

US oil and gas reserves, production and ESG benchmarking study

2022



Building a better
working world

The background of the page is a photograph of an oil rig at sunset. The rig is a tall, dark metal structure with several blue-painted platforms. The sun is low on the horizon, creating a bright glow and casting long shadows. The sky is a mix of orange, yellow, and blue. In the foreground, there is a large pile of material covered with a blue tarp, and some sparse vegetation is visible.

Table of contents

Overview	01
Capital expenditures	09
Revenues and results of operations	11
Capital allocation analysis	13
Oil reserves	14
Gas reserves	17
Performance measures	
Proved reserve acquisition costs	19
Production replacement rates: oil	20
Production replacement rates: gas	21
Production costs	22
ESG	23
Company statistics	26
Peer groups	40
Appendix	41
Contacts	45

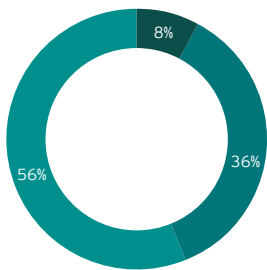
Overview

This study is a compilation and analysis of US oil and gas reserve and production information reported by publicly traded companies to the United States Securities and Exchange Commission and an analysis of certain publicly reported environmental, social and governance (ESG) disclosures, as applicable. It presents results for the five-year period from 2017 to 2021 for the 50 largest companies based on 2021 end-of-year US oil and gas reserve estimates. These companies represent approximately 41% of the US combined oil and gas production for 2021, and we believe that these companies are a good bellwether of industry trends. However, the oil and gas industry in the US is unique, and the conclusions that we draw do not necessarily apply to the rest of the world.

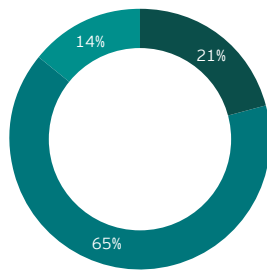
Companies have been classified into three peer groups: integrated companies (integrateds), large independents and independents. Integrateds are companies that have oil-refining and marketing activities in addition to exploration and production (E&P) activities. Independents do not have oil-refining and marketing activities but may have midstream operations. Independents are classified as “large” if their reserves exceeded 1 billion barrels of oil equivalent (BOE) at the end of 2021.

We’ve expanded our study this year to continue highlighting the industry’s growing focus on sustainability and nonfinancial goals related to ESG matters. Our benchmarks include whether an ESG or a sustainability report was issued; whether it aligns to a specific reporting framework (e.g., Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), Task Force on Climate-Related Financial Disclosures (TCFD)); whether third-party assurance is provided and, if so, what level of assurance is provided; whether greenhouse gas (GHG) emissions are reported; and finally, whether GHG reduction goals have been established.

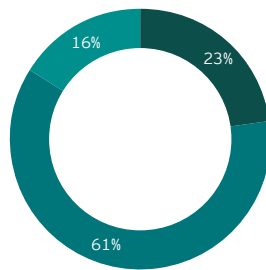
Number of companies



End-of-year US oil and gas reserves, 2021



US combined oil and gas production, 2021



■ Integrateds ■ Large independents ■ Independents



2021 in review

2021 was mostly a year of reset and recovery in oil and gas markets. What we saw in 2021: recovering demand and price signals that indicate the potential for extreme tightening in the supply-demand balance are only partially reflected in the data that we have compiled in this study. Oil reserves, which plummeted in 2020, spiked in 2021 but are still below where they ended in 2019. Higher prices have led to reserve revisions as recovery economics have improved while extensions and discoveries came in at the second-lowest level in the last five years, reflecting capital investment that has yet to reflect those economics. Instead, our study indicates that companies used cash flows to increasingly fund share buybacks and dividends over exploration and development costs.

US crude oil stocks



Source: US Energy Information Administration (EIA).

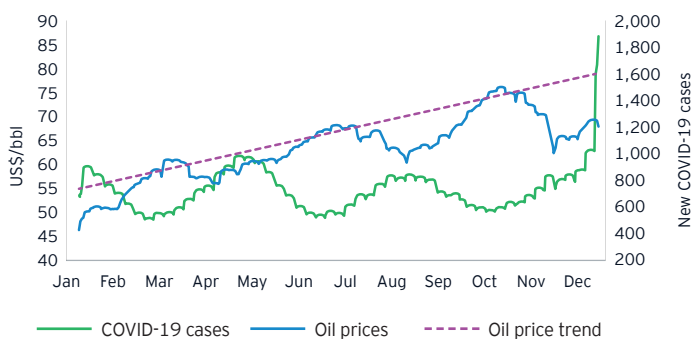
Inventory levels were the key. OPEC+ stated policy was to hold production below demand until stocks returned to normal levels. The policy worked. Between the peak of the pandemic and the end of 2021, OECD commercial inventories fell from 3.2 billion barrels to 2.6 billion barrels.

The driving force in the market was the discipline showed by OPEC+,¹ and it has been remarkable. In early January 2021, the Kingdom of Saudi Arabia announced a unilateral output cut of 1 million barrels per day (mbpd) and declared itself “the guardian of this industry.” During 2021, OPEC² supply of crude oil and natural gas liquids (NGLs) increased by only 3.3 mbpd while world liquids demand increased by 5.2 mbpd.

¹ The 13 oil-producing countries of OPEC plus 10 more oil-producing countries.

² Organization of Petroleum Exporting Countries.

2021 oil and gas prices



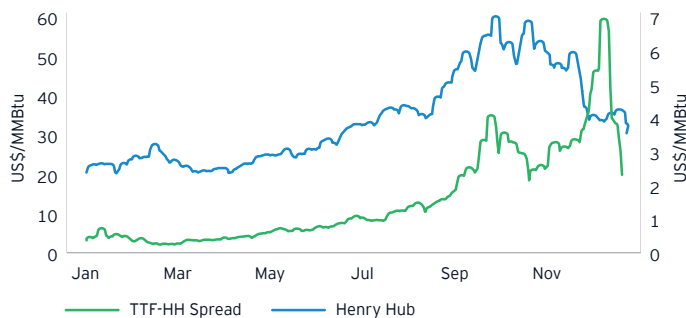
Sources: US EIA and World Health Organization.

Predictably, interruptions to the oil price recovery trend in the summer and late fall corresponded almost perfectly to waves of COVID-19 infections and market uncertainty regarding the speed with which demand would return to pre-pandemic levels.

2021 was a watershed year for the liquefied natural gas (LNG) industry. The history of the business has been riddled with questions about the direction of trade flows (many liquefaction plants in the US are sited at places that were once slated for regasification facilities), supply-demand balance and whether economics would ever be sustainable. There are indications that has changed until (or if) gas is permanently displaced by renewable electricity.

At the end of 2021, US producers still saw European gas market conditions as either transitory or irrelevant to the US industry. There was no rush to accelerate final investment decisions and no apparent pressure on upstream resources. Henry Hub prices were stable or falling as European prices spiked. Reserve additions through extension or discovery were well above 2020's depressed levels and on par with 2019 – but substantially below the first two years of our study period.

Natural gas prices at the Henry Hub (HH) and Dutch Title Transfer Facility (TTF) 2021



Source: Refinitive.

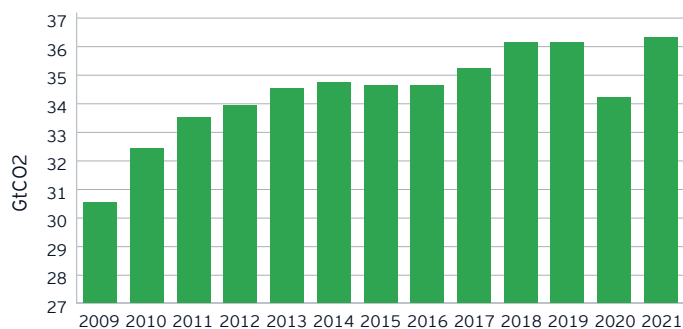
The gas market landscape was marked by an unprecedented runup in the spread between prices at the Henry Hub, where much of the feedstock for marginal LNG is priced, and Northern Europe.

The North American market has crossed the bridge on capital discipline. Notwithstanding progressively improving well economics, rig activity has increased steadily, but not spectacularly. The number of working rigs hasn't (and probably never will) returned to pre-pandemic levels and will almost certainly never return to levels seen at the height of the shale boom. However, 2021 was a record year for reserve acquisition. Companies spent a total of US\$94 billion acquiring the proved and unproved properties of other companies. Behind that number is an overarching trend in asset ownership. The sellers of these assets were largely integrated oil companies (working to rebalance their portfolio toward lower-carbon businesses) and independents (facing pressure from capital providers with heightened focus on ESG matters). The buyers were large independents looking for value. This trend doesn't tell us much about the underlying economics of oil and gas exploration, but it provides valuable clues regarding the diversity of opinion about the future of oil and gas and the differing capital market pressures facing the various segments of the industry.

Increasingly, policies that have led finance providers and companies to favor capital return over reinvestment in reserves will be tested if gasoline prices continue to rise and pressure on elected officials continues to grow.

Further, our study shows ESG matters were high on the minds of oil and gas company management, but there are still questions about how that focus will manifest in meaningful impact on climate change. Carbon emissions fell dramatically in 2020 when economies shut down and mobility ground to a halt. Life returned mostly to normal in 2021 and so did carbon emissions. Energy transition is the work of a generation, and in the here and now, it appears that the world's appetite for hydrocarbons won't fall off a cliff anytime soon. Oil and gas exploration and development, and the concomitant investment, will be a feature of the landscape for some time.

Global emissions



Source: IEA.

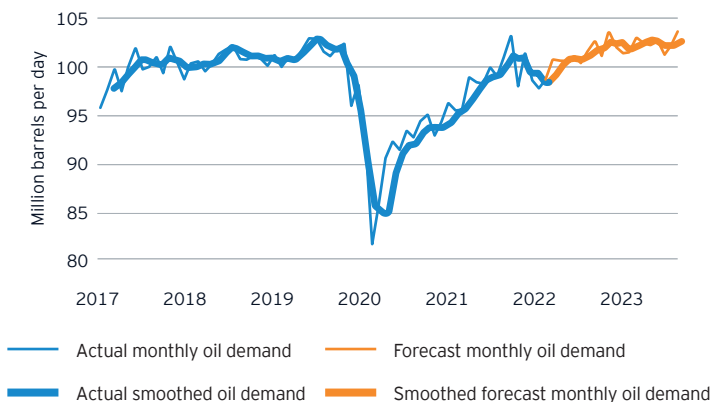
Gigatonnes of carbon dioxide (GtCO₂).

2021 was a year when the best intentions of the industry came to be tested. While our data suggests that companies and their shareholders increased their focus on ESG matters, global emissions increased to pre-COVID-19 levels as economies began to recover.

Looking forward

For the balance of 2022, we can expect US oil industry activity will be driven by events on the ground in Ukraine, the response of governments around the world (particularly those in Europe), the market reaction to changes in oil and gas trade flows, and the ability and willingness of companies and their capital providers to fund exploration and development geared toward replacing Russian oil. Now, the volume of oil that will need to be replaced remains a question mark. The Chinese and Indian governments have, so far, declined to sanction Russia. They account for 27.5% of the world's oil imports, but only 11% of those imports come from Russia, and Russia's total crude oil exports are less than one-third of China's and India's imports. Suffice it to say that there are significant opportunities for trade flows to change in a way that minimizes the net impact on supplies. However, infrastructure to enable new trade flows is lacking, and those adjustments will take time, perhaps a long time.

Actual and forecast crude oil demand



Source: US EIA.

Global oil demand continued its recovery from the COVID-19 pandemic during 2021 and is for all intents and purposes “normal” again. The latter part of last year and the beginning of 2022 brought the omicron phase of the COVID-19 pandemic and a predictable dip in demand.

Further complicating the global supply-demand balance is the resurgence of COVID-19 in China. The “zero-COVID” strategy adopted by the Chinese government began to face some challenges in early 2022, and between late January and late April, the number of reported cases in China

increased from fewer than 500 per day to almost 30,000 per day. The Chinese government responded by imposing strict mobility restrictions in Shanghai, the country's most populous city. Although the situation was temporary and the lifting of restrictions has already begun, this incident illustrates the ongoing vulnerability of economies and energy demand to flare-ups in infections and government response, particularly in Asia.

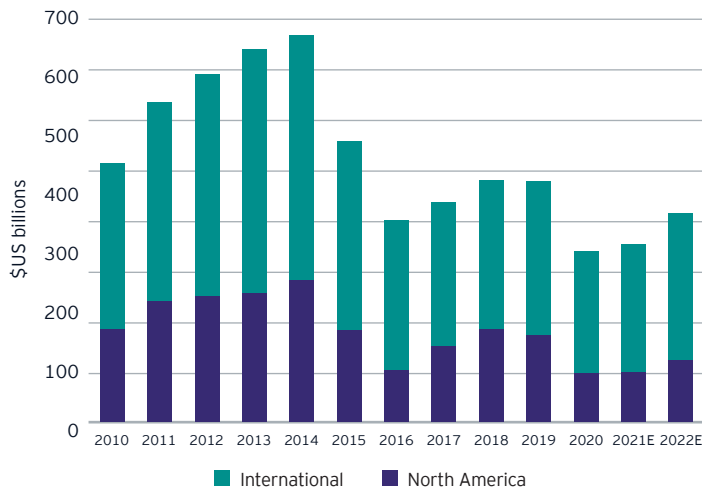
The war in Ukraine has thrown the global macroeconomic picture, the demand for oil and gas, and the return on upstream investment into turmoil. Historically, energy supply disruption and escalating prices have led to policy responses that triggered and heightened inflation-recession cycles. By the time of the war in Ukraine, central bankers were already in the process of tapering (and even reversing) monetary policy programs and appear resolute in their intention to get inflation under control.

