Oil and Gas Investor

JANUARY 2021

Producers prioritize ESG mandates to reduce emissions and unlock investor value.

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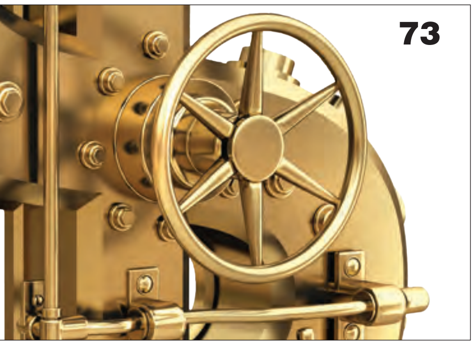

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ABOUT THE COVER: The disruptive events of 2020 propelled the call for adherence to environmental, social and governance (ESG) criteria front and center for oil and gas companies. By instituting programs to reduce carbon emissions, they hope to unlock closed minds and reveal upside value. Illustration by Robert D. Avila.

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LATEST CONTENT

TC Energy Reaches $1.68 Billion Deal for TC PipeLines Buyout
Emily Patsy, Senior Managing Editor
Upon closing the transaction, TC PipeLines will become a wholly owned subsidiary of TC Energy and cease to be a publicly traded MLP.

Colorado School of Mines Hosts Online Fall 2020 Reservoir Characterization Project
Emily Patsy, Senior Managing Editor
The Colorado School of Mines Reservoir Characterization Project featured field projects from across the globe including the study of legacy wells and wells currently being drilled by HighPoint Resources in the D-J Basin.

Oil Major Exxon Mobil Boosts Emissions Reduction Target for 2025
Emily Patsy, Senior Managing Editor
Exxon Mobil, which has recently come under attack by an activist campaign demanding changes at Exxon including the U.S. oil company's transition to cleaner fuels, unveiled plans to further reduce its emissions over the next five years.

Report: World to Run Out of Oil Unless Pace of Exploration Changes
Hart Energy Staff
Unless a momentous transition in the global energy mix occurs sooner than currently expected, upstream players may have to more than double exploration efforts in order to meet global oil demand through 2050, a recent report says.

How to Address Energy Transition Risks
Graham Bennett, DNV GL - Oil & Gas
A novel framework approach can help the oil and gas industry manage climate change risks as the ongoing transition to a lower-carbon economy sparks a fundamental re-shaping of finance.

ONLINE EXCLUSIVES

Why Innovex's CEO Spoke Up about North Face's Stance on Oil and Gas
Len Vermillion, Editorial Director
A viral letter by the CEO of a Texas-based service company sparked a social media frenzy by oil and gas supporters bringing the importance of industry messaging to the forefront.

Changing Energy Landscape Creates Natural Gas Opportunities for E&Ps
Velda Addison, Group Senior Editor
Some natural gas plays that have been out of the E&P limelight in recent years could make a resurgence, analyst says.

Innovators Talks Technology amid Energy Transition
Velda Addison, Group Senior Editor
Executives from Suez Water Technology & Solutions, Repsol and AlphaX Decision Sciences share insight on advancing technologies from oil and gas into other sectors.

Hart Energy's Unconventional Activity Tracker
By Larry Prado, Activity Editor
Updated weekly, Hart Energy's exclusive rig counts measure drilling intensity. They exclude units classified as rigging up or rigging down, and also exclude rigs drilling injection wells, disposal wells or geothermal wells. They are designed to offer the most accurate picture of what is actually occurring in the field.

HART ENERGY VIDEOS

By Jessica Morales, Director of Video Content

hartenergy.com/videos/

Forty Under 40 Honoree Interviews
For your introduction to these role models, we invite you to enjoy these video and audio interviews, extended narratives and personal insights.

hartenergy.com/videos/forty-under-40

What's Trending

1. Why Innovex's CEO Spoke Up about North Face's Stance on Oil and Gas
2. Parsley Lays Off Workers As Part of Sale to Pioneer Natural Resources
3. Shipping Firm Says Oil Tanker Hit by 'External Source' in Saudi Arabia
4. SandRidge Energy Exits Colorado North Park Basin Asset in $47 Million Sale
5. From Oil and Gas Investor Editor-in-Chief: A New Energy Era

CONFERENCES

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hartenergyconferences.com/executive-oil-conference

THE ESG ULTIMATUM

STEVE TOON,
EDITOR-IN-CHIEF

In December, the New York State Common Retirement Fund, the third largest state pension fund in the U.S. with $226 billion invested, announced a goal to transition its portfolio to net-zero greenhouse gas emissions by 2040. A plan to assess energy sector companies in its portfolio against a set of undefined minimum standards for "climate-related investment risk" is already underway, with the Canadian oilsanders first in line.

New York State Comptroller Thomas P. DiNapoli, who controls the fund, said the decision puts the Empire State pensioners "at the leading edge of investors addressing climate risk, because investing for the low-carbon future is essential to protect the fund's long-term value.

"We continue to assess energy sector companies in our portfolio for their future ability to provide investment returns in light of the global consensus on climate change," he said. "Those that fail to meet our minimum standards may be removed from our portfolio. Divestment is a last resort."

The announcement didn't say the fund would outright divest from or no longer invest in hydrocarbon equities, as many from the fossil fuel divestment movement would like, but it very well could, depending on those minimum standards. It is, however, the latest in a growing list of big institutional funds globally and domestically to either denounce hydrocarbon investments altogether or scrutinize them against more rigorous environmental, social and governance (ESG) standards.

The New York decision to question fossil fuel investments is no longer an outlier.

A year ago the conversation around the need for oil and gas companies to incorporate ESG principles into their business strategies was postulated as a good idea but not necessarily an immediate directive. A year later, it is a fast-growing and forceful mandate.

Why does it matter? Because more and more of the capital providers that oil and gas companies rely on are either pulling away from fossil fuel investments entirely or making their participation conditional. The Forum for Sustainable and Responsible Investment in November released a report showing that at the beginning of 2020 some $17 trillion in U.S. domiciled assets under management apply ESG criteria to their investing decisions. That's a 42% increase from 2018, and it represents 33% of all U.S. funds under management.

Why does it matter? Because enough of society wants reduced atmospheric carbons and are electing officials to effect these changes with regulations. The industry cannot take its social license to operate for granted, assuming the societal need for its product predisposes its ability to produce it. That license to operate is dangerously close to being revoked, as society is willing to risk the costs and consequences of powering the economy without oil, gas or coal.

"Bottom line, ESG considerations are real and—regardless of what you think of the motivation behind investor demands or requirements for ESG metrics in their investments—those demands and requirements are here to stay," said Hillary Holmes, partner and co-chair of the global capital markets practice for law firm Gibson Dunn & Crutcher LLP speaking on a virtual panel at the Rice Energy Finance Summit in November.

"The need for energy companies to access capital in such a tight investing environment means that completely ignoring the ESG focus by capital sources could be unwise for the individual corporations long term and, frankly, could hamper the industry's recovery as a whole."

Investment bank Cowen last month released its "Themes 2021" report with "ESG & Energy Transition" as one. Socially conscious investing, it said, was well underway pre-COVID-19, but it has gained momentum as institutional investors are shifting their portfolios away from carbon-intensive assets and toward renewables.

At Cowen's Virtual Energy Conference Energy in December, however, Marianne Kah, adjunct senior research scholar at the Center on Global Energy Policy at Columbia University, said she recently participated in a discussion with investors on perceived value from companies' decarbonization strategies. Quoted in a Cowen research note, she noted that investors do not view oil and gas as "uninvestable," though "we're starting to see a differentiation between the good and bad players."

Investor recognizes ESG as a sea change that is shaking how the industry operates its businesses. Our cover story this month addresses "ESG and the Independent E&P," showing why and how producers are responding to the call to reduce emissions. Through the upcoming months we will also explore the social and governance aspects of ESG, and the capital perspectives as well.

The industry urgently adapted and responded to the double black swan events of 2020—the COVID-19-induced global demand destruction and the OPEC+-driven supply glut, but it must also mobilize as fervently to the third black swan of 2020, the ESG directive. Oil and gas producers are already in a transition in which they are retooling business models to generate investor returns over sheer growth. So too must they incorporate ESG into that model.

It could be just as critical to an oil and gas company's survival.


PUZZLING TIMES?
X M D A C X A Y O S A
I S H I P H K C T H I
N Z R E U A J H M L M
V R E T H I N K G P B
E V C Q Q I P C K B A
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M O B V B M P O

™

FOOLS, LIARS, CHARLATANS

DARREN BARBEE,
SENIOR EDITOR

The last of the depth charges have slipped into the sea of 2020, exploded and left the oil and gas industry shuddering, knee deep in black water, listening to metal groan.

No, the oil and gas industry has not been sunk. But the year did damage that will take time to assess before deeming it as salvageable or a wreck.

The deal market was, if anything, better than could have been expected. During the past 12 months, upstream oil and gas deals managed about $55 billion worth of value, but over the entire industry, still fell sharply by 41%, according to a Dec. 10 report by PwC.

Oil and gas transaction values only remained afloat because of second half mega deals, which made up $47 billion, or about 85%, of upstream deal tallies. And, of course, those deals consisted mostly of low-premium, all-stock consolidation in oily plays (meaning the Permian Basin).

And, so, we arrive at 2021's doorstep, blinking, slightly dazed and generally unhappy.

If last year's movie tagline was something like, "in 2020, no one can hear you scream," this year's may well be more Hitchcockian. "Check in. Unpack. Relax. Take a Shower."

As the famed seismologist Charles Richter once quipped, only fools, liars and charlatans can predict earthquakes. Assuming it gets better from here may be a mistake. Or not. Expectations in general seem to get everyone into trouble.

PwC sees the deal outlook improving as the industry recovers, though with a hard lean into sustainability measures. With commodity demand still suffering from COVID-19, capital discipline will continue to be the force majeure for the industry.

"Capital priorities, overcapacity and profitability concerns will likely drive 2021 deal decisions," the firm said.

Oil producers, with a glut so disproportionate it has love handles, will likely look to cut loose underperforming assets. Domestic and global natural gas demand appears to be improving, PwC said, suggesting that gas-targeted assets and strategic deals are "also likely set to grow."

However, PwC also sees competing priorities. The industry will be shifting toward lower hydrocarbons while rebalancing strategy and operations—demands that have to be balanced while engaging in M&A.

The presidential election's consequences are still unfolding, as well.

"Uncertainty persists across the oil and gas sector, and policy changes under a new U.S. administration's focus on energy transition could motivate further shifts in deals toward divestments of hydrocarbon assets and infrastructure buildouts to support renewables (including hydrogen), though finding buyers may prove challenging," PwC's report said.

Room for optimism? Sure, if you like. The COVID-19 vaccine began circulating in the U.K. in December. IEA reported in November that the lingering impacts of COVID-19 are likely to reduce demand by about 700,000 bbl/d in first-quarter 2021. However, improved expectations in China and India have prompted IEA to raise demand estimates.

In the year, demand will settle in about 3 MMbbl/d below 2019 levels, IEA estimated. It's still too early to say how and when vaccines will allow normal life to resume, the agency said.

Now for some pessimism. The U.S. economy is in tatters, the nation divided and, according to Feeding America, more people are worried about where they will get their next meal after significant gains in the past 20 years. Even before the pandemic, more than 35 million people were "food insecure." The organization now estimates about 50 million people may experience food insecurity because of COVID-19. That includes 17 million children, or more than one out of every five.

Food insecure, incidentally, means hunger because of a lack of money or other resources.

Add to this that, whatever the outcome of Senate runoffs, Republicans and Democrats are singularly bad at compromise, especially when it counts. At this moment, it's a coin toss as to who politicians say won the presidency, math be damned. While months have so far gone by without any new relief measures from Congress, that impasse is as likely as not to stretch into more months.

"Usually one gets what one expects, but very rarely in the way one expected it," Richter said.

Richter was, unexpectedly, kind of a quote machine. Reflecting on roses, he once noted that they cannot bloom without thorns. But it was a pity, he thought, "that the thorns … outlive the rose."

On the calendar, at least, the Year of the Mask may be over. It may well be that roses are ahead. Or just as likely that we're in for a year of pricks.

EVENTS CALENDAR

The following events present investment and networking opportunities for industry executives and financiers.

EVENT	DATE	CITY	VENUE	CONTACT
2021				
IPAA Private Capital Conference	Jan. 21		Virtual	ipaa.org
AAPG Global Super Basins Leadership Conference	Jan. 25-26		Virtual	superbasins.aapg.org/2021/
Executive Oil Conference	**Jan. 27**		**Virtual**	**executiveoilconference.com**
CERAWeek by IHS Markit	Mar. 1-5		Virtual	ceraweek.com
25 Influential Women In Energy	**March 25**		**Virtual**	**hartenergyconferences.com/women-in-energy**
DUG Permian/Eagle Ford/ Midstream Texas	**April 19-21**	**Fort Worth, TX**	**Fort Worth Conv. Center**	**dugpermian.com**
Williston Basin Petroleum Conference	May 11-13	Bismarck, N.D.	Bismarck Event Center	ndoil.org
DUG Haynesville	**May 26-27**	**Shreveport, La.**	**Shreveport Conv. Center**	**dughaynesville.com**
Innovation & Entrepreneurship Summit	June	Houston	Norris Conference Center, CityCentre	spegcs.org/events/4637/
Energy Capital Conference	**June 1-2**	**Houston**	**Omni Hotel Houston**	**energycapitalconference.com**
DUG Bakken and Rockies	**August**		**Virtual**	**dug-rockies.com**
Offshore Technology Conference	Aug. 16-19	Houston	NRG Park	2021.otcnet.org
NAPE Summit	Aug. 18-20	Houston	George R. Brown Convention Center	napeexpo.com/summit
DUG Midcontinent	**Sept. 22-23**	**Oklahoma City**	**Oklahoma City Convention Center**	**dugmidcontinent.com**
A&D Strategies and Opportunities	**Sept. 27-28**	**Dallas**	**Fairmont Hotel**	**adstrategiesconference.com**
Executive Oil Conference	**Nov. 2-3**	**Midland**	**Midland County Horseshoe Arena**	**executiveoilconference.com**
Monthly				
ADAM-Dallas	First Thursday	Dallas	Dallas Petroleum Club	adamenergyforum.org
ADAM-Fort Worth	Third Thursday, odd mos	Fort Worth	Fort Worth Petroleum Club	adamenergyfortworth.org
ADAM-Greater East Texas	First Wednesday, even mos	Tyler, Texas	Willow Brook Country Club	getadam.org
ADAM-Houston	Third Friday	Houston	Brennan's	adamhouston.org
ADAM-OKC	Bimonthly (Feb.-Oct.)	Oklahoma City	Park House	adamokc.com
ADAM-Permian	Bimonthly	Midland, Texas	Midland Petroleum Club	adampermian.org
ADAM-Tulsa Energy Network	Bimonthly	Tulsa, Okla.	The Tavern On Brady	adamtulsa.com
ADAM-Rockies	Second Thurs./Quarterly	Denver	University Club	adamrockies.org
Austin Oil & Gas Group	Varies	Austin	Headliners Club	coleson.bruce@shearman.com
Houston Association of Professional Landmen	Bimonthly	Houston	Houston Petroleum Club	hapl.org
Houston Energy Finance Group	Third Wednesday	Houston	Houston Center Club	sblackhefg@gmail.com
Houston Producers' Forum	Third Tuesday	Houston	Houston Petroleum Club	houstonproducersforum.org
IPAA-Tipro Speaker Series	Second Wednesday	Houston	Houston Petroleum Club	tipro.org

Email details of your event to Bill Walter at bwalter@hartenergy.com.
For more, see the calendar of all industry financial, business-building and networking events at HartEnergy.com/events.


