

# Large Cap Monthly

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## Exploration & Production Research

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January 2018

*Pricing as of January 8, 2018, unless otherwise stated.*

## Investment Thesis into 2018: 2017 Brought Flight to Safety, Permian Exposure; Time to Increase Beta

In 2017, EOG Resources, Inc. (EOG) and Occidental Petroleum Corporation (OXY) had the best performance, up 7% and 3%, respectively, along with the majors up 7% on average, while the rest of the large cap group was in the red. With the volatility in oil prices scaring any real money from entering the space, energy-mandated investors flocked to safety. However, as oil steadies around \$60/bbl, we find better value elsewhere, as both EOG and OXY trade at two turns the group average. We believe investors will be more stock-selective in 2018, no longer shirking valuation at all costs. Yet, we may only see one foot off the boat. **As a result, while the risk-off trade may subside slightly, we still need to look for names that have all the attributes needed to drive value, but at the same time do not sit at 52-week highs (leaving aside Marathon Oil Corporation [MRO]).**

In 2018, investors may not stray from the Permian, but instead take a closer look at names within the basin that have the highest rate of change. Looking at it from the large cap perspective, MRO, Devon Energy Corporation (DVN), Noble Energy, Inc. (NBL), and Anadarko Petroleum Corporation (APC) show the highest expected growth from the basin through the end of the decade. This could translate into higher margin growth and cash flows, which should allow these companies to retain their capex and cash flow neutrality. As a result, these names strike the best chord with us within the large cap space as 2018 should be the year that this meteoric jump in production begins.

		'18 YTD	2017
<b>Majors</b>			
BP p.l.c. Sponsored ADR	BP	2.1%	12.4%
ConocoPhillips	COP	5.0%	9.5%
Chevron Corporation	CVX	2.5%	6.4%
Statoil ASA Sponsored ADR	STO	6.3%	17.4%
Total SA Sponsored ADR Class B	TOT	4.6%	8.5%
Exxon Mobil Corporation	XOM	4.1%	-7.3%
<b>Average</b>		<b>4.1%</b>	<b>7.8%</b>
<b>Large Cap E&amp;P</b>			
Apache Corporation	APA	8.5%	-33.5%
Anadarko Petroleum Corporation	APC	3.9%	-23.1%
Chesapeake Energy Corporation	CHK	2.3%	-43.6%
Devon Energy Corporation	DVN	4.4%	-9.3%
EOG Resources, Inc.	EOG	4.4%	6.7%
Hess Corporation	HES	11.4%	-23.8%
Marathon Oil Corporation	MRO	6.2%	-2.2%
Murphy Oil Corporation	MUR	7.8%	-0.3%
Noble Energy, Inc.	NBL	8.8%	-23.4%
Occidental Petroleum Corporation	OXY	2.3%	3.4%
<b>Average</b>		<b>6.0%</b>	<b>-14.9%</b>
<b>Variance</b>		<b>1.9%</b>	<b>-22.7%</b>

While we understand the recent performance, we feel 2018 brings an opportunity to invest in a slightly riskier bucket.

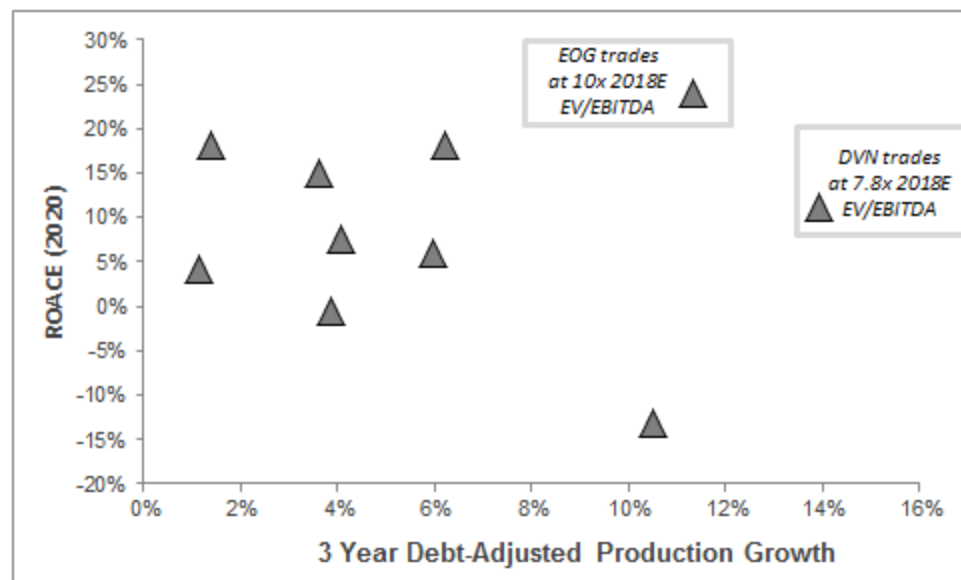
Ticker	'17E Permian Exposure	'20E Permian Exposure	Growth
APA	41%	57%	38%
APC	10%	20%	102%
CHK	N/A	N/A	
DVN	11%	20%	92%
EOG	34%	41%	19%
HES	N/A	N/A	
MRO	2%	10%	404%
MUR	N/A	Unknown	
NBL	7%	14%	116%
OXY	48%	58%	22%

Source: Scotia Howard Weil; company reports.

Source: Scotia Howard Weil; FactSet.

## Group Offers Growth Within Cash Flow at a Reasonable Price and Who We Like the Most...

In an unknown macro backdrop, the large cap space offers balance sheet protection and stability of cash flows. However, certain names in the group also provide firepower to allow for returns-focused growth, minimal/no outspend, and boosting margins. At current levels, the valuations have become far more appealing to us, although not through multiples. With investors' penchant for corporate returns, we focus on the handful of names that appear to be capable of growth near cash flow in a \$50-\$55/bbl crude world, with inventories supported by high-quality acreage. The incremental cash flow at current higher commodity prices allows free cash flow to be returned to investors in the form of debt reduction, share repurchases, or dividend payments.



Source: Scotia Howard Weil; company reports.

*DVN and EOG both show the highest debt-adjusted production growth through the end of the decade, and are well-positioned, in our view, to generate peer-leading corporate returns (ex. dividend). However, DVN trades at almost a three-turn discount to the bellwether EOG. While EOG has earned this multiple distinction, Devon's execution, asset portfolio, and EBITDA growth should narrow the gap over time. MRO offers an additional level of valuation disconnect versus the group.*

## Top Picks:

**Devon Energy Corporation (DVN: \$43.25; FS; one-year target \$54.00)** is, in our view, executing at a high level, exiting the commodity downturn with a stronger balance sheet and with the capital it needs to post top-tier cash flow growth. The company's strategy of operating fewer, more resilient plays has boosted cash margins. This is augmented by the fact that it continues to experiment with drilling and completion techniques to reduce well costs and increase returns, as evidenced by the increase in EURs across its entire drilling portfolio. We expect continued portfolio rationalization, which was already announced in the Barnett but could eventually include other non-core assets. In our view, DVN is a catalyst-rich story, and we expect delineation and spacing results in the STACK and Permian to propel the stock through 2018.

**Marathon Oil Corporation (MRO: \$17.97; SO; one-year target \$23.00).** We continue to be positive on the portfolio and operational restructuring that has taken place over the past two years. What those changes yield is a company capable of growing materially within cash flow while expanding margins and improving returns. The cherry on top is that these favorable optics can be bought today for one of the lowest multiples among its peers. Now that the heavy lifting on the portfolio has been completed, the key to multiple expansion will be execution in the four key onshore regions, and recent results give us some comfort that favorable outcomes will continue or accelerate. MRO will direct 95% of its capital to the U.S. resource plays. Eagle Ford and Bakken both offer predictable high-return development drilling. Delaware and STACK/SCOOP are newer to the portfolio and offer NAV accretion upon success and delineation.

## Will the Returns Theme Hold Through 2018?

**Valuations Present an Opportunity, but Will Investors Notice?** For the most part, the E&P group has historically traded above spot WTI pricing, but recent valuations have the group trading at \$58/bbl. The lack of interest makes us think that investors refuse to allow these companies to turn the spigot back on, and we believe the large cap group strikes the best balance between free cash flow neutrality and growth at reasonable prices.

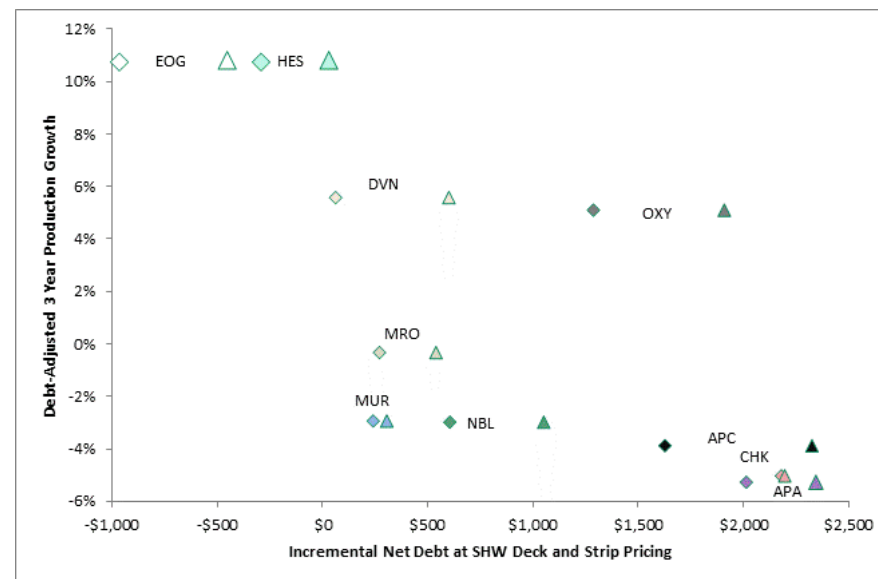
**No New Debt Allowed.** Over the last couple months, even in more active markets, investors have called for returns over growth. While not applicable to every stock's lifecycle, we believe the higher cap group's large production bases set them up well to do just that. Certainly, investors do not want to see debt used to fund longer-term growth. In the chart to the right, we show debt-adjusted growth versus incremental net debt.

Large Cap NTM EV/EBITDA (2012 - 2017)

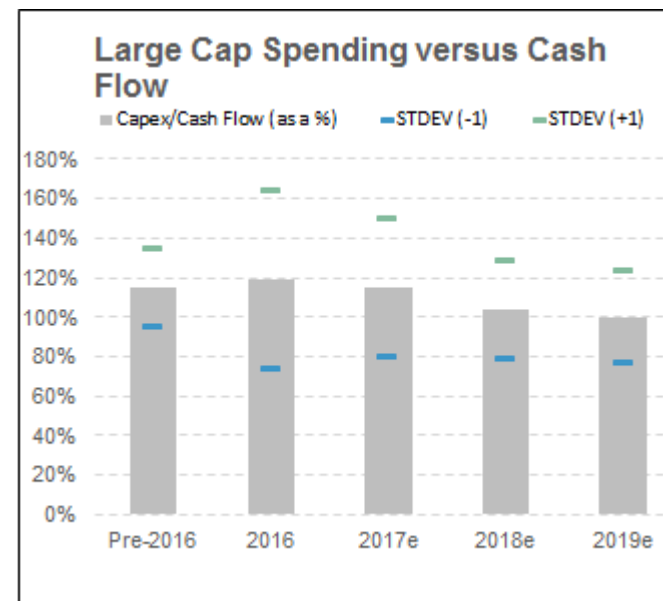


Source: Scotia Howard Weil; company reports.

*After climaxing in 2016, large cap valuation has slowly trended back within range, and has hovered around mean valuations over the last six months. With valuations not looking expensive, generalists may start to find value back in the stocks. Coupled with the large caps' balance sheet strength and profitable growth trajectory, the excitement around shareholder return and risk/reward levels can start to be more constructive.*



Source: Scotia Howard Weil; company reports.



Source: Scotia Howard Weil; company reports.

## Large Cap Valuation Sheet

Company	Symbol	Stock Price	Rating	Target Price	Shares O/S (mm)	Market Value	Enterprise Value (\$mm)	Net Debt / Capital	'19e ND / EBITDA	EV/ EBITDA		Unhedged EV/EBITDA		Overall Prod. Growth		CFPS Growth	
		1/08/18								2018e	2019e	2018e	2019e	2018e	2019e	2018e	2019e
Apache Corporation	APA	\$45.92	SP	\$55.00	380.9	\$17,493	\$25,488	42%	1.5x	6.2x	5.8x	6.2x	5.7x	7%	7%	22%	8%
Anadarko Petroleum Corporation	APC	\$55.39	SO	\$66.00	547.2	\$30,307	\$45,081	42%	1.0x	6.5x	5.6x	6.5x	5.5x	8%	9%	32%	21%
Chesapeake Energy Corporation	CHK	\$3.97	SP	\$4.00	908.7	\$3,607	\$14,712	130%	4.6x	6.4x	5.9x	6.3x	5.8x	3%	-2%	40%	11%
Devon Energy Corporation	DVN	\$43.25	FS	\$54.00	525.5	\$22,729	\$36,127	39%	1.1x	7.8x	6.7x	8.0x	6.6x	8%	13%	15%	20%
EOG Resources, Inc.	EOG	\$112.71	SP	\$110.00	578.2	\$65,171	\$70,968	28%	0.2x	10.0x	8.1x	10.0x	8.1x	17%	15%	31%	24%
Hess Corporation	HES	\$52.49	SO	\$56.00	317.8	\$16,679	\$22,698	22%	0.7x	11.6x	8.8x	11.6x	8.8x	11%	10%	1%	40%
Marathon Oil Corporation	MRO	\$17.97	SO	\$23.00	849.7	\$15,268	\$18,033	28%	0.7x	5.2x	4.2x	5.3x	4.2x	18%	14%	39%	25%
Murphy Oil Corporation	MUR	\$33.32	SP	\$30.00	172.6	\$5,750	\$7,999	22%	0.7x	5.3x	4.5x	5.2x	4.5x	9%	10%	38%	16%
Noble Energy, Inc.	NBL	\$31.68	SP	\$37.00	486.6	\$15,416	\$23,780	41%	1.3x	6.8x	5.5x	6.9x	5.5x	7%	16%	44%	26%
Occidental Petroleum Corporation	OXY	\$75.19	SP	\$71.00	765.2	\$57,539	\$64,376	27%	1.0x	9.5x	8.4x	9.5x	8.4x	9%	5%	37%	13%
Mean								42%	1.3x	7.5x	6.3x	7.5x	6.3x	10%	10%	30%	21%
Median								34%	1.0x	6.7x	5.8x	6.7x	5.8x	8%	10%	34%	21%

Source: Scotia Howard Weil estimates; FactSet.