The International Monetary Fund (IMF) projects that global growth will slow from an estimated 6.1% in 2021 to 3.6% in both 2022 and 2023. Those forecasts are a significant downward revision from projections made as recently as January when the IMF was calling for 4.4% and 3.8% growth, respectively, in those years. After that, no one knows how disrupted commodity supplies will affect growth and inflation.

North American oil and gas producers will be watched carefully. Unconventional oil is widely seen as a potential source of replacement for Russian crude and the US is seen as a source of new LNG, and providing enough feedstock to new liquefaction plants without putting undue pressure on domestic markets will require new investment. As always, the market understands favorable economics can be fleeting and market sentiment can change quickly. Time will tell how long it might take for companies to respond to an opportunity that looks attractive in the here and now but comes with uncertainties related to energy transition and reluctance of capital providers to fund fossil fuel assets.

2022 may be a year of interrupted progress toward sustainability goals. A central question regarding the world's response to the war in Ukraine is what will make up for Russian oil, natural gas, coal and metal supplies that have been either officially or unofficially sanctioned by western governments and companies and how the loss of those supplies will affect the balance between energy affordability, energy security and energy sustainability: the energy trilemma.

Capital investment in upstream oil and gas



Source: Barclays Research.

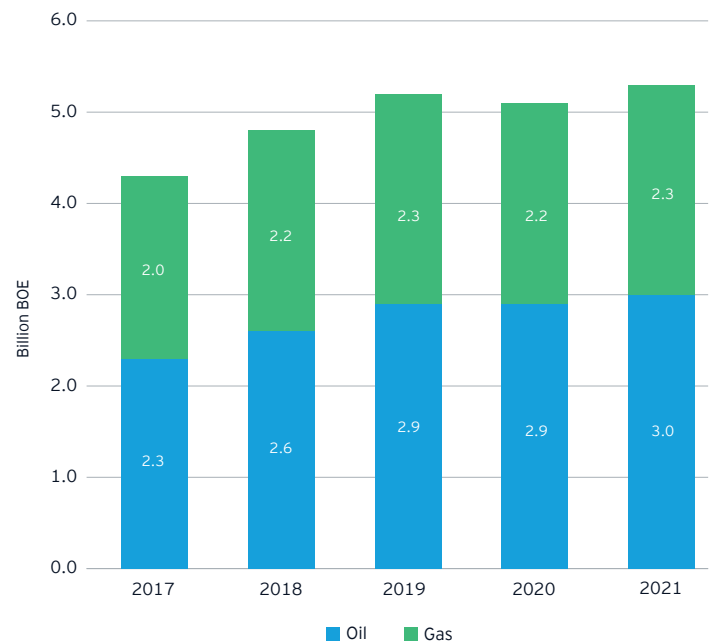
Capital investment in upstream oil and gas continues to be a question mark. Notwithstanding a supply-demand picture and wellhead economics that are at least as good as they were just before the 2015 downturn, companies (and/or their finance providers) don't appear to be interested in pouring money into the North American oilfield. The industry's leading lens into capital spending shows only a marginal improvement over 2020 and is lower than any year between 2010 and 2019.

At the beginning of 2022, energy security was a given and energy affordability was mostly assured. That premise has been abandoned, perhaps permanently. The desire to end dependence on Russian supplies and the threat of Russia preemptively cutting those supplies hangs over utilities and consumers alike. The US and European Union have entered into agreements for the US to provide additional LNG supplies, but there is no extra LNG to sell to Europe, and it remains to be seen where those supplies will come from. Affordability will be challenged as well. When the upside and downside risks to energy prices are weighed, it is difficult to envision a scenario where they return to normal levels (as we have come to know in recent years) anytime soon.

It is unclear where this crisis will take us with respect to sustainability. Intention has been, and will continue to be, to replace fossil fuels with renewables, but that transition has always been viewed as gradual while today's shortfalls in natural gas and oil supply are immediate. It has always been expected that energy transition would require capital redeployment away from fossil fuels and toward renewables. The urgent often takes priority over the important. As a result, the need to create substitutes for Russian oil and gas may slow capital redeployment. Then again, crises often spur innovation and alternative energy technology could follow that pattern. Affordability and sustainability could both be pushed forward.

It will be interesting to see what next year's study will show us. The demands of the world market appear to be on a collision course with the capacity of operators and the service sector (which has been largely devastated by the last two downturns) to drill new wells and bring new reserves to the mix.

Combined oil and gas production for the study companies



Study highlights

Rising commodity prices led to increases in revenues, production costs and capital expenditures in 2021. Although the study companies were able to capitalize on increasing commodity prices and realize an increase in revenues and pretax results of operations, this was partially offset by an increase in production costs in part attributed to rising inflation.

Capital expenditures

- ▶ Expenditures totaled US\$144.1 billion, 136% higher than 2020, nearing pre-pandemic totals in 2019, but still 28% less than the US\$200 billion in expenditures noted at the height of the shale revolution in the 2014 study.
- ▶ Significant increases in acquisitions of proved and unproved property compared with 2020 were the primary contributing categories to the overall increase in capital expenditures, while development spending was at its lowest amount in the five-year study period at US\$41.7 billion.
- ▶ The companies drilled 4% and 53% more development and exploration wells, respectively, compared with 2020.

Revenues and results of operations

- ▶ Revenues were US\$211.9 billion, up 89% from 2020 and the highest in the study period as a result of higher commodity prices.
- ▶ Production costs were up US\$1.38/BOE, a 15% increase as compared with 2020.
- ▶ Impairment was US\$1.6 billion, significantly lower than the recorded impairments of US\$68.4 billion in 2020 as a result of the significant oil price decline caused by the global pandemic.
- ▶ After-tax profits were US\$73.7 billion, a significant rebound from the after-tax losses of US\$86 billion recognized in 2020.

Capital allocation

- ▶ Payments of dividends and share repurchases increased 122% among large independents and independents, from US\$8.1 billion in 2020 to US\$18.1 billion in 2021.
- ▶ Development and exploration costs as a percentage of netback (revenues less production costs) decreased from 64% in 2020 to 32% in 2021 among large independents and independents, as a result in a shift in capital allocation more toward dividends and share repurchases.


Oil reserves and production

- ▶ Production was 3.0 billion barrels, a 5% increase from 2020 and the highest production during the study period.
- ▶ The companies reported extensions and discoveries of 4.6 billion barrels, an increase of 98% as compared with 2020, reflecting the rebound in capital expenditures due to rising commodity prices throughout the year.
- ▶ The companies reported combined oil reserves of 31.8 billion barrels, a 21% increase as compared with 2020, primarily driven by purchases of 3.5 billion barrels and the 4.6 billion barrels of extensions and discoveries.

Gas reserves and production

- ▶ Production was 13.9 trillion cubic feet (tcf), a 4% increase from 2020 and the highest production during the study period.
- ▶ The companies reported extensions and discoveries of 24.2 tcf, an increase of 56% as compared with 2020, primarily due to increased development capital spending.
- ▶ The companies reported combined gas reserves of 188.6 tcf, an increase of 27% as compared with 2020, primarily driven by 11.8 tcf of upward revisions due to higher commodity pricing and 21.6 tcf of purchases.



An aerial photograph of an industrial facility, likely an oil or gas processing plant, situated on a narrow strip of land between two bodies of water. The facility features several large, cylindrical storage tanks in various colors (white, blue, red). A long pier extends from the land into the water, with a barge or ship docked at its end. The sky is clear and blue, and the water is a deep blue. The overall scene is industrial and coastal.

The studied companies realized increased profits and participated significantly in merger and acquisition activities to strategically strengthen their core acreage positions.

Capital expenditures

US – capital expenditures (US\$ millions) (a)

	2017	2018	2019	2020	2021
Proved properties acquired	12,722	25,803	28,806	7,356	59,915
Unproved properties acquired	24,747	13,412	34,664	4,545	34,275
Exploration	12,938	13,623	11,542	6,196	8,100
Development	58,991	78,494	77,386	42,841	41,738
Other	163	578	73	96	42
Total	109,561	131,910	152,471	61,034	144,070

(a) Includes the 50 largest companies based on 2021 end-of-year oil and gas reserve estimates. Activity related to acquired companies has also been reflected as described in the appendix.

The study companies significantly increased capital expenditures in 2021, recording the second-highest level of spend during the study period, but still 28% less than the US\$200 billion in expenditures noted at the height of the shale revolution in the 2014 study. The high level of capital expenditures was primarily driven by merger and acquisition activity, as acquisitions of proved and unproved properties represented 65% of the total capital expenditures in the year and the highest level of acquisition capital expenditures during the study period. Total capital expenditures were US\$144.1 billion in 2021, representing a 136% increase from 2020, and returning to near pre-pandemic levels.

ConocoPhillips was the leading purchaser in 2021 with total property acquisition costs of US\$27.4 billion, primarily due to the acquisition of Concho Resources Inc., which included acquisition costs of US\$11.8 billion and US\$6.9 billion for proved and unproved properties, respectively.

Pioneer Natural Resources Company followed with total property acquisition costs of US\$17.1 billion, primarily due to the acquisition of Parsley Energy, Inc., which included acquisition costs of US\$5.1 billion and US\$5.6 billion for proved and unproved properties, respectively.

Exploration spending was US\$8.1 billion in 2021 compared with US\$6.2 billion in 2020. Pioneer Natural Resources Company kept its leading position in exploration spend from the prior year and incurred US\$2.7 billion. Diamondback Energy, Inc. followed with exploration spend of US\$1.2 billion. The two companies represented 48% of 2021 total exploration spend in our study.

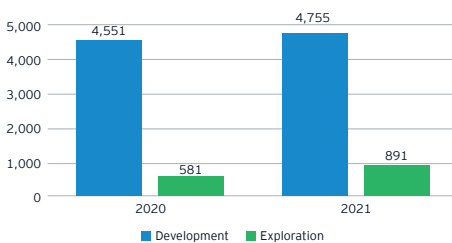
Development spending decreased slightly, from US\$42.8 billion in 2020 to US\$41.7 billion in 2021. Investments in development expenditures from the integrated oil and gas companies decreased year over year by approximately 25%, primarily due to less development acreage as a result of net sales of oil and gas properties in 2021 and a reallocation of capital. This is in contrast to an increase in development expenditures from the large independents and independents of approximately 14%.

Highest capital expenditures for 2021 (US\$ millions)

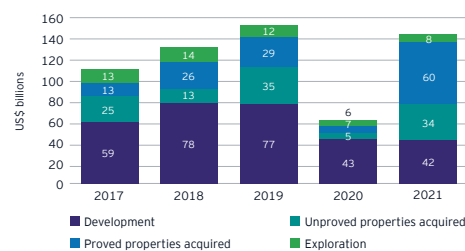
Proved properties acquired	
ConocoPhillips	16,101
Pioneer Natural Resources Company	9,039
Coterra Energy Inc. ¹	7,472
Devon Energy Corporation	7,017
Civitas Resources, Inc. ¹	4,200
Unproved properties acquired	
ConocoPhillips	11,262
Pioneer Natural Resources Company	8,090
Coterra Energy Inc. ¹	5,386
Devon Energy Corporation	2,381
Diamondback Energy, Inc.	1,829
Exploration	
Pioneer Natural Resources Company	2,690
Diamondback Energy, Inc.	1,223
Shell plc	920
ConocoPhillips	849
Chevron Corporation	331
Development	
Chevron Corporation	4,360
ConocoPhillips	3,410
Exxon Mobil Corporation ¹	3,360
EOG Resources, Inc.	3,206
Shell plc	3,116

¹ See company endnotes on page 44.

Net wells drilled



Costs incurred



The studied companies recorded a combined US\$212 billion in revenues, nearly double those recorded in 2020 and the highest during the study period.



Revenues and results of operations

US – revenues and results of operations (US\$ millions) (a)

	2017	2018	2019	2020	2021
Revenues	133,021	177,435	167,549	112,167	211,929
Production costs (b)	48,234	53,823	55,729	48,539	56,921
Exploration expense	6,143	4,335	3,673	7,538	2,154
DD&A (c)	60,047	61,000	74,191	85,599	60,173
Impairments	10,260	8,927	20,157	68,366	1,577
Other expenses (d)	5,334	5,879	12,508	6,725	3,597
Pretax results of operations	3,003	43,471	1,291	(104,600)	87,507
Income tax expense (benefit) (e)	(13,209)	8,481	217	(18,632)	13,805
Results of operations	16,212	34,990	1,074	(85,968)	73,702

US – revenues and results of operations (US\$ per BOE)

	2017	2018	2019	2020	2021
Revenues	29.73	36.83	31.58	21.64	39.98
Production costs (b)	10.78	11.17	10.50	9.36	10.74
Exploration expense	1.37	0.90	0.69	1.45	0.41
DD&A (c)	13.42	12.66	13.98	16.51	11.35
Impairments	2.29	1.85	3.80	13.19	0.30
Other expenses (d)	1.19	1.22	2.36	1.30	0.68
Pretax results of operations	0.68	9.03	0.25	(20.17)	16.50
Income tax expense (benefit) (e)	(2.95)	1.76	0.04	(3.59)	2.60
Results of operations	3.63	7.27	0.21	(16.58)	13.90

(a) Includes the 50 largest companies based on 2021 end-of-year oil and gas reserves. Activity related to acquired companies has also been reflected as described in the appendix.

(b) Includes production taxes and transportation costs for companies that separately disclose these expenses.

(c) DD&A = depreciation, depletion and amortization.

(d) Includes asset retirement obligation accretion and production-related general and administrative costs, among other items, for companies that separately disclose these expenses.

(e) Income taxes are presented for informational purposes only. The study is focused on pretax results of operations as a more meaningful comparative metric. Facts and circumstances underlying an individual company's tax results might not be representative of the study group as a whole and, as such, are not discussed in further details.

The study companies reported the highest combined pretax and after-tax results of operations during the study period represented by profits more than twice the size of those recorded in 2018. Results of operations for 2021 were a profit of US\$73.7 billion compared with a loss of US\$86 billion in 2020, mainly due to the improved commodity price environment in 2021. The revenue increase of 89% from the prior year was attributable to rising prices as the average realized revenue per BOE increased by 85% as compared with the prior year. Oil and gas production was materially consistent year over year, increasing 5% and 4%, respectively.