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Alvarez & Marsal: Companies must self-fund oil and gas efforts

As 2020 closes, bankruptcy has become a widespread reality of the oil and gas landscape, and for as many companies that have begun the process, there are plenty of others for which it remains an imminent possibility, according to Seth Bullock, managing director for Alvarez & Marsal and leader of the firm's oil and gas restructuring practice.

Speaking during a recent Houston Energy Finance Group webinar, Bullock called for a rapid mindset and methodological shift. Overall, he said the industrywide imperative is to become "predatory and opportunistic" in response to an environment of severe price depression and capital unavailability.

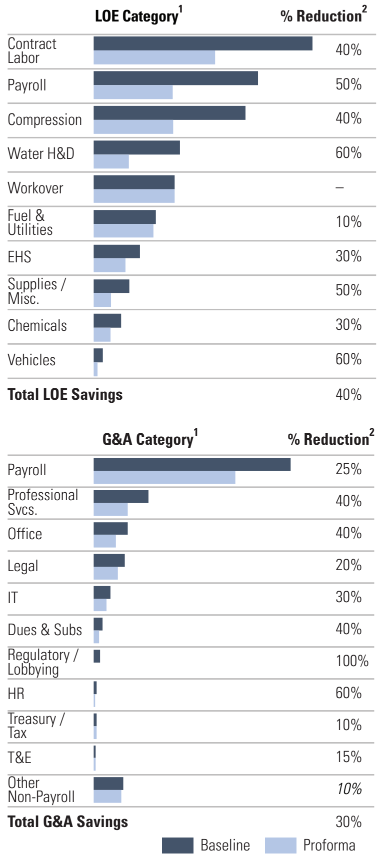
Bullock began the discussion with a sober reminder that, despite the extraordinary events of this year—namely the COVID-19 pandemic—low commodity prices are representative of historical norms over the long-term. As a result, low prices should form part of an oil and gas company's standard operating premise.

"You can't plan on a price increase to bail you out," he said. "I would actually plan on lower prices to stress test your business plan. If you're wrong and prices increase, then your downside in that scenario is, you make more money. But conversely, if you're wrong and assuming you've got an upward bias and prices decline, you may be putting your company at risk."

Complicating the situation further, "Nothing has happened since the fourth quarter of 2018 to make this area more attractive for investors," so capital infusions to offset low prices cannot be relied upon either. Add accelerating ESG concerns to the mix, and companies have one clear option: cost reductions.

"Companies in this industry need to get to the point where they can self-fund their business

Example Cost Reduction Categories And Results



1) LOE categories were mapped to standardized A&M categories for effective comparison to peers.

2) Non-payroll spend reduction calculated as difference between baseline and contracted savings.

Source: Alvarez & Marsal

plan," Bullock said. "You can't rely upon external capital to bail you out, and self-funding needs to be at today's commodity prices, if not a discount. The question is, how do you do that? The major delineating factor we see between companies that are thriving in this environment and those that are hurting is their cost structure."

Bullock cited an unnamed client that recently worked with Alvarez & Marsal to reduce its cost structure, noting that, after the reductions, the company "had the best quarter they've ever had in their company's history." To achieve this, Bullock's team benchmarked the client's costs against best-in-class metrics and worked to close the gaps, a practice that is unfamiliar for many oil and gas companies, he noted.

"The industry got a lot of muscle tissue on learning how to grow. There's less knowledge and expertise on being efficient," but practicing financial "self-help" will be critical in the world of continued low commodity prices, he said.

For some companies, cost reductions will not suffice, and restructuring will prove necessary. Though it involves pain, the process need not be cause for despair, Bullock said, because if initiated, followed through and exited from carefully, it presents a significant opportunity to revitalize an overlevered, inefficient organization.

When advising during a restructuring, he said, "We often ask our clients: 'What would you do if you were starting over, if you had a blank sheet of paper, what would this company look like?' Many times, we end up with an answer from the clients that's different from what the company looks like today."

Reconceiving a company is difficult work, especially amid a crisis, and companies faced with bankruptcy are often tempted to do an out-of-court or pre-packaged bankruptcy to achieve a faster result. However, "You may actually want a little more difficult process, a little longer process, if it gets you a better answer on the end," Bullock said, pointing in particular to companies with a larger number of contracts, which are difficult to reject in "pre-pack" agreements.

Bullock went on to describe several critical considerations throughout the long weeks of a restructuring. These included maintaining liquidity, establishing a retention plan for key employees and identifying large spending areas. It is key that management remains "honest about the challenges that are being faced, what it means for employees, even if it's not great news, and the steps that you're taking to fix it," he said.

Make no mistake, Bullock said, "You want to do this quickly, and you want to do it once."

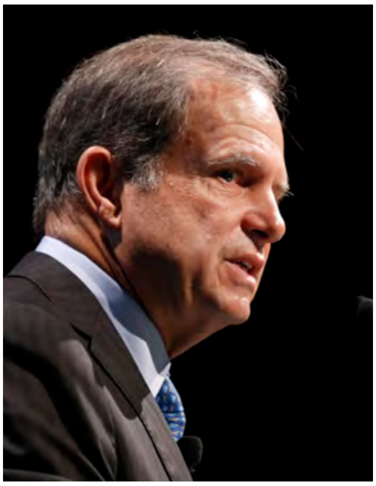
"You want to avoid the Chapter 22, which is the Chapter 11 you had to file twice because you didn't get it right the first time," he continued.

In a final note of optimism, he pointed to the positive results of Southwest Airline's operating model, which the Wall Street Journal described as enabling the company to become "predatory and opportunistic," a visual Bullock said oil and gas companies should keep in mind.

"Should you go through a restructuring? How can you get to the point where you can be predatory and opportunistic?" he speculated. In conclusion, he said these are the questions that should be on all oil and gas operators' minds, regardless of whether they've entered a restructuring arrangement or are cutting costs to avoid it.

—Bill Walter

Pioneer's Sheffield: few independents to survive oil downturn



Scott Sheffield, president and CEO, Pioneer Natural Resources Co.

Global oil demand will recover to pre-pandemic levels as soon as late 2022, but Pioneer Natural Resources Co. CEO Scott Sheffield said many oil and gas independents won't be around to see it.

"There are probably going to be very few investable oil and gas independents at the end of the day," Sheffield said Dec. 1 at the Reuters Future of Oil & Gas 2020 virtual conference. That's because oil and gas independents account for a minuscule percentage of companies on the S&P 500 index, and of those, shareholders typically focus on only two or three.

Survival for many will require consolidation, of which five major deals have been announced in the past several months. Among them was Pioneer's takeover of Parsley Energy Inc.

"We're excited about our Parsley acquisition, which we expect to close in the first quarter," he said. "It will make Pioneer the largest pure-play independent in the Permian that's public."

Recent major deals include:

- Devon Energy Corp. and WPX Energy Inc.
- Chevron Corp. and Noble Energy Inc.
- ConocoPhillips Co. and Concho Resources Inc.
- Pioneer Natural Resources Co. and Parsley Energy Inc.
- Cenovus Energy Inc. and Husky Energy Inc.

A consolidation like Devon Energy Corp. and WPX Energy Inc. creates a single entity with

an enterprise value of almost $10 billion, Sheffield said.

"As they de-lever and other companies reduce their leverage, I think you'll see a lot more consolidation over the next two or three years and you may end up then with very, very strong independents," he said. "You'll have two or three in the Permian, two or three in the Bakken, and two or three in the Marcellus."

Sheffield, who started working in the oil patch during the Ford administration, called 2020 "the most interesting year in my entire career." But despite the damage endured by the industry from the pandemic and the Saudi-Russian price war earlier this year, he sees a recovery on the horizon. Once a vaccine can be distributed, travel will pick up and spur demand for fuel, especially jet fuel.

"I'm more optimistic that the airline industry will come back sooner than later and we'll get back up to 100 million barrels a day of demand in the world," Sheffield said. "I still expect maybe '22, maybe '23, we'll get back to 100 MMbbl/d. I think people have felt cooped up. They want to get out, they want to travel and people are ready for that vaccine."

His confidence is bolstered by the Brent strip for 2021, which has received a, well, shot in the arm from recent announcements concerning COVID-19 vaccines. The price for Brent, the international oil benchmark, was $37.94/bbl at the end of October. By the end of November, the price had jumped to $47.59/bbl, or an increase of 25.4%. The futures prices for 2021 were above $47/bbl for the entire year on Dec. 2.

"The more confident we get in the Brent strip for 2021 and moving forward to be above $45, [Pioneer] will start growing at about 5% a year, and we'll have a good base dividend of about 2.5% and a variable dividend of about 3%," Sheffield said.

Like companies throughout the oil and gas industry and the economy at large, Pioneer was forced to cut its workforce this year. It has also found ways to reduce overhead costs by about $2/boe. Going forward, he expects the company to establish policies allowing some employees to work from home and reducing Irving, Texas-based Pioneer's need for office space.

The oil and gas industry will need to slow its pace of growth, Sheffield said. For the near term, at least, average additions of 1 MMbbl/d per year will have to wait. And that's not such a bad thing.

"Eventually, the market's going to get tight because we're spending a lot less capital in the U.S., we're spending a lot less capital on exploration worldwide and we're probably going to go into a much tighter market in 2023 to 2025," he said. "I think return on capital employed is going to be higher for the industry. The key is, we have to gain trust back with the investors and it's going to take a good two years to do that."

—Joseph Markman

DUG East: CNX's DeIuliis warns of M&A's hard truths

As the energy transition moves forward and oil prices struggle, natural gas producers are wondering about the opportunity ahead. Nowhere is that more evident than the Appalachian Basin where gas producers in the Marcellus and Utica shale plays decipher the future market, the changing regulatory environment and who will be left to take advantage of the opportunity?

If you knew the definitive answer to that last one, you'd be a rich investor. As it stands, there's plenty of mergers and acquisition rumors to keep the Twitter-verse appeased, but how much will consolidation actually hit the Appalachian Basin?

Nick DeIuliis, president and CEO, CNX Resources Corp.

One person whose company has been the subject of persistent mergers and acquisition talk is Nick DeIuliis, president and CEO of CNX Resources Corp. who was the keynote speaker of Hart Energy's DUG East and Marcellus-Utica Midstream Virtual Conference on Dec. 2.

Although DeIuliis didn't let on whether his company was in talks to be acquired by EQT Corp., as rumors continue to float, he did talk extensively about the A&D market as one of his three "reckonings" Appalachian shale producers will have to face.

"M&A is front and center everywhere you look these days in our industry and in our basin," DeIuliis said. "Obviously, M&A depends. It always depends. There are synergies that will be created with combinations. There are also 'dis-synergies' that are created in certain instances where the costs of the combination can take quite a long time to overcome."

DeIuliis offered what he called "hard truths" about M&A to the approximately 1,500 registrants of the event.

"Early movers in M&A are typically the losers while the patient ones are typically the winners," he said, noting examples in the banking industry during the financial crisis.

"Another thought on M&A is, sometimes, it's a convenient opportunity to gloss over or address problems the acquirer may have looming," he continued. "Whether it's balance sheet, whether it's free-cash-flow outspend, cost structure, lack of depth of inventory—those issues can loom quite large. If you're looking to address those, M&A often can gloss over those problems."

The problem with the M&A approach, according to DeIuliis, is that equity holders of the acquirer ultimately pay the price of fixing that problem. "But that might be something we are seeing looming large for M&A in our basin," he said.

DeIuliis also talked about scale in regard to M&A. In particular, he said getting bigger doesn't always mean there are inherent advantages. "When you look at getting bigger or scale for the sake of scale, there's data that questions that thesis, and it's data within our own industry. I'll point to Chesapeake in the past, and I'll also point to Gulfport," he said.

However, per DeIuliis, CNX isn't interested in horizontal integration—more acres, more production, more wells. "For us, that doesn't seem to be a big value proposition via M&A," he said, "but, with respect to vertical integration, there could be value there."

DeIuliis noted that vertical integration is one of the reasons CNX made the move to take back in all of CNX Midstream. "The ability to get that midstream integration with our upstream activities [is] a big driver of our cost structure, and a 'financial moat,' I'll call it of our financial sustainability," he said.

He added, "vertical integration via industrial logic might warrant some benefit and thought, but the horizontal one [is] sort of difficult and more challenging to see where that value might be."

—*Len Vermillion*

MLP investors' free cash flow wish to come true, experts say

Investors can expect a free cash flow-friendly approach from midstream companies and MLPs in 2021 as the sector emerges from 2020 in comparatively stronger shape than its upstream cousins, experts said on a recent webinar.

"Regardless of what happens with the macro environment and the movement in oil prices, the midstream space is poised to generate meaningful free cash flow next year," Stacey Morris, director of research for Alerian, said during a joint webcast with SS&C ALPS Advisors. "That free cash flow is really coming from a combination of stable cash flows and significant reduction in capital spending and capital commitment."

Even before the COVID-19 pandemic struck in the first quarter, capex was on its way down, she said, and the environment the sector is in today discourages the urge to spend.

"Free-cash-flow generation is certainly something that the market has been asking of these companies and something that these companies are actually starting to show us in terms of operational results," said Paul Baiocchi, senior investment strategy advisor for SS&C ALPS Advisors. Those results include free-cash-flow generation after distributions, improved coverage in some cases or, at the very least, stable coverage ratios as they relate to distributions.