Based on the summary of valuations above, it should be clear that **we are not seeking value for value's sake**. Looking strictly at the 2018E and 2019E EV/EBITDA multiples, some of the most inexpensive names have the lowest ratings. This is because we believe their multiples appropriately reflect the business. The primary exception is MRO.

Our top picks (DVN, MRO) trade at or below the group average on a multiple basis, creating a valuation arbitrage opportunity with continued growth and execution. Based on our commodity views, we also shy away from the highest-multiple names given that we believe incremental dollars directed into the space are likely to go elsewhere.

## Large Cap E&P Group Tear Sheet

Company		Target Price		Tier	Analyst Thoughts
		LT \$65/\$3.50	Upside		
Apache Corporation	APA	\$55	20%	3	Large Permian position with various acreage quality; Alpine High remains constrained by infrastructure (2H17); Egypt and North Sea are still large parts of the business; Not as cheap as it once was
Anadarko Petroleum Corporation	APC	\$66	19%	2	Delaware, DJ Basin, and Deepwater Gulf of Mexico driven; Likely to exceed production expectations within cash flow; Recent execution issues likely give investors a pause
Chesapeake Energy Corporation	CHK	\$4	1%	3	While a lot of progress has been made, debt levels remain elevated; need high level asset sales; should remain volatile and we remain on the sidelines
Devon Energy Corporation	DVN	\$54	25%	1	The top large cap pick; top tier STACK and Delaware; potential for future asset sales (Barnett); growth within cash flow. Reasonable valuation
EOG Resources, Inc.	EOG	\$110	-2%	1	A qualitative favorite with a multiple to match; consensus long; hard not to love but there are better places for incremental dollars
Hess Corporation	HES	\$56	7%	2	Bakken and Guyana drive longer-term oil exposure; hampered in the near-term by high multiple and execution worries; oil beta with a strong balance sheet
Marathon Oil Corporation	MRO	\$23	28%	1	Compelling valuation with upside from the STACK/SCOOP, Bakken, Eagle Ford and Permian
Murphy Oil Corporation	MUR	\$30	-10%	3	Need Duvernay costs to go down or for the Permian to work; Eagle Ford still good but light on inventory; production growth lower than peers creating a challenging treadmill going into 2018
Noble Energy, Inc.	NBL	\$37	17%	2	With over 120,000 net acres, NBL now a player in the Delaware basin; valuation has gotten cheaper, but leviathan CAPEX burden causing investor worry; watch for continued Delaware results (which have been impressive) and for the sell down of Tamar.
Occidental Petroleum Corporation	OXY	\$71	-6%	3	Fits oddly between an independent E&P and the integrated group; valuation and balance sheet degradation over the past few years prompts our Sector Perform rating

Source: Scotia Howard Weil estimates; FactSet.

## Apache Corporation (APA: \$45.92) – Sector Perform; \$55.00 per Share

### Thesis

We downgraded APA at the beginning of 2017 as we felt the substantial amount of capital directed toward Alpine High could cause lower production growth than its peers and weaker capital-efficiency metrics. Today, even though the Alpine High is beginning to flow and the metrics are improving, we still find more upside in other names with lower natural gas exposure.

### Valuation

APA trades at 5.8x 2019E EV/EBITDA compared with the large cap peer group average of 6.3x. On an NAV basis, the stock currently trades at 83% of our price target, while the peer group averaged 92%.

### Catalysts

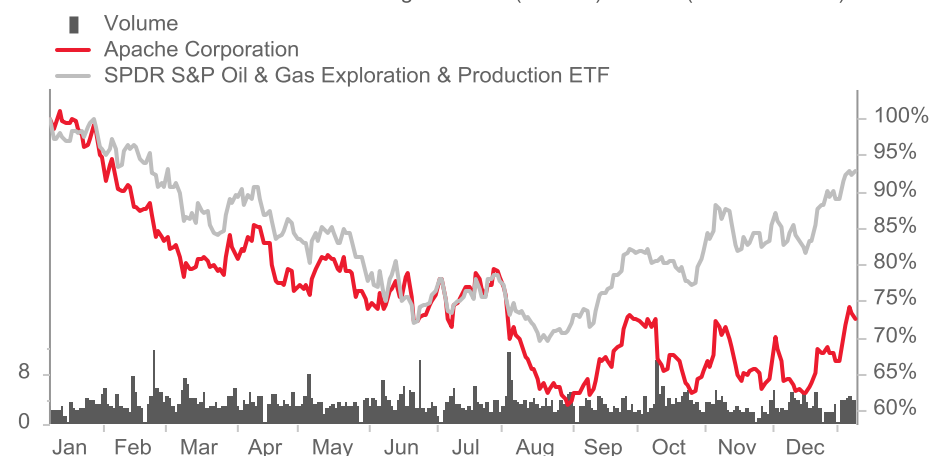
- Alpine Ranch delineation.
- Alpine Ranch infrastructure build-out.

### Concerns

- High spend in Alpine Ranch.
- Corporate growth rate reliance on Alpine High delineation.
- Geopolitical risk in Egypt.

### Apache Corporation vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



Source: FactSet Prices

## Anadarko Petroleum Corporation (APC: \$55.39) – Sector Outperform; \$66.00 per Share

**Thesis** APC's weakness of late creates an opportunity for those who are patient enough. Essentially, we believe more than the fair share of exposure to the Colorado and the deepwater write-offs have been priced into the stock. Despite some hiccups, APC continues to execute on its "3-D" assets: the DJ, Delaware, and Deepwater GoM. Longer term, growth within cash flow and margin expansion should ultimately drive the shares higher.

**Valuation** APC trades at 5.6x 2019E EV/EBITDA compared with its large cap peer group average of 6.3x. On an NAV basis, the stock currently reflects 84% of our price target, versus the peer group average of 92%.

**Catalysts**

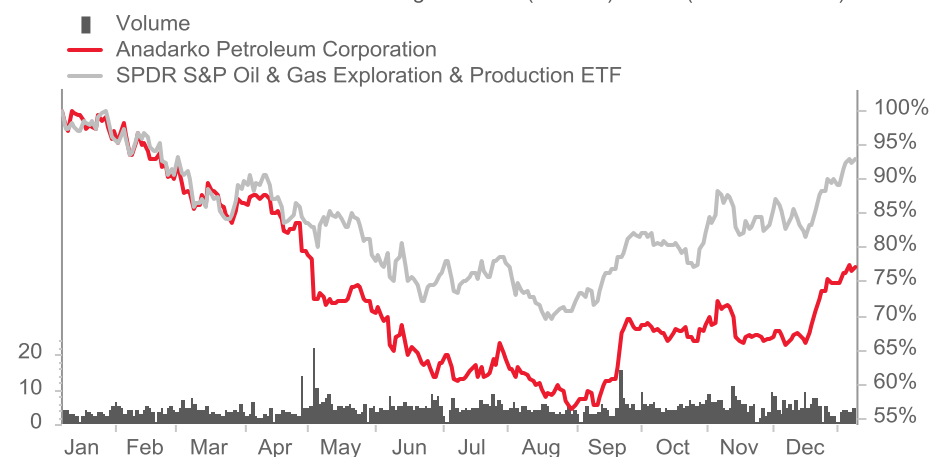
- Delaware zone delineation.
- Pad drilling in the Delaware Basin.
- Guidance later this month.
- Colombia exploration well results.

**Concerns**

- Delaware liquids content.
- Colorado regulatory environment.
- Offshore exploration risk.
- Mozambique LNG CAPEX burden and geopolitical risk.

### Anadarko Petroleum Corporation vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



Source: FactSet Prices



## Chesapeake Energy Corporation (CHK: \$3.97) – Sector Perform; \$4.00 per Share

**Thesis** After utilizing the downturn to reduce debt and clean up its portfolio, CHK accelerated its rig count in 1H17 and has recently pulled it back somewhat. Although certainly improved, CHK stock performance reacted accordingly in 2016, and while longer laterals and additional proppant loading could create a "beat and raise" story through the remainder of the year, the debt leverage in the stock gives us pause and we see no easy solution in the near term.

**Valuation** CHK trades at 5.9x 2019E EV/EBITDA, versus its large cap peer group's average of 6.3x. On an NAV basis, the stock currently reflects 99% of our price target, versus the peer group average of 92%.

**Catalysts**

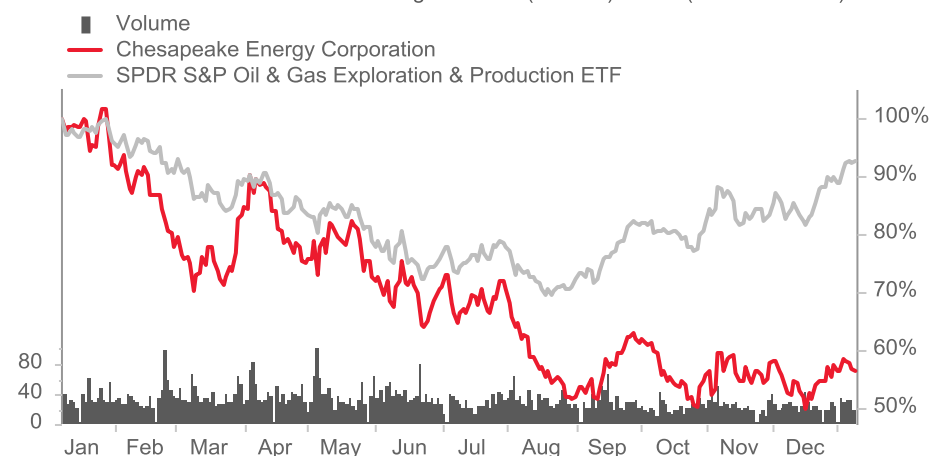
- PRB Reservoir delineation.
- Upper Eagle Ford delineation and incorporation.
- Lateral and proppant testing in Eagle Ford and Haynesville.
- Meramec – St. Genevieve appraisal.

**Concerns**

- High leverage to peers.
- High outspend/balance sheet deterioration.
- Quality inventory concerns.
- Long-term growth plan.
- Trading volatility

### Chesapeake Energy Corporation vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



Source: FactSet Prices

## Devon Energy Corporation (DVN: \$43.25) – Focus Stock; \$54.00 per Share

### Thesis

DVN is executing at a high level, exiting the commodity downturn with a stronger balance sheet and the capital it needs to post top-tier cash flow growth. The company's strategy, hinged on fewer, more resilient plays, has boosted cash margins. This is augmented by the fact that it continues to experiment with drilling and completion techniques to reduce well costs and increase returns, as seen in the increase in EURs across its entire drilling portfolio. We expect continued portfolio rationalization, which was already announced in the Barnett, but could eventually include other non-core assets. In our view, DVN is a catalyst-rich story, and we expect delineation and spacing results in the STACK and Permian to propel the stock through 2017.

### Valuation

DVN trades at 6.7x 2019E EV/EBITDA, compared with its large cap peer group average of 6.3x. On an NAV basis, the stock currently reflects 80% of our price target, while the peer group average is 92%.

### Catalysts

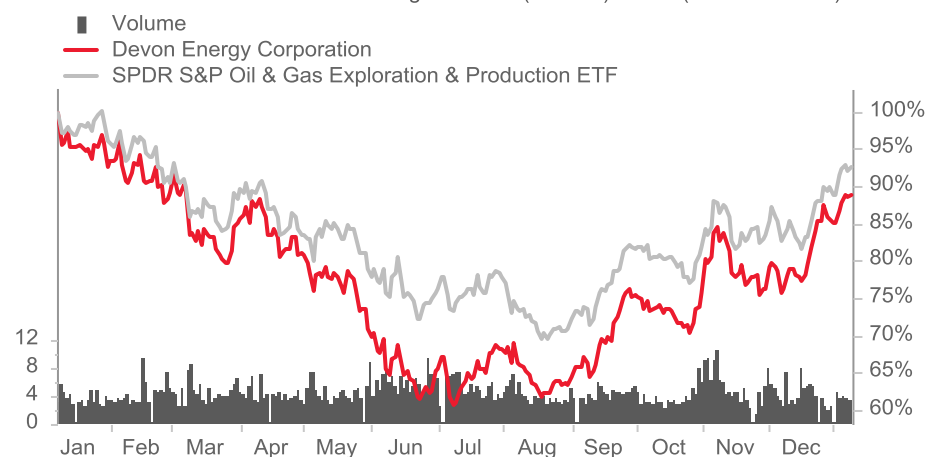
- Showboat development in STACK (12 to 15 wells per section in Meramec).
- Leonard downspacing (19 wells per section).
- Wolfcamp appraisal in the Delaware Basin (9,000 unrisks locations).
- Barnett asset sale (which we estimate at \$0.8 B).

