 million in 2014. Gross interest expense increased to \$240 million in 2016 from \$213 million in 2015, excluding a \$47 million charge for unamortized fees associated with the repayment of our bridge facility in the first quarter of 2015, due to an increase in our cost of debt. Gross interest expense for 2016 includes \$6 million related to unamortized debt issuance costs and debt discounts associated with the extinguished debt. Capitalized interest decreased to \$152 million in 2016, compared to \$204 million in 2015 primarily due to the evaluation of a portion of our Southwest Appalachia assets acquired in December 2014. Gross interest expense increased in 2015 from \$114 million in 2014 due to our increased borrowing level related to financing

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the acquisition of our Southwest Appalachia assets and a \$47 million charge for unamortized fees associated with the repayment of our bridge facility in January 2015. Interest capitalized increased to \$204 million in 2015 compared to \$55 million in 2014 as the result of the increase in our unevaluated property balance associated with the 2014 acquisition of our Southwest Appalachia assets.

Gain (Loss) on Derivatives

In general, our derivatives are not designated for hedge accounting treatment. Changes in the fair value of derivatives that are not designated for hedge accounting are recorded in gain (loss) on derivatives. We recorded a \$339 million net loss on our derivatives for the year ended December 31, 2016, consisting of a \$373 million loss on unsettled derivatives, partially offset by a \$34 million gain on settled derivatives. We recorded a \$47 million net gain on our derivatives for the year ended December 31, 2015, consisting of a \$202 million gain on settled derivatives, partially offset by a \$155 million loss on unsettled derivatives. We refer you to Note 4 to the consolidated financial statements included in the Annual Report for additional details about our gain (loss) on derivatives. In general and without consideration of volatility or duration, as natural gas prices increase from December 31, 2016 levels, we will recognize losses in future periods and, likewise, as natural gas prices decline from December 31, 2016 levels, we will recognize gains in future periods on our derivative contracts not designated for hedge accounting treatment prior to settlement.

Loss on Early Extinguishment of Debt

During the third quarter of 2016, we used a portion of the proceeds from our July 2016 equity offering to purchase and retire \$700 million of our outstanding senior notes due in the first quarter of 2018 and retire \$375 million of our \$750 million term loan entered into in November 2015. For the year ended December 31, 2016, we recognized a loss of \$51 million for the redemption of these senior notes, which included \$50 million of premiums paid. Unamortized debt issuance costs and debt discounts associated with the extinguished debt totaled \$6 million and were included in other interest charges for the year ended December 31, 2016. In September 2016, we used \$48 million of the proceeds received from the West Virginia sale to Antero Resources Corporation to further decrease the balance of the term loan entered into in November 2015.

Income Taxes



Our effective tax rate was approximately 1%, 31%, and 36%, in 2016, 2015 and 2014, respectively. We recorded an income tax benefit of \$29 million and \$2,005 million in 2016 and 2015, respectively, and income tax expense of \$525 million in 2014. Our effective tax rate decreased as a result of our recognition of a valuation allowance (beginning in the fourth quarter of 2015 and persisting throughout 2016) that reduced the deferred tax asset primarily related to our current net operating loss carryforward. A valuation allowance for deferred tax assets, including net operating losses, is recognized when it is more likely than not that some or all of the benefit from the deferred tax asset will not be realized. We refer you to Note 9 to the consolidated financial statements for additional discussion about our income taxes.

## LIQUIDITY AND CAPITAL RESOURCES

We depend primarily on funds generated from our operations, our cash and cash equivalents balance, our \$809 million revolving credit facilities and capital markets as our primary sources of liquidity.

During 2016, we took significant steps in managing our maturities and liquidity. In June 2016, we refinanced approximately 97% of our principal credit facility, which was due in December 2018, including extending the maturity by two years until December 2020, granting liens on certain assets and modifying interest rates and covenants. We simultaneously modified interest rates and covenants under our \$750 million unsecured term loan facility and provided for its extension to December 2020 should its principal balance be reduced by 50% by June 2018. The maturity date will accelerate to October 2019 if, by that date, we have not amended, redeemed or refinanced at least \$765 million of our senior notes due in January 2020. In July 2016, we completed a public offering of 98,900,000 shares of our common stock, with net proceeds totaling approximately \$1,247 million after underwriting discounts and offering expenses. Of the funds received from the common stock offering, \$375 million was used to pay down a portion of our \$750 million unsecured term loan and \$750 million was used to settle certain tender offers by purchasing an aggregate principal amount of approximately \$700 million of our outstanding senior notes due in the first quarter of 2018. The repayment of \$375 million on the \$750 million unsecured term loan had the effect of extending its maturity date to December 2020, subject to the conditions described above. In September 2016, we completed the sale of 55,000 net acres in West Virginia for \$422 million to Antero Resources Corporation, subject to customary post-closing adjustments, and used \$48 million of the proceeds to further decrease the balance of this term loan. We earmarked \$500 million of the remaining funds from the equity issuance and the sale of the West Virginia acreage for capital activity, with approximately \$300 million having been invested as of December 31, 2016.

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