Pearce Hammond, senior research analyst at Piper Sandler & Co., agreed, but his optimism was tempered by the sector's challenges of excess capacity and, in some cases, swollen balance sheets.

"The midstream sector has found firmer financial footing through capex and distribution cuts with the result that the sector should generate enough cash flow to fully cover capex and distributions in '21 and in some cases excess [free cash flow] for deleveraging and equity buybacks," he wrote in a Nov. 24 research note. "A prominent wildcard is next week's OPEC+ meeting to see if the group delays the planned 2 MMbbl/d production increase."

Midstream equities are pricing in a delay from the cartel, Hammond said. If OPEC+ does not deliver, then oil and the midstream sector would come under pressure.

Since the report, OPEC+ agreed to a modest 500,000 bbl/d increase.

Midstream's defensive nature has been evident in 2020 as the sector has shown more resilience than oilfield services and E&P companies, which are more sensitive to commodity price fluctuations, Morris said.

"Arguably, energy has been the most impacted sector by COVID-19 and has the most to gain from a successful vaccine and a recovery in oil demand and a return to life we had prior to COVID," she said. That's been borne out by the rally in energy stocks following positive news of vaccine developments from Pfizer/BioNTech and Moderna. On Nov. 23, AstraZeneca announced that its vaccine in development with the University of Oxford had shown positive results.

"That's been encouraging to see, and I think there's still plenty of leverage here to a recovery in demand and to the extent that we see successful deployment of the vaccine," Morris said.

Still, oil and gas production will decline in 2021, the U.S. Energy Information Administration expects, even with a resumption of growth in the second half of the year. And those declines, Morris said, are not necessarily a bad thing for MLP and midstream equity performance.

"The last year we saw strong MLP and midstream performance was actually in 2016," she said. Production was down, but oil prices rallied fairly significantly. That raises the possibility that 2021 could echo 2016, when production was down but equity prices and oil prices staged a recovery.

In fact, strong production growth, which the industry experienced in 2017 through 2019, didn't translate into stronger results for midstream companies and MLPs. At this point, production declines could help restore balance in commodity markets, particularly for oil, Morris suggested. Over the last couple of years, she said, producers have reacted to higher oil prices by overproducing, which resulted in drops in prices.

"To the extent that we see declines next year and producer discipline as prices start to recover, that could actually be a good thing for oil prices and, therefore, a good thing for the stocks," Morris said.

Numerous companies in the sector cut their distributions to investors in the first quarter in reaction to uncertainty in the marketplace and volatility in commodity prices, Baiocchi said. There was also considerable concern about counterparty risk and production cuts that were on the way in many U.S. basins.

But in the third quarter, he said, only two of the 19 companies in Alerian's AMZI (Alerian MLP Infrastructure Index) cut distributions, while 16 maintained them as they were in the second quarter and one increased its distribution. By weight, about 90% of the portfolio maintained or grew distributions quarter over quarter.

"At least in the most recent quarter, the bias has been toward

bigness or growth, and the cuts that we've seen so far this year, which were mostly in the gathering and processing segment and mid- and small-cap names, have largely been subdued in the most recent quarter," Baiocchi said. The exception, however, was Energy Transfer LP, which cut its distribution and is one of the bellwether companies in this segment.

Other large operators have avoided distribution cuts either by reducing capex spending or managing operations in a way that allows them to improve financial flexibility and weather this current storm in the marketplace, he said.

Another catalyst for investors is change for the better in buybacks, especially given the extreme negative sentiment toward energy in the equity markets. Midstream companies are now positioned to use excess free cash flow to both raise their distributions and buy back units, in stark contrast to the last five years in which they've been issuing more debt.

"More and more investors are telling these companies, 'Look, we're not asking you to raise your distributions in an unsustainable way,'" Baiocchi said. "What we're asking you is to ensure that you have the financial flexibility to weather the ups and downs of the energy market."

—Joseph Markman

Oil, gas lease sale results show GoM's staying power

Oil and gas companies with eyes on longer-term demand still have an appetite for resources of the U.S. Gulf of Mexico (GoM), evidenced by nearly $121 million in high bids placed on blocks offered during the last federal offshore lease sale of 2020.

The U.S. Bureau of Ocean Energy Management's (BOEM) Nov. 18 sale—which offered blocks for oil and gas development offshore Texas, Louisiana, Mississippi, Alabama and Florida—attracted 23 companies that placed 105 bids, preliminary statistics showed.

The bids were placed on only 93 of the more than 14,860 blocks offered.

Top GoM Lease Bidders

Company	Bid Total
Shell Offshore Inc.	$27,877,809
Equinor Gulf of Mexico LLC	$22,158,274
BP Exploration & Production Inc.	$17,130,319
Chevron USA Inc.	$17,098,072
EnVen Energy Ventures LLC	$7,699,000

Source: Bureau of Ocean Energy Management

That's an improvement from the lease sale in March when 22 companies placed bids on 71 blocks, bringing in more than $93 million in high bids.

Results of the Nov. 18 lease surpassed the goals of Mike Celata, regional director for BOEM's GoM region.

"I think the Gulf, and I've said this often, especially in the deep water, is a place where companies can explore. We have the infrastructure. We can make discoveries, tie into that infrastructure, bringing greater returns to those companies," Celata said on a media call following the sale. "So, I'm pleased. …The Gulf has a long future. We still have a huge amount of resources in deep water."

Lease Sale 256 took place as oil and gas companies continue to endure oil price volatility, weak returns and a fuel demand threatening pandemic. Though offshore projects have longer development cycles, the pace of progress can be affected by near-term cash available.

"Every dollar spent today is just the start of additional investment in America," Erik Milito, president of the National Ocean Industries Association, said in a statement. "Companies will spend millions of dollars exploring, evaluating and, hopefully, producing from many of today's lease blocks."

The sale also comes as the industry faces regulatory uncertainty. The sale is the last before President-elect Joe Biden, who vowed not to issue new permits on federal lands and waters, steps into office. Such moves, if carried out, could deal a blow to the nation's energy security and the financial coffers of not just oil companies but also federal, state and local governments.

Kate MacGregor, deputy secretary of the Interior Department, pointed out that lease sales are being carried out under a five-year plan that was released by the Obama administration.

"That lease program, while it has the lowest number of lease sales in the history of a five-year program at just 10, still had Gulf of Mexico leasing," MacGregor said. "I think there is an acknowledgment of the fact that these revenues are incredibly important to the federal Treasury, and I think there's also acknowledgment of the fact that these jobs are extremely important to the Gulf of Mexico, to the people living in Gulf States and to our entire nation who uses this oil and natural gas."

Companies are still excited about the GoM, which is estimated to contain about 48 Bbbl of undiscovered technically recoverable oil and 141 Tcf of undiscovered technically recoverable gas.

"You still see the same companies interested," Celata said. Major oil players, including BP Plc, Shell and Equinor, were among the companies willing to shell out big bucks.

Equinor Gulf of Mexico LLC and Repsol E&P USA Inc. teamed up to place the highest bid of the sale—nearly $12 million—on Walker Ridge Block 365. The bid was about six times the nearly $2 million bid placed by Chevron USA Inc.

Equinor and Repsol, working with co-venturer Progress Resources USA Ltd., hit net oil pay at their Monument prospect located on nearby Walker Ridge Block 316. Celata said the companies may have a prospect to the east.

Competition was high for a couple of blocks in Mississippi Canyon.

Chevron was the apparent high bidder at more than $2.2 million for Mississippi Canyon Block 382, narrowly outbidding Hess Corp. and Anadarko US Offshore LLC which placed bids of about $2.1 million and $1.5 million, respectively, for the same block.

Four companies vied for Mississippi Canyon Block 426, where a $1.5 million bid from BP came in higher than the rest.

"There's probably some shallow Miocene, but there is some potential in the Mesozoic there that we're looking at," Celata said, adding there are some deep expulsion-rollover systems that companies could be prospecting. The frontier-like nature of the area could also be why the blocks garnered million-dollar bids, instead of $10 million ones, he said.

In all, companies are being more selective in what they bid on, especially since COVID-19, according to Walter Cruickshank, acting director of BOEM.

"They're not bidding on as many tracks as they used to. But they are bidding on those where they see value," he said.

Mfon Usoro, senior research analyst for Wood Mackenzie, pointed out that bidding activity Nov. 18 trended below the average high bid amount of previous regionwide lease sales, though it was 30% higher than the March sale.

"The increase in bid amount was driven by the majors and private companies increasing their spend by 39% and 14%, respectively," Usoro said in a statement. "Most notable was EnVen Energy driving bidding in its peer group with US$7.7 million to beef up its infrastructure-led exploration drilling inventory."

Blocks with water depths greater than 800 m continue to be the most attractive to GoM players.

BOEM is in the process of updating its resource assessment in the GoM, particularly in deep water, and making sure blocks are receiving fair market value.

Long-term demand is part of the picture considering it typically takes seven to 10 years for some developments to reach first oil, though existing infrastructure and tiebacks can shave off years and cut costs.

"The past year has been tough, but the noted increase in winning bids and number of bids on tracts demonstrates the continued resilience of the U.S. Gulf of Mexico," said Milito. "Long-term projections still show rising energy demand, including for oil and natural gas, and with its world-class infrastructure, safety and environmental performance and positive environmental justice attributes, the U.S. Gulf of Mexico should remain the region of choice for energy production."

BOEM has proposed holding its first GoM lease sale of 2021 in March. Lease Sale 257 would be the eighth offshore sale of the current Outer Continental Shelf Oil and Gas Leasing Program and the first under the Biden administration.

"With the Biden administration set to inaugurate next year and possibly ban future lease sales, a massive land grab might have ensued. But companies are constrained by tight budgets due to the prevailing low oil price," Usoro said. "Additionally, companies in the region have existing drilling inventory to sustain them in the near term. The best blocks with the highest potential reserves are likely already leased."

Companies winning leases are required to pay a 12.5% royalty rate for blocks in water depths of less than 200 m and a royalty rate of 18.75% for all other leases.

—Velda Addison

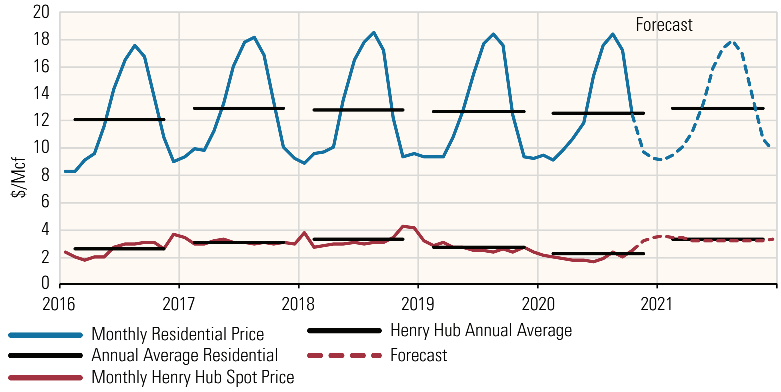
Henry Hub price less relevant for LNG, says Tellurian CEO

The U.S. benchmark Henry Hub price of natural gas will be less relevant in the next phase of the global LNG business model, Tellurian Inc. CEO Meg Gentle said during the recent North American Gas Forum, organized by Energy Dialogues LLC.

That's because partners up and down the value chain will work together to achieve supply and price certainty, she said.

"The price at Henry Hub is actually set by the most expensive molecule of natural gas in the U.S. because that's what it takes to clear the market," Gentle said. Integrating the value chain involves working with a known price of gas. *(Editor's note: Gentle left Tellurian shortly following these comments.)*

Short-Term U.S. Natural Gas Prices



Source: U.S. Energy Information Administration, Short-Term Energy Outlook, November 2020, and Refinitiv

Tellurian's model for its Driftwood LNG facility, to be built on the Calcasieu River, south of Lake Charles, La., involves partnering with a producer in the Haynesville gas play and developing a 96-mile pipeline to deliver an average of 4 Bcf/d to the facility. The $15.5 billion project will boast a capacity of 27.6 mmtpy when complete. Construction is slated to begin in 2021.

"As we produce the gas at the wellhead and bring it all the way into the market, the relative value in the different parts of the value chain are changing over time, and so the best value that comes from the project—that comes from the partners—is participation together and aligned on all those pieces," she said.

Start with Henry Hub, where the natural gas price is loaded with volatility. Now shift to a gas-producing play where an operator might have more control.

"The cost of producing gas in the Haynesville has very little volatility," she said. "It's really that cost certainty that we bring to the market from integrating

the project, that we know we have LNG delivered at $5 or less, depending on how far we're taking it."

The actual production price for Driftwood's gas in the Haynesville is about $1.50/MMBtu, Gentle said. By contrast, the Henry Hub price on the afternoon of Nov. 10 was $2.95/MMBtu. It costs about $2/MMBtu to deliver the gas from the wellhead in the Haynesville to the plant.

"With upward pressure on Henry Hub," she said, "we're really focused on making sure we can deliver really low-cost LNG to the partners by doing the project on an integrated basis and making sure that we're loading LNG on the Gulf Coast at roughly $3.50 and delivering in Asia at $5/MMBtu."

The price for Asian gas on the benchmark Japan Korea Mark (JKM) was $6.905/MMBtu on Nov. 10. In Europe, the Nov. 10 price on the Title Transfer Facility (TTF) in the Netherlands was $4.868/MMBtu.

Globally, many LNG projects of 10 years to 12 years ago were developed with the intent of serving the pre-shale U.S. market, said Majed Limam, manager of Americas for Poten & Partners, an energy and shipping brokerage. When the demand market morphed into a supply market, a lot of LNG supply in the Atlantic Basin became "homeless."

"That disrupted the old-fashioned approach in LNG where demand would develop and supply would catch up and you'd have a nice step function where demand and supply would meet nicely," Limam said during the forum. "There was, all of a sudden, that surplus LNG."

As the market shifted, the LNG business did, too. Driftwood represents the fourth evolution of U.S. LNG, Gentle said. The path from point-to-point contracts serving the Japanese market has matured into today's fully traded, liquid commodity.

"Some of the big milestone changes, when you think of them, you can match them with the evolution in how projects begin, where the capital comes from and how we became more and more flexible," she said.

The milestones are:

- Atlantic LNG of Trinidad and Tobago offering the first LNG traded in the Atlantic Basin that was not point-to-point;
- BP Plc creating a liquid portfolio, which led other portfolio companies to join and bring liquidity to the market;
- and Cheniere Energy Inc., where Gentle worked prior to Tellurian, converting the Sabine Pass, La., import terminal into an export terminal, which was the birth of U.S. LNG. The business model introduced flexibility to the sector with no destination restrictions.