### Concerns

- High fixed cost structure as a result of legacy assets.
- STACK delineation.
- SAGD expansion.
- NGL differentials.

### Devon Energy Corporation vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



Source: FactSet Prices

## EOG Resources, Inc. (EOG: \$112.71) – Sector Perform; \$110.00 per Share

**Thesis** With an inventory capable of supporting its growth trajectory without sacrificing corporate returns, EOG remains a top-tier operator and investor stalwart, and, as a result, the stock is valued accordingly (see valuation below). Additionally, while the company's guidance is impressive, we think most investors likely expected it, which means there is no meaningful exodus from or additional money flow into the name at this time.

**Valuation** EOG currently trades at 8.1x 2019E EV/EBITDA, versus its large cap peer group's average of 6.3x. On a price to NAV basis, the stock trades at 102% of NAV, while the peer group average is 92%.

**Catalysts**

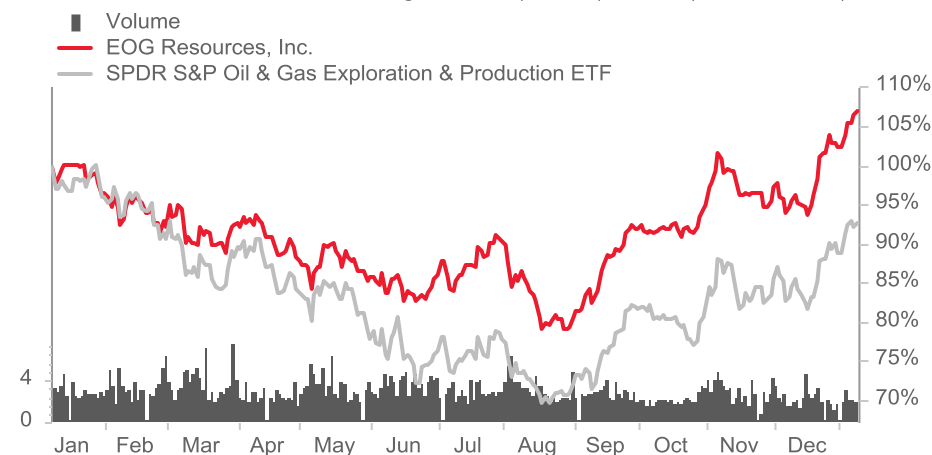
- Delaware Wolfcamp headline results.
- Longer lateral completions.
- Premium inventory conversion.
- Austin Chalk delineation.
- Yates acreage incorporation in Delaware basin.
- EOR pilots in the Eagle Ford.

**Concerns**

- Premium valuation to peers.
- Long-term production growth profile.
- Delaware Basin delineation risk.

### EOG Resources, Inc. vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



## Hess Corporation (HES: \$52.49) – Sector Outperform; \$56.00 per Share

**Thesis** We view HES as a high-beta way to play oil in the longer term, as well as having upside potential in Guyana and the Bakken. However, timing remains a concern. With 2017 having been a year of transition, and with the effects lingering in 2H17, investors have gone elsewhere for better near-term outlooks. That said, Bakken growth could exceed expectations as soon as 1Q18 following a recent re-set, and the tremendous resource size in Guyana has us sticking around to play the weakness year-to-date.

**Valuation** HES currently trades at 8.8x 2019E EV/EBITDA, compared with its large cap peer group average of 6.3x. On a price to NAV basis, the stock trades at 94% of NAV, compared with the peer group average of 92%.

**Catalysts**

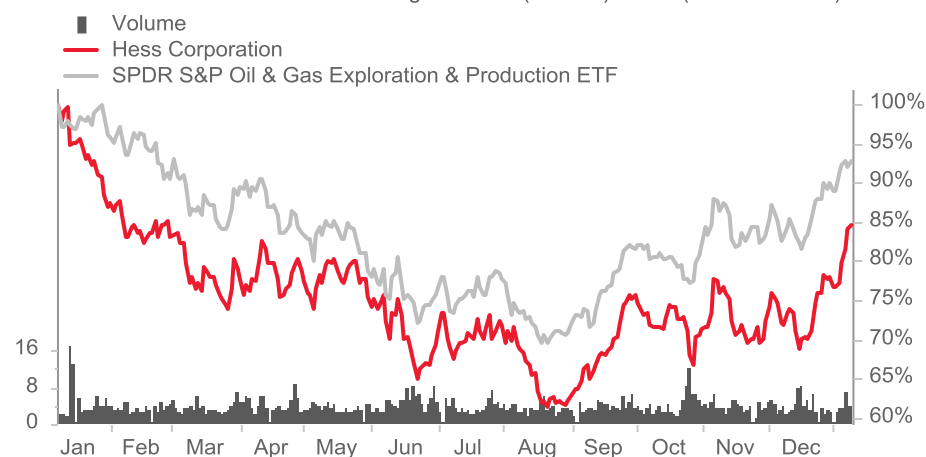
- Exploration results in Guyana.
- Resumption of growth in the Bakken.
- North Malay Basin start-up.

**Concerns**

- Ongoing exploration success in Guyana.
- Acceleration in the Bakken.
- Cost pressures in the Bakken.
- Guyana CAPEX burden.

### Hess Corporation vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



Source: FactSet Prices

## Marathon Oil Corporation (MRO: \$17.97) – Sector Outperform; \$23.00 per Share

**Thesis** Earlier in 2017, we believed that MRO shares reflected an unfair discount to peers, given the company's strong STACK/SCOOP, Bakken, Eagle Ford, and new Permian positions and the potential for U.S. resource play growth. Although the shares outperformed peers for a period of time on a revised outlook and operational updates, we still see material upside in the name. Of the stocks under our coverage, we believe this is among the few names that are being misread.

**Valuation** MRO currently trades at 4.2x 2019E EV/EBITDA, compared with the large cap peer group average of 6.3x. On a price to NAV basis, the stock trades at 78% of NAV, versus the peer group average of 92%.

**Catalysts**

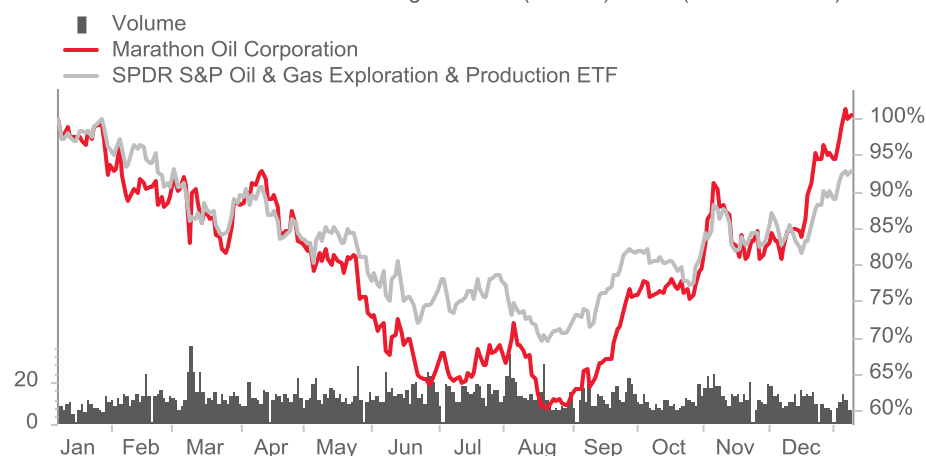
- Permian delineation.
- STACK downspacing.
- Rig ramp-up in Bakken and Hector delineation.

**Concerns**

- Permian acquisition overhang.
- Execution in STACK/Permian and importance to long-term growth.
- Rig ramp-up could lead to higher service cost inflation.

### Marathon Oil Corporation vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



Source: FactSet Prices

## Murphy Oil Corporation (MUR: \$33.32) – Sector Perform; \$30.00 per Share

**Thesis** While we still like MUR's position in the Eagle Ford, the real upside for the shares likely lies in the Kaybob Duvernay and Montney in Canada, as well as the recently added Permian. This has us on the sidelines on the name, as we await better delineation of the various positions. Our worry is that even with delineation, results and potential value will fall on deaf ears among U.S. investors who rarely give full value to non-U.S. onshore assets, and, in the Permian we are skeptical about the acreage quality based on past operator results.

**Valuation** MUR currently trades at 4.5x 2019E EV/EBITDA, compared with its large cap peer group average of 6.3x. On a price to NAV basis, the stock trades at 111% of NAV, while the peer group average is 92%.

**Catalysts**

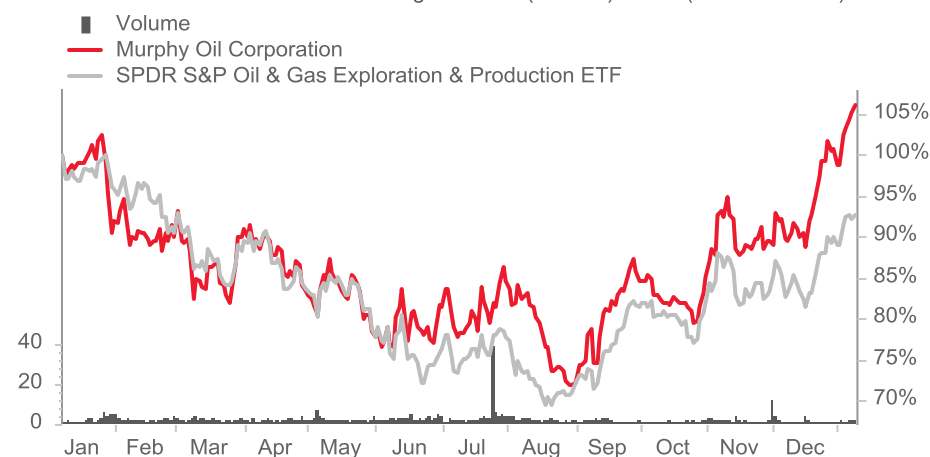
- Duvernay delineation and completion optimization.
- Permian delineation.
- Eagle Ford production growth resumption.
- Mexican GOM exploration (2018).

**Concerns**

- Geologic risk in Canada.
- Exploration spend.
- Geopolitical risk.
- Long-term growth rate.

### Murphy Oil Corporation vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



Source: FactSet Prices

## Noble Energy, Inc. (NBL: \$31.68) – Sector Perform; \$37.00 per Share

**Thesis** We believe the CWEI acquisition was a net positive, in that it transformed NBL into a real player in the Delaware Basin at a reasonable price. The shares responded favorably, but have recently reversed and we feel the valuation is reasonable. In the future, execution in the Delaware could drive material NAV accretion, but we are taking more of a wait-and-see approach.

**Valuation** NBL currently trades at 5.5x 2019E EV/EBITDA, compared with its large cap peer group average of 6.3x. On a price to NAV basis, the stock trades at 86% of NAV, versus the peer group average of 92%.

**Catalysts**

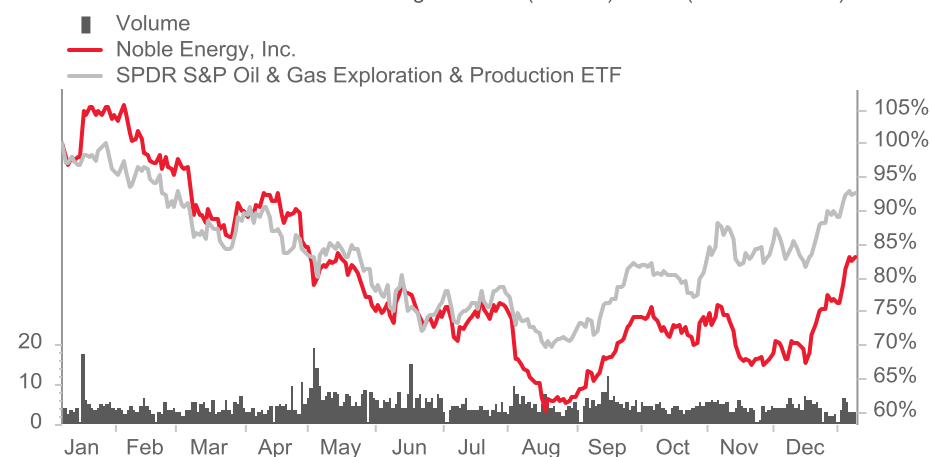
- Delaware and DJ Basin type curve increases.
- Three-well Wolfcamp/Bone spring pad (2Q17).
- Upsized completion design in DJ and Delaware.
- Suriname exploration well (4Q17).

**Concerns**

- Israel geopolitical exposure.
- Successful integration of CWEI assets.
- Leviathan CAPEX burden.
- Colorado regulatory environment.

### Noble Energy, Inc. vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



Source: FactSet Prices

## Occidental Petroleum Corporation (OXY: \$75.19) – Sector Perform; \$71.00 per Share

**Thesis** Occidental has long been a bellwether name for relative safety because of its balance sheet, with high oil exposure and associated robust margins. However, over the past two years, OXY has morphed into a name that is somewhere between a sub-par major/integrated and a sub-par independent E&P. This drives our neutral stance on the name, given the valuation and material degradation to a once-pristine balance sheet.