While the study companies recognized an increase of US\$1.38 per BOE, or 15%, in production costs year over year, DD&A and oil and gas property impairment charges decreased year over year by US\$5.16 per BOE, or 31%,

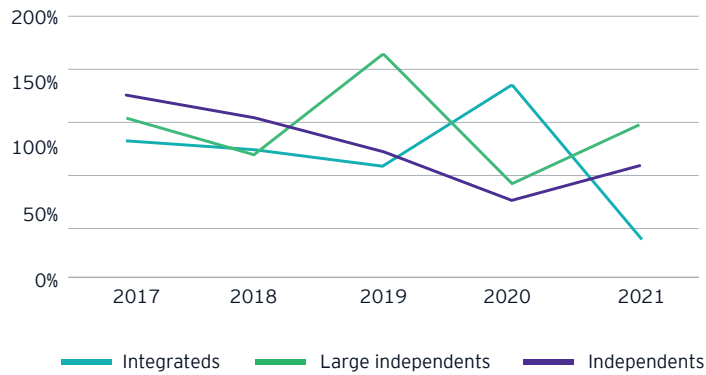
and US\$12.89 per BOE, or 98%, respectively. The decrease in oil and gas property impairments comes after the study group recorded a record US\$68.4 billion of oil and gas property impairments in 2020, compared with US\$1.6 billion in 2021. The decrease in DD&A per BOE is likely reflective of upward revisions to oil and gas reserves and prior year impairments, partly offset by higher cost basis of properties as a result of the significant increase in acquisitions of proved properties.

The study companies posted a 93% plowback percentage in 2021 compared with the 2020 average of 96%. The plowback percentage represents total capital expenditures as a percentage of netback (revenues less production costs). Integrated companies posted the lowest plowback percentage with a 2021 rate of 34%, one year after posting the highest plowback percentage in 2020 at a rate of 154%.

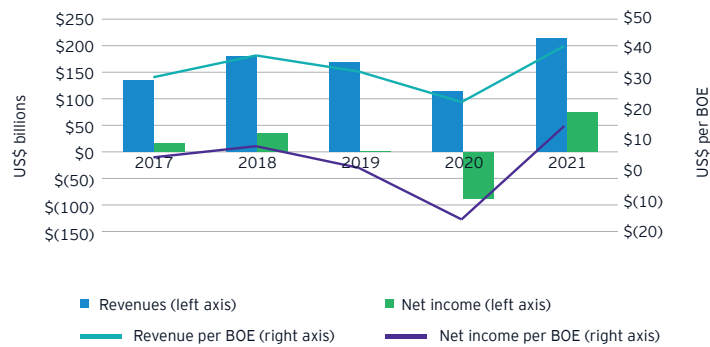


Large independents had a rate of 123%, and independents had a rate of 90%. The larger plowback percentages for the large independents and independents are primarily due to increases in acquisitions of proved and unproved properties by these companies.

Plowback percentage



Revenues and results of operations



Capital allocation analysis

Dividends paid, shares repurchased, and development and exploration costs (US\$ millions) (a) (b)

	2020		2021	
	Dividends and share repurchases (b)	Development and exploration costs (c)	Dividends and share repurchases (b)	Development and exploration costs (c)
Large independents	7,528	21,472	16,991	26,379
Independents	618	7,439	1,075	8,718

(a) Integrated are excluded from this analysis as the reported dividends and share repurchases are for the consolidated company, whereas the development and exploration costs are for US exploration and production operations.

(b) Dividends and share repurchases reflect the amounts recorded as financing activities within the statement of cash flows.

(c) Includes capital expenditures noted as "other" (see capital expenditures table on page 26).

Capital allocation (a)

US – dividends paid, shares repurchased, and development and exploration costs as a percentage of netback (%) (b)

	2020		2021	
	Dividends and share repurchases (c)	Development and exploration costs (d)	Dividends and share repurchases (c)	Development and exploration costs (d)
Large independents	23%	65%	19%	30%
Independents	5%	61%	5%	40%

(a) Integrated are excluded from this analysis as the reported dividends and share repurchases are for the consolidated company, whereas the development and exploration costs are for US exploration and production operations.

(b) Netback is calculated as revenues less production costs.

(c) Dividends and share repurchases reflect the amounts recorded as financing activities within the statement of cash flows.

(d) Includes capital expenditures noted as "other" (see capital expenditures table on page 26).

In 2021, large independents increased payments of dividends and share repurchases compared with 2020 by US\$9.5 billion (126%). The significant increase in dividend payments and share repurchases in 2021 compared with 2020 contrasts with only a US\$4.9 billion (23%) increase in development and exploration costs in 2021 by large independents. This is primarily due to increased cash on hand from a more favorable commodity price environment compared to 2020, coupled with increasing pressure from shareholders to provide higher returns as opposed to allocating capital to production growth.

This trend is reinforced when looking at dividends and share repurchases, and development and exploration costs as a percentage of netback (revenues less production costs). Dividends and share repurchases were paid out at relatively consistent percentages of netback in 2021 (19% and 5% for large independents and independents, respectively) compared with 2020 (23% and 5% for large independents

and independents, respectively). This is in contrast to development and exploration costs as a percentage of netback decreasing significantly in 2021 (30% and 40% for large independents and independents, respectively) compared with 2020 (65% and 61% for large independents and independents, respectively).

Furthermore, in 2020, dividends, share repurchases, and development and exploration costs collectively represented approximately 88% and 66% of total netback for large independents and independents, respectively. These percentages declined in 2021, where dividends, share repurchases, and development and exploration costs collectively only comprised 49% and 45% of netback for large independents and independents, respectively. This highlights a greater focus observed among the large independents and independents on strengthening the balance sheet and capital allocation, including more acquisitions, in 2021 amid a more favorable commodity price environment.

Oil reserves

US – proved oil reserves (million barrels) (a) (b)

	2017	2018	2019	2020	2021
Beginning of year	23,346	28,234	31,881	32,510	26,295
Additions:					
Extensions and discoveries	4,869	5,415	4,915	2,314	4,572
Improved recovery	202	262	455	140	71
Revisions	1,793	410	(2,039)	(5,204)	1,837
Production	(2,345)	(2,620)	(2,921)	(2,850)	(2,983)
Purchases	1,136	1,827	2,091	818	3,494
Sales	(776)	(1,708)	(1,872)	(1,433)	(1,429)
Other	9	61	0	0	(17)
End of year	28,234	31,881	32,510	26,295	31,840

(a) Includes the 50 largest companies based on 2021 end-of-year oil and gas reserve estimates. Activity related to acquired companies has also been reflected as described in the appendix.

(b) Includes condensate and natural gas liquids.

Oil reserves for the study companies increased 21% in 2021 mainly due to significant extensions and discoveries, purchases and upward revisions, which were partially offset by sales and production, both of which were materially consistent with 2020 levels. As a result, the study companies reported the highest oil reserves since 2019.

Extensions and discoveries increased by 98% as compared with 2020 as companies increased the number of exploratory and development wells drilled in 2021 as compared with 2020. At 4.6 billion barrels, the study companies reported the second-lowest extensions and discoveries for the study period, primarily as a result of the increase in purchases of oil reserves, which was the highest for the study period in 2021 at 3.5 billion barrels.

Upward revisions for 2021 were 2.5 billion barrels, offset by downward revisions of 0.7 billion barrels, resulting in 1.8 billion barrels of net positive revisions.

The largest upward revisions were reported by Occidental Petroleum Corporation (609 million barrels), ConocoPhillips (364 million barrels)

and Chevron Corporation (313 million barrels). Revisions by these three companies accounted for 52% of all upward revisions in 2021. Individual contributions to the downward revisions were not significant.

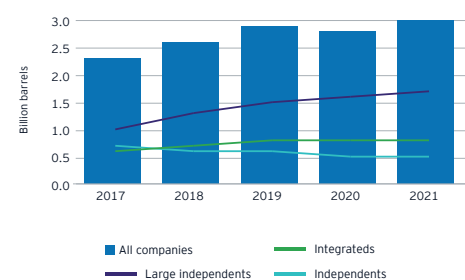
Oil production remained materially flat as compared with 2020, increasing 5% year over year. The largest increases were posted by ConocoPhillips (105 million barrels) and Pioneer Natural Resources Company (74 million barrels) likely due to the acquisitions of Concho Resources Inc. and Parsley Energy, Inc., respectively. The largest decrease was posted by Occidental Petroleum Corporation (25 million barrels) and is likely the result of sales of assets in the Permian and DJ basins.

Overall, oil production increased by 27% from 2017 to 2021, with the large independents' production growing 69% compared with 33% growth for the integrations and a 35% decrease for the independents.

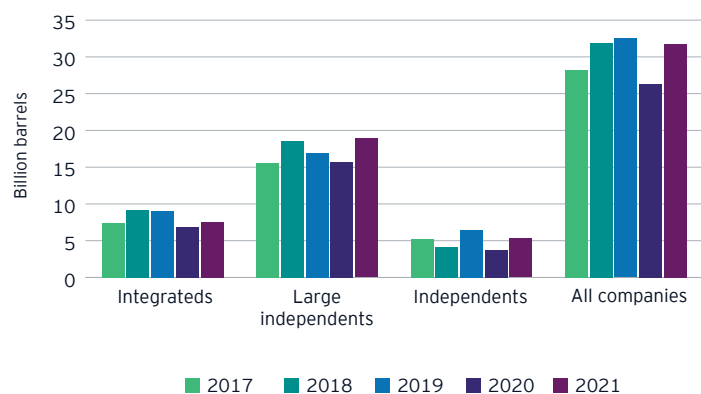
Purchases of oil reserves for 2021 were 3.5 billion barrels, while sales were 1.4 billion barrels. ConocoPhillips recorded 763 million barrels in

purchases (22% of total purchases), largely due to its acquisition of Concho Resources Inc. and oil and gas assets from Shell plc. Pioneer Natural Resources Company recorded 718 million barrels in purchases (21% of total purchases), largely due to its acquisitions of Parsley Energy, Inc. and Double Eagle III Midco 1 LLC. Cimarex Energy Co.; Extraction Oil & Gas, Inc.; and QEP Resources, Inc. accounted for combined sales of 690 million barrels (48% of total sales), given the acquisitions of these companies by other companies included in the study group.

Oil production



End-of-year oil reserves



Oil reserves, 2021 – top-ranked companies (million barrels)

Ending reserves	
ConocoPhillips	3,115
Chevron Corporation	2,876
Exxon Mobil Corporation ¹	2,462
EOG Resources, Inc.	2,375
Occidental Petroleum Corporation	2,030
Production	
Chevron Corporation	313
ConocoPhillips	280
Occidental Petroleum Corporation	261
EOG Resources, Inc.	215
Exxon Mobil Corporation ¹	192


¹ See company endnotes on page 44.

Oil reserves, 2020 – top-ranked companies (million barrels)

Ending reserves	
Chevron Corporation	2,343
EOG Resources, Inc.	2,326
Exxon Mobil Corporation ¹	2,090
ConocoPhillips	1,896
BP p.l.c.	1,771
Production	
Chevron Corporation	290
Occidental Petroleum Corporation	286
EOG Resources, Inc.	199
Exxon Mobil Corporation ¹	194
ConocoPhillips	175

¹ See company endnotes on page 44.





In 2021, the studied companies reported the highest combined purchases of oil and gas reserves in the study period.

Gas reserves

US – proved gas reserves (billion cubic feet (bcf)) (a)

	2017	2018	2019	2020	2021
Beginning of year	143,996	172,977	178,014	171,129	149,041
Additions:					
Extensions and discoveries	31,534	31,284	23,860	15,519	24,186
Improved recovery	1,246	1,646	700	728	255
Revisions	9,810	(2,608)	(18,336)	(20,006)	11,819
Production	(12,165)	(13,011)	(13,684)	(13,363)	(13,904)
Purchases	12,180	5,347	10,208	6,776	21,623
Sales	(13,615)	(15,906)	(9,633)	(11,757)	(4,373)
Other	(9)	(1,715)	0	15	(44)
End of year	172,977	178,014	171,129	149,041	188,603

(a) Includes the 50 largest companies based on 2021 end-of-year oil and gas reserve estimates. Activity related to acquired companies has also been reflected as described in the appendix.

End-of-year gas reserves for the study companies increased by 27% in 2021 to 188.6 trillion cubic feet (tcf), marking the highest level of gas reserves in the study period. The increase is mainly due to significant extensions and discoveries, purchases and upward revisions.

EQT Corporation (2.8 tcf); EOG Resources, Inc. (2.6 tcf); and Southwestern Energy Company (2.5 tcf) posted the largest extensions and discoveries, accounting for 33% of the total extensions and discoveries for the study group.

Upward revisions for 2021 were 13.8 tcf, and downward revisions were 2.0 tcf, resulting in 11.8 tcf of net positive revisions.

The largest upward revisions were reported by Chesapeake Energy Corporation (1.5 tcf), Exxon Mobil Corporation (1.5 tcf), Occidental Petroleum Corporation (1.3 tcf) and Antero Resources Corporation (1.0 tcf). Revisions by these four companies accounted for 38% of all upward revisions in 2021 and were largely driven by increasing gas prices. The largest downward revisions were reported by EQT Corporation

(0.6 tcf), Coterra Energy Inc. (0.5 tcf) and CNX Resources Corporation (0.3 tcf). Revisions by these three companies accounted for 72% of all downward revisions in 2021.

Gas production remained materially flat as compared with 2020, increasing 4%. The largest increases were posted by EQT Corporation (328 bcf), Southwestern Energy Company (321 bcf) and ConocoPhillips (243 bcf), while the largest decreases were posted by BP p.l.c. (543 bcf), Occidental Petroleum Corporation (84 bcf) and Shell plc (58 bcf).

