Montney versus Deep Basin

Which of Canada's two biggest natural gas resource plays has the edge?

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Overview of Study

This study looks at overall activity levels in the Montney and Deep Basin during 2016 and 2017. It also compares nine companies with the majority of their production in the Montney and five companies with the majority of their production in the Deep Basin area of Alberta. It benchmarks full cycle supply costs using the following metrics:

1. Three-year average finding and development costs
2. Operating and transportation expenses
3. General and Administrative costs
4. Interest expenses
5. Royalty expenses

This study also reviews the production mix of natural gas and natural gas liquids (NGLs) coming out of each play, and provides field netbacks based on that production to give a more comprehensive understanding of the economics of the Montney and the Deep Basin.

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Key Findings

The Montney and Deep Basin tight gas plays are the two fastest growing gas plays in Western Canada. To understand how the two plays compare and how they are changing over time, JWN leveraged its CanOils database to develop this benchmarking study based on average 2016 and 2017 financial and operating data.

The key findings allow us greater understanding of the costs and opportunities that exist for companies looking to capitalize within the two plays.

Both the Montney and Deep Basin saw a major uptick in activity in 2017, when compared with the previous year. The Deep Basin saw a 46 per cent increase in rig releases in 2017 when compared with 2016. Well licences increased by 69 per cent in the same time period.

The Montney saw an 89 per cent increase in rigs releases in 2017 when compared to 2016. Activity has remained strong in early 2018 in areas of the play with high liquids and condensate content.

SUPPLY COSTS ARE CHANGING – WITH THE DEEP BASIN ENJOYING A SIGNIFICANT ADVANTAGE

While both Montney and Deep Basin operators continued cutting costs and improving productivity in 2017, operators in the Deep Basin were more successful.

Deep Basin operators enjoyed a large advantage over Montney operators in combined operation and transportation costs in 2017. Deep Basin operators reported combined costs of $5.66 per boe compared with Montney costs of $9.65 per boe.

Both plays saw a $0.47 per boe increase in transportation costs in 2017, due largely to pipeline maintenance outages.

Deep Basin operators managed to lower operating costs by six per cent in 2017 as new facilities were brought on stream. Montney operators saw an eight per cent increase in operating costs as more wells targeting liquids-rich areas of the play were drilled.

Montney operators have seen their three year average finding and development costs climb by 10 per cent from 2016 to 2017, while Deep Basin operators have seen their F&D costs decline by 22 per cent. In 2016, the Deep Basin had costs almost $2 per boe higher than in the Montney but now enjoys a cost advantage.

Deep Basin operators had a 30 per cent full cycle cost advantage over Montney operators in 2017. Full cycle costs declined 10 per cent in the Deep Basin in 2017, while costs in the Montney climbed by six per cent.

MONTNEY PRODUCTION MIX CREATES HIGHER NETBACKS

Despite much lower full cycle costs, the Deep Basin trails the Montney when it comes to operating netbacks as the mix in production outweighs Deep Basin cost efficiencies. Higher liquids production in the Montney gives it a $2.26 per boe netback advantage over the Deep Basin.

Seven Generations provides an example of the liquids advantage. One-third of the company's production is condensate, but it accounts for two-thirds of the company's revenues.

LOOKING AHEAD

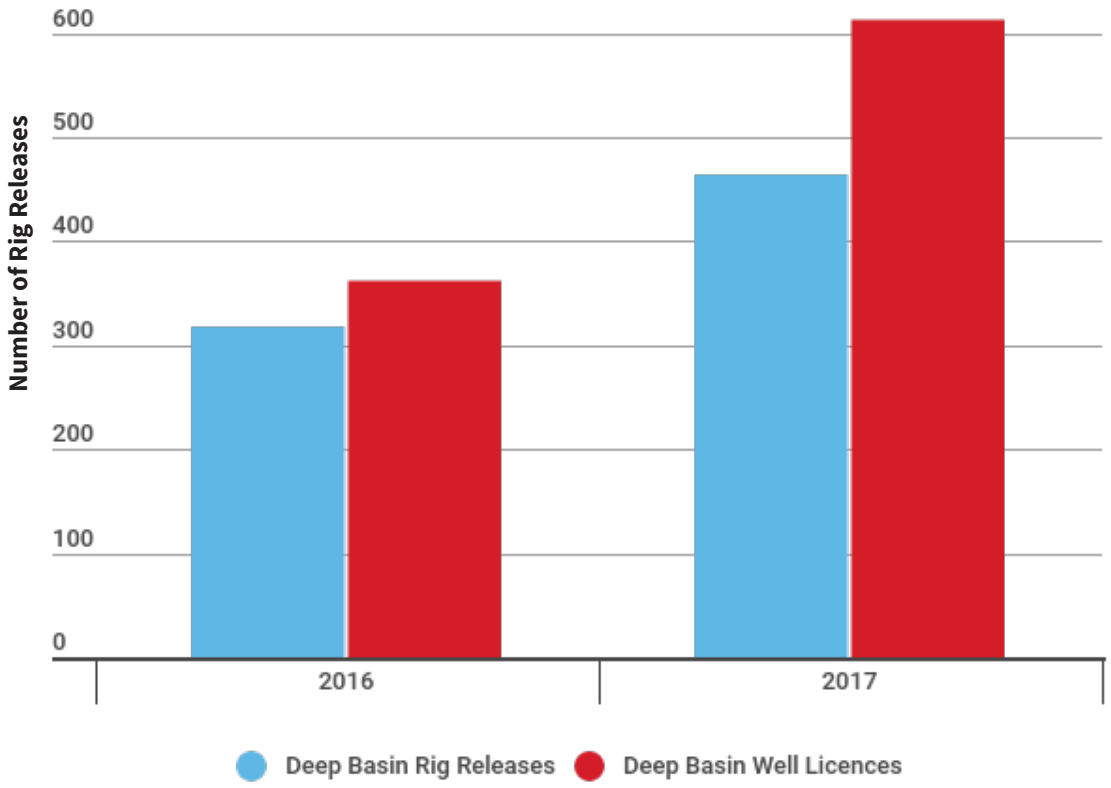
While Montney and Deep Basin operators reported improved field netbacks in 2017 compared with the previous years, they both face challenges in 2018.

With lower to no condensate production, Deep Basin operators are cutting capital expenditures while waiting for higher natural gas prices to make investment viable.

For Montney operators, costs are slowly creeping up. Operators in liquids-rich areas of the play are still seeing strong netbacks but outside of these areas they are facing a similar situation to Deep Basin operators with low gas prices curtailing activity.