**Valuation** OXY currently trades at 8.4x 2019E EV/EBITDA, compared with its large cap peer group average of 6.3x. On a price to NAV basis, the stock trades at 106% of NAV, versus the peer group average of 92%.

**Catalysts**

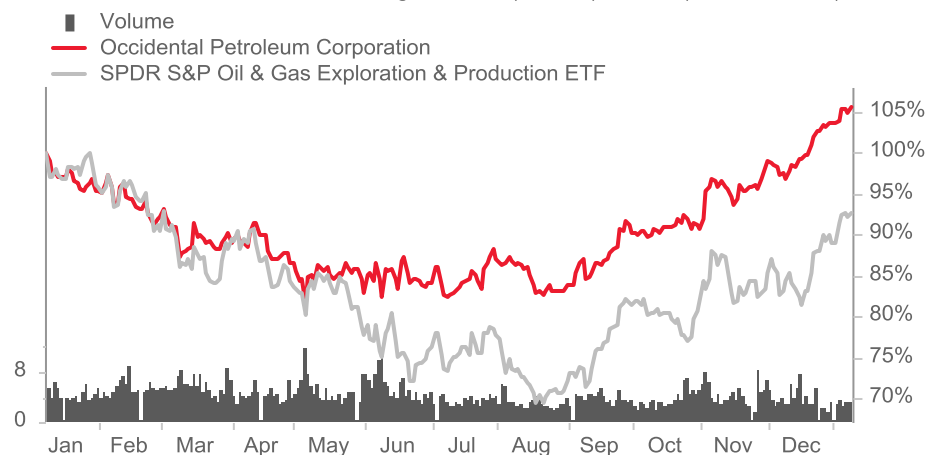
- Permian delineation.
- Integration of Reeves County acquisition.
- Colombian Development.

**Concerns**

- Middle East geopolitical risk
- Dividend burden.
- Balance sheet deterioration.
- Premium valuation to peers.

### Occidental Petroleum Corporation vs. Peers

Indexed Price Performance with target volume (Millions) Price (Indexed to 100)



Source: FactSet Prices



## Stock Performance and Returns

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Company	Symbol	Stock Price		52 Week High	% below	52 Week Low	% Above	Price above		Delta	Bottom	52 Week High and Low Range	Stock Performance						
		1/08/18	P/NAV										YTD	1 Day	1 WK	1 MO	3 MO	6 MO	1 YR
Apache Corporation	APA	\$45.92	83%	\$64.13	39.7%	\$38.14	20.4%	\$25.99	\$7.78			APA	6.5%	-2%	2%	11%	-2%	0%	-28%
Anadarko Petroleum Corporation	APC	\$55.39	84%	\$72.32	30.6%	\$39.96	38.6%	\$32.36	\$15.43			APC	3.9%	1%	2%	16%	14%	29%	-20%
Chesapeake Energy Corporation	CHK	\$3.97	99%	\$7.29	83.6%	\$3.41	16.4%	\$3.88	\$0.56			CHK	2.7%	2%	-1%	10%	-3%	-10%	-41%
Devon Energy Corporation	DVN	\$43.25	80%	\$48.18	11.4%	\$28.79	50.2%	\$19.39	\$14.46			DVN	3.9%	-1%	2%	13%	20%	46%	-8%
EOG Resources, Inc.	EOG	\$112.71	102%	\$113.22	0.5%	\$81.99	37.5%	\$31.23	\$30.72			EOG	3.9%	-1%	3%	12%	16%	27%	9%
Hess Corporation	HES	\$52.49	94%	\$62.24	18.6%	\$37.25	40.9%	\$24.99	\$15.24			HES	10.3%	0%	9%	15%	18%	25%	-14%
Marathon Oil Corporation	MRO	\$17.97	78%	\$18.15	1.0%	\$10.55	70.3%	\$7.60	\$7.42			MRO	6.0%	0%	3%	18%	32%	56%	3%
Murphy Oil Corporation	MUR	\$33.32	111%	\$33.50	0.5%	\$22.21	50.0%	\$11.29	\$11.11			MUR	7.7%	0%	4%	18%	28%	37%	9%
Noble Energy, Inc.	NBL	\$31.68	86%	\$40.89	29.1%	\$22.99	37.8%	\$17.91	\$8.70			NBL	8.1%	-1%	4%	17%	12%	17%	-16%
Occidental Petroleum Corporation	OXY	\$75.19	106%	\$75.24	0.1%	\$57.20	31.5%	\$18.04	\$17.99			OXY	2.1%	0%	2%	9%	18%	28%	7%
Mean			92%											0%	3%	14%	15%	25%	-10%
Median														0%	2%	14%	17%	27%	-11%
vs. XOP												XOP	5%	0%	2%	10%	15%	27%	-4%

## Dividends

Symbol	Short Interest			Dividend per Share	Dividend Yield	Annual Increases in last 5 Years	Dividend Coverage	Growth		
	%	Days						1 YR	3 YR	5 YR
APA	7%	7.6		\$1.00	2%	3	0.5x	0%	0%	47%
APC	2%	2.2		\$0.20	0%	3	-1.1x	-81%	-80%	-44%
CHK	18%	6.3		\$0.00	0%	1	0.0x	N/A	N/A	N/A
DVN	2%	2.6		\$0.24	1%	4	11.8x	-56%	-55%	-48%
EOG	2%	3.7		\$0.67	1%	4	3.0x	0%	15%	97%
HES	10%	6.9		\$1.00	2%	2	-3.7x	0%	0%	150%
MRO	2%	1.7		\$0.20	1%	2	1.2x	-71%	-75%	-71%
MUR	17%	13.4		\$1.00	3%	4	0.3x	-14%	-9%	2%
NBL	3%	3.2		\$0.40	1%	4	2.1x	-44%	-41%	-12%
OXY	1%	2.5		\$3.08	4%	5	0.6x	2%	5%	40%

Source for all exhibits: Company reports; Scotia Howard Weil estimates; FactSet.

## Annual and Quarterly Estimates

Company	EPS				CFPS				EBITDA (\$MM)			
	2017e	2017e	2018e	2018e	2017e	2017e	2018e	2018e	2017e	2017e	2018e	2018e
	SHW	Street	SHW	Street	SHW	Street	SHW	Street	SHW	Street	SHW	Street
APA	(\$0.05)	\$0.12	\$0.53	\$0.86	\$7.11	\$6.89	\$8.80	\$8.55	\$3,563	\$3,601	\$4,123	\$3,902
APC	(\$2.10)	(\$2.22)	(\$0.21)	(\$0.25)	\$7.39	\$7.37	\$10.19	\$9.84	\$5,209	\$5,353	\$6,897	\$6,418
CHK	\$0.71	\$0.72	\$0.71	\$0.79	\$1.28	\$1.29	\$1.89	\$1.96	\$2,065	\$2,064	\$2,302	\$2,355
DVN	\$1.85	\$1.81	\$2.83	\$2.46	\$6.06	\$5.75	\$6.95	\$6.69	\$3,466	\$3,645	\$4,634	\$4,253
EOG	\$0.95	\$0.87	\$2.03	\$2.20	\$8.28	\$7.93	\$10.89	\$10.60	\$5,121	\$4,746	\$7,093	\$6,001
HES	(\$4.41)	(\$4.47)	(\$3.65)	(\$3.04)	\$5.35	\$4.64	\$5.56	\$5.40	\$2,071	\$2,073	\$1,960	\$1,969
MRO	(\$0.42)	(\$0.37)	\$0.25	(\$0.03)	\$2.59	\$2.61	\$3.61	\$3.29	\$2,702	\$2,623	\$3,468	\$3,003
MUR	(\$0.38)	(\$0.24)	\$0.30	\$0.20	\$5.74	\$6.08	\$7.91	\$7.46	\$1,366	\$1,345	\$1,506	\$1,438
NBL	\$0.13	(\$0.01)	\$0.86	\$0.19	\$4.53	\$4.45	\$6.33	\$5.26	\$2,643	\$2,544	\$3,473	\$2,988
OXY	\$0.91	\$0.84	\$1.90	\$1.78	\$6.06	\$6.24	\$8.31	\$7.66	\$5,046	\$5,421	\$6,746	\$7,017

Company	EPS				CFPS				EBITDA (\$MM)			
	Current Year				Current Year				Current Year			
	1Q17	2Q17	3Q17	4Q17e	1Q17	2Q17	3Q17	4Q17e	1Q17	2Q17	3Q17	4Q17e
APA	\$0.08	(\$0.21)	\$0.04	\$0.04	\$1.91	\$1.57	\$1.71	\$1.92	\$999	\$850	\$821	\$893
Street	\$0.08	(\$0.21)	\$0.04	\$0.20	\$1.71	\$1.68	\$1.62	\$1.94	\$1,000	\$848	\$835	\$933
APC	(\$0.60)	(\$0.77)	(\$0.77)	\$0.06	\$1.25	\$2.85	\$1.13	\$2.18	\$1,235	\$1,216	\$1,235	\$1,523
Street	(\$0.60)	(\$0.77)	(\$0.77)	(\$0.03)	\$1.45	\$2.22	\$1.25	\$2.23	\$1,566	\$1,172	\$1,254	\$1,488
CHK	\$0.23	\$0.13	\$0.12	\$0.24	\$0.11	\$0.27	\$0.37	\$0.54	\$525	\$461	\$468	\$611
Street	\$0.23	\$0.18	\$0.12	\$0.23	\$0.42	\$0.32	\$0.36	\$0.50	\$525	\$487	\$468	\$590
DVN	\$0.41	\$0.34	\$0.43	\$0.67	\$1.51	\$1.37	\$1.47	\$1.70	\$848	\$764	\$726	\$1,128
Street	\$0.41	\$0.34	\$0.46	\$0.61	\$1.46	\$1.26	\$1.38	\$1.62	\$851	\$831	\$905	\$1,026
EOG	\$0.15	\$0.08	\$0.19	\$0.52	\$1.85	\$1.82	\$2.02	\$2.58	\$1,134	\$1,112	\$1,163	\$1,601
Street	\$0.15	\$0.08	\$0.19	\$0.46	\$1.84	\$1.80	\$1.96	\$2.40	\$1,139	\$1,106	\$1,151	\$1,342
HES	(\$1.07)	(\$1.47)	(\$1.07)	(\$0.81)	\$1.41	\$1.06	\$1.32	\$1.57	\$526	\$409	\$557	\$579
Street	(\$1.07)	(\$1.46)	(\$1.07)	(\$0.89)	\$1.37	\$0.92	\$1.22	\$1.38	\$540	\$405	\$591	\$414
MRO	(\$0.13)	(\$0.17)	(\$0.08)	(\$0.03)	\$0.72	\$0.55	\$0.59	\$0.73	\$584	\$590	\$800	\$728
Street	(\$0.07)	(\$0.17)	(\$0.08)	(\$0.01)	\$0.60	\$0.57	\$0.61	\$0.78	\$613	\$552	\$731	\$716
MUR	(\$0.06)	(\$0.11)	(\$0.03)	(\$0.18)	\$1.41	\$1.24	\$1.53	\$1.56	\$464	\$278	\$305	\$318
Street	(\$0.06)	(\$0.11)	(\$0.03)	(\$0.02)	\$1.59	\$1.44	\$1.39	\$1.74	\$402	\$294	\$287	\$337
NBL	(\$0.05)	\$0.09	(\$0.02)	\$0.11	\$1.23	\$1.03	\$0.96	\$1.32	\$600	\$676	\$601	\$766
Street	(\$0.05)	\$0.05	(\$0.02)	\$0.01	\$1.14	\$1.03	\$0.99	\$1.22	\$610	\$660	\$597	\$708
OXY	\$0.15	\$0.15	\$0.18	\$0.43	\$1.37	\$1.35	\$1.41	\$1.93	\$1,118	\$1,185	\$1,164	\$1,579
Street	\$0.15	\$0.15	\$0.18	\$0.36	\$1.35	\$1.85	\$1.40	\$1.76	\$1,228	\$1,185	\$1,306	\$1,595

Source for all exhibits: FactSet; Scotia Howard Weil estimates.