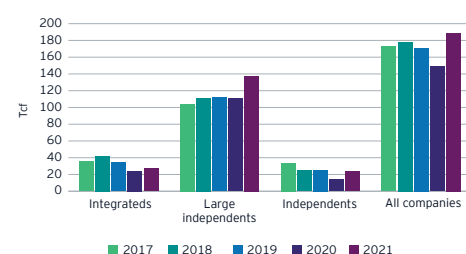
While gas production from 2017 to 2021 has increased moderately (14%), the level of change varied among the peer groups. The large independents increased their gas production by 149% from 2017, and production of the integrations and the independents decreased by 20% and 66%, respectively. The large independents accounted for 72% of total gas production in 2021.

Purchases of gas reserves were 21.6 tcf in 2021. Southwestern Energy Company recorded 5.8 tcf in purchases, primarily due to its acquisitions of Indigo Natural

Resources LLC and GEP Haynesville, LLC. EQT Corporation recorded 4.2 tcf in purchases, primarily due to its acquisition of Alta Marcellus Development, LLC and ARD Operating, LLC. Collectively, this represents 46% of total purchases.

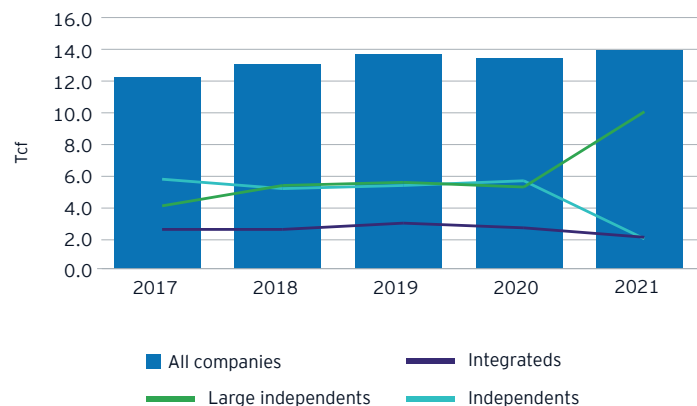
Sales of gas reserves were 4.4 tcf in 2021. BP p.l.c. posted the largest sales in 2021 of 0.4 tcf while Cimarex Energy Co.; Extraction Oil & Gas, Inc.; and QEP Resources, Inc. accounted for combined sales of 2.1 tcf, given the acquisition of these companies by other companies included in the study group.

End-of-year gas reserves





Gas production



Gas reserves, 2021 – top-ranked companies (bcf)

Ending reserves	
EQT Corporation	23,524
Southwestern Energy Company	17,207
Exxon Mobil Corporation ¹	15,128
Coterra Energy Inc. ¹	14,895
Range Resources Corporation	11,452
Production	
EQT Corporation	1,746
Exxon Mobil Corporation ¹	1,114
Southwestern Energy Company	1,015
Coterra Energy Inc. ¹	911
Antero Resources Corporation	826

¹ See company endnotes on page 44.

Gas reserves, 2020 – top-ranked companies (bcf)

Ending reserves	
EQT Corporation	18,864
Coterra Energy Inc. ¹	13,672
Exxon Mobil Corporation ¹	13,541
Range Resources Corporation	11,148
Antero Resources Corporation	10,025
Production	
EQT Corporation	1,419
Exxon Mobil Corporation ¹	1,093
Antero Resources Corporation	875
Coterra Energy Inc. ¹	858
Southwestern Energy Company	694

¹ See company endnotes on page 44.

Performance measures

Proved reserve acquisition costs

US – proved reserve acquisition costs (PRACs) (a)

US\$ per BOE

	2017	2018	2019	2020	2021	Three-year	Five-year
PRACs	4.11	10.04	7.92	4.07	8.44	7.66	7.44

(a) Includes the 50 largest companies based on 2021 end-of-year oil and gas reserve estimates and their historic results of operations and production information. As a result, activity related to acquired companies has not been reflected as described in the appendix.

PRACs were US\$8.44 per BOE in 2021, approximately double that of the prior year. ConocoPhillips and Pioneer Natural Resources Company accounted for 47% of proved properties acquisition costs. The larger acquisitions relating to these companies were discussed above, and the PRAC results for ConocoPhillips and Pioneer Natural Resources Company were US\$13.77 per BOE and US\$9.97 per BOE, respectively. We note that this measure is a combination of oil and gas property acquisitions, and the US\$ per BOE measure is impacted by the mix of the commodities in acquired reserves.

Lowest three-year (2019-21) PRACs (a)

PRACs (b)	
Ovintiv Inc. ¹	\$ 0.09
Exxon Mobil Corporation ¹	1.26
Callon Petroleum Company	1.89
Amplify Energy Corp.	2.17
National Fuel Gas Company	2.20

¹ See company endnotes on page 44.

(a) Amounts presented represent a combination of oil and gas property and development costs. As such, a company with a large concentration of expenditures related to natural gas will likely have a lower US\$ per BOE in these measures.

(b) Based on companies with proved acquisition costs of at least US\$50 million for the three-year period.



Production replacement rates: oil

US – all sources and finding and development (F&D) oil production replacement rates (a)

	2017	2018	2019	2020	2021	Three-year	Five-year
All sources	304%	283%	178%	(93%)	309%	136%	188%
F&D, including revisions	286%	237%	121%	(98%)	217%	84%	143%
F&D, excluding revisions	215%	218%	186%	87%	156%	143%	168%

(a) Includes the 50 largest companies based on 2021 end-of-year oil and gas reserve estimates and their historic results of operations and production information. As a result, activity related to acquired companies has not been reflected as described in the appendix.

Increases in oil reserves mainly due to purchases, upward revisions and higher extension and discovery adds as a result of a favorable price environment lead to increased oil production replacement rates. Production replacement rates from all sources; F&D, including revisions; and F&D, excluding revisions were greater than 100% for each peer group.

All sources. In 2021, all companies with significant oil reserves reported positive replacement from all sources, while 40 companies reported more than 100% replacement from all sources.

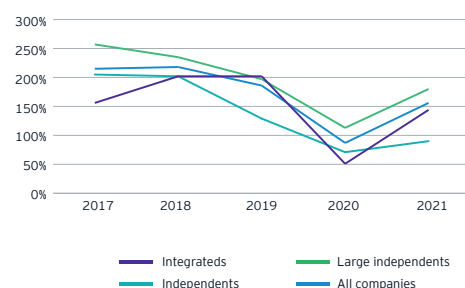
F&D, including revisions. In 2021, 48 companies reported positive replacement from all F&D sources, while 42 companies reported more than 100% replacement from all F&D sources.

F&D, excluding revisions. In 2021, 25 companies achieved more than 100% replacement from F&D sources other than revisions.

Oil production replacement by peer group, 2021

	All sources	F&D, including revisions	F&D, excluding revisions
Integrations	180%	202%	144%
Large independents	381%	235%	180%
Independents	275%	180%	90%

Oil F&D, excluding revisions, production replacement rates



Production replacement rates: gas

US – all sources and F&D gas production replacement rates (a)

	2017	2018	2019	2020	2021	Three-year	Five-year
All sources	412%	183%	83%	(35%)	400%	155%	204%
F&D, including revisions	355%	235%	43%	(29%)	261%	95%	167%
F&D, excluding revisions	285%	260%	180%	124%	176%	160%	201%

(a) This includes the 50 largest companies based on 2021 end-of-year oil and gas reserve estimates and their historic results of operations and production information. As a result, activity related to acquired companies has not been reflected as described in the appendix.

Similar to oil replacement rates, increases in gas reserves resulted in higher levels of replacement rates for gas reserves. Each peer group achieved a production replacement rate greater than 100% in 2021 from all sources; F&D, including revisions; and F&D, excluding revisions.

All sources. In 2021, 48 companies reported positive replacement rates from all sources, while 45 companies reported more than 100% replacement from all sources.

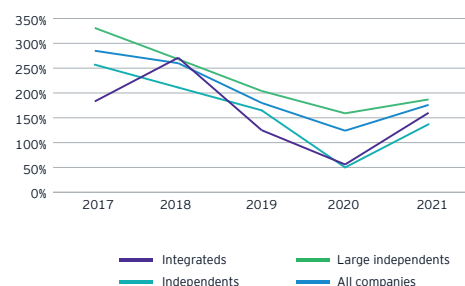
F&D, including revisions. In 2021, 47 companies reported positive replacement rates from all F&D sources, while 42 companies reported more than 100% replacement from all F&D sources.

F&D, excluding revisions. In 2021, 30 companies achieved more than 100% replacement from F&D sources other than revisions.

Gas production replacement by peer group, 2021

	All sources	F&D, including revisions	F&D, excluding revisions
Integrations	274%	315%	160%
Large independents	426%	246%	187%
Independents	397%	283%	137%

Gas F&D, excluding revisions, production replacement rates



Production costs

US – production costs (US\$ per BOE) (a)

	2017	2018	2019	2020	2021	Three-year	Five-year
Integrations	13.22	13.40	12.85	11.70	13.11	12.54	12.83
Large independents	9.96	10.31	9.73	8.74	9.73	9.41	9.66
Independents	11.45	11.42	11.10	9.68	11.56	10.79	11.03
All companies	11.11	11.31	10.78	9.63	10.74	10.39	10.68

(a) This includes the 50 largest companies based on 2021 end-of-year oil and gas reserve estimates and their historic results of operations and production information. As a result, activity related to acquired companies has not been reflected as described in the appendix.

Production costs per BOE increased 11% from 2020 to 2021 as production taxes increased due to higher commodity prices and as potential cost inflations began to be realized by companies concurrent with the rising price environment.

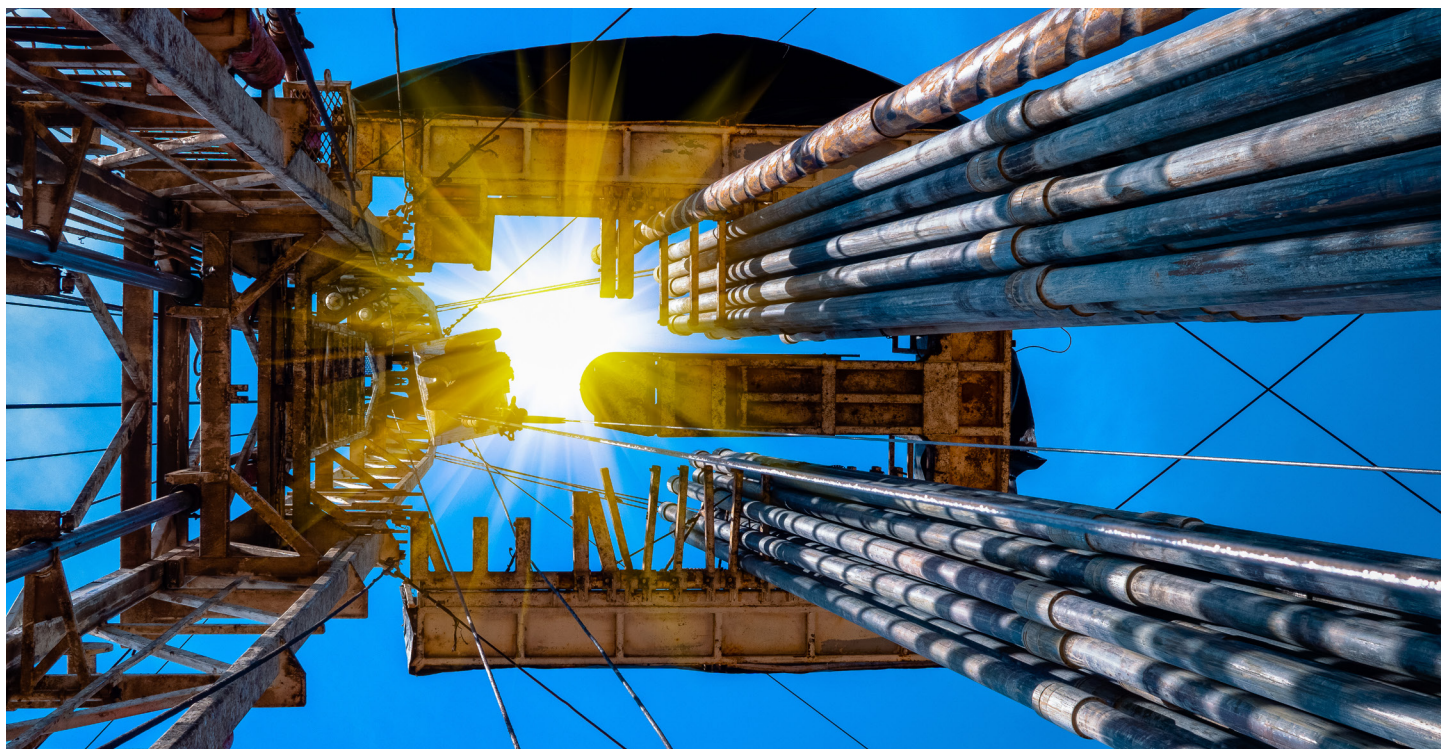
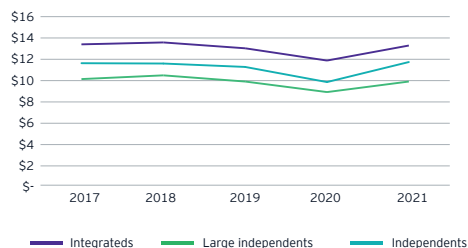
Lowest three-year (2017-21) production costs (US\$ per BOE) (a)

Comstock Resources, Inc.	3.40
SilverBow Resources	4.87
Coterra Energy Inc. ¹	4.91
CNX Resources Corporation	5.06
PDC Energy, Inc.	5.36

(a) Amounts presented represent a combination of oil and gas production costs. As such, a company with a large concentration of expenditures related to natural gas will likely have a lower US\$ per BOE in this measure.

¹ See company endnotes on page 44.