2020 has been a less-than-stellar year all around in the fossil fuel space, but LNG has made it through in decent shape.

"The signs are for a recovery," Limam said. "If you look at how the LNG industry and the market performed compared to oil and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other commodities worldwide, it's held its own. We may not see the growth that was anticipated for 2020 in 2019, but we're not going to see a very large drop."

And if growth was modest this year, it is expected to pick up again in 2021 and the medium- to long-term looks promising for LNG, Limam said. A key difficulty earlier in 2020 was the inability of Europe to absorb the surplus LNG in the Atlantic Basin, but that issue is in the past.

"The price arbitrage has opened up now," he said. "Where the Asia Pacific prices are, it's definitely promoting trade from the U.S. and other parts of the Atlantic into these markets."

By mid-decade, the market will catch up to the surplus and resolve the "homeless" LNG problem.

"The silver lining is that we see a tightening of the market now happening sooner, perhaps in a decade, because of the delays on some [final investment decisions]," Limam said. "The projects that do make it and are operational by that time frame, perhaps have a better opportunity now than they did before."

—Joseph Markman

Hunt CEO talks energy 'addition' approach to new tech, renewables

The COVID-19 pandemic has significantly quickened the pace of the energy transition, but thanks to a unique approach, adapting to the new normal appears to be less of an obstacle for Hunt Consolidated Energy Inc., according to CEO Hunter L. Hunt.

"Part of my job is not just to look at where we are today, but where things are heading in 10 to 20 years and see how we can continue to position ourselves to be both contrarian and community-centric, and make sure we have a positive role in the energy industry," said Hunt, who oversees the operations of Hunt Energy.

Managed by the Ray L. Hunt family, Hunt Energy is the holding company for all of the family's activities related to energy. The Dallas-based company's operations include refining, power infrastructure and renewable energy technologies as well as Hunt Oil Co., one of the largest privately owned energy companies in the world.

Speaking during a recent webinar hosted by EPIcenter, Hunt said the company has taken a bullish stance on the energy transition by investing in new technologies that support renewables and other energy sources. The goal is to make the company "fluid" to market conditions by having a hand in both the renewable world as well as oil and gas.

Hunt Energy's approach to the energy transition is from an energy 'addition' standpoint, he said, which involves adding electrons into the mix rather than totally moving away from molecules.

"We're proud to be an oil and gas company," he said. "We see a need for both fuels for quite some time, but we also understand the planet and humanity have other needs that are more around electrons. We really do view this more as an energy addition with new sources showing up than an energy transition where we're getting out of oil and gas in the near-term into something completely separate."

As for Hunt Energy's home state of Texas, Hunt said he is bullish on more renewables and economic development showing up and intends to partner with more municipally-owned electric utilities and electric cooperatives to grow the business.

"From a technological perspective, it's clear the energy mix is shifting and being impacted particularly by wind, solar and batteries," he said. "If we're truly going to be community-centric and serve humanity, that's where we need to be shifting into."

So far, Hunt Energy has made early technology plays in the battery sector and investments in next-generation solar cells. On the energy storage side, the company anticipates large gigawatts will come into play in Texas soon.

"The more that storage shows up with the incredible cost of wind and solar, you can see a complete transformation of what people think the supply mix is for electrons and it may be more bearish for natural gas," he said.

On the debate surrounding the use of electric vehicles (EVs) vs. internal combustion engines (ICE), Hunt said EVs will be a part of the future but the entire global ecosystem around ICE will not go away.

"That underestimates the amount of innovation we're going to see come out of the oil sector to make internal combustion engines both cleaner and more efficient," he said.

Hunt noted the growth in the use of EVs is coming far slower than what most proponents projected, but at a quicker pace than what most oil executives anticipated.

Additionally, he sees growth in the hydrogen economy by way of new technology needed for hydrogen infrastructure and extraction. "It is further behind renewables and I don't think it will ever be as popular as an electrified world, but there will absolutely be applications for it," he said.

However, the world still needs and operates off of oil, gas and even coal, according to Hunt. The misconception, he noted, is that the oil industry will quickly disappear following "peak oil."

"Wind, solar and battery are declining cost-curve industries," he said. "Every year the cost of that technology is reducing without fail and one thing we know for certain is that a year from now wind, solar and batteries are going to be cheaper than they are today and so forth."

However, oil and gas has a history of increasing as well as decreasing margin trends.

"Renewables are going to win to be clear, but the supply, distribution and waste disposal chains are wholly under-formed compared to petroleum products," he said. "Having had a foot in the utilities space for 20 years and being very active in the oil and gas space, we view it as the mother of all battles but we do think there is going to be a lot of price volatility associated with this."

Being a private, multigenerational company, as opposed to a supermajor, has helped Hunt Energy, which history dates back to 1934, with embracing the new wave of innovation, Hunt said.

"A lot of the ability in the U.S. for oil companies to pivot into these new technologies is limited, which is why it is great to be private," he said. "Internationally, I think they have the thinking correct but the challenge is

putting the proof in the pudding. It's really hard to see, in my opinion, the European supermajors leading the way in these new technologies."

The key behind the company's success coming out of this pandemic and into the new energy world is resilience and being committed to communities and humanity, he said. Resilience is a pretty critical word right now, he added, and that will "favor more distributed type resources over time."

Over the next 20 to 30 years, Hunt believes there will be a propensity to see energy become more distributed and localized.

"In the oil and gas industry, we tend to look at economic development as something that needs energy and so we provide it, but we forget people create economic development," he said. "We're here to serve, and I think that mindset is one of the biggest things that is going to come out of the pandemic."

He continued: "The real winners are going to be focused on what the communities want, how to make communities more resilient and how to best serve them—that's our approach."

—Mary Holcomb

Hydrogen could become key energy source, says former Shell executive

Hydrogen, along with solar and nuclear, could replace coal, oil and natural gas as the world's dominant sources of energy, according to a longtime energy insider known for his straightforward insight.

John Hofmeister, founder and CEO, Citizens for Affordable Energy

Key Benefits Of Hydrogen

- Hydrogen can be produced from diverse domestic resources for use in multiple sectors, or for export.
- Hydrogen has the highest energy content by weight of all known fuels—3x higher than gasoline—and is a critical feedstock for the entire chemicals industry, including for liquid fuels.
- Hydrogen, along with fuel cells or combustion-based technologies, can enable zero or near-zero emissions in transportation, stationary or remote power and portable power applications.
- Hydrogen can be used for gigawatt-hours of energy storage and as a "responsive load" on the grid to enable grid stability, increasing the utilization of power generators, including nuclear, coal, natural gas and renewables.
- Hydrogen can be used in a variety of domestic industries, such as the manufacturing of steel, cement, ammonia and other chemicals.

Source: U.S. Department of Energy

But it likely won't happen until the 22nd century, said John Hofmeister, CEO of Citizens for Affordable Energy and former president of Shell Americas.

"Guess what? Zero CO_2 and other particulates. Yeah, we'll still have to deal with uranium waste, radioactive uranium waste, but we can reduce that worry by shifting away from uranium as the source of nuclear to thorium, which is much safer to work with over time," Hofmeister said during a recently-held virtual energy forum by JLL and Gensler.

The discussion took place amid increasing focus on ESG concerns and a shift toward cleaner sources of energy. While oil, gas and coal remain the dominant power sources, attention is turning to alternative energy—including the simplest and lightest element on the periodic table—as many target smaller carbon footprints.

"Hydrogen is the most available molecule in the earth, and we're learning better and better how to capture it, how to transport it, how to manage it safely," Hofmeister said. "And I think it will be a great source of energy as we go through this century."

Hydrogen as an alternative fuel source is not a novel concept. NASA has used hydrogen gas as rocket fuel to carry crew and cargo to space for decades. It's most commonly used today as a feedstock.

However, there are efforts underway to increase its usage across different sectors, given its potential use, abundance and net-zero greenhouse gas emissions.

BP Plc has teamed up with Ørsted AS to build wind-powered technology to produce hydrogen from water at the Lingen refinery in Germany, the energy majors said Nov. 10.

Traditional oilfield service companies are also making moves on the hydrogen technology front. Baker Hughes Co., working with partner Snam SpA, successfully tested the world's first hydrogen blend turbine—called NovaLT12—for gas networks.

Hydrogen could also play a role in reducing the demand for gasoline in the U.S., according to Hofmeister.

"I think it's a combination of batteries and hydrogen fuel cells that will power the public in the next couple of decades because, again, technology and climate and costs," he said. "I think the price will continue to be more and more attractive for both battery, electric and hydrogen fuel cells … In the end, we will use batteries for as long as they are available (lithium is a finite resource) and convenient and affordable, and we will also use hydrogen."

But it won't be until the 22nd century when "hydrogen will be a primary energy source for mobility," he said.

Asked why not sooner, he referred to the Hindenburg disaster in 1937. Kept afloat by highly flammable hydrogen, the German zeppelin—which resembles a large blimp—caught fire, killing more than 30 people in New Jersey.

"Also, hydrogen has some economic issues," Hofmeister said. "Where does it come from? Does it come from natural gas? Does it come from biomass? Does it come from water? The electrolysis of hydrogen remains an energy-intense process by which we would get that hydrogen if we get it from water."

He noted the economics are still troubling for many as well as the cost of the fuel cell.

"Like any new technology, you've got to get past the point at which you can get a return on your investment and you have

faith in the marketplace that it's safe and reliable," he said.

Development of hydrogen as an energy source has made strides in the 25 years or so the industry has been focusing on it.

"It's come a long way, but my goodness, it's very hard to go out and buy a hydrogen fuel cell vehicle unless you live in California, where they actually have about almost 100 hydrogen stations now in a huge state," he said. "So, it's just going to take time."

The U.S. Department of Energy, working with other federal agencies, is doing its part, releasing on Nov. 12 its Hydrogen Program Plan that provides a framework for hydrogen research, development and demonstration activities.

As stated in the plan, the program aims to:

- lower costs and improve hydrogen production, delivery, storage and conversion systems;
- address barriers to hydrogen's integration with conventional energy systems;
- explore opportunities for large-scale adoption and use;
- develop and validate integrated energy systems utilizing hydrogen;
- and show the value proposition for hydrogen.

"The key technical challenges for hydrogen and related technologies are cost, durability, reliability, and performance, as well as the lack of hydrogen infrastructure," the plan states. "To achieve widespread commercialization, hydrogen utilization technologies must enter larger markets and be able to compete with incumbent technologies in terms of life-cycle cost, performance, durability, and environmental impact."

Nontechnical barriers to address include "developing and harmonizing codes and standards, fostering best practices for safety, and developing a robust supply chain and workforce."

—Velda Addison

Deloitte 2021 outlook: oil, gas companies face great compression

The realities of 2020 for oil and gas compose a bitter catalogue: U.S. shale companies have written down about $145 billion worth of assets and at least 43 operators have filed for bankruptcy protection, oil demand has shrunk significantly and to some degree permanently and 14% of permanent jobs were cut from U.S. oil and gas companies, with 70% of jobs lost amid the pandemic potentially not to return until after 2021, according to Deloitte's "2021 Oil and Gas Industry Outlook."

In the report, the firm characterized these challenges as the "great compression of the oil and gas industry," which will shape the industry's future such that "the next decade could look very different for the entire oil and gas value chain."

Looking to the immediate future, it said, "2021 will either be a leapfrog year or a test of endurance for many" and noted five trends that will likely force companies to reinvent their ways of working or fall by the wayside altogether. The report described these trends as:

- Oil prices are trapped between soft demand and rallying equity markets.
- Changed market dynamics have altered the financial outlook and portfolio options for U.S. shale operators;
- COVID-19 and the oil downturn have accelerated—not paused—long-term trends, such as energy transition and digital transformation;
- Natural gas is wedged between decarbonization efforts and renewables focus; and
- Overbuilding looms as a growing concern for midstream and downstream.

Deloitte noted that oil prices have been atypically range-bound in 2020. This, combined with the previous five years of low capital spending and severe capex cuts in 2020, put the industry "at risk of underinvestment. Just to replace the annual consumption and offset natural field declines, the industry would need to invest more than $525 billion annually," according to the report.

Though less consequential in the short-term, "In the medium-to-long term, underinvestment could affect supplies, especially from non-OPEC producing nations," and overall, the supply-demand picture is highly uncertain. As a result, "Companies should consider accelerating digital transformation to reduce operating costs, 'variablizing' their fixed costs of support functions, maintaining flexibility in their operations and optimizing their capital allocation for the projects of tomorrow," Deloitte said.

Coming out of the maelstrom of 2020, the nature of shale financing and portfolios requires redefinition. Deloitte said, "Although five out of 10 shale operators have been reporting negative free cash flows since 2010, the pandemic and an oil price crash have stripped the industry of its three lifelines"—reserve-based lending, investor appetite for shale and the ability of oilfield service firms to optimize the shale boom.

Widespread divestments and a growing wave of consolidation have resulted, but Deloitte considered these strategies temporary solutions at best. "Although the strategies of concentration and diversification have their pros and cons, operators that go beyond 'solving for a market cycle' and challenge their traditional mindset of 'this is the type of work we do' would likely emerge as winners in the long term," it said.

Contrary to many operators' speculations, the events of 2020 accelerated rather than slowed demand for energy transition and digital transformation. These trends "should be the strategic priorities for the organization of the future, and there are many ways in which the one enables the other and the combination of the two creates new and differentiated value for a company and its stakeholders," according to the report.

As of late, a great deal of hope has been pinned on natural gas as an intersection of industry economics and the broader public's call for cleaner fuels, but reality of gas is complicated, Deloitte noted. "With the cleanest fossil fuel available at the lowest price, the projected share of gas in the future energy mix should increase over time. Yet, its projected share remains flat at around 25% by 2025 to 2030, with a few recent outlooks now even predicting a drop to 22% to 23% in a net-zero scenario," it said.

This disconnect, Deloitte explained, exists because "Gas

seems trapped between oil and gas companies' decarbonization strategy of focusing on low-carbon fuels and the broader impetus to replace gas with renewables for electricity generation."

So, in the short term, "natural gas producers (including LNG exporters) should refine their commercial and integration strategies with midstream to build greater resilience and capture new margin opportunities," according to the report, but in the long term, even "Gas likely has to decarbonize itself to either pair or compete with other, cleaner fuels."

Deloitee said these upstream complications have"clouded the long-term outlook for US midstream and refining companies. This seems especially worrisome, as these companies have been building infrastructure anticipating growing US tight oil production and higher demand from export markets."