## Production Estimates

	Total Production			% Liquids			Change Y-O-Y %			
	FY17e	FY18e	FY19e	FY17e	FY18e	FY19e	FY17e	FY18e	FY19e	
Company	Mboe/d			%	%	%	%	%	%	
APA	378.4	404.2	434.3	66%	67%	65%	-16%	7%	7%	
APC	639.0	689.7	754.5	70%	71%	71%	-19%	8%	9%	
CHK	546.1	564.4	555.2	27%	28%	30%	-14%	3%	-2%	
DVN	548.6	592.4	667.1	63%	64%	65%	-8%	8%	13%	
EOG	603.6	704.8	814.0	70%	72%	73%	8%	17%	15%	
HES	240.5	267.3	293.0	66%	65%	67%	-3%	11%	10%	
MRO	358.8	422.7	484.0	62%	64%	66%	-6%	18%	14%	
MUR	164.0	178.6	195.8	61%	59%	59%	-7%	9%	10%	
NBL	382.2	409.6	474.0	52%	59%	60%	-9%	7%	16%	
OXY	604.2	656.2	690.6	77%	78%	79%	-5%	9%	5%	
Total	4,465.4	4,889.9	5,362.7	Mean	61%	63%	64%	-8%	10%	10%
				Median	65%	65%	65%	-7%	8%	10%

	Gas Production			% Gas			Change Y-O-Y %			
	FY17e	FY18e	FY19e	FY17e	FY18e	FY19e	FY17e	FY18e	FY19e	
Company	Bcf/d			%	%	%	%	%	%	
APA	0.8	0.8	0.9	34%	33%	35%	-19%	4%	13%	
APC	1.2	1.2	1.3	30%	29%	29%	-44%	4%	7%	
CHK	2.4	2.4	2.3	73%	72%	70%	-17%	1%	-4%	
DVN	1.2	1.3	1.4	37%	36%	35%	-10%	5%	10%	
EOG	1.1	1.2	1.3	30%	28%	27%	-7%	9%	10%	
HES	0.5	0.6	0.6	34%	35%	33%	2%	16%	1%	
MRO	0.8	0.9	1.0	38%	36%	34%	8%	9%	11%	
MUR	0.4	0.4	0.5	39%	41%	41%	2%	14%	9%	
NBL	1.1	1.0	1.1	48%	41%	40%	-21%	-9%	12%	
OXY	0.8	0.9	0.9	23%	22%	21%	-14%	5%	2%	
Total	10.3	10.7	11.3	Mean	39%	37%	36%	-12%	6%	7%
				Median	35%	35%	35%	-12%	5%	9%

	Oil Production			% Oil			Change Y-O-Y %			
	FY17e	FY18e	FY19e	FY17e	FY18e	FY19e	FY17e	FY18e	FY19e	
Company	Mbo/d			%	%	%	%	%	%	
APA	197.4	209.6	214.2	52%	52%	49%	-14%	6%	2%	
APC	349.7	390.4	429.2	55%	57%	57%	11%	12%	10%	
CHK	90.0	96.7	102.2	16%	17%	18%	0%	8%	6%	
DVN	248.8	274.4	312.1	45%	46%	47%	-5%	10%	14%	
EOG	336.0	404.1	474.7	56%	57%	58%	19%	20%	17%	
HES	117.2	126.7	145.8	49%	47%	50%	-5%	8%	15%	
MRO	169.1	210.0	245.5	47%	50%	51%	-22%	24%	17%	
MUR	90.3	94.6	103.5	55%	53%	53%	-13%	5%	9%	
NBL	133.9	165.8	192.4	35%	40%	41%	5%	24%	16%	
OXY	382.8	419.0	444.9	63%	64%	64%	-3%	9%	6%	
Total	2,115.2	2,391.3	2,664.4	Mean	47%	48%	49%	-3%	13%	11%
			Median	50%	51%	50%	-4%	10%	12%	

	NGL Production			% Liquids			Change Y-O-Y %		
	FY17e	FY18e	FY19e	FY17e	FY18e	FY19e	FY17e	FY18e	FY19e
Company	Mbo/d			%	%	%	%	%	%
APA	53.2	61.3	69.6	14%	15%	16%	-15%	15%	14%
APC	95.4	97.6	109.5	15%	14%	15%	-25%	2%	12%
CHK	57.1	63.4	63.5	10%	11%	11%	-13%	11%	0%
DVN	97.0	104.8	120.1	18%	18%	18%	-11%	8%	15%
EOG	85.8	101.7	120.1	14%	14%	15%	5%	18%	18%
HES	41.5	46.1	51.8	17%	17%	18%	-4%	11%	12%
MRO	51.7	62.3	71.9	14%	15%	15%	31%	21%	15%
MUR	9.2	10.7	12.8	6%	6%	7%	0%	16%	20%
NBL	64.1	75.8	94.0	17%	18%	20%	7%	18%	24%
OXY	85.1	94.1	100.1	14%	14%	14%	6%	11%	6%
Total	640.0	717.7	813.5	Mean	14%	14%	-2%	13%	14%
			Median	14%	15%	15%	-2%	13%	14%

Source for all exhibits: FactSet; Scotia Howard Weil estimates.

## Cash Flow and Capex

Company	DCF (\$mm)			EBITDA (\$mm)			CAPEX (\$mm)			Free Cash Flow (\$mm)			Capex/CF		
	2017e	2018e	2019e	2017e	2018e	2019e	2017e	2018e	2019e	2017e	2018e	2019e	2017e	2018e	2019e
APA	\$2,754	\$3,369	\$3,642	\$3,596	\$4,123	\$4,430	\$3,100	\$3,247	\$3,315	-\$346	\$122	\$327	113%	96%	91%
APC	\$4,052	\$5,333	\$6,476	\$5,209	\$6,897	\$8,118	\$5,395	\$4,808	\$4,584	-\$1,343	\$525	\$1,892	133%	90%	71%
CHK	\$1,231	\$1,719	\$1,912	\$2,065	\$2,302	\$2,513	\$2,601	\$2,503	\$2,552	-\$1,370	-\$784	-\$640	211%	146%	133%
DVN	\$3,202	\$3,675	\$4,420	\$3,466	\$4,634	\$5,393	\$3,102	\$3,065	\$3,497	\$100	\$610	\$922	97%	83%	79%
EOG	\$4,793	\$6,300	\$7,818	\$5,121	\$7,093	\$8,794	\$4,051	\$4,312	\$5,966	\$742	\$1,987	\$1,851	85%	68%	76%
HES	\$1,679	\$1,689	\$2,369	\$2,071	\$1,960	\$2,593	\$2,150	\$1,875	\$2,114	-\$471	-\$186	\$255	128%	111%	89%
MRO	\$2,204	\$3,073	\$3,834	\$2,702	\$3,468	\$4,314	\$2,025	\$2,468	\$2,713	\$179	\$605	\$1,121	92%	80%	71%
MUR	\$991	\$1,365	\$1,586	\$1,366	\$1,506	\$1,783	\$994	\$1,124	\$1,269	-\$3	\$241	\$317	100%	82%	80%
NBL	\$2,131	\$3,069	\$3,879	\$2,643	\$3,473	\$4,289	\$2,369	\$2,597	\$3,122	-\$238	\$472	\$757	111%	85%	80%
OXY	\$4,639	\$6,363	\$7,162	\$5,046	\$6,746	\$7,684	\$3,482	\$3,979	\$4,960	\$1,157	\$2,384	\$2,202	75%	63%	69%
Average													114%	90%	84%
Median													106%	84%	80%

Source: FactSet; Scotia Howard Weil estimates.

Historically, the E&P group has outspent cash flow in excess of 1.2x, but, as we show in the table above, we expect spending levels to be in line with or slightly below cash flow (1.0-0.9x). We attribute this to the companies' desire to maintain or improve balance sheets while growing, which has thus far been

only occasionally achievable for the group. The names with the biggest outspend have also been among the biggest laggards (CHK in particular), which highlights investors' preference for balance sheet prudence.

## Efficiency Metrics

Company	Recycle Ratio			Full Cycle Returns			Maintenance Capex (\$MM)			Capital Efficiency		ROCE			ROE		
	(CF/Boe / Organic '16 F&D Cost)			(CF/Boe / DD&A/Boe)			(Annual Production / '16 YR F&D)			2018e	2019e						
	2017e	2018e	2019e	2017e	2018e	2019e	2017e	2018e	2019e	\$/Boe/d	\$/Boe/d	2017e	2018e	2019e	2017e	2018e	2019e
APA	1.5x	1.4x	1.5x	34%	15%	19%	\$1,425	\$2,030	\$2,181	\$42,415	\$43,286	3%	4%	4%	0%	3%	4%
APC	0.4x	0.4x	0.5x	59%	68%	80%	\$2,407	\$3,464	\$3,789	\$47,084	\$36,109	-1%	3%	4%	-11%	-1%	3%
CHK	3.7x	3.8x	4.3x	79%	71%	93%	\$2,057	\$2,835	\$2,788	\$22,832	\$30,406	10%	9%	10%	N/A	N/A	N/A
DVN	1.4x	1.7x	1.8x	108%	203%	217%	\$2,066	\$2,975	\$3,350	\$31,440	\$27,311	7%	9%	11%	8%	11%	13%
EOG	1.8x	2.2x	2.4x	36%	61%	71%	\$2,274	\$3,540	\$4,088	\$22,933	\$31,357	8%	11%	3%	4%	8%	10%
HES	1.2x	1.3x	1.5x	15%	33%	55%	\$906	\$1,342	\$1,472	\$37,787	\$37,447	-6%	-6%	-4%	-8%	-9%	-5%
MRO	4.0x	5.7x	6.1x	-16%	24%	33%	\$1,352	\$2,123	\$2,430	\$18,626	\$24,695	0%	2%	4%	-1%	-1%	0%
MUR	2.3x	2.5x	2.8x	21%	28%	40%	\$618	\$897	\$984	\$28,328	\$33,569	1%	3%	4%	0%	0%	1%
NBL	2.0x	2.6x	2.8x	7%	33%	46%	\$1,440	\$2,057	\$2,381	\$31,511	\$28,004	2%	3%	4%	1%	4%	6%
OXY	1.4x	1.8x	2.0x	10%	47%	61%	\$2,276	\$3,295	\$3,468	\$35,778	\$64,347	3%	5%	6%	3%	7%	8%
Average	2.0x	2.3x	2.6x	35%	58%	71%	\$1,682	\$2,456	\$2,693	\$31,873	\$35,653	3%	4%	5%	-1%	2%	4%
Median	1.7x	2.0x	2.2x	28%	40%	58%	\$1,748	\$2,479	\$2,609	\$31,475	\$32,463	2%	4%	4%	0%	3%	4%

Source: FactSet; Scotia Howard Weil estimates.

## Debt-Adjusted Cash Flow

Symbol	CFPDAS				P / CF per DAS			
	2016	2017e	2018e	2019e	2016	2017e	2018e	2019e
APA	\$6.45	\$7.75	\$9.33	\$9.89	9.8x	5.4x	4.8x	4.5x
APC	\$6.27	\$8.96	\$11.99	\$15.69	11.1x	6.0x	4.6x	3.6x
CHK	\$1.26	\$1.23	\$1.44	\$1.41	5.6x	3.2x	2.8x	2.9x
DVN	\$3.30	\$6.54	\$7.68	\$9.61	13.8x	6.3x	5.6x	4.5x
EOG	\$5.03	\$8.80	\$11.88	\$15.11	20.1x	12.3x	9.4x	7.4x
HES	\$3.52	\$6.11	\$6.44	\$9.00	17.7x	7.8x	8.1x	5.8x
MRO	\$1.53	\$2.99	\$4.51	\$6.02	11.3x	5.7x	4.0x	3.0x
MUR	\$4.35	\$7.31	\$10.22	\$12.28	7.2x	4.2x	3.3x	2.7x
NBL	\$4.68	\$4.85	\$7.49	\$9.90	8.1x	6.0x	4.2x	3.2x
OXY	\$4.33	\$5.55	\$7.61	\$8.54	16.5x	13.3x	9.9x	8.8x

Source: FactSet; Scotia Howard Weil estimates.

Symbol	Production per Debt-Adjusted Share (Boe/sh)				Debt-Adjusted Production Growth			
	2016	2017e	2018e	2019e	2016	2017e	2018e	2019e
APA	1.19	1.07	1.12	1.18	-8%	-10%	13%	12%
APC	1.63	1.41	1.55	1.83	-1%	-6%	33%	39%
CHK	0.86	0.54	0.47	0.41	-2%	-31%	-17%	-34%
DVN	1.17	1.12	1.24	1.45	-29%	-3%	19%	30%
EOG	1.02	1.11	1.33	1.57	-2%	9%	27%	29%
HES	0.80	0.88	1.02	1.11	-19%	9%	33%	27%
MRO	0.54	0.49	0.62	0.76	-15%	4%	47%	53%
MUR	1.15	1.21	1.34	1.52	-5%	19%	41%	47%
NBL	1.05	0.87	1.00	1.21	19%	-11%	23%	43%
OXY	0.76	0.72	0.78	0.82	-13%	-13%	-1%	-4%

## Hedging Sheet

2017e																				
	Natural Gas		Natural Gas		\$ Nat Gas Hedged		Hedge Gain		Crude Production		Crude Hedged		\$ Crude Hedged		Hedge Gain		Total Hedge		Total Hedge	
Company	Production (Mmcf/d)	Hedged (Mmcf/d)	Floors	Ceilings	per \$/mcf	Total Value		(mbo/d)	(mmbo/d)	Floors	Ceilings	per \$/bo	Total Value				Revenue (\$/boe)	Gain (\$mm)		
APA	767.0	17.0	\$1.45	\$1.45	\$0.01	\$0.00		197.4	131.4	\$49.91	\$0.00	(\$0.13)	(\$9.03)				(\$0.06)	(\$9.0)		
APC	1,163.3	770.2	\$2.48	\$3.30	(\$0.15)	(\$62.94)		349.7	91.0	\$10.00	\$59.80	\$0.30	\$37.69				(\$0.09)	(\$25.3)		
CHK	2,394.3	1,835.6	\$2.75	\$2.77	(\$0.01)	(\$6.45)		90.0	63.0	\$49.67	\$49.67	(\$0.44)	(\$14.53)				(\$0.09)	(\$21.0)		
DVN	1,216.9	628.6	\$2.39	\$2.64	\$0.02	\$9.15		248.8	133.5	\$39.22	\$45.32	\$1.11	\$100.89				\$0.51	\$110.0		
EOG	1,090.5	147.7	\$2.21	\$2.64	(\$0.00)	(\$1.67)		336.0	17.4	\$49.04	\$49.04	(\$0.08)	(\$9.57)				(\$0.05)	(\$11.2)		
HES	521.8	-	\$0.00	\$0.00	\$0.00	\$0.00		169.1	72.8	\$49.30	\$68.54	\$0.98	\$0.06				\$0.00	\$0.1		
MRO	828.1	120.3	\$1.51	\$1.95	\$0.01	\$2.06		169.1	50.9	\$11.05	\$56.73	\$0.62	\$38.11				\$0.29	\$40.2		
MUR	387.0	127.3	\$1.82	\$1.82	(\$0.28)	(\$38.90)		90.3	22.0	\$48.90	\$48.90	(\$0.10)	(\$0.00)				(\$0.61)	(\$38.9)		
NBL	1,105.5	435.1	\$2.67	\$3.05	\$0.01	\$3.35		133.9	45.8	\$22.11	\$58.19	\$0.20	\$9.78				\$0.09	\$13.1		
OXY	817.7	-	\$0.00	\$0.00	\$0.00	\$0.00		382.8	-	\$0.00	\$0.00	\$0.00	\$0.00				\$0.00	\$0.0		
Total	10,292.1	4,081.9	\$2.54	\$2.82	(\$0.04)	(\$95.39)		2,167.0	627.7	\$36.52	\$43.15	\$0.38	\$153.39					\$58.0		