Production costs per BOE



ESG

US – ESG reporting (a)

	Does the company publish a sustainability or an ESG report?	Does reporting align to a specific framework? (b)	Does reporting include third-party assurance over ESG metrics?	Are GHG emissions reported?	Has the company set a GHG reduction goal?
Integrations	100%	100%	75%	100%	100%
Large independents (c)	89%	89%	33%	100%	78%
Independents	75%	75%	14%	75%	46%
All companies	82%	82%	26%	86%	62%

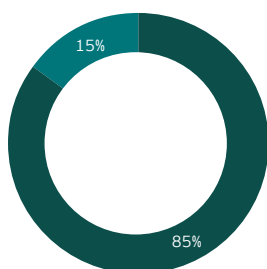
(a) Includes the 50 largest companies based on 2021 end-of-year oil and gas reserve estimates. The data presented here is based on a review of company sustainability and ESG reports, as well as a review of information included on company websites.

(b) The frameworks included in this question were GRI, SASB and the TCFD frameworks.

(c) Three large independents did not publish a sustainability or ESG report, but they did publish GHG emissions data on their websites.

As stakeholder demand for ESG information has continued to increase, oil and gas companies have responded by providing ESG disclosures through sustainability reports and information on company websites. The integrated and large independents have led the charge as 100% and 89% of these companies, respectively, published a sustainability or ESG report, while 75% of independents published a report. This reflects an increase to 82% of all companies in the study group publishing a sustainability or ESG report, as compared with 76% in 2020.

Type of assurance for ESG metrics obtained (a)



■ Limited assurance

■ Reasonable assurance (b)

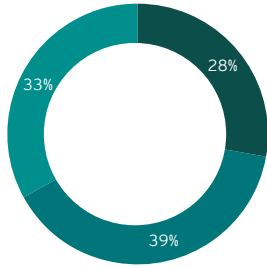
(a) Thirteen companies within the study group reported obtaining some type of assurance over their reported ESG metrics.

(b) The two companies that obtained reasonable assurance over certain reported ESG metrics were Chevron Corporation (integrated) and BHP Group (independent, but an internationally based oil and gas company with mining and resource extraction operations).

Most reports published align with the GRI, SASB and/or the TCFD frameworks. While 75% of integrated companies included third-party assurance over ESG metrics, large independents and independents were significantly less likely to include third-party assurance (33% and 14%, respectively). Of the 13 companies (26%) from the study group that obtained third-party assurance over ESG metrics, substantially all obtained limited assurance (11 companies), while 2 companies obtained reasonable assurance.

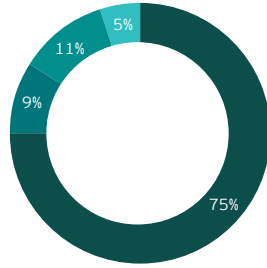


GHG emission scope(s) reported (a)



- Scope 1
- Scopes 1 and 2
- Scopes 1, 2 and 3 (b)

Scope 1 boundary definition (a)



- Operational control (c)
- Equity share (d)
- Both
- Not defined

- (a) Data population is of the 43 companies within the study group that reported at least one scope of GHG emissions.
- (b) Represents reported scope 3 GHG emissions for any category as there were not any companies reporting all categories of their scope 3 emissions.
- (c) Under the operational control approach, a company accounts for 100% of the GHG emissions from operations over which it has operational control. It does not account for GHG emissions from operations in which it owns an interest but has no operational control. Operational control is defined by the Greenhouse Gas Protocol when a company or one of its subsidiaries has the authority to introduce and implement its operating policies at the operation.
- (d) Under the equity share approach, a company accounts for GHG emissions from operations according to its share of equity ownership in the operation.

A significant majority of the study companies (86%, 43 companies) report at least one scope of GHG emissions. Within the 43 companies reporting at least one scope of GHG emissions, 28% only reported scope 1 emissions, while 39% reported both scope 1 and scope 2 emissions. Nearly a third (33%) of the companies reporting GHG emissions reported at least one category of scope 3 emissions in addition to their scope 1 and scope 2 emissions. All of the integrations reported scopes 1 and 2 and at least one category of scope 3 GHG emissions. Furthermore, a significant majority (75%) of the study companies reporting at least one scope of GHG emissions reported their scope 1 emissions using the operational control approach. Only 9% reported their scope 1 GHG emissions using the equity share approach, and 11% reported their scope 1 GHG emissions using both the operational control and equity share approaches.



Company statistics

US – capital expenditures for the latest fiscal year (a)

US\$ millions

	Proved properties	Unproved properties	Exploration	Development	Other	Total expenditures
Amplify Energy Corp.	0	0	0	27	0	27
Antero Resources Corporation	0	79	20	581	0	680
APA Corporation	0	9	6	545	0	560
Battalion Oil Corporation	0	0	6	38	6	50
Berry Corporation	1	0	0	154	0	155
BHP Group	642	19	166	749	0	1,576
BP p.l.c.	81	18	138	2,541	0	2,778
California Resources Corporation	53	0	7	210	0	270
Callon Petroleum Company	677	301	138	396	0	1,512
Centennial Resource Development, Inc.	2	5	6	304	0	317
Chesapeake Energy Corporation	2,183	1,121	31	775	0	4,110
Chevron Corporation	98	13	331	4,360	0	4,802
Civitas Resources, Inc. ¹	4,200	648	8	316	0	5,172
CNX Resources Corporation	32	21	31	394	0	478
Comstock Resources, Inc.	22	36	7	621	0	686
ConocoPhillips	16,101	11,262	849	3,410	0	31,622
Continental Resources, Inc.	2,580	1,198	172	1,175	0	5,125
Coterra Energy Inc. ¹	7,472	5,386	18	688	0	13,564
Crescent Energy Company ¹	1,099	41	1	195	0	1,336
Denbury Resources Inc.	11	0	0	178	0	189
Devon Energy Corporation	7,017	2,381	212	1,643	0	11,253
Diamondback Energy, Inc.	2,805	1,829	1,223	516	0	6,373
Earthstone Energy, Inc.	465	0	0	134	0	599
EOG Resources, Inc.	100	207	296	3,206	0	3,809
EQT Corporation	2,286	806	24	951	0	4,067
Exxon Mobil Corporation ¹	37	78	19	3,360	0	3,494
Gulfport Energy Corporation ¹	17	0	0	304	0	321
Hess Corporation	0	4	92	653	0	749

	Proved properties	Unproved properties	Exploration	Development	Other	Total expenditures
Laredo Petroleum, Inc.	899	199	33	411	0	1,542
Magnolia Oil & Gas Corporation ¹	12	10	0	241	0	263
Marathon Oil Corporation	47	9	162	781	0	999
Matador Resources Company	146	105	52	476	0	779
Murphy Oil Corporation	20	9	32	513	0	574
National Fuel Gas Company	2	5	15	329	20	371
Northern Oil and Gas, Inc.	435	19	0	202	0	656
Oasis Petroleum Inc.	606	0	0	170	16	792
Occidental Petroleum Corporation	378	51	147	1,749	0	2,325
Ovintiv Inc. ¹	9	2	10	1,148	0	1,169
PDC Energy, Inc.	0	3	7	583	0	593
Pioneer Natural Resources Company	9,039	8,090	2,690	706	0	20,525
Range Resources Corporation	0	22	30	385	0	437
Ranger Oil Corporation	0	4	0	262	0	266
Sandridge Energy Inc.	4	0	1	10	0	15
Shell plc	0	26	920	3,116	0	4,062
SilverBow Resources	138	7	0	123	0	268
SM Energy Company	0	9	125	584	0	718
Southwestern Energy Company	0	139	0	984	0	1,123
Talos Energy Inc.	0	0	24	245	0	269
W&T Offshore, Inc.	2	0	47	18	0	67
Whiting Petroleum Corporation	197	104	4	278	0	583
All companies	59,915	34,275	8,100	41,738	42	144,070
Integrations	216	135	1,408	13,377	0	15,136
Large independents	50,071	32,643	6,014	20,366	0	109,094
Independents	9,628	1,497	678	7,995	42	19,840

(a) Amounts are determined from the disclosure of costs incurred and may include amounts that were capitalized and amounts that were charged to expense.

¹ See company endnotes on page 44.

US – revenues and results of operations for the latest fiscal year (a)

US\$ millions

	Revenues	Production costs (b)	Exploration expense	DD&A	Impairments	Other income (expense) (c)	Income taxes	Results of operations
Amplify Energy Corp.	246	(165)	0	(28)	0	(7)	0	46
Antero Resources Corporation	5,791	(2,794)	(1)	(736)	(91)	0	520	2,689
APA Corporation	3,280	(888)	(28)	(511)	0	(30)	(383)	1,440
Battalion Oil Corporation	160	(120)	0	(45)	0	(16)	0	(21)
Berry Corporation	665	(293)	0	(138)	0	(27)	(57)	150
BHP Group	1,244	(267)	(164)	(489)	0	(22)	(78)	224
BP p.l.c.	10,734	(2,061)	(78)	(3,153)	0	(907)	(1,127)	3,408
California Resources Corporation	1,729	(808)	(7)	(190)	0	(59)	(144)	521
Callon Petroleum Company	1,456	(384)	0	(357)	0	0	0	715
Centennial Resource Development, Inc.	898	(260)	(8)	(289)	(33)	34	(1)	341
Chesapeake Energy Corporation	3,290	(1,387)	(9)	(991)	(1)	(72)	(106)	724
Chevron Corporation	19,361	(5,253)	(221)	(5,184)	(43)	793	(2,108)	7,345
Civitas Resources, Inc. ¹	655	(183)	(8)	(227)	(65)	(61)	(73)	38
CNX Resources Corporation	651	(424)	(21)	(515)	0	(94)	87	(316)
Comstock Resources, Inc.	1,431	(284)	0	(469)	0	(162)	11	527
ConocoPhillips	18,452	(4,866)	(178)	(4,917)	3	(99)	(1,845)	6,550
Continental Resources, Inc.	5,794	(1,036)	(21)	(1,872)	(38)	0	(691)	2,136
Coterra Energy Inc. ¹	3,449	(902)	(18)	(693)	0	(332)	344	1,848
Crescent Energy Company ¹	1,477	(596)	(1)	(313)	0	(4)	0	563
Denbury Resources Inc.	1,160	(542)	0	(120)	(14)	(360)	0	124
Devon Energy Corporation	9,531	(2,131)	(14)	(2,050)	0	142	(1,238)	4,240
Diamondback Energy, Inc.	5,500	(1,202)	0	(1,275)	0	(10)	(631)	2,382
Earthstone Energy, Inc.	344	(76)	0	(106)	0	0	(2)	160
EOG Resources, Inc.	15,170	(2,971)	(166)	(3,411)	(312)	(559)	(1,690)	6,061
EQT Corporation	6,804	(2,167)	(24)	(1,677)	(291)	0	(667)	1,978
Exxon Mobil Corporation ¹	17,834	(5,374)	(19)	(6,694)	0	0	(1,276)	4,471
Gulfport Energy Corporation ¹	1,503	(467)	0	(220)	(118)	0	8	706
Hess Corporation	3,638	(884)	(102)	(1,085)	(147)	(1,256)	0	164

	Revenues	Production costs (b)	Exploration expense	DD&A	Impairments	Other income (expense) (c)	Income taxes	Results of operations
Laredo Petroleum, Inc.	1,147	(219)	0	(202)	0	(4)	(14)	708
Magnolia Oil & Gas Corporation ¹	1,078	(195)	(4)	(188)	0	(5)	(9)	677
Marathon Oil Corporation	4,837	(1,388)	(136)	(2,032)	0	(38)	(7)	1,236
Matador Resources Company	1,480	(288)	0	(345)	0	(2)	(75)	770
Murphy Oil Corporation	2,338	(573)	(30)	(628)	0	(157)	(184)	766
National Fuel Gas Company	916	(289)	0	(177)	(76)	(11)	(99)	264
Northern Oil and Gas, Inc.	439	(248)	0	(141)	0	(30)	0	20
Oasis Petroleum Inc.	1,200	(403)	(3)	(110)	0	0	(162)	522
Occidental Petroleum Corporation	15,817	(4,432)	(158)	(7,053)	(282)	(1,176)	508	3,224
Ovintiv Inc. ¹	4,883	(1,275)	0	(837)	0	(11)	(673)	2,087
PDC Energy, Inc.	1,851	(446)	(1)	(627)	0	(11)	(37)	729
Pioneer Natural Resources Company	8,869	(1,918)	(51)	(2,498)	0	(1,484)	(628)	2,290
Range Resources Corporation	2,695	(1,279)	(24)	(365)	(7)	(21)	10	1,009
Ranger Oil Corporation	442	(99)	0	(132)	(2)	(67)	(2)	140
Sandridge Energy Inc.	167	(46)	0	(15)	0	(29)	0	77
Shell plc	11,420	(2,285)	(616)	(5,201)	0	2,550	(1,268)	4,600
SilverBow Resources	337	(71)	0	(69)	0	0	(1)	196
SM Energy Company	1,849	(505)	(39)	(774)	(35)	0	(10)	486
Southwestern Energy Company	4,640	(1,304)	0	(537)	0	0	0	2,799
Talos Energy Inc.	954	(287)	0	(396)	(18)	(58)	2	197
W&T Offshore, Inc.	466	(203)	0	(91)	0	(23)	(8)	141
Whiting Petroleum Corporation	1,857	(383)	(4)	0	(7)	88	(1)	1,550
All companies	211,659	(56,921)	(2,154)	(60,173)	(1,577)	(3,597)	(13,805)	73,702
Integrates	59,349	(14,973)	(934)	(20,232)	(43)	2,436	(5,779)	19,824
Large independents	121,242	(32,644)	(923)	(33,013)	(1,166)	(5,172)	(6,696)	41,628
Independents	31,068	(9,304)	(297)	(6,928)	(368)	(861)	(1,330)	12,250

(a) Amounts are determined from the results of the operations table if it is provided; otherwise, amounts are determined from the income statement.

Revenues determined from the income statement include oil and gas sales and realized derivatives gains or losses.