The midstream and downstream sectors must adapt to structural changes to remain healthy. Already, some pain is being felt—"Cash flows from midstream projects, which are typically financed using 50% to 60% debt, have fallen by 10% to 15% in tandem with their pipeline utilization—and companies may need to reconsider their profitability ratios.

"The choices oil and gas companies make in the coming months and the trends they prioritize will decide the path forward and reverberate in their decision-making through the coming decade," the report concluded.

—Bill Walter

Oil, gas must prepare for post-COVID world, experts say

If this pandemic is, as Indian writer Arundhati Roy suggests, "a portal, a gateway between one world and the next," does the energy transition for midstream qualify as a logical extension of the metaphor? Winona LaDuke thinks so.

"I'm looking at this decline in production and that we're all operating remotely, that Google is the biggest guy in the world along with Amazon," the environmental activist said during the recent Reuters Future of Oil & Gas 2020 online conference, referring to leading public companies based on market capitalization. "Exxon's not there anymore, right? So, these transitions happen, and the question is: With disruptive technologies and disruptive times, how are we all going to adapt?"

LaDuke heads Honor the Earth, a Minnesota nonprofit focused on raising awareness and financial support for indigenous environmental justice. Much of her time is spent fighting Enbridge Inc.'s Line 3 replacement project as well as the Canadian company's other operations. And while her crusade is to move the world away from fossil fuels and the pipelines dedicated to transporting them, at least some of the points she makes find agreement in the oil and gas industry.

"I honestly look at any sort of market disruption, and the market disruption that happened here was that, even pre-COVID you saw an expansion of oil and gas," Justin Carlson, co-founder and chief strategy officer of East Daley Capital, said during the conference. "You saw an excess amount of supply hit the market and therefore we had a collapse in prices. And that was pre-COVID. Then you stack on COVID, you have even less demand."

How the new normal supply/demand balance will shake out is unclear. The overall demand response may depend on whether people continue to work from home, which also would require a closer look at supply.

"Any time you have a market cycle like this, you have an opportunity for companies to shift the way that they're making their investments and shift the way they think about the future," he said. "They may not be as married to the old way that they operated because they have to make a shift, and they make a shift, or they go under."

The U.S. Energy Information Administration forecasts global energy consumption to grow by 50% between now and 2050. Carlson expects natural gas to meet a lot of that higher demand but not all of it. He sees renewables as primed to step in, as well.

Swelling global population and economic expansion in emerging nations will drive this demand and weigh on the system, Carlson said.

Midstream entered 2020 fresh off its largest capital development year ever: $37 billion. The sector had mounted a ferocious effort to match infrastructure with burgeoning supply. Capex cycles start with production growth, Carlson said, followed by infrastructure development to meet it, or a constraint of infrastructure leading to price spreads, which creates the need for more infrastructure. And so, the cycle goes. Or it did.

"We're now out of that cycle," he said. "We don't need as much infrastructure. We've done the development we need and now companies can focus their attention elsewhere, midstream companies in particular."

Focusing elsewhere might include turning away from that poster child of incomplete projects, TC Energy Corp.'s Keystone XL pipeline.

"We've been relatively skeptical about even the need for Keystone XL as a whole for a long time, despite the long-term support," Carlson said. So skeptical, in fact, that East Daley hasn't included the project in its forecast models because it didn't make sense financially. Analysts doubted it would ever be built and that was well before Biden won the election.

"Certainly the Biden administration is going to come in with its own set of policies, but quite frankly, the capital markets have done quite a bit towards furthering what would be considered Biden's initiatives, anyway," he said. "They've already rectified some of the excess supply."

The incoming administration's plan to accelerate the energy transition fits into what midstream companies do.

"At the end of the day, they are logistics companies," Carlson said. "They're solving a supply/demand issue." That positions the sector to tackle whatever problems that an energy transition will present, including legal and regulatory issues, land use issues and just plain moving or storing stuff, be it natural gas, crude oil or hydrogen.

"There is not a strategy team in any midstream company that I know of that is not talking about what role they play in the future," he said. "What they're about is just trying to run efficient businesses. They're trying to create jobs for people and to the extent that they have the opportunity to play a role in an energy transition, they're going to step up to the plate."

—Joseph Markman

EOG RESOURCES INC.

ESG AND THE INDEPENDENT E&P

The U.S. oil and gas industry is under extreme pressure by capital providers, stakeholders and elected officials to mitigate greenhouse gas emissions and to show compliance to globally accepted climate change goals. Can a hydrocarbon-producing company win in this scenario?

EOG Resources Inc. has incorporated ESG protocols into its field operations, building a solar farm, for instance, to power oil and gas operations in southeast New Mexico.

ARTICLE BY
DARREN BARBEE

In New Mexico this summer, EOG Resources Inc. debuted a new technology to capture natural gas that sometimes flows back due to third-party midstream companies. EOG engineers in Midland, Texas, were pleased but not satisfied with the company's 99.5% gas capture rate. But the culture at EOG bends toward perfectionism.

In the company's Permian Basin division, in what might have been a hallway conversation between an engineer and a geologist, the question, relentlessly, was how to do it better. In this case, capture emissions.

One area that EOG cannot control is its third-party midstream disruptions. A disruption downstream limits takeaway capacity. Even with redundancies, there are times when companies have no choice but to flare the gas. Out of that occasional uncertainty came EOG's June test of a closed-loop gas capture system, which automatically re-routes natural gas back into existing wells. "We had a team of technical and operational specialists get together to brainstorm the idea," said Gordon Goodman, EOG's director of sustainability. "They came up with the concept and then followed through with a successful test."

The closed-loop gas capture technology will not only reduce the need to flare gas, but the system will pay for itself by conserving resources that can be sold.

The atmosphere around ESG began to change in relation to the oil and gas industry in 2020. Like the air itself, the ambiance among bankers, insurers, investors and institutional funds was invisible, but unmistakably pushed and shoved about by high- and low-pressure areas. Those stakeholders wanted assurances, or at least the veneer of assurance, that oil and gas companies are taking ESG seriously.

Subash Chandra, managing director and senior analyst at Northland Capital Markets, believes sustainability reports will ultimately be the most important document for investors after the 10-K.

The environmental, or the E, has taken on an outsized significance as global capital providers have largely fallen in line with the Paris Accord climate goals to reduce carbon emissions.

Subash Chandra, managing director and senior analyst at Northland Capital Markets, said companies lately have hyperfocused on environmental topics while looking to overachieve state or federal regulations.

"At this point, you're seeing everyone take it seriously because they have to," he said.

That's created the need for spending, the hiring of staff and further innovation, a paper chase of sustainability reports. E&Ps, many for the first time, began publishing principles for an effective ESG policy that broadly hits categories such as greenhouse gases, diversity and societal engagement.

Most companies have made the case that sustainability and tighter emission controls result in higher profitability—in general meaning they can sell what would otherwise be lost to the atmosphere.

CEOs, private equity firms and analysts all expect companies to continue to make progress, despite suffering under a relentlessly bad commodity environment.

Lenders such as JPMorgan Chase & Co. have made clear that ESG will be a factor in which businesses get money. Insurers and institutional investors are also beginning to ask questions about oil and gas companies' environmental stewardship, with some E&P executives fielding calls on what they're doing to report, and eventually, mitigate emissions.

New York capital provider Kimmeridge Energy Management Co. has been at the forefront of such efforts, including publication of its principles for an effective ESG policy that generates economic returns while committing to reducing methane emissions.

Ben Dell, a managing partner at Kimmeridge, said that the industry has a standing problem with reacting to problems and challenges rather than leading the way.

"I think the environmental discussion is a great, great example of that, where E&Ps have tended to have the view that they will do the minimum required based on what they're told to do, rather than actually thinking about what the best practice is, what's in the best interest" of stakeholders, he said.

Ultimately what's forcing the industry to change now is that capital markets won't give them any more money, Dell said. "That cost of capital will in the end force them to change or force them out of business. In that respect, the market is arguably doing its job."

Dell said that reclaiming investors may not be as big a chore as it first seems considering the state of the industry.

"First, all these companies are being priced as if they're going out of business. So, your starting point is extremely low. It's not a high hurdle to actually start attracting investments again," he said.

Companies also need to make money, which Dell said is "not a big ask." The industry, he argues, hasn't had a problem generating cash flow but rather in spending that cashflow on drilling instead of returning money to investors.

In the past two quarters, Dell said he's seen teams aggressively crack down on costs, capex and maintenance spending.

"They've been able to do it even with the trough of the commodity," he said.

To win the ESG crowd on environmental concerns, Dell sees a relatively quick fix: Don't flare.

"We don't flare as a business, unless there's an emergency use situation where it's a real safety issue," he said. "And all it requires is better planning, getting pipeline companies to build out to your well locations ahead of your drilling … so that they can be turned inline to sales."

For most companies, halting flaring has no economic downside.

"Burning your product and venting it to the atmosphere is not an economically rational thing to do," he said. "It's more profitable to put it in the pipeline and see that product come to fruition."

EOG's ESG efforts

Following the first test in New Mexico, in cooperation with the state's Energy, Miner-

“We’ve helped the states try to drive their requirements to higher and higher levels to appropriately reflect what needs to be done. For that gas capture, we’re 99.5% and we’re still looking at opportunities to go even further.”

—William Berry,
CEO, Continental Resources Inc.

als and Natural Resources Department, EOG plans to consider additional sites to deploy the technology.

While 2020 saw an influx of sustainability reports, EOG has been one of perhaps a handful of independent E&Ps to produce such reports. EOG first published their report in 2017. The company has shown improvements on emissions, flaring, water use and safety. For the second year in a row, EOG reduced its methane intensity rate by 45% through a mix of retrofitting and removing pneumatic controllers and field pumps.

COO Lloyd W. “Billy” Helms Jr. said that a growing interest in ESG has provided the company with an opportunity to engage with a broader audience to share the “innovative technology we have developed to reduce emissions, minimize flaring and increase water reuse.”

“Growing interest in ESG has led to more transparency by E&Ps of industry operations as a whole, and environmental practices and performance in particular, which drives the dual benefit of educating more stakeholders and highlighting the benefits of responsible oil and gas development to local communities,” he said.

As various stakeholders make increasing demands for ESG, and environmental stewardship in particular, in the oil and gas industry, EOG has responded by producing low-cost energy while also finding ways to reduce emissions and the overall footprint of its operations, he said.

“We believe investor interest will follow the demand for barrels as it gravitates toward the most efficient producers—the most efficient from a capital perspective and the most efficient from an emissions perspective,” he said.

Goodman said EOG’s approach to reporting its environmental statistics is geared toward showing its performance. In developing disclosures for the company’s sustainability report, he said EOG has tailored its metrics to be relevant to operations and as comprehensive as possible.

The company bases its metrics, where feasible, on publicly available information to aid in comparability among peers.

“While we are committed to enhancing disclosure of our policies and metrics that are important to our operations, we evaluate the success of our ESG efforts by performance and performance improvement, and just like every other area of our operations, we drive performance improvement through innovation,” he said.

Swapnil Karnik, senior research analyst for oil and gas, Columbia Threadneedle, said, “Once you start measuring [ESG] and reporting it, people want to get better at it. So maybe the first reduction that happens is all the easy things that you do. But even that is a good thing.”

MARC MORRISON/BPX ENERGY INC.

A drone detects methane leaks onsite for BPX Energy Inc. Developing robust ESG processes will greatly require companies to leverage technology.

Continental Resources Inc. founder and chairman Harold Hamm said the company, which produced its first sustainability report this year, has been striving to make the company an environmental steward for more than 50 years.

Continental's perspective

It's clear that some companies are getting new questions, which has kicked off a mountain of new sustainability reports that highlight air, water, diversity, social engagement and other ways oil and gas communities act as stewards of their resources.

Continental Resources Inc. CEO William Berry said that some parties involved in the ESG discussion clearly want to see the petroleum industry disappear, however unworkable that might be. But various stakeholders are increasingly asking what companies are doing on the ESG front.

"What you're seeing out there is that a lot of the banks, insurance companies—their investors are putting pressure on them to say, 'Okay, what's your policy around ESG,'" Berry said. "They're wanting to make sure that that's being considered and so … we have had conversations with those guys where they are saying, 'This is part of the dialogue that we're having to have with our investors.'

"What I think everyone is struggling with is that 'investors' is a wide swath," he said.

Continental founder and chairman Harold Hamm said much of the tumult in the oil and gas industry is due to the fluctuations in oil and gas commodity prices. And while Hamm believes ESG is largely good for the industry and Continental, he's also wary of it being used as a weapon by investors and activists.

Continental, which produced its first sustainability report this year, has been striving to make the company an environmental steward for more than 50 years, Hamm said. For instance, decades ago the company created ECO-Pad technology that allowed for drilling multiple wells from a single site, minimizing the production profile for multiple wells. And though ESG concerns are important, price will be the ultimate determinant for investment, he said.

"Everybody wants to press ESG, and a lot more, perhaps, than it should be [pushed]," Hamm said. "Rather than [catering] to these activist groups trying to set some arbitrary goals or metrics, we believe [in] demonstrating very clearly that we're a part and a driver of the solution, not the problem, and as such the larger issues around climate management can be achieved."