2018e																				
	Natural Gas		Natural Gas		\$ Nat Gas Hedged		Hedge Gain		Crude Production		Crude Hedged		\$ Crude Hedged		Hedge Gain		Total Hedge		Total Hedge	
Company	Production (Mmcf/d)	Hedged (Mmcf/d)	Floors	Ceilings	per \$/mcf	Total Value		(mbo/d)	(mmbo/d)	Floors	Ceilings	per Barrel	Total Value				Revenue (\$/boe)	Gain (\$mm)		
APA	800.1	233.9	\$2.48	\$2.48	\$0.03	\$0.01		209.6	45.3	\$34.49	\$57.23	(\$0.06)	(\$4.91)				(\$0.0)	(\$4.9)		
APC	1,210.1	250.0	\$2.43	\$3.22	(\$0.03)	(\$14.01)		390.4	-	\$0.00	\$0.00	\$0.00	\$0.00				(\$0.1)	(\$14.0)		
CHK	2,426.0	1,586.3	\$2.70	\$2.72	\$0.10	\$92.33		96.7	57.6	\$46.88	\$50.88	(\$2.98)	(\$105.38)				(\$0.1)	(\$13.0)		
DVN	1,279.2	504.4	\$2.54	\$2.65	\$0.05	\$21.25		274.4	81.4	\$38.82	\$44.45	(\$1.00)	(\$100.11)				(\$0.4)	(\$78.9)		
EOG	1,194.0	98.7	\$2.54	\$2.86	\$0.00	\$1.26		404.1	-	\$0.00	\$0.00	\$0.00	\$0.00				\$0.0	\$1.3		
HES	576.1	-	\$0.00	\$0.00	\$0.00	\$0.00		134.7	115.0	\$47.50	\$62.50	(\$2.13)	(\$0.10)				(\$0.0)	(\$0.1)		
MRO	902.4	169.9	\$1.80	\$2.44	\$0.02	\$6.76		210.0	68.4	\$6.34	\$54.82	(\$0.47)	(\$36.35)				(\$0.2)	(\$29.6)		
MUR	439.7	63.9	\$2.10	\$2.10	(\$0.09)	(\$14.08)		94.6	7.0	\$50.41	\$50.41	(\$0.38)	(\$0.01)				(\$0.2)	(\$14.1)		
NBL	1,008.6	70.0	\$2.45	\$3.41	\$0.00	\$0.32		165.8	28.0	\$24.05	\$62.35	(\$0.13)	(\$8.09)				(\$0.1)	(\$7.8)		
OXY	858.6	-	\$0.00	\$0.00	\$0.00	\$0.00		419.0	-	\$0.00	\$0.00	\$0.00	\$0.00				\$0.0	\$0.0		
Total	10,694.8	2,977.0	\$2.56	\$2.72	\$0.06	\$93.85		2,399.3	402.7	\$35.62	\$55.07	(\$1.34)	(\$254.96)					(\$161.1)		

Source: FactSet; Scotia Howard Weil estimates.

## Cash Margin Rankings

2017e per Boe							Ranking					
Company	Revenue	Operating Costs	Operating Margin	Interest	G&A	Net Profit	Revenue	Profit	OPEX	Interest	G&A	Net Margin
APA	\$40.04	\$12.82	\$27.22	\$2.90	\$3.08	\$21.25	3	3	8	7	7	4
APC	\$42.72	\$4.35	\$38.37	\$3.89	\$4.79	\$29.69	2	1	1	9	10	1
CHK	\$22.35	\$10.23	\$12.12	\$2.09	\$1.32	\$8.72	10	10	5	3	1	10
DVN	\$30.08	\$7.80	\$22.28	\$2.52	\$3.29	\$16.48	9	6	2	5	8	6
EOG	\$35.52	\$11.13	\$24.38	\$1.24	\$1.88	\$21.27	5	5	6	1	3	3
HES	\$47.48	\$11.32	\$36.16	\$5.27	\$2.00	\$28.88	1	2	7	10	4	2
MRO	\$35.08	\$14.20	\$20.88	\$2.50	\$2.89	\$15.48	6	8	9	4	5	9
MUR	\$34.87	\$7.92	\$26.94	\$3.13	\$3.89	\$19.93	7	4	3	8	9	5
NBL	\$30.89	\$9.22	\$21.66	\$2.55	\$2.96	\$16.15	8	7	4	6	6	8
OXY	\$35.63	\$16.56	\$19.06	\$1.39	\$1.39	\$16.29	4	9	10	2	2	7
<b>Total</b>	<b>\$35.46</b>	<b>\$10.56</b>	<b>\$24.91</b>	<b>\$2.75</b>	<b>\$2.75</b>	<b>\$19.41</b>						

2018e per Boe							Ranking					
Company	Revenue	Operating Costs	Operating Margin	Interest	G&A	Net Profit	Revenue	Profit	OPEX	Interest	G&A	Net Margin
APA	\$36.80	\$11.15	\$25.65	\$2.74	\$3.43	\$19.48	7	8	9	7	7	9
APC	\$44.82	\$4.53	\$40.29	\$3.61	\$4.66	\$32.02	2	1	1	10	10	1
CHK	\$23.45	\$10.87	\$12.57	\$2.21	\$1.40	\$8.96	10	10	6	4	2	10
DVN	\$34.83	\$7.75	\$27.08	\$2.31	\$3.55	\$21.21	9	6	2	6	8	7
EOG	\$39.58	\$10.96	\$28.62	\$0.98	\$1.87	\$25.77	4	4	7	1	3	3
HES	\$46.65	\$11.00	\$35.65	\$3.07	\$2.00	\$30.57	1	2	8	9	4	2
MRO	\$37.34	\$10.22	\$27.12	\$1.74	\$3.13	\$22.24	5	5	5	3	5	4
MUR	\$36.94	\$8.17	\$28.78	\$2.99	\$4.10	\$21.69	6	3	3	8	9	6
NBL	\$35.31	\$9.22	\$26.08	\$2.27	\$3.17	\$20.65	8	7	4	5	6	8
OXY	\$40.39	\$16.00	\$24.39	\$1.19	\$1.19	\$22.01	3	9	10	2	1	5
<b>Total</b>	<b>\$37.61</b>	<b>\$9.99</b>	<b>\$27.62</b>	<b>\$2.31</b>	<b>\$2.85</b>	<b>\$22.46</b>						

Source: FactSet; Scotia Howard Weil estimates.



## Balance Sheet Summary

Company	Date	Assets			Debt		Equity				
		Cash (\$MM)	WC (ex Cash) (\$MM)	Available Liquidity (\$MM)	Long Term Debt (\$MM)	Net Debt (\$MM)	Minority Interest (\$MM)	Book Equity (\$MM)	BV / Share	TBV / Share	Price / TBV
APA	3Q17	\$1,846.0	-\$542.0	\$5,346.0	\$7,933.0	\$6,087.0	\$1,366.0	\$7,011.0	\$18.40	\$4.37	10.5x
APC	3Q17	\$5,251.0	-\$1,461.0	\$10,251.0	\$15,424.0	\$10,173.0	\$3,140.0	\$10,782.0	\$19.71	\$0.97	57.1x
CHK	3Q17	\$10.0	-\$924.0	\$3,259.0	\$9,937.0	\$9,927.0	\$254.0	-\$2,526.0	-\$2.78	-\$6.37	(0.6)x
DVN	3Q17	\$2,781.0	-\$991.0	\$5,781.0	\$10,383.0	\$7,602.0	\$4,805.0	\$7,129.0	\$13.57	\$2.57	16.9x
EOG	3Q17	\$846.1	-\$262.2	\$2,845.4	\$6,380.4	\$5,534.3	\$0.0	\$13,922.3	\$24.08	\$19.16	5.9x
HES	3Q17	\$2,526.0	-\$657.0	\$6,526.0	\$6,592.0	\$4,066.0	\$1,296.0	\$13,132.0	\$41.33	\$20.79	2.5x
MRO	3Q17	\$1,795.0	\$1,928.0	\$5,095.0	\$6,488.0	\$4,693.0	\$0.0	\$11,775.0	\$13.86	\$7.86	2.3x
MUR	3Q17	\$993.4	-\$875.6	\$2,193.4	\$2,367.1	\$1,373.7	\$0.0	\$4,972.2	\$28.81	\$16.10	2.1x
NBL	3Q17	\$564.0	-\$964.0	\$4,564.0	\$7,487.0	\$6,923.0	\$477.0	\$9,466.0	\$19.45	\$10.07	3.1x
OXY	3Q17	\$1,806.0	\$683.0	\$3,806.0	\$9,326.0	\$7,520.0	\$0.0	\$20,669.0	\$27.01	\$22.04	3.4x
<b>Total</b>		<b>\$18,418.5</b>	<b>-\$4,065.8</b>	<b>\$49,666.7</b>	<b>\$82,317.5</b>	<b>\$63,899.0</b>	<b>\$11,338.0</b>	<b>\$96,332.5</b>			
<b>Average</b>									<b>20.3x</b>	<b>9.8x</b>	<b>10.3x</b>
<b>Median</b>									<b>19.6x</b>	<b>9.0x</b>	<b>3.3x</b>

Source: FactSet; Scotia Howard Weil.

## Proved Reserves

Company	Reserves						Reserve Replacement		F&D Costs (\$/boe)					PV-10				
	Total	Developed	% PDP	% Oil	R/P	PD R/P	All-In	Organic	All-In	Organic	3-YR			SEC (\$mm)	per Boe	per Share	FPC per Boe	FDC per Boe
	(mboe)	(mmboe)			(yrs.)	(yrs.)					All-In	Organic	5-YR					
APA	1,311.3	1,173.6	90%	49%	6.9x	6.1x	-29%	54%	-\$29.97	\$13.76	\$345.16	\$28.94	\$67.34	\$8,060	\$6.15	\$21.16	\$11.94	\$48.97
APC	1,722.6	1,325.3	77%	41%	5.9x	4.6x	86%	14%	\$21.80	\$74.01	\$36.07	\$29.45	\$22.76	\$6,630	\$3.85	\$12.12	\$11.73	\$19.78
CHK	1,708.2	1,188.8	70%	23%	7.3x	5.1x	291%	249%	\$3.20	\$2.35	\$27.02	\$7.19	\$35.07	\$4,379	\$2.56	\$4.82	\$3.98	\$6.97
DVN	1,574.6	1,460.2	93%	13%	8.0x	8.0x	138%	69%	\$12.41	\$12.13	\$63.01	\$26.06	\$42.82	\$4,198	\$2.67	\$7.99	\$13.19	\$43.56
EOG	2,146.6	1,093.9	51%	55%	10.4x	5.3x	195%	101%	\$15.99	\$11.87	\$21.93	\$14.57	\$23.02	\$8,812	\$4.11	\$15.24	\$13.05	\$12.10
HES	1,108.8	799.3	72%	66%	9.2x	6.6x	119%	57%	\$11.80	\$24.33	\$85.23	\$29.37	\$54.74	\$4,025	\$3.63	\$12.67	\$12.67	\$27.90
MRO	1,403.7	851.8	61%	57%	6.8x	6.8x	118%	246%	\$14.29	\$3.91	\$21.01	\$11.90	\$18.39	\$4,953	\$3.53	\$5.83	\$25.21	\$21.92
MUR	569.7	343.5	60%	38%	5.3x	5.3x	142%	105%	\$8.83	\$8.56	\$17.15	\$19.01	\$22.44	\$2,580	\$4.53	\$14.95	\$15.75	\$15.90
NBL	1,436.7	950.5	66%	23%	9.4x	6.2x	161%	117%	\$6.80	\$8.03	\$24.14	\$23.45	\$20.69	\$5,686	\$3.96	\$11.68	\$7.32	\$11.77
OXY	2,406.1	1,856.3	77%	56%	10.4x	8.0x	209%	81%	\$9.66	\$11.95	\$25.39	\$18.53	\$23.02	\$9,713	\$4.04	\$12.69	\$13.75	\$16.80
Total	15,388.2	11,043.3	71.6%	42.2%	8.0x	6.2x	143%	109%	\$7.48	\$17.09	\$66.61	\$20.85	\$33.03	59,036.2	\$3.90	\$11.91	\$12.86	\$22.57

Source: FactSet; Scotia Howard Weil.