Activity Comparisons

Deep Basin Rig Releases And Well Licences

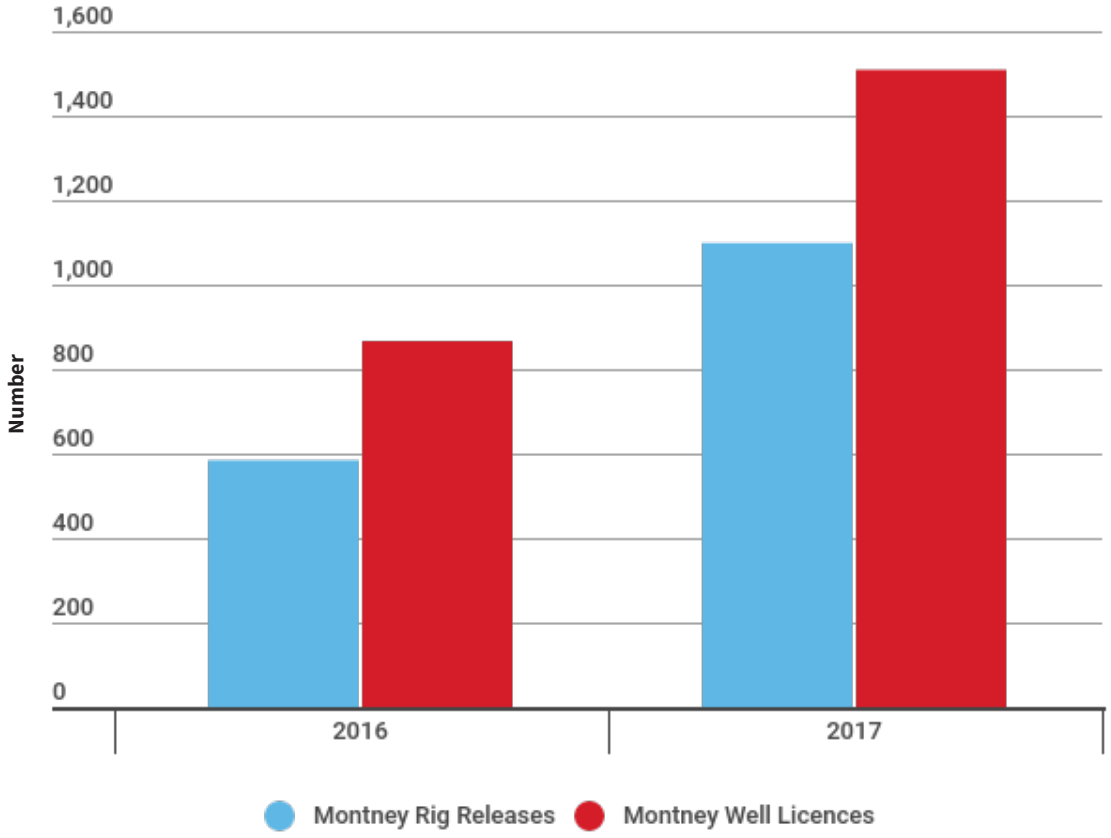


Source: Daily Oil Bulletin

The Deep Basin saw a 46 per cent increase in rig releases in 2017 when compared with 2016. The activity increase was driven by higher gas prices.

Well licences increased by 69 per cent in the same time period. However, in early 2018 lower dry gas prices have resulted in a decline in Deep Basin activity.

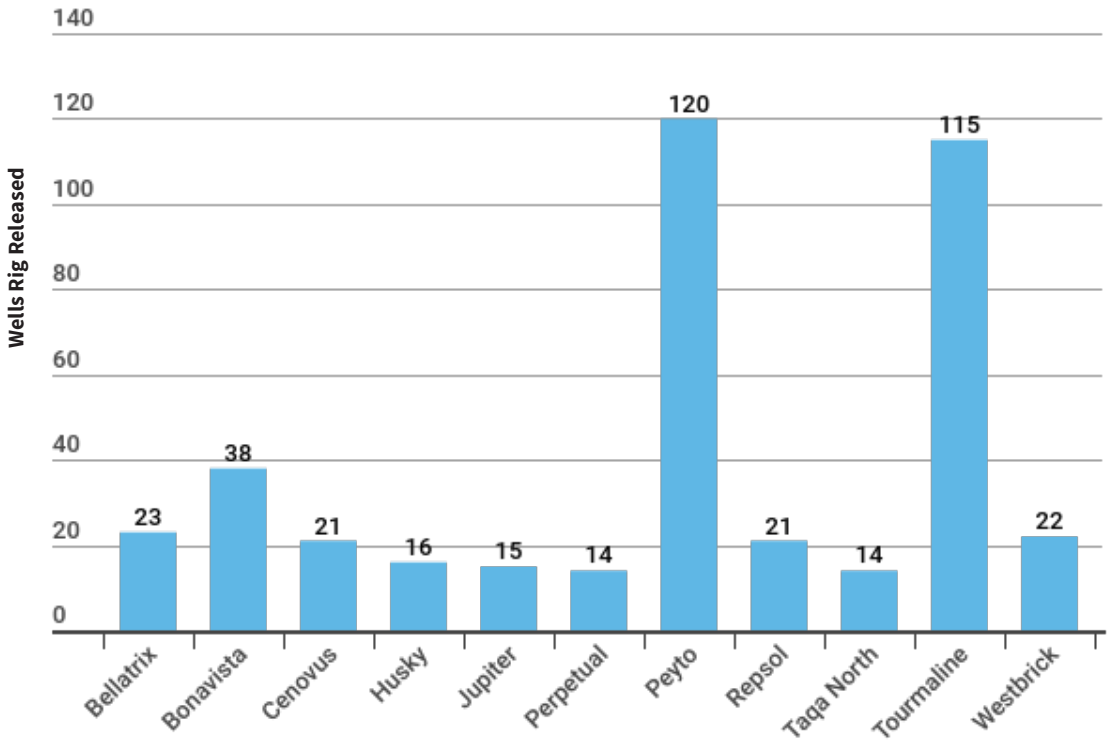
Montney Rig Releases & Well Licences



Source: Daily Oil Bulletin

The Montney saw an 89 per cent increase in rigs releases in 2017 when compared to 2016. Activity in the Montney was driven by both higher condensate prices and higher dry gas prices.
Activity has remained strong in early 2018 in areas of the play with high liquids content.