(b) This includes production taxes and transportation costs for companies that separately disclose these expenses.

(c) This includes asset retirement obligations accretion and production-related general and administrative expenses, among other items, for those companies that separately disclose these expenses.

¹See company endnotes on page 44.

US – oil reserves for the latest fiscal year (a)

Million barrels

	Beginning	Extensions and discoveries	Improved recovery	Revisions	Production	Purchases	Sales	Other	Ending
Amplify Energy Corp.	68	1	0	5	(5)	0	0	0	69
Antero Resources Corporation	1,269	20	0	83	(62)	0	(55)	0	1,255
APA Corporation	398	39	0	18	(52)	0	(24)	0	379
Battalion Oil Corporation	50	22	0	7	(4)	0	0	0	75
Berry Corporation	91	3	0	2	(9)	0	0	0	87
BHP Group	281	1	0	(9)	(25)	24	0	0	272
BP p.l.c.	1,771	2	54	(47)	(138)	0	(9)	0	1,633
California Resources Corporation	354	4	1	55	(26)	0	(4)	0	384
Callon Petroleum Company	386	30	0	(14)	(29)	45	(30)	0	388
Centennial Resource Development, Inc.	211	26	0	(9)	(15)	0	(3)	0	210
Chesapeake Energy Corporation	213	58	0	54	(34)	0	0	0	291
Chevron Corporation	2,343	539	0	313	(313)	34	(40)	0	2,876
Cimarex Energy Co. (a)	304	0	0	0	0	0	(304)	0	0
Civitas Resources, Inc. ¹	79	0	0	(10)	(6)	204	0	(17)	250
CNX Resources Corporation	86	12	0	14	(6)	0	0	0	106
Comstock Resources, Inc.	11	0	0	0	(1)	0	(9)	0	1
ConocoPhillips	1,896	381	1	364	(280)	763	(10)	0	3,115
Continental Resources, Inc.	497	165	0	15	(59)	175	0	0	793
Coterra Energy Inc. ¹	0	9	0	28	(15)	389	0	0	411
Crescent Energy Company ¹	223	9	0	26	(19)	59	(10)	0	288
Denbury Resources Inc.	140	0	0	56	(17)	10	0	0	189
Devon Energy Corporation	500	170	0	132	(154)	503	(5)	0	1,146
Diamondback Energy, Inc.	1,049	399	0	(167)	(109)	235	(48)	0	1,359
Earthstone Energy, Inc.	60	14	0	(9)	(7)	42	(1)	0	99
EOG Resources, Inc.	2,326	505	0	(244)	(215)	5	(2)	0	2,375
EQT Corporation	156	53	0	49	(19)	0	0	0	239
Extraction Oil & Gas, Inc. (a)	84	0	0	0	0	0	(84)	0	0
Exxon Mobil Corporation ¹	2,090	501	0	85	(192)	5	(27)	0	2,462

	Beginning	Extensions and discoveries	Improved recovery	Revisions	Production	Purchases	Sales	Other	Ending
Gulfport Energy Corporation ¹	52	13	0	11	(7)	0	0	0	69
Hess Corporation	563	234	0	39	(59)	0	(46)	0	731
Laredo Petroleum, Inc.	169	16	0	22	(20)	85	(50)	0	222
Magnolia Oil & Gas Corporation ¹	78	27	0	5	(17)	0	0	0	93
Marathon Oil Corporation	638	49	0	132	(82)	4	0	0	741
Matador Resources Company	160	17	0	14	(18)	8	0	0	181
Murphy Oil Corporation	275	16	0	33	(35)	1	0	0	290
National Fuel Gas Company	22	1	0	1	(2)	0	0	0	22
Northern Oil and Gas, Inc.	96	13	0	20	(12)	15	0	0	132
Oasis Petroleum Inc.	120	8	0	42	(13)	43	(25)	0	175
Occidental Petroleum Corporation	1,528	115	6	609	(261)	40	(7)	0	2,030
Ovintiv Inc. ¹	1,020	196	0	(109)	(80)	4	(40)	0	991
PDC Energy, Inc.	414	1	0	77	(42)	4	0	0	454
Pioneer Natural Resources Company	948	367	0	(66)	(183)	718	(147)	0	1,637
QEP Resources, Inc. (a)	302	0	0	0	0	0	(302)	0	0
Range Resources Corporation	1,009	74	0	10	(39)	0	0	0	1,054
Ranger Oil Corporation	114	56	0	(8)	(9)	51	0	0	204
Sandridge Energy Inc.	20	0	0	19	(3)	1	(3)	0	34
Shell plc	728	55	9	119	(165)	0	(136)	0	610
SilverBow Resources	26	6	0	0	(3)	14	0	0	43
SM Energy Company	229	91	0	(2)	(33)	0	0	0	285
Southwestern Energy Company	468	236	0	(11)	(38)	0	0	0	655
Talos Energy Inc.	120	1	0	19	(18)	0	0	0	122
W&T Offshore, Inc.	50	0	0	13	(6)	0	0	0	57
Whiting Petroleum Corporation	210	17	0	51	(27)	13	(8)	0	256
All companies	26,295	4,572	71	1,837	(2,983)	3,494	(1,429)	(17)	31,840
Integrations	6,932	1,097	63	470	(808)	39	(212)	0	7,581
Large independents	14,177	3,043	7	932	(1,696)	2,836	(369)	0	18,930
Independents	5,186	432	1	435	(479)	619	(848)	(17)	5,329

(a) See appendix for activity related to acquired companies.

¹See company endnotes on page 44.

US – gas reserves for the latest fiscal year

Bcf

	Beginning	Extensions and discoveries	Improved recovery	Revisions	Production	Purchases	Sales	Other	Ending
Amplify Energy Corp.	274	4	0	60	(24)	0	0	0	314
Antero Resources Corporation	10,025	349	0	993	(826)	0	(337)	0	10,204
APA Corporation	1,129	228	0	280	(193)	1	(23)	0	1,422
Battalion Oil Corporation	79	27	0	29	(9)	0	0	0	126
Berry Corporation	26	3	0	41	(6)	0	0	0	64
BHP Group	116	0	0	(9)	(10)	8	0	0	105
BP p.l.c.	5,344	1	247	717	(60)	0	(445)	0	5,804
California Resources Corporation	527	6	0	108	(58)	0	(7)	0	576
Callon Petroleum Company	542	38	0	(3)	(37)	73	(35)	0	578
Centennial Resource Development, Inc.	528	56	0	41	(41)	0	(7)	0	577
Chesapeake Energy Corporation	3,530	1,744	0	1,522	(807)	1,835	0	0	7,824
Chevron Corporation	4,250	1,408	0	829	(617)	44	(29)	0	5,885
Cimarex Energy Co. (a)	1,363	0	0	0	0	0	(1,363)	0	0
Civitas Resources, Inc. ¹	236	0	0	(57)	(14)	768	0	(44)	889
CNX Resources Corporation	9,034	833	0	(327)	(552)	0	0	0	8,988
Comstock Resources, Inc.	5,563	797	0	89	(489)	203	(44)	0	6,119
ConocoPhillips	4,096	822	0	756	(559)	2,438	(270)	0	7,283
Continental Resources, Inc.	3,641	1,235	0	234	(370)	372	0	0	5,112
Coterra Energy Inc. ¹	13,672	973	0	(538)	(911)	1,699	0	0	14,895
Crescent Energy Company ¹	823	17	0	317	(90)	473	(49)	0	1,491
Denbury Resources Inc.	16	0	0	(1)	(3)	6	(1)	0	17
Devon Energy Corporation	1,512	348	0	393	(325)	961	(11)	0	2,878
Diamondback Energy, Inc.	1,607	720	0	195	(169)	303	(70)	0	2,586
Earthstone Energy, Inc.	111	50	0	32	(15)	107	0	0	285
EOG Resources, Inc.	5,043	2,574	0	754	(483)	23	(4)	0	7,907
EQT Corporation	18,865	2,787	0	(569)	(1,746)	4,187	0	0	23,524
Extraction Oil & Gas, Inc. ¹	370	0	0	0	0	0	(370)	0	0
Exxon Mobil Corporation ¹	13,541	1,386	0	1,476	(1,114)	3	(164)	0	15,128
Gulfport Energy Corporation ¹	2,281	617	0	913	(333)	0	0	0	3,478

	Beginning	Extensions and discoveries	Improved recovery	Revisions	Production	Purchases	Sales	Other	Ending
Hess Corporation	653	282	0	138	(94)	0	(44)	0	935
Laredo Petroleum, Inc.	657	22	0	102	(57)	90	(229)	0	585
Magnolia Oil & Gas Corporation ¹	208	62	0	29	(43)	1	0	0	257
Marathon Oil Corporation	1,174	113	0	294	(138)	3	0	0	1,446
Matador Resources Company	662	95	0	165	(82)	12	0	0	852
Murphy Oil Corporation	320	14	0	19	(33)	2	0	0	322
National Fuel Gas Company	3,325	689	0	23	(314)	0	0	0	3,723
Northern Oil and Gas, Inc.	160	32	0	89	(44)	701	0	0	938
Oasis Petroleum Inc.	376	15	0	69	(46)	86	(40)	0	460
Occidental Petroleum Corporation	2,446	176	3	1,274	(477)	22	(25)	0	3,419
Ovintiv Inc. ¹	2,268	428	0	61	(178)	7	(50)	0	2,536
PDC Energy, Inc.	1,901	2	0	409	(176)	24	0	0	2,160
Pioneer Natural Resources Company	1,940	689	0	162	(272)	1,132	(144)	0	3,507
QEP Resources, Inc. (a)	368	0	0	0	0	0	(368)	0	0
Range Resources Corporation	11,149	1,156	0	(311)	(541)	0	0	0	11,453
Ranger Oil Corporation	74	48	0	(11)	(7)	122	0	0	226
Sandridge Energy Inc.	103	0	0	149	(21)	5	(1)	0	235
Shell plc	802	158	5	90	(215)	0	(225)	0	615
SilverBow Resources	948	325	0	(200)	(61)	143	0	0	1,155
SM Energy Company	1,052	289	0	12	(109)	0	(1)	0	1,243
Southwestern Energy Company	9,181	2,543	0	749	(1,015)	5,750	(1)	0	17,207
Talos Energy Inc.	257	3	0	9	(33)	0	0	0	236
W&T Offshore, Inc.	569	0	0	83	(45)	0	0	0	607
Whiting Petroleum Corporation	304	22	0	140	(42)	19	(16)	0	427
All companies	149,041	24,186	255	11,819	(13,904)	21,623	(4,373)	(44)	188,603
Integrations	23,937	2,953	252	3,112	(2,006)	47	(863)	0	27,432
Large independents	105,399	18,569	3	5,869	(9,952)	18,935	(1,000)	0	137,823
Independents	19,705	2,664	0	2,838	(1,946)	2,641	(2,510)	(44)	23,348

(a) See the appendix for activity related to acquired companies.

¹See company endnotes on page 44.

US – performance measures (three-year averages)

Costs in US\$ per BOE; production replacement rates in %

	Production replacement rates							Production costs
	Oil			Gas				
	PRAC	All sources	F&D including revisions	F&D excluding revisions	All sources	F&D including revisions	F&D excluding revisions	
Amplify Energy Corp.	2.17	(47%)	(283%)	11%	126%	(134%)	7%	16.98
Antero Resources Corporation	0.00	181%	210%	130%	52%	69%	150%	12.95
APA Corporation	6.57	(13%)	35%	93%	25%	83%	85%	10.09
Battalion Oil Corporation	(0.22)	152%	164%	309%	174%	182%	187%	18.82
Berry Corporation	34.95	(4%)	(5%)	62%	(378%)	(381%)	13%	25.39
BHP Group	25.84	(82%)	48%	2%	(1,481%)	16%	1%	9.04
BP p.l.c.	0.00	(37%)	66%	79%	(248%)	34%	70%	9.86
California Resources Corporation	0.00	(126%)	(109%)	60%	19%	21%	36%	20.72
Callon Petroleum Company	1.89	394%	62%	155%	332%	(63%)	168%	9.78
Centennial Resource Development, Inc.	90.99	127%	133%	208%	241%	246%	167%	10.21
Chesapeake Energy Corporation	10.08	80%	(55%)	91%	147%	64%	124%	9.49
Chevron Corporation	4.87	155%	108%	144%	50%	34%	170%	12.21
Civitas Resources, Inc. ¹	12.57	997%	(49%)	125%	2,019%	85%	132%	11.07
CNX Resources Corporation	0.00	290%	290%	206%	201%	201%	298%	5.06
Comstock Resources, Inc.	3.94	(325%)	(157%)	5%	411%	157%	120%	3.40
ConocoPhillips	13.68	230%	117%	131%	284%	103%	133%	13.32
Continental Resources, Inc.	10.69	119%	25%	195%	153%	110%	278%	7.94
Coterra Energy Inc. ¹	11.12	2,787%	238%	57%	225%	160%	192%	4.91
Crescent Energy Company ¹	20.04	115%	(45%)	49%	215%	(31%)	25%	16.37
Denbury Resources Inc.	1.22	(18%)	(23%)	2%	(178%)	(228%)	0%	27.53
Devon Energy Corporation	10.39	293%	148%	121%	241%	127%	105%	9.90
Diamondback Energy, Inc.	9.72	290%	231%	342%	487%	428%	341%	7.96
Earthstone Energy, Inc.	7.75	229%	(45%)	122%	747%	345%	209%	7.90
EOG Resources, Inc.	16.04	136%	135%	225%	365%	369%	363%	9.40
EQT Corporation	3.33	262%	198%	140%	159%	47%	179%	7.33
Exxon Mobil Corporation ¹	1.26	(74%)	(73%)	244%	(96%)	(83%)	120%	14.88
Gulfport Energy Corporation ¹	0.00	(66%)	(55%)	166%	42%	54%	161%	6.72