## Leverage Metrics

Company	Leverage					
	Net Debt / Capital	Net Debt / Ent Value	Net Debt/EBITDA 2015	Net Debt/EBITDA 2016	Net Debt/EBITDA 2017e	Net Debt/EBITDA 2018e
APA	42.1%	23.9%	1.9x	2.3x	1.7x	1.6x
APC	42.2%	22.6%	3.3x	3.0x	2.0x	1.5x
CHK	129.7%	67.5%	4.0x	6.8x	4.9x	4.7x
DVN	38.9%	21.0%	1.6x	3.3x	2.2x	1.5x
EOG	28.4%	7.8%	1.4x	1.9x	1.0x	0.5x
HES	22.0%	17.9%	1.5x	2.7x	1.1x	0.8x
MRO	28.5%	26.0%	3.0x	2.3x	1.7x	1.0x
MUR	21.6%	17.2%	1.7x	2.2x	1.1x	0.9x
NBL	41.0%	29.1%	2.6x	2.4x	2.6x	1.7x
OXY	26.7%	11.7%	0.5x	2.4x	1.5x	1.1x
<b>Total</b>						
<b>Average</b>	<b>42%</b>	<b>24%</b>	<b>2.1x</b>	<b>2.9x</b>	<b>2.0x</b>	<b>1.5x</b>
<b>Median</b>	<b>34%</b>	<b>22%</b>	<b>1.8x</b>	<b>2.4x</b>	<b>1.7x</b>	<b>1.3x</b>

Source: FactSet; Scotia Howard Weil estimates.

Primarily by virtue of avoiding additional debt and growth in a higher commodity price environment (higher EBITDA), we estimate the leverage metrics will improve by nearly 48% by the end of 2018.

## Asset Returns

Company	Net Acres (m)	Initial 30 Day (boe/d)	Spacing (acres)	EUR mboe	Oil Cut %	CWC (\$mm)	OPEX (\$/boe)	Royalty (%)	IRR %	NPV per Well* (\$mm)	per Share Value
<b>APA</b>											
Irion County	40,000	550	100	700	50%	\$4.00	\$6.50	24%	32%	\$4.21	\$1.15
Alpine Ranch	307,000	1,491	80	1,900	7%	\$6.75	\$4.00	22%	7%	\$0.75	\$1.66
SCOOP	50,000	1,000	120	1,015	20%	\$7.50	\$6.50	18%	8%	\$0.05	\$0.03
Southern Midland Basin	50,000	1,000	120	1,015	20%	\$7.50	\$6.50	18%	8%	\$0.05	\$0.03
Central Basin Platform Horizontal	739,000	551	160	392	72%	\$2.50	\$5.00	19%	64%	\$5.03	\$0.90
Central Basin Platform Vertical	739,000	154	20	202	56%	\$1.75	\$5.00	19%	25%	\$1.38	\$0.15
Delaware Basin	144,000	890	80	554	55%	\$4.50	\$7.25	17%	50%	\$5.47	\$7.54
East Texas Eagle Ford Area A	125,000	1,100	120	462	58%	\$7.00	\$7.25	25%	-2%	(\$1.35)	-\$0.40
East Texas Eagle Ford Area B	80,000	730	120	353	57%	\$6.25	\$7.25	25%	2%	(\$0.62)	-\$0.01
Canyon Lime	130,000	1,021	120	377	50%	\$8.00	\$7.25	25%	-12%	(\$1.52)	-\$0.14
<b>APC</b>											
Wolfcamp A	255,000	1,650	53	1,500	60%	\$6.50	\$6.00	23%	76%	\$16.16	\$21.33
Wolfcamp B	255,000	1,350	107	1,000	60%	\$5.80	\$6.00	22%	71%	\$11.97	\$1.31
Wattenberg (Oil Window)	550,000	575	80	385	59%	\$2.70	\$5.00	3%	50%	\$4.49	\$0.97
Laramie - Codell	100,000	1,110	160	313	78%	\$8.00	\$6.00	0%	15%	\$2.73	\$0.55
Laramie - Niobrara	100,000	750	160	430	71%	\$7.50	\$6.00	0%	7%	\$1.06	\$0.47
Eaglebine	92,000	600	80	300	90%	\$5.80	\$6.00	18%	16%	\$2.51	\$0.00
Wattenberg Core	400,000	615	40	560	34%	\$2.70	\$5.00	12%	65%	\$5.65	\$29.95
<b>CHK</b>											
The Wedge	870,000	1,200	160	850	50%	\$3.90	\$12.90	20%	4%	(\$0.82)	-\$0.10
Oswego	52,000	776	128	400	70%	\$3.00	\$9.85	21%	29%	\$2.51	\$0.55
Eagle Ford	270,000	818	91	810	59%	\$4.20	\$15.30	25%	19%	\$2.73	\$4.57
Utica Dry	540,000	2,700	160	16,900	0%	\$6.00	\$1.23	18%	20%	\$3.45	\$0.75
PRB	307,000	1,183	261	1,200	53%	\$7.00	\$10.90	20%	16%	\$3.26	\$1.28
Haynesville	255,000	4,100	160	19,900	0%	\$9.50	\$0.23	23%	40%	\$9.36	\$3.61
Marcellus	795,000	4,750	160	17,100	0%	\$5.00	\$1.05	15%	25%	\$3.76	\$0.30
<b>DVN</b>											
Woodford	280,000	1,500	160	1,600	5%	\$6.25	\$2.50	21%	21%	\$3.88	\$0.28
Meramec	120,000	1,855	107	1,555	45%	\$7.46	\$4.03	21%	51%	\$14.27	\$10.52
PRB	225,000	1,150	213	700	95%	\$6.75	\$11.55	20%	17%	\$3.33	\$1.79
Eagle Ford - DeWitt	52,000	1,650	50	950	60%	\$5.00	\$4.45	25%	75%	\$11.05	\$3.78
Eagle Ford - Lavaca	32,000	1,050	60	500	75%	\$8.80	\$4.81	25%	6%	(\$0.95)	-\$0.12
Delaware - Bone Spring	285,000	1,000	107	700	62%	\$7.50	\$7.72	21%	16%	\$3.07	\$5.45
Delaware - Sands	80,000	800	128	650	60%	\$4.70	\$7.72	21%	25%	\$3.80	\$0.41
Delaware - Leonard	60,000	1,000	107	1,000	50%	\$5.00	\$7.72	20%	24%	\$4.17	\$1.96
Delaware - Wolfcamp	425,000	1,150	128	900	42%	\$8.00	\$7.72	22%	10%	\$1.21	\$1.66
Barnett	625,000	500	60	583	5%	\$2.10	\$7.01	18%	10%	(\$0.18)	\$0.00
Barnett HZ Refrac	625,000	200	60	333	5%	\$0.95	\$5.50	18%	13%	\$0.24	\$0.44
Barnett Vert Refrac	625,000	73	60	100	5%	\$0.25	\$5.50	18%	15%	\$0.10	\$0.13

Source: FactSet; Scotia Howard Weil estimates.

## Asset Returns (Continued)

Company	Net Acres (m)	Initial 30 Day (boe/d)	Spacing (acres)	EUR mboe	Oil Cut %	CWC (\$mm)	OPEX (\$/boe)	Royalty (%)	IRR %	NPV per Well* (\$mm)	per Share Value
<b>EOG</b>											
Eagle Ford	565,000	950	40	1,000	71%	\$4.50	\$6.00	22%	47%	\$7.05	\$37.77
Bakken	90,000	1,150	80	745	73%	\$4.80	\$6.00	20%	47%	\$7.68	\$3.72
Bakken - Antelope	30,000	1,000	80	760	78%	\$5.25	\$4.80	20%	43%	\$7.96	\$0.68
PRB - Parkman	30,000	1,250	160	1,050	82%	\$5.00	\$8.00	22%	61%	\$11.84	\$2.10
PRB - Turner	63,000	1,050	200	860	80%	\$5.00	\$9.00	20%	40%	\$7.65	\$1.40
Laramie - Codell	81,000	1,650	160	1,100	78%	\$4.50	\$8.00	18%	66%	\$10.61	\$1.88
Laramie - Niobrara	50,000	850	160	430	71%	\$9.00	\$9.00	18%	1%	(\$2.46)	\$0.01
Delaware - Leonard	160,000	1,500	80	1,296	31%	\$6.80	\$6.00	20%	25%	\$5.62	\$2.79
Delaware - Wolfcamp	226,000	1,500	107	1,330	53%	\$7.60	\$6.00	21%	35%	\$8.26	\$18.77
Delaware - 2nd Bone Spring	289,000	1,000	107	950	62%	\$7.30	\$6.00	22%	27%	\$6.32	\$10.14
Midland - Wolfcamp	81,000	1,650	160	1,100	78%	\$4.50	\$8.00	18%	66%	\$10.61	\$1.88
Barnett - Combo	215,000	435	80	360	44%	\$3.40	\$7.00	22%	10%	\$0.90	\$0.30
<b>HES</b>											
Bakken	556,000	1,250	98	860	72%	\$5.80	\$7.50	19%	37%	\$7.34	\$32.44
Utica	44,000	1,800	120	1,200	8%	\$8.50	\$2.50	18%	14%	\$1.67	\$0.58
Liza - Guyana	Offshore	0		2,500,000	100%	\$3.50	\$22,800.00		600%	\$7.00	\$0.00
Sicily - GOM	Offshore	40,000		358,333	98%	\$3,500.00	\$5.00		22%	\$472.50	\$1.50
<b>MRO</b>											
Eagle Ford - Oil	120,000	1,100	53	700	65%	\$4.20	\$5.50	22%	50%	\$6.60	\$4.49
Eagle Ford - Condensate	60,000	1,250	64	800	30%	\$4.50	\$5.50	22%	24%	\$2.92	\$0.78
Austin Chalk	18,000	970	160	815	45%	\$4.75	\$5.50	22%	21%	\$2.93	\$0.14
SCOOP XL	63,000	1,650	160	2,700	16%	\$10.00	\$6.00	20%	16%	\$4.56	\$1.04
SCOOP SL	63,000	800	160	1,700	25%	\$7.50	\$5.50	20%	11%	\$0.91	\$0.02
Springer	140,000	770	160	940	67%	\$10.00	\$5.50	20%	18%	\$5.93	\$0.45
Bakken - Myrmdon	60,000	1,400	107	894	88%	\$6.00	\$5.50	22%	60%	\$11.11	\$0.00
Bakken - Hector	115,000	1,150	220	898	88%	\$6.50	\$7.50	22%	26%	\$6.07	\$0.00
<b>MUR</b>											
Karnes	11,222	1,000	40	600	80%	\$4.50	\$5.50	22%	58%	\$7.19	\$0.96
Tilden	77,382	625	49	400	70%	\$4.50	\$5.50	22%	21%	\$2.16	\$3.49
Catarina	47,846	825	64	600	45%	\$4.50	\$6.75	22%	30%	\$3.21	\$5.85
Austin Chalk	24,200	750	91	435	70%	\$4.00	\$6.50	22%	25%	\$2.04	\$1.48
Duvernay	23,100	675	160	500	50%	\$7.14	\$6.25	8%	8%	(\$0.18)	\$0.04
<b>NBL</b>											
Eagle Ford - Gates Ranch	26,500	4,132	55	3,750	16%	\$7.50	\$6.00	25%	96%	\$25.34	\$2.33
Eagle Ford - Other	8,500	1,250	55	1,053	32%	\$9.50	\$7.50	20%	6%	(\$0.82)	-\$0.16
Wolfcamp A	118,200	1,463	53	1,100	70%	\$7.88	\$8.00	25%	34%	\$9.42	\$14.21
Wolfcamp B	118,200	1,650	134	1,135	70%	\$9.38	\$8.00	25%	25%	\$9.03	\$3.50
Wolfcamp C	118,200	1,125	107	900	70%	\$9.38	\$8.00	25%	12%	\$3.51	\$0.81
Bone Springs	47,200	1,150	160	920	70%	\$7.50	\$6.50	22%	31%	\$8.61	\$0.99
Wells Ranch	78,000	850	60	1,100	40%	\$6.00	\$4.50	20%	48%	\$8.40	\$6.17
Mustang	75,000	850	60	975	40%	\$6.50	\$6.50	20%	24%	\$4.81	\$4.91
Wattenberg Non Core	169,000	750	80	780	36%	\$5.46	\$7.50	20%	13%	\$1.52	\$0.00
East Pony	30,000	833	80	700	75%	\$5.40	\$6.00	20%	35%	\$6.06	\$1.42
West Pony	55,000	425	40	345	75%	\$4.70	\$8.00	20%	11%	\$1.16	\$0.37
Marcellus - Wet	89,000	1,833	80	14,256	3%	\$8.00	\$0.85	15%	19%	\$4.11	\$2.69
Leviathan	Offshore	0		3,667	0%	\$0.00	\$3.00		30%		\$5.72
<b>OXY</b>											
Delaware Basin - New Mexico	130,000	1,000	43	700	68%	\$6.00	\$6.00	18%	41%	\$5.91	\$8.50
Delaware Basin - Texas	130,000	1,000	43	700	65%	\$5.95	\$6.00	18%	39%	\$5.47	\$7.51
Midland Basin	230,000	850	32	702	58%	\$6.00	\$5.50	20%	22%	\$3.08	\$4.46

Source: FactSet; Scotia Howard Weil estimates.