Top 10 Deep Basin Operators 2017

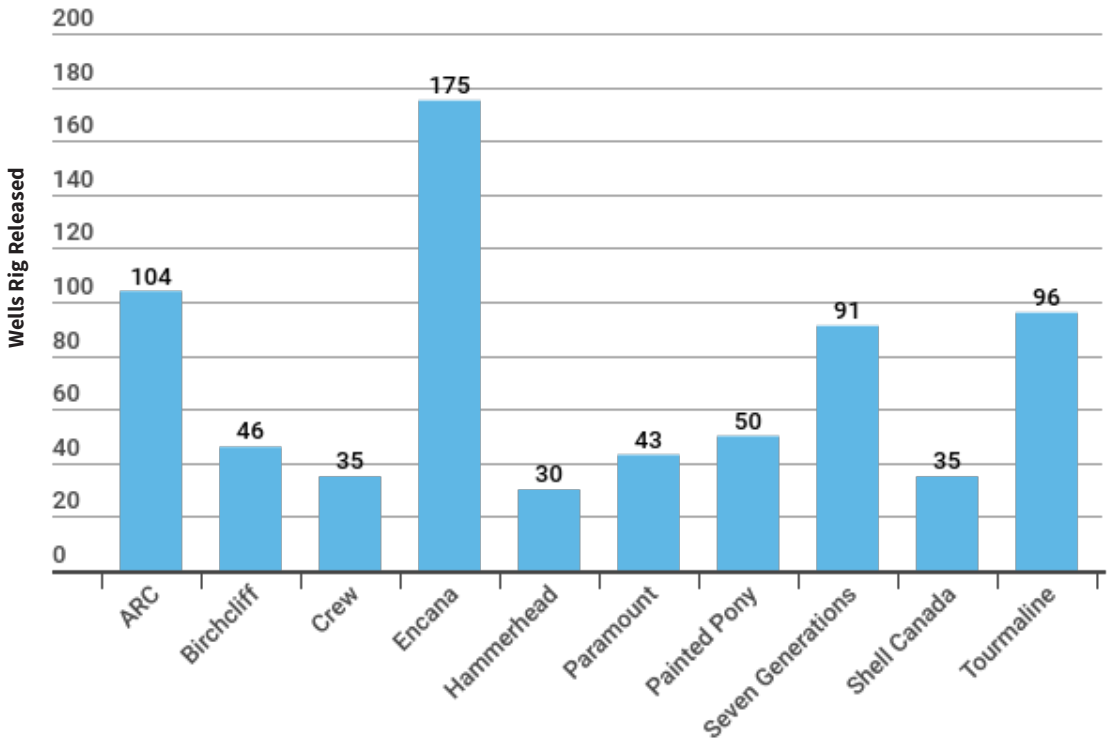


Source: Daily Oil Bulletin

Activity in the Deep Basin is driven by two operators, Peyto Exploration & Development Corp. and Tourmaline Oil Corp. The two companies were responsible for 50 per cent of the wells drilled in the Deep Basin in 2017.

However, with Cenovus Energy recently purchasing ConocoPhillips's assets, there will be more competition in the Deep Basin.

Top 10 Montney Operators 2017

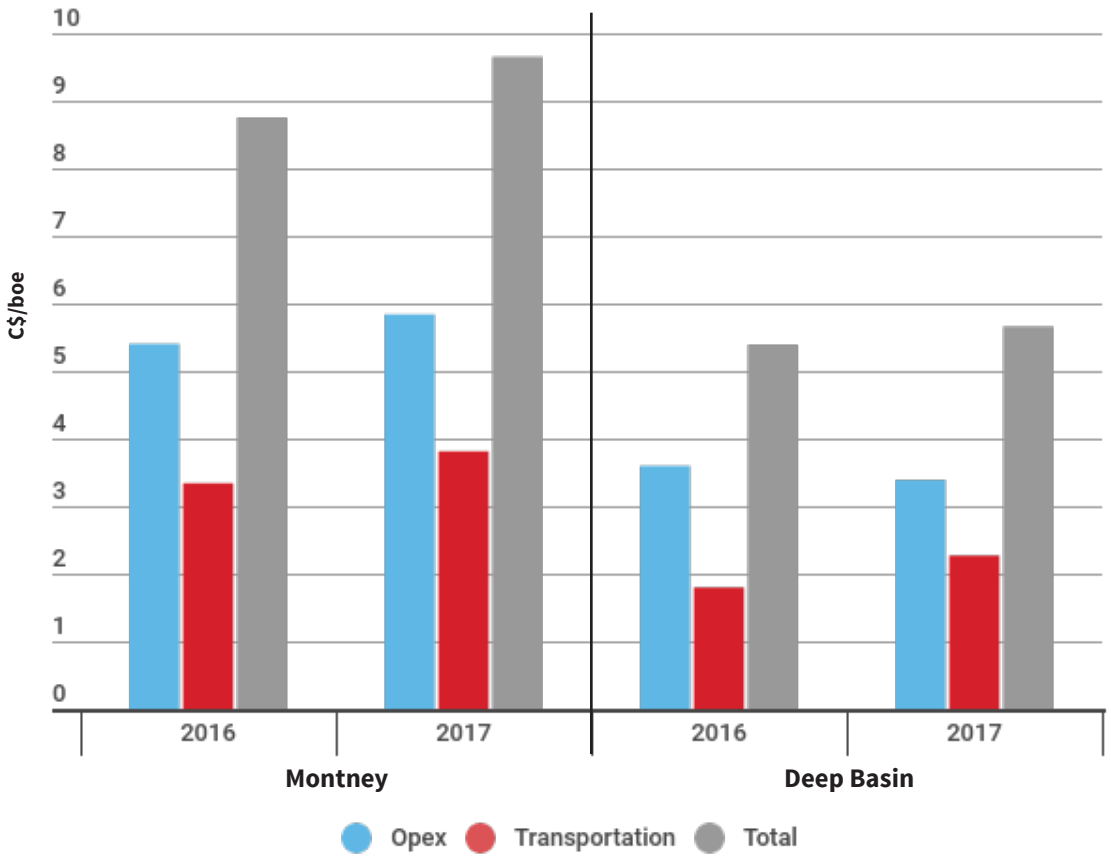


There are a greater number of operators in the Montney but again a few operators dominated drilling in 2017. The top four operators in the play drilled 42 per cent of the wells in the play with top operator Encana drilling 16 per cent of the wells. Operators in liquids rich sections of the Montney dominated drilling, driven by higher condensate prices in 2017.