	Production replacement rates							Production costs
	Oil			Gas				
	PRAC	All sources	F&D including revisions	F&D excluding revisions	All sources	F&D including revisions	F&D excluding revisions	
Laredo Petroleum, Inc.	7.22	220%	104%	80%	126%	172%	62%	5.91
Magnolia Oil & Gas Corporation ¹	15.01	143%	129%	131%	164%	144%	114%	7.26
Marathon Oil Corporation	6.04	70%	65%	55%	76%	78%	61%	11.64
Matador Resources Company	16.21	221%	206%	164%	242%	241%	138%	8.37
Murphy Oil Corporation	9.67	26%	(29%)	79%	112%	20%	69%	14.35
National Fuel Gas Company	2.20	11%	11%	31%	285%	192%	187%	5.48
Northern Oil and Gas, Inc.	8.25	156%	33%	120%	1,141%	162%	81%	12.45
Oasis Petroleum Inc.	10.63	(4%)	(34%)	118%	37%	8%	74%	14.94
Occidental Petroleum Corporation	14.68	174%	72%	64%	245%	66%	62%	12.33
Ovintiv Inc. ¹	0.09	305%	131%	294%	439%	183%	234%	9.16
PDC Energy, Inc.	5.37	216%	74%	4%	280%	105%	3%	5.36
Pioneer Natural Resources Company	9.96	311%	177%	193%	451%	316%	214%	8.16
Range Resources Corporation	0.00	138%	193%	123%	66%	121%	184%	9.54
Ranger Oil Corporation	0.33	467%	267%	522%	799%	161%	492%	9.22
Sandridge Energy Inc.	(0.50)	(316%)	(294%)	5%	(122%)	(126%)	3%	7.62
Shell plc	0.00	19%	51%	33%	(71%)	29%	41%	12.11
SilverBow Resources	3.62	121%	(36%)	246%	134%	46%	395%	4.87
SM Energy Company	1.40	102%	101%	225%	76%	77%	216%	9.56
Southwestern Energy Company	0.00	111%	34%	284%	495%	165%	183%	6.11
Talos Energy Inc.	7.11	98%	30%	36%	177%	(41%)	34%	12.48
W&T Offshore, Inc.	2.50	134%	34%	6%	395%	74%	1%	13.58
Whiting Petroleum Corporation	12.44	(55%)	(54%)	63%	(124%)	(121%)	63%	10.57
All companies	7.66	136%	84%	143%	155%	95%	160%	10.39
Integrates	4.77	35%	45%	132%	(93%)	(19%)	111%	12.54
Large independents	8.01	206%	123%	164%	230%	131%	183%	9.41
Independents	7.11	85%	26%	97%	129%	79%	119%	10.79

¹ See company endnotes on page 44.

US – rankings and accounting method

	Rankings for the latest fiscal year					Accounting method
	All sources	Oil reserves		Gas reserves		
	Total capital expenditures	Beginning	Ending	Beginning	Ending	
Amplify Energy Corp.	49	41	45	39	41	Successful efforts
Antero Resources Corporation	28	7	9	5	6	Successful efforts
APA Corporation	34	19	22	24	25	Successful efforts
Battalion Oil Corporation	48	44	43	47	47	Full cost
Berry Corporation	46	37	42	49	49	Successful efforts
BHP Group	16	22	27	44	48	Successful efforts
BP p.l.c.	14	5	7	9	13	Successful efforts
California Resources Corporation	40	21	21	35	37	Successful efforts
Callon Petroleum Company	18	20	20	33	35	Full cost
Centennial Resource Development, Inc.	39	27	32	34	36	Successful efforts
Chesapeake Energy Corporation	9	26	23	14	9	Successful efforts
Chevron Corporation	8	1	2	11	12	Successful efforts
Civitas Resources, Inc. ¹	6	39	29	41	30	Successful efforts
CNX Resources Corporation	35	38	39	7	7	Successful efforts
Comstock Resources, Inc.	27	49	50	8	11	Successful efforts
ConocoPhillips	1	4	1	12	10	Successful efforts
Continental Resources, Inc.	7	16	13	13	14	Successful efforts
Coterra Energy Inc. ¹	3	50	19	2	4	Successful efforts
Crescent Energy Company ¹	19	25	25	27	23	Successful efforts
Denbury Resources Inc.	45	32	34	50	50	Full cost
Devon Energy Corporation	4	15	10	22	19	Successful efforts
Diamondback Energy, Inc.	5	8	8	21	20	Full cost
Earthstone Energy, Inc.	30	42	40	45	42	Successful efforts
EOG Resources, Inc.	12	2	4	10	8	Successful efforts
EQT Corporation	10	31	30	1	1	Successful efforts
Exxon Mobil Corporation ¹	13	3	3	3	3	Successful efforts

	Rankings for the latest fiscal year					Accounting method
	All sources	Oil reserves		Gas reserves		
	Total capital expenditures	Beginning	Ending	Beginning	Ending	
Gulfport Energy Corporation ¹	38	43	44	17	17	Full cost
Hess Corporation	25	14	15	31	29	Successful efforts
Laredo Petroleum, Inc.	17	29	31	30	34	Successful efforts
Magnolia Oil & Gas Corporation ¹	44	40	41	42	43	Successful efforts
Marathon Oil Corporation	22	13	14	23	24	Successful efforts
Matador Resources Company	24	30	35	29	31	Successful efforts
Murphy Oil Corporation	33	23	24	37	40	Successful efforts
National Fuel Gas Company	37	47	49	15	15	Full cost
Northern Oil and Gas, Inc.	29	36	37	43	28	Full cost
Oasis Petroleum Inc.	23	34	36	36	38	Successful efforts
Occidental Petroleum Corporation	15	6	5	16	18	Successful efforts
Ovintiv Inc.	20	9	12	18	21	Full cost
PDC Energy, Inc.	31	18	18	20	22	Successful efforts
Pioneer Natural Resources Company	2	11	6	19	16	Successful efforts
Range Resources Corporation	36	10	11	4	5	Successful efforts
Ranger Oil Corporation	43	35	33	48	46	Full cost
Sandridge Energy Inc.	50	48	48	46	45	Full cost
Shell plc	11	12	17	28	32	Successful efforts
SilverBow Resources	42	46	47	26	27	Successful efforts
SM Energy Company	26	24	26	25	26	Successful efforts
Southwestern Energy Company	21	17	16	6	2	Full cost
Talos Energy Inc.	41	33	38	40	44	Full cost
W&T Offshore, Inc.	47	45	46	32	33	Full cost
Whiting Petroleum Corporation	32	28	28	38	39	Successful efforts

¹ See company endnotes on page 44.

US – ESG reporting (a)

	Does the company publish a sustainability or an ESG report?	Does reporting align to a specific framework? (b)	Does reporting include third-party assurance over ESG metrics?	Are GHG emissions reported?	Has the company set a GHG reduction goal?
Amplify Energy Corp.	No	No	No	No	No
Antero Resources Corporation	Yes	Yes	No	Yes	Yes
APA Corporation	Yes	Yes	No	Yes	Yes
Battalion Oil Corporation	No	No	No	No	No
Berry Corporation	Yes	Yes	No	Yes	No
BHP Group	Yes	Yes	Yes	Yes	Yes
BP p.l.c.	Yes	Yes	Yes	Yes	Yes
California Resources Corporation	Yes	Yes	No	Yes	Yes
Callon Petroleum Company	Yes	Yes	No	Yes	Yes
Centennial Resource Development, Inc.	Yes	Yes	No	Yes	Yes
Chesapeake Energy Corporation	Yes	Yes	Yes	Yes	Yes
Chevron Corporation	Yes	Yes	Yes	Yes	Yes
Civitas Resources, Inc. ¹	Yes	Yes	No	Yes	Yes
CNX Resources Corporation	Yes	Yes	No	Yes	Yes
Comstock Resources, Inc.	No	Yes	No	Yes	No
ConocoPhillips	Yes	Yes	Yes	Yes	Yes
Continental Resources, Inc.	Yes	No	No	Yes	No
Coterra Energy Inc. ¹	No	No	No	Yes	No
Crescent Energy Company ¹	Yes	Yes	No	Yes	No
Denbury Resources Inc.	Yes	Yes	No	Yes	Yes
Devon Energy Corporation	Yes	Yes	No	Yes	Yes
Diamondback Energy, Inc.	Yes	Yes	Yes	Yes	Yes
Earthstone Energy, Inc.	No	No	No	Yes	No
EOG Resources, Inc.	Yes	Yes	Yes	Yes	Yes
EQT Corporation	Yes	Yes	No	Yes	Yes
Exxon Mobil Corporation ¹	Yes	Yes	No	Yes	Yes
Gulfport Energy Corporation ¹	Yes	Yes	No	No	No
Hess Corporation	Yes	Yes	Yes	Yes	Yes

	Does the company publish a sustainability or an ESG report?	Does reporting align to a specific framework? (b)	Does reporting include third-party assurance over ESG metrics?	Are GHG emissions reported?	Has the company set a GHG reduction goal?
Laredo Petroleum, Inc.	Yes	Yes	Yes	Yes	Yes
Magnolia Oil & Gas Corporation	Yes	Yes	No	Yes	No
Marathon Oil Corporation	Yes	Yes	No	Yes	Yes
Matador Resources Company	Yes	Yes	No	Yes	No
Murphy Oil Corporation	Yes	Yes	Yes	Yes	Yes
National Fuel Gas Company	Yes	Yes	No	Yes	Yes
Northern Oil and Gas, Inc.	No	No	No	No	No
Oasis Petroleum Inc.	Yes	Yes	No	Yes	No
Occidental Petroleum Corporation	Yes	Yes	Yes	Yes	Yes
Ovintiv Inc. ¹	Yes	Yes	No	Yes	Yes
PDC Energy, Inc.	Yes	Yes	No	Yes	Yes
Pioneer Natural Resources Company	Yes	Yes	No	Yes	Yes
Range Resources Corporation	Yes	Yes	No	Yes	Yes
Ranger Oil Corporation	No	No	No	No	No
Sandridge Energy Inc.	No	No	No	No	No
Shell plc	Yes	Yes	Yes	Yes	Yes
SilverBow Resources	No	No	No	No	No
SM Energy Company	Yes	Yes	Yes	Yes	Yes
Southwestern Energy Company	Yes	Yes	No	Yes	No
Talos Energy Inc.	Yes	Yes	No	Yes	Yes
W&T Offshore, Inc.	Yes	Yes	No	Yes	No
Whiting Petroleum Corporation	Yes	Yes	No	Yes	No
% of all companies	82%	82%	26%	86%	62%
Integrations	100%	100%	75%	100%	100%
Large independents	89%	89%	33%	100%	78%
Independents	75%	75%	14%	75%	46%

(a) Fifty largest companies based on 2021 end-of-year oil and gas reserve estimates. The data presented here is based on a review of company sustainability and ESG reports, as well as a review of information included on company websites.

(b) The frameworks included in this question were GRI, SASB and the TCFD frameworks.

¹ See company endnotes on page 44.



Peer groups

Integrateds

BP p.l.c.
Chevron Corporation
Exxon Mobil Corporation
Shell plc

Large independents

Antero Resources Corporation
Chesapeake Energy Corporation
CNX Resources Corporation
Comstock Resources, Inc.
ConocoPhillips
Continental Resources, Inc.
Coterra Energy Inc.
Devon Energy Corporation
Diamondback Energy, Inc.
EOG Resources, Inc.
EQT Corporation
Hess Corporation
Marathon Oil Corporation
Occidental Petroleum Corporation
Ovintiv Inc.
Pioneer Natural Resources Company
Range Resources Corporation
Southwestern Energy Company

Independents

Amplify Energy Corp.
APA Corporation
Battalion Oil Corporation
Berry Corporation
BHP Group
California Resources Corporation
Callon Petroleum Company
Centennial Resource Development, Inc.
Civitas Resources, Inc.
Crescent Energy Company
Denbury Resources Inc.
Earthstone Energy, Inc.
Gulfport Energy Corporation
Laredo Petroleum, Inc.
Magnolia Oil & Gas Corporation
Matador Resources Company
Murphy Oil Corporation
National Fuel Gas Company
Northern Oil and Gas, Inc.
Oasis Petroleum Inc.
PDC Energy, Inc.
Ranger Oil Corporation
Sandridge Energy Inc.
SilverBow Resources
SM Energy Company
Talos Energy Inc.
W&T Offshore, Inc.
Whiting Petroleum Corporation

Appendix

Acquired companies

Due to the significance of the operations of companies that were acquired during the study period, capital expenditures, revenues and results of operations, oil reserves and gas reserves schedules for the 2017 through 2021 period were updated to include activities prior to acquisition as described below. This provides a more meaningful comparison throughout the study period.

In December 2021, Crescent Energy Company formed through the merger of Contango Oil and Gas Company and Independence Energy LLC. The annual report filed by Crescent Energy Company for 2021 included the 2019 and 2020 capital expenditures, revenues and results of operations, oil reserves and gas reserves for Contango Oil and Gas Company and Independence Energy LLC. These results have been included in the above-mentioned schedules. The capital expenditures, revenues and results of operations, oil reserves and gas reserves for Contango Oil and Gas Company and Independence Energy LLC for 2017 and 2018 are not publicly available and have been excluded from the above-mentioned schedules. Contango Oil and Gas Company's and Independence Energy LLC's end-of-year 2018 oil reserves (279 million barrels) and gas reserves (1,190 bcf) have been included as an adjustment to "Other" in the oil reserves and gas reserves schedules to roll the reported proved reserves.

In November 2021, Civitas Resources, Inc. (formerly Bonanza Creek Energy, Inc.) and Extraction Oil & Gas, Inc. merged, with Civitas Resources, Inc. remaining as the accounting acquiror. Extraction Oil & Gas, Inc.'s 2017 through 2020 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Civitas Resources, Inc. for 2021 include activity related to the operations acquired from Extraction Oil & Gas, Inc. Extraction Oil & Gas, Inc.'s end-of-year 2020 oil reserves (84 million barrels) and gas reserves (370 bcf) have been included in the 2021 beginning-of-year reserves with an equal volume included as sales in 2021 to reflect the Civitas Resources, Inc. transaction.