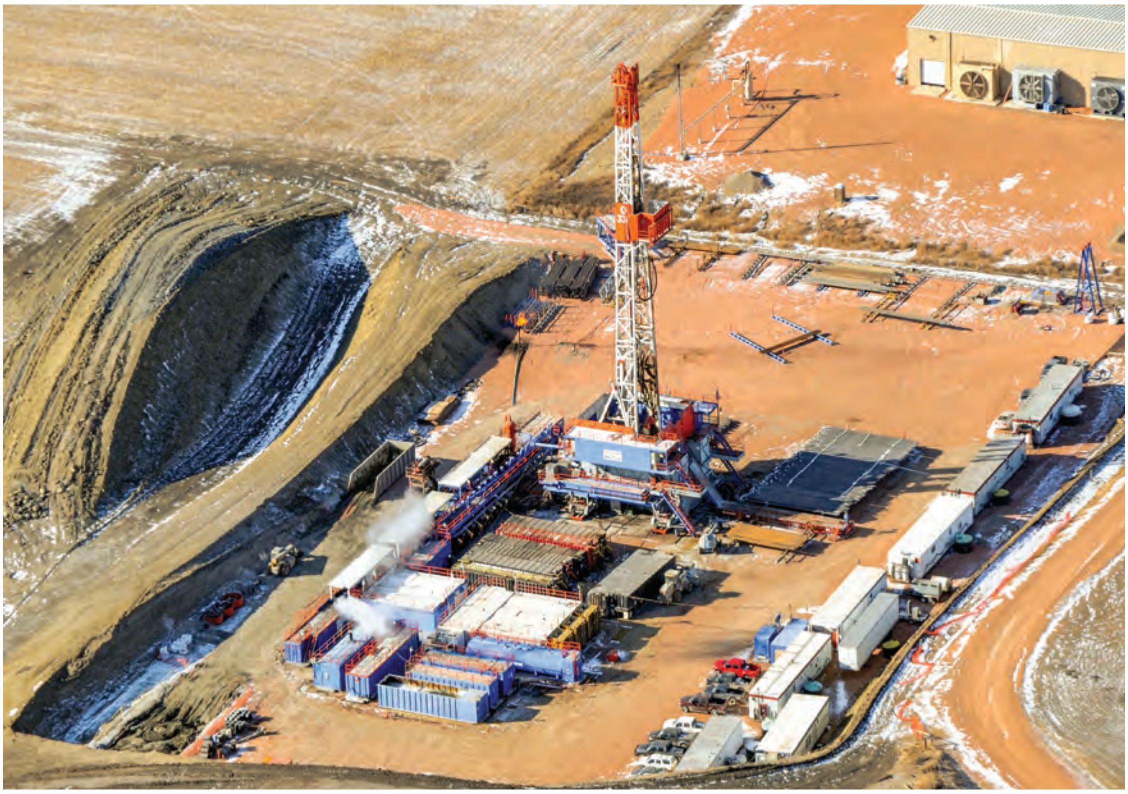
Of its own volition, Continental Resources has already found ways to limit methane and volatile organic compounds from escaping to the atmosphere. In 2016, for instance, the company began installation of new controllers for natural gas at well facilities. Since then, the company's greenhouse gas and methane intensity rates have fallen by at least 22% while production has increased by about 44%.

Escape the echo

The determinant factor for oil and gas companies, and other industries, is public sentiment, Chandra said. And the public's sentiment is that climate is real. That, he said, drives everything else.

"Global capital has led the way, and that is because global capital is concerned about climate change," he said. "Global capital is composed of the bank accounts of the global population."

Within the past year, Chandra recalled visiting oil and gas companies to talk about environmental concerns. A few companies were talking about it but, "I didn't get the sense [that the] rank and file felt that strongly about it."



CONTINENTAL RESOURCES INC.

Continental Resources has developed several successful strategies to reduce emissions as it conducts its E&P operations.

PDC'S SUSTAINABILITY FOCUS

In September, PDC Energy Inc. published the company's first sustainability report. But the company has long been at work to exceed its own expectations as well as the onerous regulations imposed by the Colorado Oil and Gas Conservation Commission.

Still, President and CEO Bart Brookman said he saw the end product as the result of building momentum around ESG and questions from a variety of shareholders.

Partly, that began in March 2020, as private equity firm BlackRock Inc. became one of the most prominent investor groups—and PDC's largest investor—to make sustainability a focus for its investments. Banks, particularly European lenders such as Credit Suisse and Deutsche Bank, have led the way.

Brookman said investors want to see a commitment to ESG and a "good summary of the progress we're making."

The sustainability report has also helped to clarify that PDC's actions align with what it's saying. Toward that end, PDC's team assembled what the company was already doing, Brookman said, into a single cohesive report.

"I think there's a lot of aspects of, culturally, who we are as a company," he said, as well as the way the company has been shaped by Colorado state regulations over the past five years.

Brookman sees such reports as what the industry needs to be doing to become more transparent, more accountable environmentally and to demonstrate how E&Ps are following tightening regulations.

"We are early in our journey," he said. "This is our first year. We plan on setting goals to make better and better progress on the E, S and G areas as we go forward. On the environmental side, we definitely have plans to improve, to get cleaner and cleaner."

"The big thing with the sustainability report this year is that it gets all the information out there and the ratings agency scores catch up and accurately portray what we've been doing for years as a company," said Kyle Sourk, senior manager of corporate finance and investor relations.

The sustainability report includes data from various company departments and then presents it in a way that the average person or state officials can easily digest.

"The sustainability report involves going out and gathering all the data, putting it into one concise report where the investment community, the banks, the board of directors and any of other stakeholders can go and look," Brookman said.

The report also has an authenticity to it that cannot be spontaneously created. Many of the conversations and snippets of conversations quoted in the document happened over years.

"They don't just happen when we're putting together a report," said Courtney Loper, senior manager for stakeholder relations, who helped create the sustainability report. "The testimonials in the report are things that we already had in our files, because that was the feedback we got in real time from some of those events and some of those partnerships."

Through the need for innovation or at the behest of the state, PDC has also been exploring cleaner technology that it's implemented in the past 10 years, including vapor recovery units, tank pressure monitoring and loadout control among others.

"We have dramatically changed the engineering of our facilities," Brookman said. "We have that 80% to 85% reduction in CO_2 and methane emissions. And that is a collaborative effort of our field operations, engineers, regulations, and the state of Colorado saying, 'We want you to do this,' and we go find a way to get it done."

That said, Colorado's regulations can be onerous and even illogical.

"I have to shoot straight with you on it," Brookman said. "There are times that proposed regulations have us holding our head. But I am proud of the progress we have made in these areas."

And even without the changes in regulations, Brookman said he believes the company would still have done a phenomenal job to get cleaner.

Brookman notes that he joined PDC 15 years ago. Two years later, he hired his first safety employee. In November the company had 25 environmental, health, and safety employees working fulltime.

Instead, he got the sense they were seeing it as a political issue and that if the right people were elected it would go away.

"What really scared me about that kind of opinion is that the E&P sector has had enough issues. They haven't gotten in front of many of them, and here's one more issue that they are not anticipating," he said.

Then, beginning in March, "You've just seen this topic be topic No. 1, and there's no going back."

Chandra said companies are faced with a stark choice: If they can run their businesses without public financing, they're free to run their business as they choose, but for the others that need financial backing, companies need to be aware that climate change is driving investor decision-making.

"And so, you saw things like BlackRock and [others] adopt climate change and ESG and the Paris Agreement," he said.

Chandra said he watched ESG approach like it was an incoming shelling dropping on an unsuspecting target and that the industry needs to lean into the ESG movement.

What it doesn't need is to engage in long debates on climate change, he noted. It may well be that other factors cause global warming, but the prevailing sentiment is that man-made emissions are responsible. The other factor is that global temperatures are breaking records, glaciers are melting and storm activity in 2020 was at a record levels.

"If weather wasn't so screwy, this would not be a big topic," he said. "My point to the companies was, 'Guys, get out of that echo chamber. It's not going to help you.'"

Dell said there's a misconception that to be a leader or thoughtful on environmental matters requires abandonment of economic rationales. Good environmental performance, like good safety performance, pays off, he said.

"Over a period of time, you benefit from doing it. If you have good locations and you don't have spills, over time, you'll benefit because the cleanup cost is lower. If you don't flare gas wells, you also benefit over time because you can sell that product."

Advantage gas?

EQT's new management team has been in a "fixer-up mode," setting standards and listening to stakeholders.

While the company hasn't felt pressure to adopt any standards yet, EQT CFO David Khani said, "We know from our conversa-

PDC Energy Inc. president and CEO Bart Brookman said publishing the company's sustainability report has helped to clarify that PDC's actions align with what it's saying.

tions with investors, with banks and a whole host of what we'll call 'capital providers' that the goal here is to set very tangible metrics," he said.

"The goal would be to get to net-zero in scope one and probably scope two and think about the right timing and approach for scope three emissions," Khani said. Pressure would come if EQT were to set standards or targets that they fail to achieve.

Companies that don't go down a path of reducing emissions will see their ability to attract capital erode.

"We see lending standards on oil and gas companies ratcheting up, and after the first conversation we had with one bank, more conversations have been occurring recently on this topic with multiple banks," he said.

Insurers are also asking similar questions, he said. "They're very long-term providers of capital. Their renewals might be annual, but they're expecting to be with us for many years," Khani said. "They're asking us about our current ESG focus, so they understand these are rising risk determinants on capital … we're providing transparency into our ESG practices, which goes beyond the standard environmental focus."

These sorts of conversations have picked up in the past two or three years from typical conversations regarding property and surety lines and now translate over to areas such as casualty insurance.

Khani expects the industry to find itself sundered into more distinct camps of oil and natural gas. He expects pure natural gas producers such as EQT to have a sizeable advantage over coal and oil companies.

"I would say there's going to be a major bifurcation between oil-based and natural gas-focused companies for these banks/capital providers, driving their investment standards to the lower emission entities over time. It's not like they're not going to lend or invest in an oil company, but if you don't have a much more rapid reduction in emissions, their ability to lend or invest with them over time will erode.

"I haven't seen that yet, but it's probably coming. So, there will be bifurcation from the investment community on a gas versus oil. It's going to come," he said.

The same is true for "dirty" natural gas providers.

E&Ps will first face a profitability hurdle before banks and institutional investors back and trust them due to the poor investment performance of the group. Then they will choose the companies they want to work alongside.

"If you have two companies with the same economic profile, but one is a better steward of the 'E', lenders will gravitate to that company. In essence, they will use that as a second filter for sure," Khani said. "And in our conversations with different institutional investors, they are ranking companies from an ESG perspective."

"We believe investor interest will follow the demand for barrels as it gravitates toward the most efficient producers—the most efficient from a capital perspective and the most efficient from an emissions perspective."

—Lloyd W. "Billy" Helms Jr., COO, EOG Resources Inc.

Some have simple "one to five" rankings. Others use different ranking mechanisms. But again, a second filter on picking and choosing winners and losers.

"I have not seen that extreme yet, but it's where it's the broader market is heading because you're seeing this occur from the more sophisticated, larger investors now," Khani said.

A complicated picture

Not everyone is convinced that oil and gas companies will need to meet ESG criteria to find investors.

Hamm said the American model of production, which is highly regulated and controlled, has already reduced emissions. The U.S. saw emissions drop by 77% since 1970, including during a recent ramp up period in which production rose by 2.5x.

Continental's Berry said the world needs multiple forms of energy and it has for quite some time. But managing carbon dioxide would be far easier if the world switched from coal to natural gas.

"You'd probably see a 20% reduction from fossil fuels just by switching to natural gas. That's what happened in the United States. That's why we've been able to meet part of the Paris Accord today. We achieved that because of natural gas."

Berry said that ESG has become far more visible of late, though like Hamm he said that ESG has long been one of the fundamentals driving the industry.

"It's a continuous drive for improvement," he said. "We don't see this as a static environment."

Berry also said separating the need to reduce emissions from energy poverty throughout the world is short-sighted, since some nations may rely on coal rather than natural gas for their power generation needs.

"There's 10% of the population that is European and North American that are trying to drive the narrative for 100% of the population of the world," he said.

The company also exceeds flaring requirements in the Bakken and captures 99.5% of its emissions, Berry said. North Dakota's overall gas capture target was 93% in September 2020.

"We've helped the states try to drive their requirements to higher and higher levels to appropriately reflect what needs to be done," Berry said. "For that gas capture, we're 99.5% and we're still looking at opportunities to go even further."

While commodity prices may rise in some unforeseeable way, Kimmeridge tends not to be swept up in the euphoria of the industry's peaks and valleys.

"We are able to sit back a little bit more and look at the overall market and say, 'Listen, if you're competing for capital in this market, you have to be relevant. You have to be investable,'" he said. "And that isn't just about being investable within the energy space; it's about being investable for everyone. It's about competing for capital across the stock market against other companies."

To do that, Dell said a more forward-thinking view of the industry in the next one or two decades is required.

Dell notes that oil and gas companies have lagged behind in diversity—and not just in terms of ethnicity or gender. Industry boards are dominated by other energy company executives. He sees this as a pitfall that leads to group thinking about what a company should do.

"At the end of the day, if you look at where we are today, we've had this herd mentality about 'What is the right business model for the industry?' and 'How should we run our companies?' And as a result, the industry's driven itself into the ground over the last decade."

Next ESG steps, and beyond

EQT itself is starting in a good position on emissions, Khani said, and focusing on becoming cleaner. The company is starting to track emissions on, for instance, water trucks and has implemented measures to electrify parts of its operations and increase its monitoring for leaks in real-time.

EQT, which has published sustainability data since 2012, reported zero flaring of natural gas in the past two years. Last year, the company also reduced fugitive emissions of carbon dioxide equivalents by more than 70%, to 6,816 metric tons compared to 23,200 metric tons in 2018.

"One bank said to us that we're at such a low level of emissions right now that there'll be a whole host of companies that could spend 10 years and never get to the same spot where we're starting at," he said.

The company is also looking at renewable technology, though "It's not a sunny place in Pittsburgh, so we can't always rely on solar," said Charity Fleenor, EQT's environmental affairs director.

In one project, EQT has looked at more closely monitoring methane leaks from pneumatics. The Environmental Protection Agency (EPA) typically identifies gas pneumatics as a primary source of emissions and accounts for about 60% of what is reported to the agency, Fleenor said.

"We've looked at different ways to capture that information and recently presented that to EPA," she said. Moving forward with such practices is a "matter of constantly keeping on top of the technology, understanding how and if the technology works for us. That's really what we're targeting right now," she said.

EQT recently presented an alternative method to calculate emissions from pneumatics to the EPA. Fleenor said EQT looked at emissions actually generated from equipment compared to a blanket emissions calculation that EPA utilizes.

Fleenor said EQT presented all of the data, good and bad, and the EPA was receptive of the thought process and appreciated the transparency. While it is uncertain if the agency will approve the alternate calculation methodology, EQT still considers this a win.

"I've been working in this industry and the environmental space for almost 24 years," she said. "And I've never had an agency give us a thumbs up on something we've done like that."

For E&P companies, beginning to compile a report can be onerous. However, many companies and analysts pointed to the Sustainability Accounting Standards Board (SASB), which provides a template for reporting carbon emissions and other ESG measures. SASB provides standards for 77 industries.

Swapnil Karnik, Columbia Threadneedle Investments' research analyst for oil and gas, said ESG has triggered tangible impacts across several different fronts. More assets under management are starting to incorporate ESG perspectives into their portfolio construction process. That usually has an impact for how much capital it is willing to invest in companies, which don't necessarily score as high on some of the ESG factors.

From a financing perspective, banks are increasingly measuring their impact on climate and climate risks while limiting their exposure to fossil fuel companies. Even Federal Reserve Chairman Jerome Powell has said it will look into how to incorporate climate change and risk into what they do, with the potential to affect monetary policy, bank regulation and financial stability.