Source: Daily Oil Bulletin

Financial Comparisons

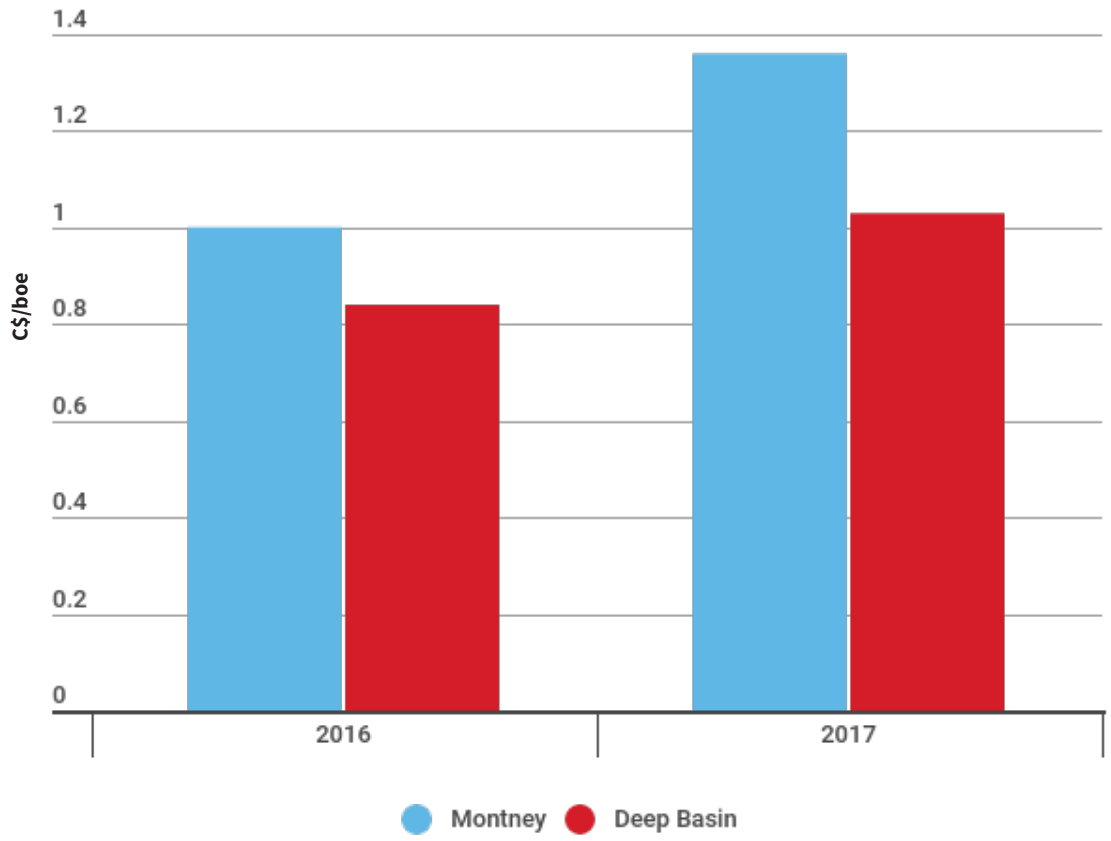
Operation & Transportation Costs



Source: CanOils

Deep Basin operators enjoyed a large advantage over Montney operators in combined operation and transportation costs in 2017. Deep Basin operators reported combined costs of $5.66 per boe compared with Montney costs of $9.65 per boe. Both plays saw a $0.47 per boe increase in transportation costs in 2017, due largely to pipeline maintenance outages. Deep Basin operators managed to lower operating costs by six per cent in 2017 as new facilities were brought on stream. Montney operators saw an eight per cent increase in operating costs as more wells targeting liquids-rich areas of the play were drilled.

Royalties per boe

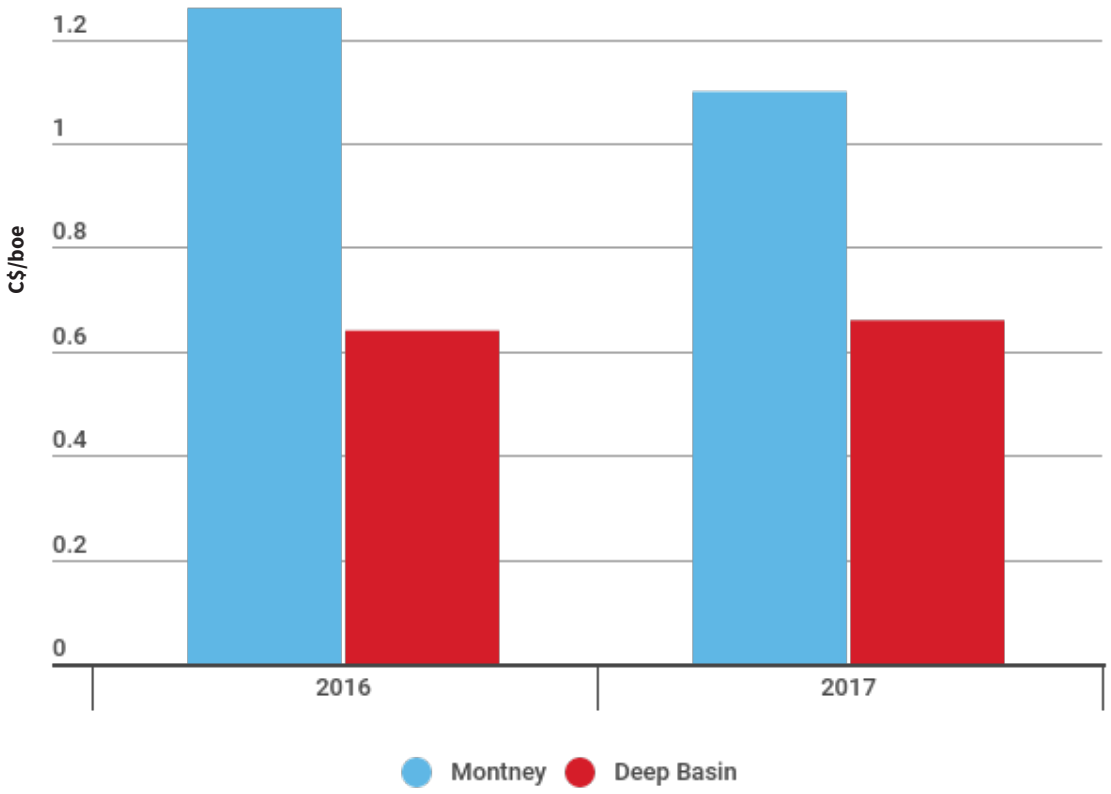


Source: CanOils

Operators in both plays saw big jumps in royalty payments in 2017 as a result of higher prices. Montney operators saw royalties climb by 35 per cent as condensate prices followed oil prices higher. The Deep Basin saw an increase of 22 per cent, driven mostly by higher propane prices and higher natural gas prices.

The Deep Basin, however, enjoyed a $0.33 per boe royalty advantage over the Montney.