In October 2021, Coterra Energy Inc. (formerly Cabot Oil & Gas Corporation) and Cimarex Energy Co. merged, with Coterra Energy Inc. remaining as the accounting acquiror. Cimarex Energy Co.'s 2017 through 2020 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results

of operations, oil reserves and gas reserves reported by Coterra Energy Inc. for 2021 include activity related to the operations acquired from Cimarex Energy Co. Cimarex Energy Co.'s end-of-year 2020 oil reserves (304 million barrels) and gas reserves (1,363 bcf) have been included in the 2021 beginning-of-year reserves with an equal volume included as sales in 2021 to reflect the Coterra Energy Inc. transaction.

In March 2021, Diamondback Energy, Inc. and QEP Resources, Inc. merged, with Diamondback Energy, Inc. remaining as the accounting acquiror. QEP Resources, Inc.'s 2017 through 2020 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Diamondback Energy, Inc. for 2021 include activity related to the operations acquired from QEP Resources, Inc. QEP Resources, Inc.'s end-of-year 2020 oil reserves (302 million barrels) and gas reserves (368 bcf) have been included in the 2021 beginning-of-year reserves with an equal volume included as sales in 2021 to reflect the Diamondback Energy, Inc. transaction.

In January 2021, Concho Resources Inc. was acquired by ConocoPhillips; Parsley Energy, Inc. was acquired by Pioneer Natural Resources Company; and WPX Energy, Inc. and Devon Energy Corporation merged, with Devon Energy Corporation remaining as the accounting acquiror. As Concho Resources Inc.; Parsley Energy, Inc.; and WPX Energy, Inc. did not file annual reports for 2020, the activity related to these companies has been excluded from the above-mentioned schedules to provide a more meaningful comparison throughout the study period.

In October 2020, Noble Energy, Inc. was acquired by Chevron Corporation. Noble Energy, Inc.'s 2017 through 2019 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Chevron Corporation for 2020 include activity related to the operations acquired from Noble Energy, Inc. Noble Energy, Inc.'s end-of-year 2019 oil reserves (640 million barrels) and gas reserves (2,019 bcf) have been included in the 2020 beginning-of-year reserves with an equal volume included as sales in 2020 to reflect the Chevron Corporation transaction.

In November 2020, Montage Resources Corporation merged into Southwestern Energy Company. Montage Resource Corporation's 2017 through 2019 results have been included in the above-mentioned schedules as applicable (see below for information related to Montage Resources Corporation's 2018 acquisition of Eclipse Resources Corporation). The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Southwestern Energy Company for 2020 include activity related to the operations merged from Montage Resources Corporation. Montage Resources Corporation's end-of-year 2019 oil reserves (99 million barrels) and gas reserves (2,138 bcf) have been included in the 2020 beginning-of-year reserves with an equal volume included as sales in 2020 to reflect the Southwestern Energy Company transaction.

Brazos Valley Longhorn, L.L.C. is the successor company to WildHorse Resources Development Company, which was acquired by Chesapeake Energy Corporation in February 2019. Brazos Valley Longhorn, L.L.C.'s and WildHorse Resources Development Company's 2017 through 2018 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Chesapeake Energy Corporation for 2019 include activity related to the operations acquired from WildHorse Resources Development Company and succeeded by Brazos Valley Longhorn, L.L.C. Brazos Valley Longhorn, L.L.C.'s end-of-year 2018 oil reserves (343 million barrels) and gas reserves (378 bcf) have been included in the 2019 beginning-of-year reserves with an equal volume included as sales in 2019 to reflect the Chesapeake Energy Corporation transaction.

In August 2019, Anadarko Petroleum Corporation was acquired by Occidental Petroleum Corporation. Anadarko Petroleum Corporation's 2017 through 2018 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Occidental Petroleum Corporation for 2019 include activity related to the operations acquired from Anadarko Petroleum Corporation. Anadarko Petroleum Corporation's end-of-year 2018 oil reserves (787 million barrels) and gas reserves (3,198 bcf) have been included in the 2019 beginning-of-year reserves with an equal volume included as sales in 2019 to reflect the Occidental Petroleum Corporation transaction.

In December 2019, Carrizo Oil & Gas, Inc., was acquired by Callon Petroleum Company. Carrizo Oil & Gas, Inc.'s 2017 through 2018 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Callon Petroleum Company for 2019 include activity related to the operations acquired from Carrizo Oil & Gas, Inc. Carrizo Oil & Gas, Inc.'s end-of-year 2018 oil reserves (249 million barrels) and gas reserves (483 bcf) have been included in the 2019 beginning-of-year reserves with an equal volume included as sales in 2019 to reflect the Callon Petroleum Company transaction.

In January 2018, Eclipse Resources Corporation was acquired by Montage Resources Corporation. Eclipse Resources Corporation's 2017 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Montage Resources Corporation for 2018 include activity related to the operations acquired from Eclipse Resources Corporation. Eclipse Resources Corporation's end-of-year 2017 oil reserves (62 million barrels) and gas reserves (1,090 bcf) have been included in the 2018 beginning-of-year reserves with an equal volume included as sales in 2018 to reflect the Montage Resources Corporation transaction.

In November 2018, Energen Corporation was acquired by Diamondback Energy, Inc. Energen Corporation's 2017 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Diamondback Energy, Inc. for 2018 include activity related to the operations acquired from Energen Corporation. Energen Corporation's end-of-year 2017 oil reserves (348 million barrels) and gas reserves (576 bcf) have been included in the 2018 beginning-of-year reserves with an equal volume included as sales in 2018 to reflect the Diamondback Energy, Inc. transaction.

In 2018, Encana Corporation, which later became Orintiv Inc. (see company endnotes), announced its acquisition of Newfield Exploration Company. The transaction closed in February 2019, and Newfield Exploration Company did not file an annual report for 2018. Newfield Exploration Company's 2017 results have been included in the above-mentioned schedules as applicable. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by Orintiv Inc. for

2019 include activity related to the operations acquired from Newfield Exploration Company. Newfield Exploration Company's end-of-year 2017 oil reserves (394 million barrels) and gas reserves (1,704 bcf) have been included in the 2018 beginning-of-year reserves with an equal volume included as sales in 2018 to reflect the Encana Corporation transaction.

In November 2017, Rice Energy Inc. was acquired by EQT Corporation. The capital expenditures, revenues and results of operations, oil reserves and gas reserves reported by EQT Corporation for 2017 include activity related to the operations acquired from Rice Energy Inc. Rice Energy Inc.'s end-of-year gas reserves (4,005.3 bcf) have been included in the 2017 beginning-of-year reserves with an equal volume included as sales in 2017 to reflect the acquisition.

For purposes of the peer group analysis, Cimarex Energy Co.; Extraction Oil & Gas, Inc.; and QEP Resources, Inc. are independents.

Performance measures

The performance measures presented herein were calculated based on the companies' oil and gas reserve disclosure information. Our methodology for calculating the performance measures is defined below:

- ▶ **Plowback percentage** represents total capital expenditures as a percentage of netback (revenues less production costs).
- ▶ **PRACs** are calculated as proved property acquisition costs divided by proved reserves purchased.
- ▶ **Production replacement rate (all sources)** is calculated as the sum of extensions and discoveries, improved recovery, revisions, purchases and sales of proved reserves divided by production.
- ▶ **Production replacement rate (F&D, including revisions)** is calculated as the sum of extensions and discoveries, improved recovery and revisions of proved reserves divided by production.

- ▶ **Production replacement rate (F&D, excluding revisions)** is calculated as the sum of extensions and discoveries and improved recovery of proved reserves divided by production.
- ▶ **Production costs** are calculated as production costs, including production taxes, and transportation costs divided by production.

Many individual companies calculate and report their own performance measures, and companies may use different methods that produce results different from those shown in this study.

Data limitations

Users of this study should keep in mind the following limitations on the data presented:

- ▶ This study excludes government and privately owned companies and smaller public companies.
- ▶ This study excludes companies whose primary business is to own and acquire mineral and royalty interests in oil and gas properties.
- ▶ Individual companies did not prepare or review the compiled data presented in this report.
- ▶ Oil and gas companies that follow US generally accepted accounting principles (GAAP) are allowed to select either successful efforts accounting or full cost accounting for their oil and gas activities. Some companies included in this study follow US GAAP, while others follow International Financial Reporting Standards as adopted by their applicable country. These variations in standards can result in different results for some companies.
- ▶ Data for all companies may not be comparable because of differing interpretations or applications of reporting requirements.
- ▶ Oil and gas reserve estimates are imprecise and are revised as additional information about reserves becomes known.

Other

The data included herein for the 2017-18 study periods is obtained from Evaluate Energy and the individual companies' published annual reports, and the data included herein for the 2019-21 study periods is obtained from the individual companies' published annual reports. The study companies generally were determined based on data available as of March 15, 2022. The 2017-18 data includes each year's original disclosures made by the companies. Restatements and other adjustments made to capital expenditures or revenues and results of operations data in subsequent years generally have not been incorporated herein. The 2019-21 data is generally based on companies' 2020 and 2021 annual reports. Unless otherwise indicated, restatements and other adjustments made to oil and gas reserve data are included in the "Other" component of the reserve tables, but these amounts are not included in the performance measure calculations.

Totals presented may not add due to rounding. All amounts are reported in US dollars.

Natural gas prices are quoted on an MMBtu (1 million British thermal units) basis, while gas reserves in this study are presented in bcf and tcf.

Certain amounts in this study are presented on a per BOE basis. Natural gas volumes are converted to barrels at a ratio of 6,000 cubic feet (mcf) to one barrel of oil. This ratio is generally viewed as being reflective of an approximate thermal equivalence between the two commodities, though some individual companies may use a different ratio for their internal performance metrics.

Company endnotes

Gulfport Energy Corporation filings include only acquisition costs without further breakdown between proved and unproved properties. For our study purposes, Gulfport Energy Corporation acquisitions were included in the proved properties acquired category.

Amounts presented for Exxon Mobil Corporation include investments accounted for by the equity method. Oil rollforwards and computations based on oil volumes exclude NGLs, which are only reported on a worldwide basis.

Magnolia Oil & Gas Corporation's filings include exploration and development capital expenditures without further breakdown between exploration and development. For our study purposes, Magnolia Oil & Gas Corporation's exploration and development capital expenditures were reflected as development costs.

Ovintiv Inc. is the successor to Encana Corporation as a result of Encana Corporation's corporate reorganization in January 2020. Ovintiv Inc. filed an annual report for 2019, which included the operations previously owned by Encana Corporation. For consistency, results for prior periods include the results of Encana Corporation.

Bonanza Creek Energy, Inc. changed its name to Civitas Resources, Inc. following the merger of Bonanza Creek Energy, Inc. and Extraction Oil & Gas, Inc. Civitas Resources, Inc. filed an annual report for 2021, which included the operations owned by Bonanza Creek Energy, Inc. For consistency, results for prior periods include the results of Bonanza Creek Energy, Inc. See discussion above for the treatment of the merger with Extraction Oil & Gas, Inc.

Cabot Oil & Gas Corporation changed its name to Coterra Energy Inc. following the merger of Cabot Oil & Gas Corporation and Cimarex Energy Co. Coterra Energy Inc. filed an annual report for 2021, which included the operations owned by Cabot Oil & Gas Corporation. For consistency, results for prior periods include the results of Cabot Oil & Gas Corporation. See discussion above for treatment of the merger with Cimarex Energy Co.

Crescent Energy Company formed through the merger of Contango Oil and Gas Company and Independence Energy LLC in December 2021. See discussion above for how the results for prior periods are used in the study.

Contacts

Paul Bogenrieder

EY US Energy Analyst
Ernst & Young LLP
+1 713 750 4945
paul.r.bogenrieder@ey.com

Herb Listen

Americas Energy Assurance Leader
Ernst & Young LLP
+1 713 750 8282
herb.listen@ey.com

Andrew Morrison

Assurance Services
Manager
Ernst & Young LLP
+1 817 348 6110
andrew.morrison@ey.com

Why Ernst & Young LLP?

Through our oil and gas industry knowledge, our closely linked Assurance, Transactions, Tax and Consulting service teams, as well as more than 10,000 industry professionals globally, Ernst & Young LLP is equipped to provide independent, whole-life support and advice to our oil and gas clients during this time of fundamental change. We help clients solve complex issues and capitalize on opportunities to grow, optimize and protect their businesses now and in the future. Our team has proven skills covering the entire breadth and depth of our oil and gas clients' businesses, ranging from strategy to portfolio review, improvement and management to execution.

EY | Building a better working world

EY exists to build a better working world, helping to create long-term value for clients, people and society and build trust in the capital markets.

Enabled by data and technology, diverse EY teams in over 150 countries provide trust through assurance and help clients grow, transform and operate.

Working across assurance, consulting, law, strategy, tax and transactions, EY teams ask better questions to find new answers for the complex issues facing our world today.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients. Information about how EY collects and uses personal data and a description of the rights individuals have under data protection legislation are available via ey.com/privacy. EY member firms do not practice law where prohibited by local laws. For more information about our organization, please visit ey.com.

How EY's Global Oil & Gas team can help you

As changing demand and pricing volatility transform the oil and gas industry, companies must reshape to thrive in this new energy world. But how do you balance the immediate cost and regulatory pressures of "now" with investment in what comes "next?" EY's Global Oil & Gas team brings together the breadth of experience and talent needed to approach the entire transformation process. By considering four key pillars of change – structure and culture, customers, technology, and skills and capabilities – we can help you adapt for today and reap the opportunities of tomorrow. And together we can build a better working world.

© 2022 Ernst & Young LLP.
All Rights Reserved.

US SCORE no. 16808-221US

2204-4035439
ED None

This material has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax, legal or other professional advice. Please refer to your advisors for specific advice.

ey.com