"We haven't necessarily seen a big shift yet in my opinion, but you're starting to see more pressure on banks starting to carve from investors in terms of their own company disclosures," Karnik said.

E&Ps may not have seen a "deep impact" yet from a bank-financing standpoint, "but in the changing environment, I think we're probably going to see some impact from available key lender, credit facility issues," Karnik said. Those may apply to certain debt refinancings that might include higher scrutiny on ESG matters.

So far, however, banks with direct exposure to fossil fuel companies haven't made any significant changes from the recent past.

"There has been no meaningful impact in terms of banks limiting their exposure to fossil fuel companies because of ESG matters;

"There's going to be a major bifurcation between oil-based and natural gas-focused companies for these banks/capital providers, driving their investment standards to the lower emission entities over time," said David Khanik, CFO with EQT Corp.

Ben Dell, managing partner at Kimmeridge Energy Management Co., said ultimately E&Ps will have no choice but to conform to ESG requirements, regardless of their perception of the matter. "The cost of capital will in the end force them to change or force them out of business."

A MODEL FOR MITIGATING EMISSIONS

While many institutional investors are running away from oil and gas on the premise of ESG concerns, Kimmeridge Energy Management Co. is running toward them. Kimmeridge, which makes both public and private investments in the oil and gas space and whose principals are rooted in the oil and gas industry, believes it can effect environmental change better from the inside out.

In February last year it published a white paper, titled "Charting A Path To Net Zero Emissions For Oil & Gas Production," on how E&Ps big and small can and should do their parts in mitigating greenhouse gas emissions.

"Kimmeridge intends to advocate for change in the sector through its investments," the report stated. It believes that companies it invests in should adopt the following five key principles:

1) Eliminate routine flaring by 2025
2) Reduce U.S. methane intensity below 0.2% of gas production by 2023
3) Reduce total upstream GHG intensity by 50% by 2030
4) Pursue routine monitoring and independent verification of emission levels
5) Align reporting with SASB standards and adopt all 11 TCFD recommended disclosures by 2022

Specific steps should include:

1) Disclose the specific actions being taken to meet intensity reduction targets (scope and frequency of leak detection and repair (LDAR) program, replacement of pneumatic devices, installation of vapor recovery units (VRUs), use of plunger lift, field electrification, etc.)
2) Outline the steps being taken to monitor the effectiveness of flare units and ensure zero flaring by 2025
3) Increase independent monitoring and verification of atmospheric readings with transparency into how it correlates to internal calculations
4) Provide independent certification of emission intensity (i.e., Intertek's CarbonClear), especially if linked to executive compensation
5) Aspire for continuous on-site emissions monitoring as the technology improves and costs are reduced

Good environmental performance is also good business, the report promotes, and the New York investment house intends to advocate for improvements in environmental performance, disclosure, verification and target setting for the E&P sector that are measurable and impactful via its capital placements.

"As the world transitions to a low carbon future, the upstream oil and gas business must evolve and address its own environmental deficiencies. The leading E&P companies of tomorrow will adopt a business model that is aligned with the energy transition through lower reinvestment rates while charting a path toward net zero emissions in their direct operations. This is critical for attracting investors back to the sector."

though, that might change given the changing environment," he said.

But ESG questions are more likely starting to be asked now.

"If your credit facility is coming up for a refinancing, you're probably going to get more questions on how you think of ESG issues than the last time you refinanced," he said.

"We do encourage our companies to focus on the standards and try to improve their disclosure on those fronts," Karnik said.

While oil and gas companies are regulated by a number of state and federal agencies, some data are self-reported. The initial accuracy of the reports is not necessarily as important as simply making an initial disclosure, he said.

"We are not necessarily making an argument for methodology behind the data that's being captured," he said. "That is an issue that's clearly there within the industry, and I think those discussions are going to evolve.

"What we like about SASB is they have identified the critical ESG issues and, based on those issues, what factors should be disclosed by the company. That's the first step we would like the industry to wholeheartedly adopt."

Beyond an initial report, emphasis shifts from what is initially reported to improvement.

"I think our focus more is more about showing progress, year after year, setting targets and tying those targets to compensation and that's what we focus on in our engagements," he said. "Obviously, then you'd start on a new objective."

"Once you start measuring it and reporting it, people want to get better at it. So maybe the first reduction that happens is all the easy things that you do. But even that is a good thing."

In 2020, there were perhaps dozens of inaugural sustainability reports published. Chandra said he mainly looks at greenhouse gases, total emissions, carbon and methane.

He believes that the corporate sustainability report will ultimately be the most important document a company publishes after the 10-K for investors. The reports also provide a way to begin ranking companies based on their emissions. The question now is whether the rest of the industry will follow suit.

"So, you either are part of the solution, or you're the villain," he said. "Why play up to the role of the villain when they already think you're one?" □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EXTREME EQT MAKEOVER

A year and a half after leading a mutiny of shareholders to take control of the nation's largest natural gas producer, CEO Toby Rice is proud to reveal the completed remodel. And it's even better than promised.

INTERVIEW BY
STEVE TOON

PHOTOS COURTESY
OF EQT CORP.

Toby Rice took the helm of EQT Corp. in July 2019 after leading a band of disgruntled shareholders, including himself, that felt disenfranchised following the Pittsburgh-based company's acquisition of Rice's previous company, Rice Energy, in 2017. EQT shares had fallen precipitously since that merger due to operational inefficiencies and cost overruns, Rice and other shareholders claimed. After an 80% shareholder vote to change management of the nation's largest natural gas producer, the former Rice Energy team became the new EQT team, perhaps the first time in hydrocarbon history the selling company management staged what was essentially a coup to take control of the buying company.

Now, EQT is coming off of third-quarter reporting in which it revealed it has reduced Pennsylvania Marcellus well costs by 22% year-over-year and 47% compared with legacy well costs. Horizontal drilling speeds have almost doubled, increasing by 95%, measured at feet per hour. Horizontal drilling days per 1,000 feet have decreased by 40%. And while equities are down across the oil and gas sector since the takeover, EQT's share price has returned to about par when the Rice team stepped in, a 90% advantage over peers.

EQT is also in the process of closing its first acquisition under Rice's tenure, a $735 million parcel from Chevron Corp. announced in late October. The deal involves 580,000 net Marcellus and Utica acres, 450 MMcf/d production and 100 DUCs in waiting.

At 37, Rice is a self-proclaimed "shalennial" and is perhaps an unlikely candidate to take charge of the century-old EQT. He did not have prior oil and gas experience before launching Rice Energy, which he started on a kitchen table along with his two brothers. But Rice Energy was built on a digital platform, the native language of millennials, and more innovative than fellow Appalachian E&Ps at the time. It eventually sold to EQT for $6.7 billion.

Rice visited with Investor *in mid-November via videoconference.*

"I always said I wanted to be able to run my business from a cell phone," said EQT CEO Toby Rice, who migrated all the company's data and communications onto a digital work platform in his first year as chief executive, and thus unlocking the opportunity to streamline efficiencies.

Investor It's been more than a year since the new board and management were elected. How would you measure EQT's transformation since then?

Rice Our mission was to realize the full potential of our assets and become the operator of choice for stakeholders. Our vision for EQT was to become a modern, digitally enabled operator with vision and purpose. The marker of our success in achieving that mission is defined by our well cost target that we put out at $730 a foot. We hit that in the second quarter, and we're now at $660 a foot. We've radically transformed the organization. We've got some of the best leaders across the country that have joined this organization to lead our departments.

And we've empowered the workforce to deliver these results. The same workforce that is

From EQT's Production Control Center in its Canonsburg, Pa., office, teams monitor producing well pads to help identify issues that may arise and can remotely control those wells, efficiently dispatch operators to reduce the down time of wells and manage water logistics as well.

delivering these results is the same workforce that was with the organization when they blew budget by $300 million. So we've added great leadership, but we've unlocked the potential of these employees.

Investor When you took control, what were the first changes you implemented and why?

Rice We spent months beforehand diagnosing the issues and then coming up with a plan that was going to address them, and that was outlined in our 100-Day plan. The goal was to transform from standalone one- or two-well pad development to large scale, combo development. To make that happen we needed to focus on planning and being great at project management. We brought in evolution leaders, proven leadership, to sit on top of it. Then we did a restructuring and streamlined from 48 departments down to 15.

The technology side was another part. It started with implementing the digital work environment, having people understand that we were going to migrate from siloed forms of communication, like email, to transparent forms of communication in our digital work environment.

Then we brought in the core critical processes needed to illuminate an operations schedule. That is the backbone. That's what we call critical utilities. These are just the business processes that we've electrified that allow us to execute in a digital work environment.

After that, we worked on culture, which is really just preaching what we focus on. That was to get alignment throughout the organization and making sure people understand their pieces of it.

Investor What, specifically, is a digital work environment?

Rice The technology side has been the biggest push for us. At the end of the day technology is just a way for us to communicate better, and we've radically changed the way we communicate. We've completely changed the way this company works.

You can think about it like a Facebook for work. This allows us to bring radical transparency to the organization. Why? So that we can plan better. As CEO of EQT I get less than a dozen emails a day from EQT employees. Now all those conversations are focused in our digital work environment, categorized in the right areas of our business processes or on dashboards. It's focused the organization to execute on those things that matter.

At the core of our digital work environment is an environment where we can all plan. Our operating schedule is the backbone of our organization, and then land, permitting, drilling, completions, production, midstream, commercial—they all have their deadlines from that backbone. Everybody works toward meeting their timelines. That's all got to be coordinated from a timing perspective. You need about 450 different operations, services and service providers to go from building a site to having gas producing into a pipeline. And as we get hit with roadblocks, we can swarm and huddle and change the plans and everybody stays in sync. It's an incredible exercise, and our digital work environment streamlines all of that. It's really just a big planning tool that we leverage for communications.

This allows us to transform our operations. The biggest thing we wanted was to get to combo development. So we're moving from setting the table for one pad to drill two or three wells to setting the table for four to five pads where we're drilling four to six wells off each pad. So you go from planning for four wells to planning for 25 wells. You have to be really great at planning.

Investor How did EQT respond to market circumstances caused by the pandemic?

Rice One of the most surprising things has been this work from home experience. It has been absolutely transformative to our organization. Had this happened when we just got in and everything was manual and there wasn't a lot of connectivity, this would have crippled EQT. But because we had nine months to build our digital work environment; working remotely was a seamless experience.

And, actually, our productivity per employee has skyrocketed. With these tools, we can see how many pieces of title the title team can produce every day, or how many cases one of our landowner relations people can close every day. It's really cool to be able to see every pocket of the organization.

And their productivity goes up. Ninety percent of individuals say they're more engaged now in a work from home experience. I think this is going to be something that makes us question the way we work in the future. Like I said, we're a digital company, and this company has proven that we have the ability to do that, which demonstrates the scaling potential this business now has.

Investor What about from an operations perspective? Did you drop rigs or curtail production?

Rice We've always said that the driver of our activity levels is the resources we need to achieve maintenance production. So we've cut rigs from six down to three, but that decrease in rig count is not because we're changing activity. We're not changing our production levels. It's because we've doubled the efficiency of our drilling performance, so we need half the rigs that we normally needed when we stepped in here. Same thing on the completions side.

With our production, we shut in over 65 Bcf of gas [in 2020]—and we're still meeting our production guidance. That's because we're operating more efficiently on the production side. We've gone from 85% uptime to now we've jacked that to 98% production uptime. So by operating more efficiently, the production and operating teams were giving us this excess production. We had a decision to make: Do we take this extra production and put it into the market, or do we save this and put it into a market that is going to be at higher pricing? So we've made the decision to shut in one and a half Bcf a day gross of gas, about a Bcf a day net.

Going forward, we will continue to use curtailment strategically to capture incremental value when the opportunity presents itself. It's a tool that we'll use because we do believe that prices will be higher in the future, which is one of the higher rate of return things we can do.

It's another example of how an organization can leverage its scale if you're connected. We're pushing buttons in the office and shutting in all of that production in less than an hour and turning it all back online in an equal amount of time, because we've got the digital oil field complementing our digital work environment.

Investor What was your motivation to take on the Chevron deal at this time?

Rice The Chevron deal marks the transformation of EQT. The company has captured a lot of efficiencies, and we've transformed EQT into a modern digitally enabled operator. We're big believers that opportunities will present themselves to continue to do what we've already been doing.

Chevron was an opportunity that was quite simply the right fit at the right price. It was accretive on a free cash flow per share and NAV per share basis. It was also deleveraging to our business, so it was a very easy deal. For those reasons it was well received by our sharehold-

EQT contractors on well sites use iPads while on the premises to access its cloud-based EHS site, part of the company's centralized digital platform, to access training info and other resources.

ers. And we're happy to start leveraging the team and the technology in our digital work environment to integrate these assets and realize the value of this transaction.

Investor A large portion of Chevron's holdings are east of your core acreage. Do you feel like the Marcellus core is moving eastward?

Rice Nothing competes with our core combo in central Washington and Greene counties and in northern West Virginia. There is a chunk in West Virginia, in Marshall County, which is an area that we think is pretty exciting. But if gas prices rise to north of $2.50 long term, we think that these undeveloped locations could be worth some money. That's when this inventory will start to have some value.

Investor Are you planning to move any rigs onto this new acreage?

Rice Our approach to these assets is to continue to maintain production, which is about 450 million [barrels] a day. One thing that came along with the deal was about a hundred work-in-progress wells where there's been about $270 million invested. So our plan over the next four or five years is to turn online and finish completing those wells in progress. Just by doing that we'll keep production flat.

We're not going to have to add rigs or frac crews. The drilling and completion teams have increased their efficiencies in drilling wells so much faster, drilling more wells per rig, and fracking more stages per crew. We expect that efficiency to continue, and those efficiency gains will leave room for us to complete the 20 to 25 wells [per year] in progress from the Chevron assets without having to add any new equipment, which means we can leverage the same teams, the same head count and capture synergies on the G&A side as well.

Investor How many rigs are you running currently overall, and what are they targeting?

Rice We're running three to four rigs right now and two frac crews. That's an activity level that we'll continue to maintain through our maintenance program. We're focusing the majority of our development in our Pennsylvania Marcellus in '21, and about 20% of our activity in northern West Virginia.

Investor Does the Ohio Utica compete for capital?

Rice To be honest, the advancements that we've made on our Marcellus program have been so compelling that it's tough for us to see the Utica competing at this time.

Investor How do you view this broad push by the investment community for consolidation?