G&A expenses per boe



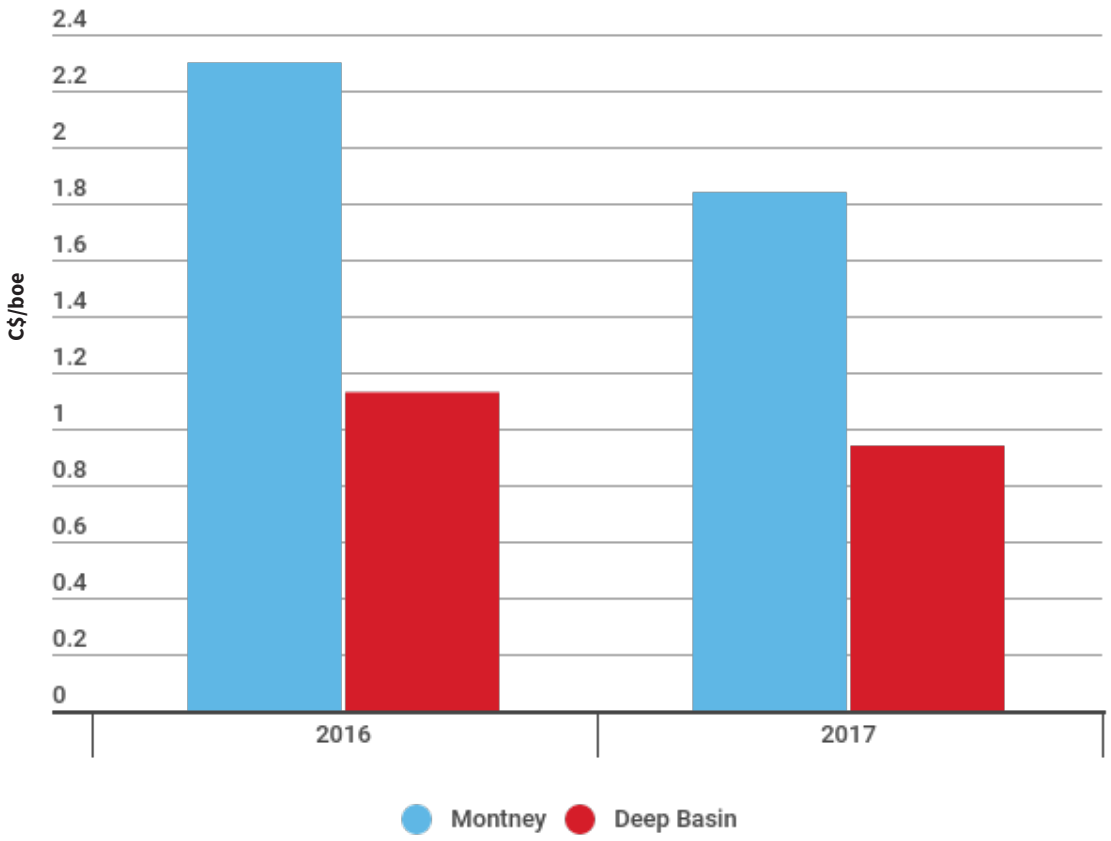
Source: CanOils

Montney operators saw a 13 per cent decline in G&A costs in 2017 compared with 2016, as large operators absorbed other operators allowing them to spread G&A costs across more barrels.

Deep Basin operators, already among the most efficient in the industry, saw their G&A costs remain relatively flat.

Operators in the Deep Basin enjoyed a $0.56 per boe cost advantage over their Montney counterparts.

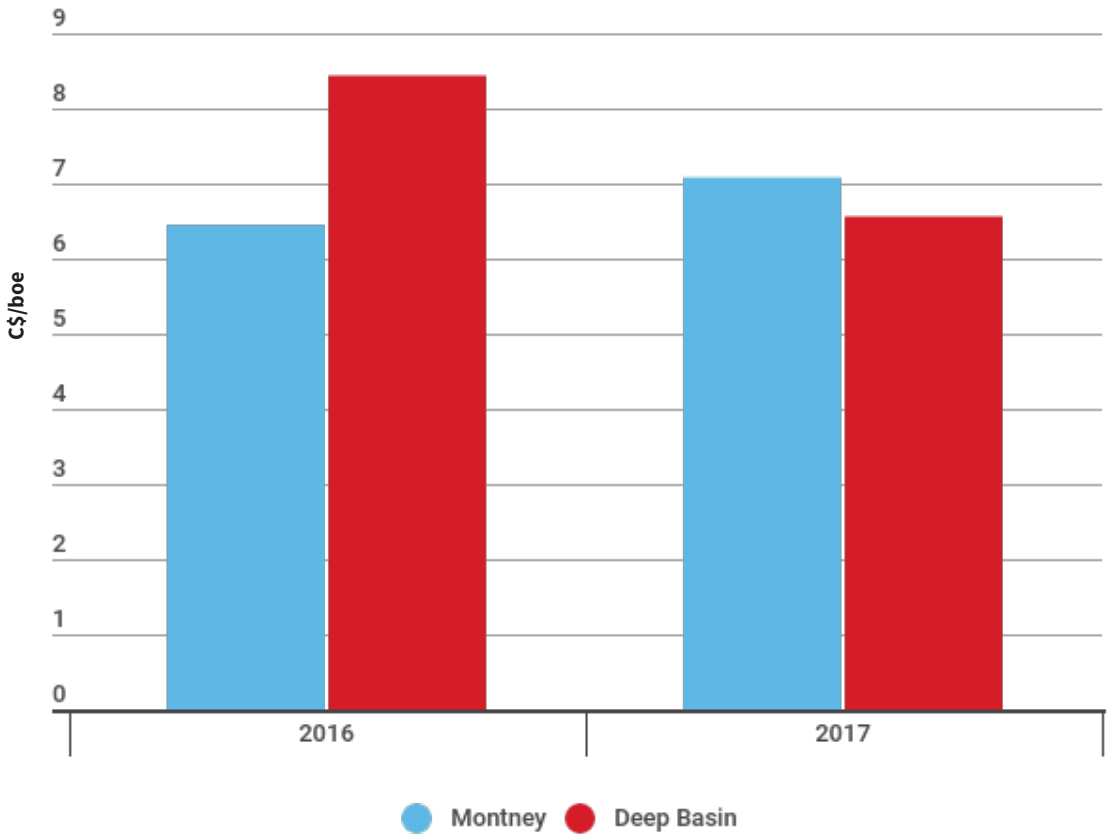
Interest expenses per boe



Source: CanOils

Montney operators are carrying much more debt than their Deep Basin counterparts resulting in $0.90 per boe higher interest expenses. However, operators in both areas decreased their debt in 2017, with Montney operators cutting interest expenses by 20 per cent and Deep Basin operators cutting interest expenses by 17 per cent.