## Pertinent Data

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### Anadarko Petroleum Corporation (APC)

Valuation: Derived from our risked NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk

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### Apache Corporation (APA)

Valuation: Derived from our risked NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk

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### Chesapeake Energy Corporation (CHK)

Valuation: Derived from our risked NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk

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### Devon Energy Corporation (DVN)

Valuation: Derived from our risked NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk

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### EOG Resources, Inc. (EOG)

Valuation: Derived from our risked NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk

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### Hess Corporation (HES)

Valuation: Derived from our risked NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk.

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### Marathon Oil Corporation (MRO)

Valuation: Derived from our risked NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk

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### Murphy Oil Corporation (MUR)

Valuation: Derived from our risked NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk

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### Noble Energy, Inc. (NBL)

Valuation: Derived from our risked NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk

**Occidental Petroleum Corporation (OXY)**

Valuation: Derived from our riskd NAV, including both proven and unproven reserves valued at the SHW price deck assumption

Key Risks: Oil and natural gas prices, execution risk

## Appendix A: Important Disclosures

Company	Disclosures (see legend below)*
Chesapeake Energy Corporation	G, I, N1, U
Marathon Oil Corporation	G, N1, U
Murphy Oil Corporation	I, N1
Noble Energy, Inc.	G, I, N1, U, V128
Occidental Petroleum Corporation	N2

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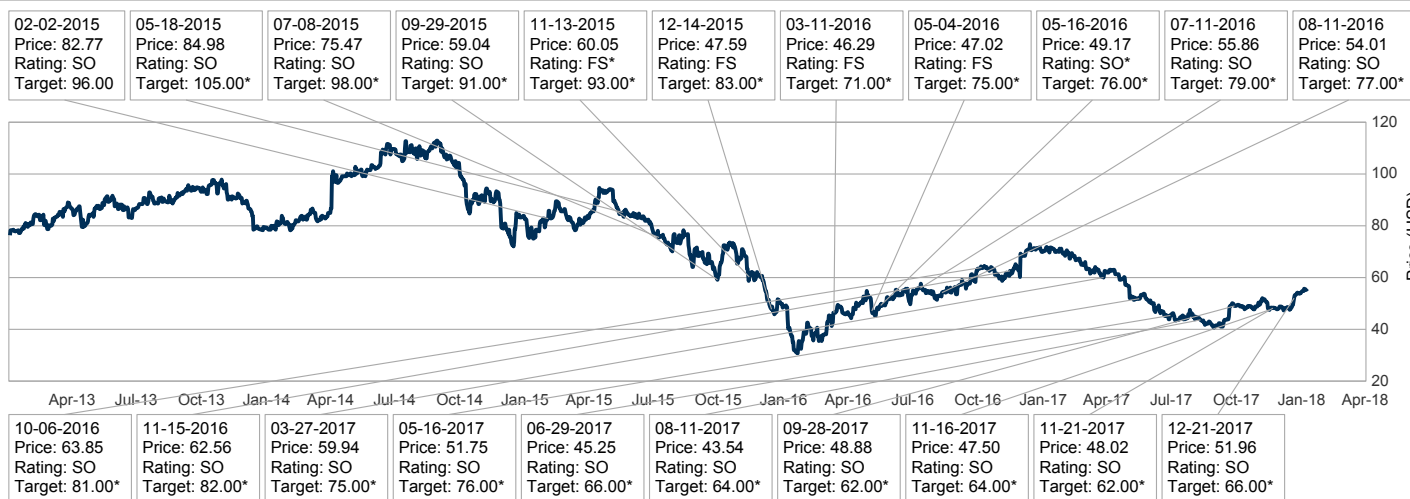


\*Represents the value(s) that changed.

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Source: Scotiabank GBM estimates/Scotia Howard Weil estimates; FactSet.

# Anadarko Petroleum Corporation (APC) as of January 09, 2018 (in USD)



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Source: Scotiabank GBM estimates/Scotia Howard Weil estimates; FactSet.

# Chesapeake Energy Corporation (CHK) as of January 09, 2018 (in USD)

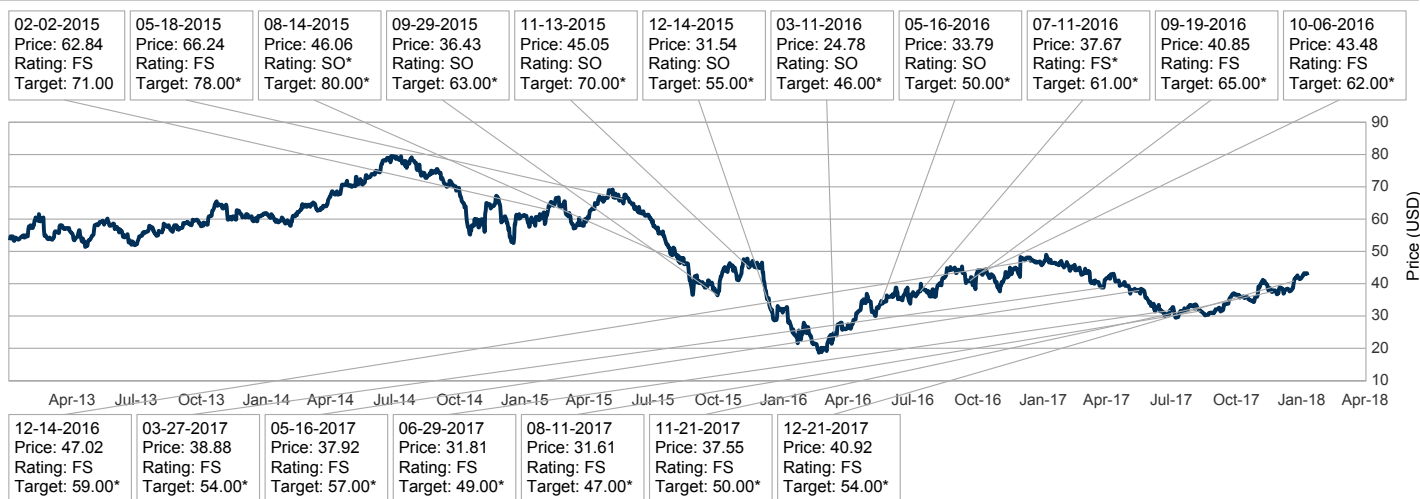


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Source: Scotiabank GBM estimates/Scotia Howard Weil estimates; FactSet.

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# Devon Energy Corporation (DVN) as of January 09, 2018 (in USD)

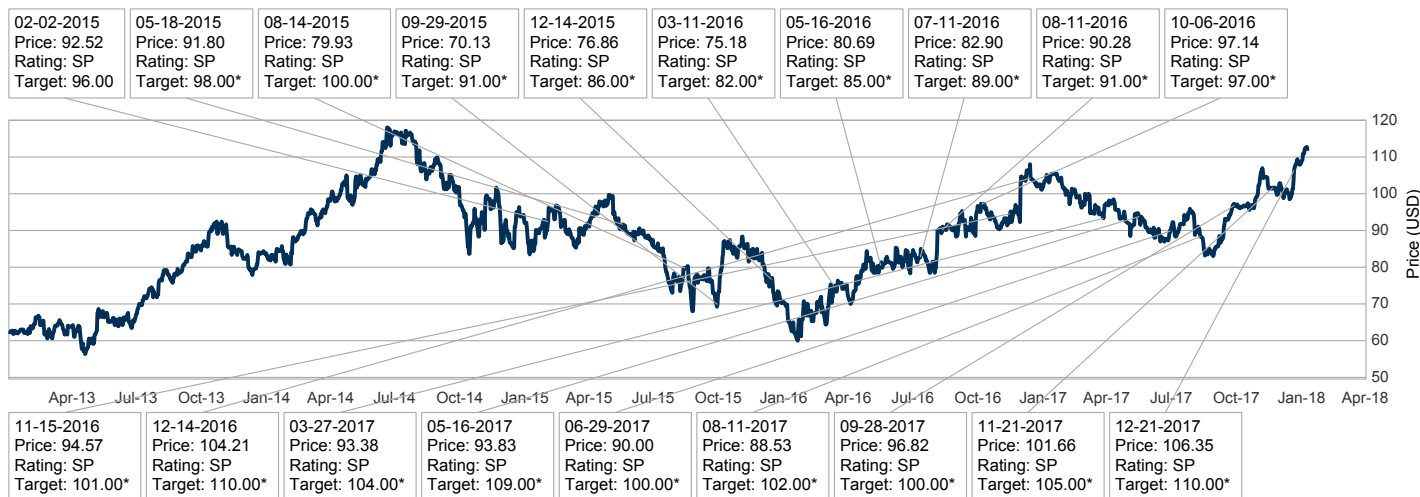


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Source: Scotiabank GBM estimates/Scotia Howard Weil estimates; FactSet.

# EOG Resources, Inc. (EOG) as of January 09, 2018 (in USD)



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Source: Scotiabank GBM estimates/Scotia Howard Weil estimates; FactSet.

## Hess Corporation (HES) as of January 09, 2018 (in USD)



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# Marathon Oil Corporation (MRO) as of January 09, 2018 (in USD)



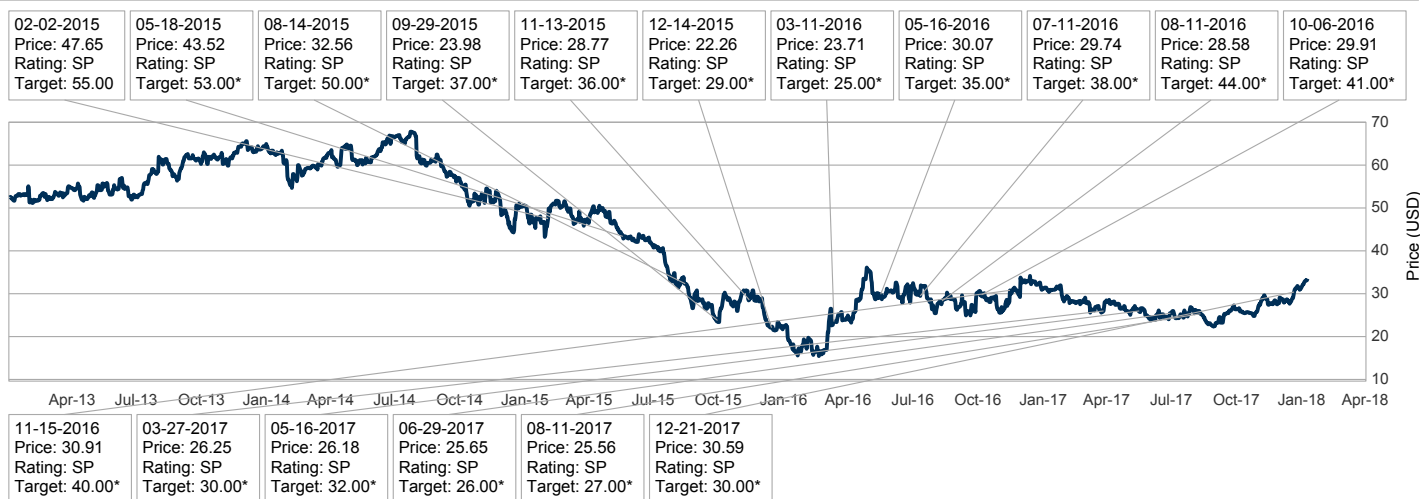
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Source: Scotiabank GBM estimates/Scotia Howard Weil estimates; FactSet.



# Murphy Oil Corporation (MUR) as of January 09, 2018 (in USD)



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Source: Scotiabank GBM estimates/Scotia Howard Weil estimates; FactSet.

## Noble Energy, Inc. (NBL) as of January 09, 2018 (in USD)



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Source: Scotiabank GBM estimates/Scotia Howard Weil estimates; FactSet.

# Occidental Petroleum Corporation (OXY) as of January 09, 2018 (in USD)



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Source: Scotiabank GBM estimates/Scotia Howard Weil estimates; FactSet.

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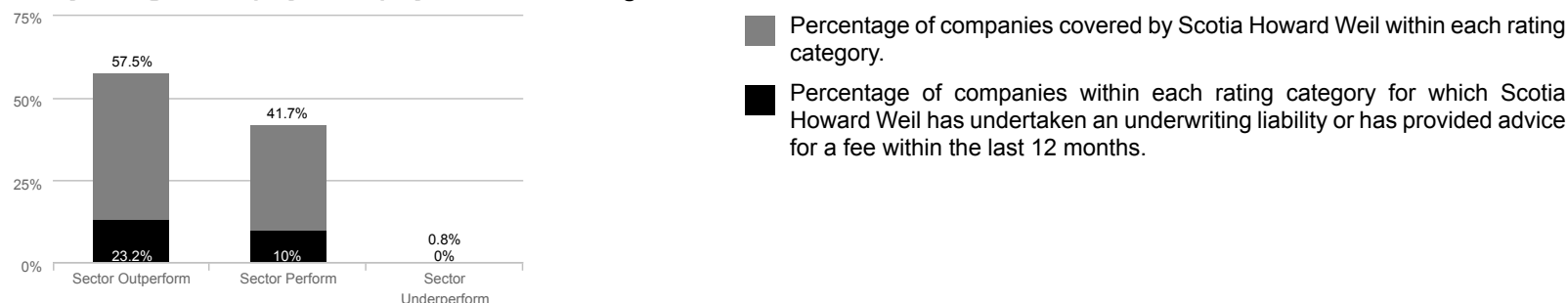
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