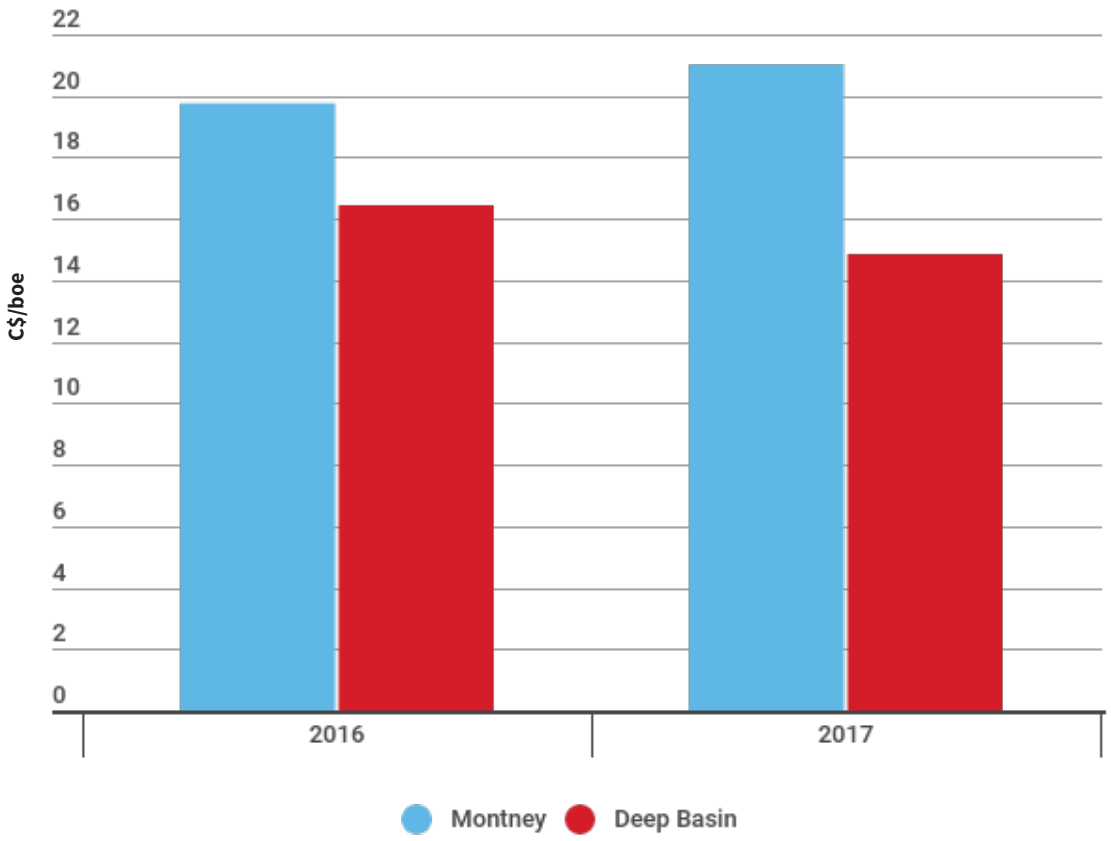
F&D costs per boe



Source: CanOils

Montney operators have seen their three year average finding and development costs climb by 10 per cent from 2016 to 2017, while Deep Basin operators have seen their F&D costs decline by 22 per cent. In 2016, the Deep Basin had costs almost $2 per boe higher than in the Montney but now enjoys a cost advantage.

Full cycle costs per boe



Deep Basin operators had a 30 per cent full cycle cost advantage over Montney operators in 2017. Full cycle costs declined 10 per cent in the Deep Basin in 2017, while costs in the Montney climbed by six per cent.

Source: CanOils

Operating Netbacks 2017

Despite much lower full cycle costs, the Deep Basin trails the Montney when it comes to operating netbacks as the mix in production outweighs Deep Basin cost efficiencies. Higher liquids production in the Montney gives it a $2.26 per boe netback advantage over the Deep Basin.

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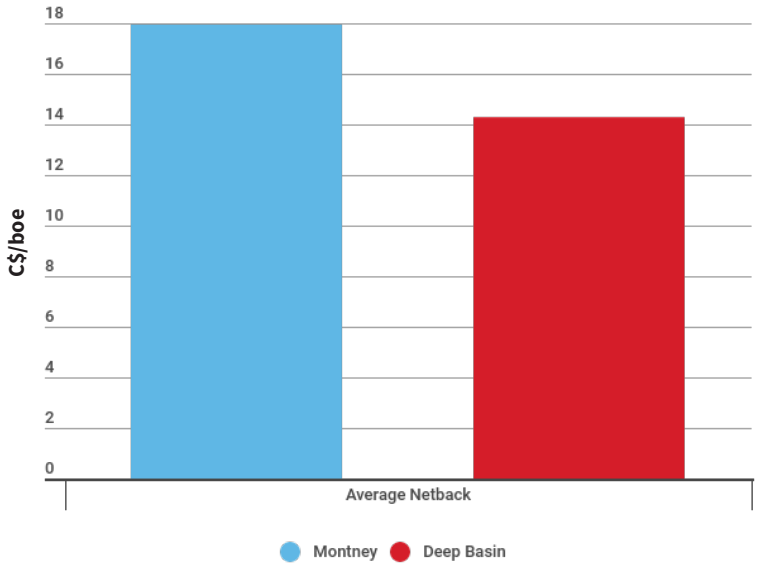
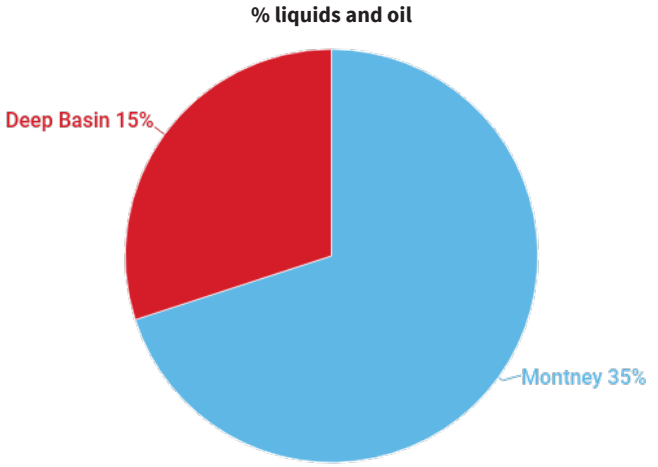
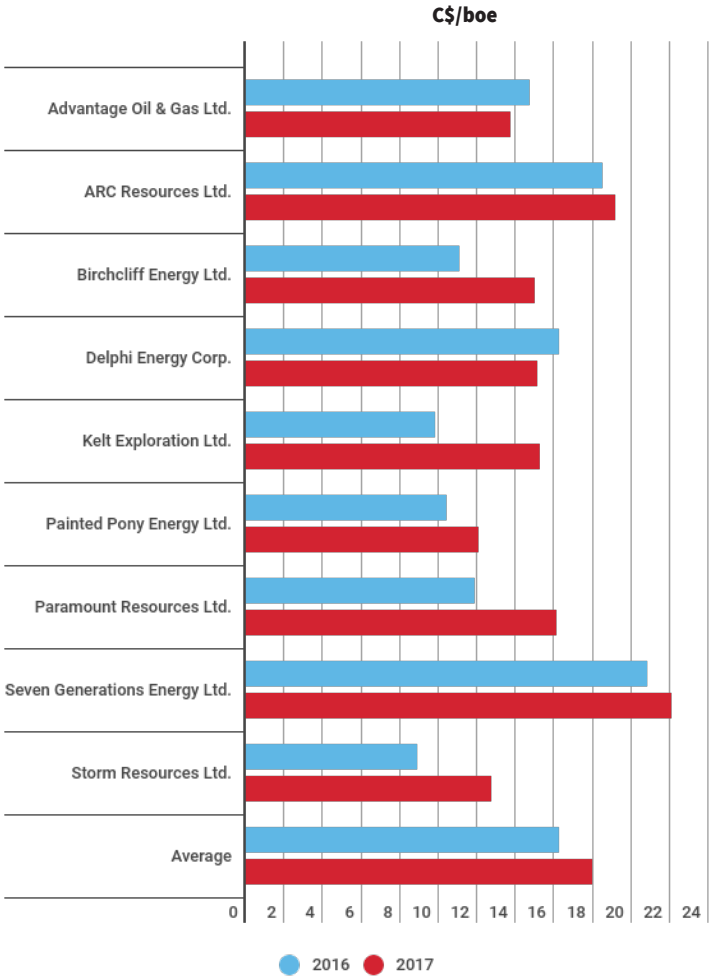


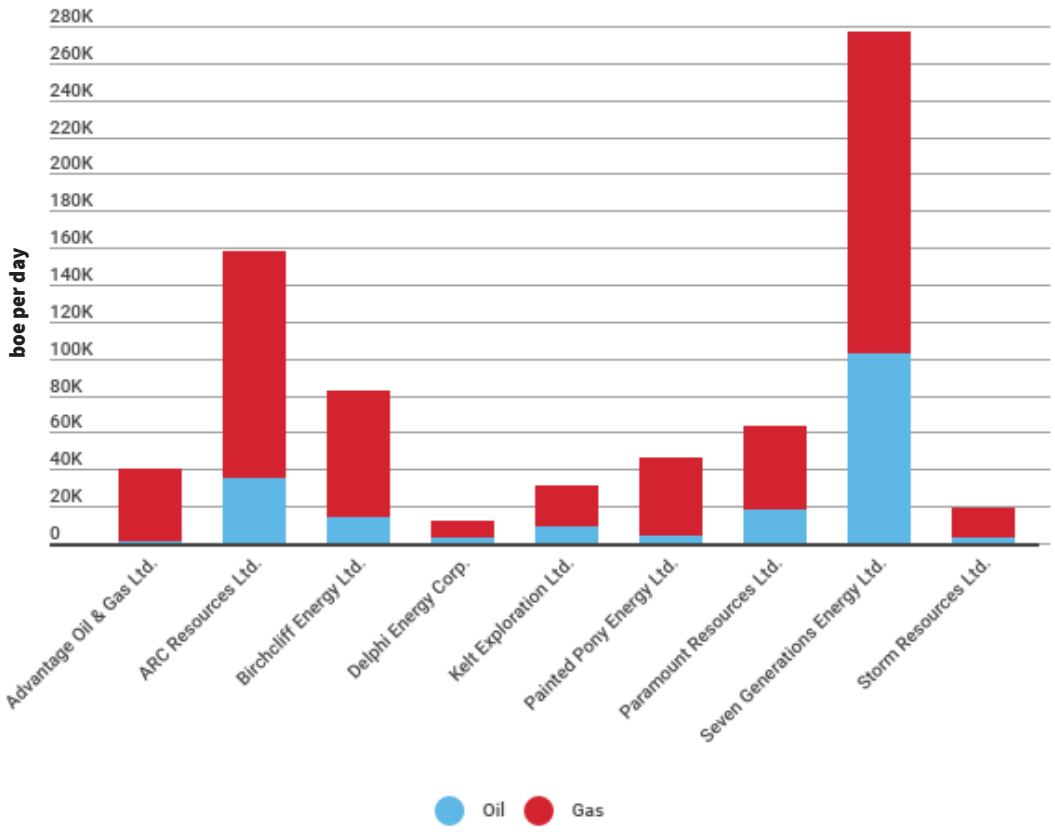


Montney Producer Operating Netbacks

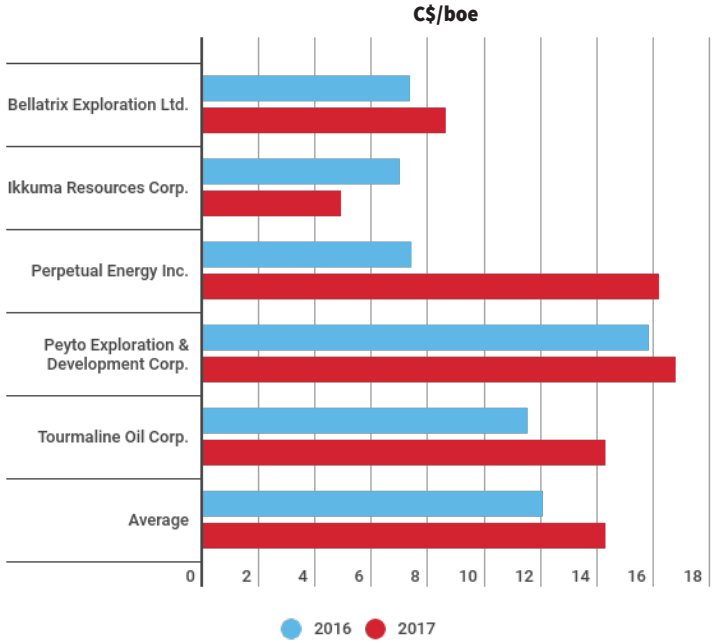


The impact of high liquids production can be seen in Montney producer netbacks. Seven Generations, which is currently producing around 20 per cent of condensate in Alberta, has the highest netbacks. Paramount Resources and Birchcliff Energy also reported higher netbacks as liquids production climbed in 2017.

Montney Producer Production Mix

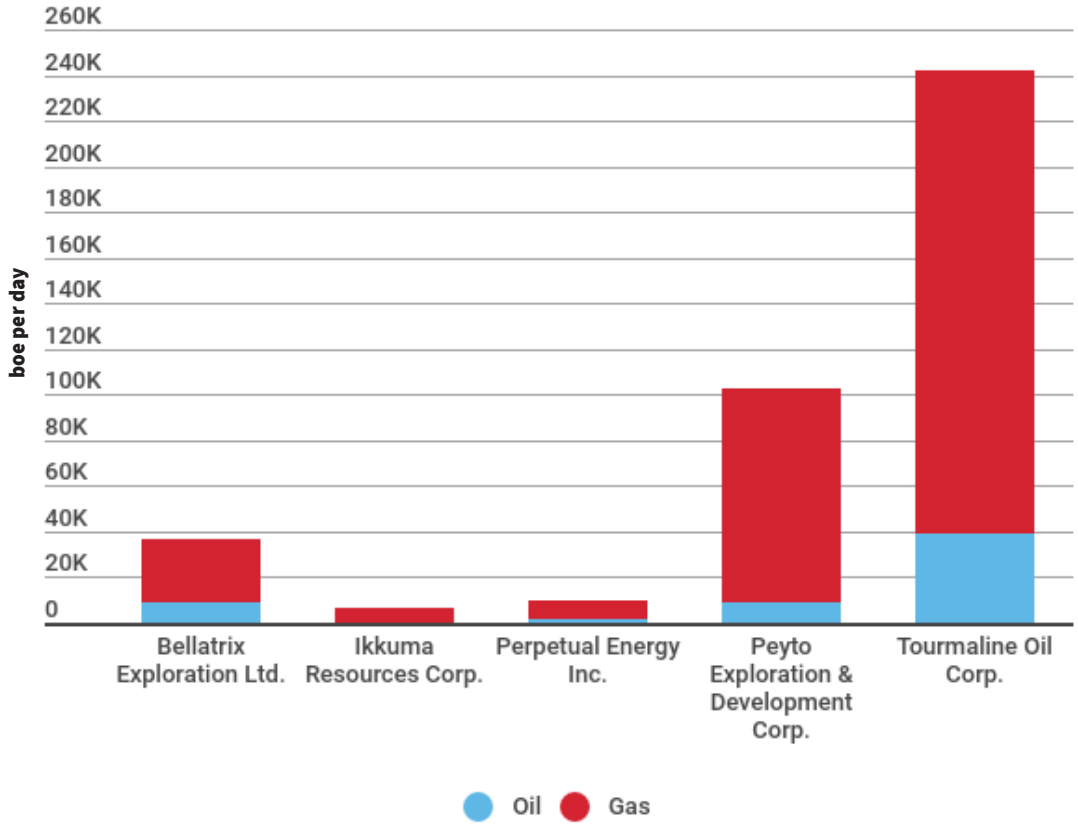


Deep Basin Producer Operating Netbacks



Deep Basin operating netbacks improved in 2017, led largely by Tourmaline due to its high volume of Deep Basin production. Low gas prices in early 2018 has slowed development in the play as companies hold back investment until prices improve. NGL production is key to netbacks with operators with higher liquids rich gas production reporting the best netbacks.

Deep Basin Producer Production Mix



Methodology

Cost Metrics

To conduct the study, the following cost metrics were chosen, and looked at on a per barrel of oil equivalent ("boe") basis:

1) Operating Expenses
2) Transportation Expenses
3) General and Administrative Expenses ("G&A Expenses")
4) Interest Expenses
5) Finding and Development Costs ("F&D Costs")
6) Full Supply Costs

The metrics were chosen by experienced industry analysts as the key components of reporting a full supply cost measure in an accurate and comparable fashion, from publicly available data.

ROYALTY EXPENSES ARE EXCLUDED FROM ALL COST CALCULATIONS

Given that U.S. companies do not report royalties per boe separate to their revenues per boe (report on a net of royalties basis), royalties per boe were excluded from the cost comparison analysis to keep the data as comparable as possible across countries.

EXCHANGE RATE

Some of the companies included in this report use U.S. dollars as their functional currency. For the purposes of this report, all data that was originally reported in U.S. dollars in both Q2 2016 and Q2 2017 has been converted into Canadian dollars at a rate of U.S.$1 to C$1.33720 (the average rate for Q2 2017).

The same rate has been used for both Q2 2016 and Q2 2017 so that costs can be compared on a like-for-like basis.

MCF TO BOE CONVERSION RATIO

This study has adopted the standard of 6 Mcf : 1 bbl when converting thousands of cubic feet of natural gas to barrels of oil equivalent ("boe"). Condensate and other natural gas liquids are converted to boe at a ratio of 1 bbl: 1 bbl and volumes of these products are included under "oil" in any production charts, figures or ratios. These ratios are estimates of the equivalent energy content of the products and do not reflect the relative economic value of each individual product.

GROSS AND NET PRODUCTION

U.S. producers report production net of royalties, while Canadian producers report on a gross basis. This could skew any cost and netback comparison slightly and should be kept in mind when analyzing any conclusions made.

Data Formula

1) Operating Expenses Per Boe

$$\frac{\text{E\&P operating expenses}}{\text{Total production}}$$

All operating expenses have been broken down to show purely E&P segment expenses for companies that have multiple segments.

2) Transportation Expenses Per Boe

$$\frac{\text{E\&P transportation expenses}}{\text{Total production}}$$

For multi-segment companies, all non-E&P related measures are excluded from this calculation where possible.

3) General and Administrative Expenses ("General & Admin. Expenses") Per Boe

$$\frac{\text{G\&A expenses excluding stock-based compensation}}{\text{Total production}}$$

This formula is for the full general and administrative expense amount for each company, and is not a pure E&P measure, as most companies do not report a clear split between segments. If stock-based compensation is reported, it is excluded from the full general and administrative amount for that company.

4) Interest Expenses Per Boe

$$\frac{\text{Interest expenses}}{\text{Total production}}$$

This formula is for the full interest expense amount for each company, and is not a pure E&P measure, as most companies do not report a clear split between segments.

Data Formula

5) Three-year Average Finding and Development Costs of Proved Reserves ("F&D Costs") Per Boe

$$\frac{\text{Sum of all exploration cost between 2014 and 2016} + \text{Sum of all development costs of proved reserves between 2014 and 2016}}{\text{Sum of all revisions between 2014 and 2016 (positive figures only)} + \text{Sum of all improved recovery between 2014 and 2016} + \text{Sum of all extensions and discoveries between 2014 and 2016}}$$

This item is only available on an annual basis, so for each quarterly period, the preceding 3 year average calculation has been used. The above formula was used for each company's Q2 2017 full supply cost calculation. For Q2 2016, figures from 2013 through to 2015 have been used. All reserve-related items are taken from the annual reserve reconciliations of proved reserves.

6) Full Supply Costs Per Boe

The sum of:

- Three-year Average Finding and Development Costs ("F&D Costs") per boe
- Operating Expenses per boe
- Transportation Expenses per boe
- General and Administrative Expenses ("G&A Expenses") per boe
- Interest Expenses per boe

7) Operating Netback Per Boe

E&P net revenue per boe – Operating expenses per boe – Transportation expenses per boe

The revenues used in this calculation for all companies are net of royalty expenses. For multi-segment companies, all non-E&P related amounts have been excluded.

Notes for F&D costs:

A three-year average is calculated to assuage the potential impact that spikes in the data on a single year basis can create. The formula also excludes the following items for the purposes of simplicity and comparability:

- Negative revisions
- Future development costs

The formula also uses "total revisions" in place of technical revisions, as US companies do not typically split between technical revisions and economic revisions.

For those interested in studying the F&D costs or reserve reconciliations of only Canadian producers, then CanOils has the data to support a far more robust and complex analysis, including this split between technical and economic revisions.

Find out more about CanOils by requesting a demo here.

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