Rice There's a tremendous amount of value to be had from consolidation, but I think you have to take a step back and look at the industry to really understand the prize there. EQT is not unique in our ability over the last year to pull a tremendous amount of costs out of our business. A lot of other operators have reduced G&A and increased their operational efficiencies as well. And that's great.

But when you step back and you look at Appalachia as an example, you've got a lot of efficient organizations, but we have 50 opera-

tors running 30 rigs. And when you look at the basin as a whole, you can see very clearly that a lot of efficient companies together operating at these levels of activity is not efficient. So there's value to be gained from having a larger presence from one operator.

The other part is I think this industry is going to struggle a bit with innovation. Everybody has pulled back from an activity level standpoint. If you're only doing 10 wells a year, how much science can you actually do? How much new technology can you bring to the program?

At EQT we're running over a million horizontal feet through our system every year. We still have a very robust science program we're delivering; we're able to put in play a lot of amazing technology. It's going to be this innovation, this technology, that is going to allow us to continue to separate on actual well performance, both on the increasing productivity and also reducing costs. So we feel like bigger organizations, if they do it the right way with a digitally connected organization like EQT has, actually get better as they get bigger. So we think that innovation will be another way that we can leverage from scale.

I think investors certainly have an appetite for companies that can operate at a larger scale, not just simply for the sake of scale, but because there is real value to be created. When you look at what we've done at EQT, taking advantage of our scale, there is real value that we're creating. We get more reps on the wells that we execute, which gives us more opportunities to improve operational performance and to have access to cutting-edge technology like our electric frac fleets that you can only put in if you have a stable operations schedule. Having a large operating footprint and a large gathering system gives us access to a lot more markets. On the balance sheet side, having an investment grade credit rating is something that's going to be a differentiator as well.

So I think investors are right in having the desire for larger scale companies that can take advantage of that scale and create value for shareholders. It's a theme that we should look forward to.

Investor What do you see as EQT's role in the ongoing wave of consolidation?

Rice We think that the companies that should be developing these wells are those that have the lowest well costs, lowest G&A and the best marketing capabilities—those that have a track record of proving they can operate efficiently at scale. Those are the natural owners of these assets. Everything we do every day is aligned to making us the natural choice. So we want to position ourselves to be the best option for that.

I think people recognize that operating at scale is not as easy as some people think. It's the whole reason why we're here. Companies typically get worse as they get bigger; they get less efficient. But for us at EQT, we're actually getting better as we get bigger.

We think there are a lot of opportunities given our existing scale. Chevron is a perfect example of that. We're going to integrate this asset in less than two weeks. We can do that because we've got all the work that we've done over the past year—building the digital work environment, getting the right leaders in place, building the operating model—that can efficiently translate strategy into results. The Chevron deal is going to be a good example of us flexing that operational muscle and showing people that we can actually deliver the results that we say we're going to deliver.

> "The technology side has been the biggest push for us. At the end of the day technology is just a way for us to communicate better, and we've radically changed the way we communicate. We've completely changed the way this company works."

Investor Is EQT looking to add scale through a merger?

Rice While we believe there's a ton of value to be created, one of the core tenants that we will stay disciplined to is it's got to be a deal that is accretive on free cash flow per share, NAV per share and continue to deleverage our business.

But the industry is in maintenance mode and not a lot of people are thinking about production growth. That's certainly true for EQT, but we remind our employees every day that just because we're not growing production doesn't mean that we're not a high growth business. We are a high growth business, but what we're growing now is free cash flow per share for our shareholders. So we think that consolidation will be one of the ways that we can increase our growth of free cash flow per share. We've done that with Chevron, and we'll continue to stay disciplined looking in the future as well.

Investor Has EQT had discussions with other operators, including CNX Resources, regarding merging, as media rumors have suggested?

Rice We don't really comment specifically on deals, but Appalachia is a small place. We all know each other; we all have conversations. So I think people recognize that scale is going to be the next viable opportunity for us to create value for shareholders.

Investor How does the E&P business win investors and capital back into the space?

Rice It starts with trust, doing what you say you're going to do. Specifically, that means delivering the returns that you say you're going to deliver. We've got to prove that shale works. The biggest challenge that we've had is operators for years saying that they're delivering 50% to 80% rate of returns on their wells, but their balance sheets don't reflect that.

Doing what we say we can do is one of the reasons why we've outperformed our peers by 90% as a public company. In the last year and a half, you've seen us continually meet and exceed the guidance that we put out. So, number one is maximize the returns you can deliver.

The second thing is ESG. Delivering results is not good enough anymore; it's about how you deliver those results. ESG performance we think is going to be a differentiator that investors care about. And we certainly believe the benefits of a strong ESG performance is going to be a key to long-term value creation for shareholders. It's just another thing that you need to bolt on to your business.

For us, how we operate is defined by our ESG principles. And this is something that we're really excited about promoting because we feel like it's another way for us to differentiate ourselves from peers.

We have one of the lowest methane emissions intensity levels across the entire country. Give plugs to our peers, Appalachia is one of the best places environmentally to produce natural gas. It lets people understand that we are the hydrocarbon of the future. This is the key to achieving a lot of the climate goals, so I think that positioning ourselves on an ESG front is going to be equally as important.

Investor What are you doing to lower emissions?

Rice We're at a great starting point. In our ESG report, we've outlined about 660,000 tons of CO_2 equivalent emissions per year. Sixty-five percent of our emissions are coming from a piece of production equipment, a pneumatic valve. We're going to replace those valves on any new wells going forward with electric valves that don't emit any methane. The cost of that technology is going to be a pretty decent dollar, but it's a little bit over a dollar a foot, and we'll do that all day long.

The remainder of our emissions are coming from our combustion equipment. We have a company initiative that we're running called "electrify the oilfield." There are two aspects of this. One is to stop burning diesel in the field. Now we're running electric frac fleets, hybrid drilling rigs and electric wire lines. With our electric frac fleets, we've eliminated the consumption of over 15 million gallons of diesel burn just [in 2020] alone. There are a lot of things that we're using now that we're converting to electric.

The second part of electrifying the oilfield is bringing out the sensors and digitizing the oil-

HOW EQT CUT COSTS BY 47%

The day after he was installed as CEO of EQT Corp., late in the evening, Toby Rice visited the company's remote drilling operating center in Canonsburg, Pa., south of its corporate headquarters in downtown Pittsburgh. He studied the screens of the geosteering team as the data from the wells in progress played across them. "I think you guys need to drill faster," he said matter-of-factly.

"What are you talking about?" the engineers asked.

"Be safe, but you can drill a lot faster." And he walked out.

Two days later one of the geosteerers excitedly called Derek Rice, Toby's brother and a member of the Rice Team, and said, "We're on pace to drill 6,000 feet today. A good day for us has been 2,000 feet."

"What happened?" Derek asked.

"Toby came in and said, 'Drill faster,' so we removed a weight-on-bit restriction and put more weight on bit."

Several years previous, EQT had experienced a stuck bit in a wellbore that was determined to be caused by too much weight on the drill bit. Since then, the company had been drilling with a limitation on weight on bit, and the rule was never challenged.

"All of a sudden our drilling performance has been unleashed," said Rice, recalling the transition his team took during first days in control of EQT. "In the beginning it was just about lifting those types of handcuffs."

In June, EQT set an industry-first drilling record of 10,566 lateral feet—over 2 miles—in a 24-hour period.

Digital makeover

The Rice Team won the shareholder vote over the incumbent management and board on the promise that it could increase efficiencies and reduce costs, all of which would translate to bottom-line shareholder returns. So far the new management team is delivering those results.

Rewiring the company to be a "digitally enabled operator" was top priority for Rice when he took over as CEO in July 2019. In fact, connecting all data and employees via a digital work environment was his secret weapon for streamlining operations. It was the first thing he did, calling it the backbone for everything else to come.

"I always said I wanted to be able to run my business from a cell phone," said Rice. "We want everything to be very mobile." Fortunately, Rice was able to build off of the digital platform he already designed for his former company, Rice Energy, now a part of EQT. "The secret to our rapid transformation since we've been here is because we were able to pick up on all the utilities and technologies that we built at Rice. We just turned it back online, wired a couple of different systems and very rapidly we were sprinting with this technology. And now the EQT workforce has taken that to another level."

One example: When national lockdowns began due to the COVID-19 pandemic last March, EQT operations did not miss a beat. In less than a day, the company developed an app that enabled the guard shacks at all of its well locations to perform contact tracing on all employees and some 1,200 service providers entering the sites daily as part of its check-in program, keeping the drill sites protected from the virus. That app is one of more than 500 digital "utilities" the company has devised to connect all communications and data via a centralized, cloud-based dashboard.

The dashboard—accessible by computer or mobile phone—is based on a Salesforce platform, but all of the different utilities are custom made. Every department and process has its own application. Decision-making analytics are executed within the dashboard.

"Our goal is to have everything in one place. That's our Nirvana," he said.

The centralized digital platform translates to operational efficiencies in the field. With the platform in place, now the company can execute what it dubs combo development, in which multiple, contiguous multi-well pad sites are drilled sequentially. Where before drilling four to six wells was the norm, now it drills 20 to 25.

"The problem has been planning," said Rice. One of the biggest challenges of shale is the logistics, and combo development multiplies logistical challenges. Rather than planning development on 400 acres, now it's on 4,000. Rather than needing to clear 100 pieces of title, the effort may jump to 1,000. Millions of gallons of water, millions of pounds of sand and hundreds of pieces of equipment must be coordinated to be available and on time.

field to complement our digital work environment. Those digital sensors allow us to jack our operating efficiency. We can drill wells in half the time and that means that's half the diesel we use. So we're pretty excited about making significant progress on the environmental side, both on the methane emissions and on the combustion side.

Investor Is the investment justified while trying to lower costs?

Rice For us to be able to say we're going to eliminate the major source of our methane emissions, even though these methane emissions are very small to begin with, by adding a dollar a foot to our well costs, that's a tremendous improvement in our environmental performance and that price makes a ton of sense for us to do. Keep in mind that our well costs are $660 a foot.

There are going to be decisions where we're going to have some higher dollars that may be a little bit tougher to justify. In those situations we're going to come back to our values and our values being trust. We want people to know that we're doing things as green as possible while being good stewards of capital.

We don't think those things are mutually exclusive, and we've shown that we can do both. It just takes a little bit more effort. We've got a very large dedicated environmental team at EQT that spearheads our initiatives, but with the digital work environment we've completely integrated ESG into everybody's workflows. So, it's not just five executives and 30 environmental people, it's 600 employees thinking about ESG.

Investor What balance are you trying to achieve between production growth and returning cash flow to investors?

Rice Our focus on capital allocation is really centered on hitting our leverage targets, being below 2x [debt to EBITDA] and getting to investment grade metrics. So all of our discretionary cash flow is going toward achieving the balance sheet that we want to produce.

But once we get there, which will be in a very short period of time, we will have a decision to make: Do we continue to delever the balance sheet, which we may consider, start thinking about shareholder friendly opportunities or think about production growth?

I don't think that production growth is going to be high up on the list. But if we did see a very compelling strip that has some depth to it that we could hedge at attractive prices and

"You can imagine the incredible effort it takes to execute that. It's a really aggressive scheduling coordination exercise that can only be accomplished with our digital work environment."

The prize is economies of scale. Bulk pricing for services and supplies reduces costs. Water can be piped rather than trucked. Rigs move 2,000 feet versus 20 miles.

"It greatly streamlines operations."

Field tested

Not all improvements in efficiency have derived from digital technology; some are simply simplifying old methods. The company quickly downshifted from planning logistics for 30 different well designs to one standard design. It upspaced to a uniform 1,000 feet between wellbores.

"Coming in, a big focus was just standardizing the well design and deploying the best design standards to deliver the best economics in the current price environment. We look at 45 different things that need to be optimized, from where to land the laterals, what our spacing is going to be and what the frac size looks like. We streamlined it to produce the best economics."

The company has achieved a 60% improvement in horizontal drilling speeds year-over-year, "which was accomplished through the continued application of best practices executed by the same crews guided by a stable operation schedule," Rice said.

With completions, the new team now deploys electric hydraulic fracturing fleets for all operations. In addition to the reduced environmental impact, e-fracs also reduce costs—seemingly counterintuitively. Conventional frac fleets cost less on the front end but require more maintenance than the electric fleets. Like an electric car, e-fracs require reduced maintenance and can thus pump for longer periods, increasing overall efficiency.

"The biggest driver on increasing stages per day is driven by pump time. If you can get 16 to 18 hours (pumping time per day) with a conventional fleet, that's pretty good. With the electric frac crews, when you eliminate maintenance, it gives us the opportunity to pump 18 to 22 hours per day. Our electric frac fleets are really hitting their stride."

EQT has some 140,000 SCADA points comprising its digital oilfield. Sensors monitor pressure, temperature and vibrations while drilling, to list a few, with all data feeding back into the central database. Sensors likewise monitor every piece of the completions operations.

"We can monitor assets and be proactive in addressing any issues before they pop up. We can stack those technologies and start doing neat things like continuously pumping two wells at once. Leveraging that digital oilfield was one of the things we really leaned in on."

These field sensors are one of the reasons the company was able to boost production uptime from 85% to 98%.

"Leveraging sensors with good engineers focused on things that matter is what allowed us to get this incremental production, and that's significant at our scale. A 1% or 2% efficiency gain is $10- or $20 million worth of value. That's exciting for our engineers."

The centralized data platform has also transformed how the company bids for services. Rather than looking for the lowest price, now with analytics it seeks highest value.

"We're putting the best technology out there," said Rice. "It's going to be more expensive, but we're going to drill wells in half the time. And when you have a holistic understanding of your business, which the digital work environment gives you, you can make that trade."

Performance driven

Since the Rice team took over EQT leadership, well costs have declined 47%, from $970 per lateral foot to $660, surpassing the company's goal of $730. Capex is reduced by 20% year-over-year—while maintaining production guidance. Those results reflect the innovation deployed in the past year and a half, Rice touts.

"That's what's driving the operational efficiencies. We've made some pretty big strides on the drilling side and on the completion side. The driving force is the continued application of new technology and leveraging our technology to drive operational efficiencies, which drive well costs. We have a good idea of what it takes to execute these wells. We'll see how much more we can innovate and continue to drive the performance.

"I'm encouraged to have an organization that has the ability to evolve and innovate."

lock in the returns for the extra growth, then we will consider growth. Growth for us, however, would be moderate, probably zero to 5%. It's not going to be like the old days of 20% or 30%, so it will be very modest growth if we do grow.

So hitting our leverage targets in '21 is going to give us the ability to make that decision. We could be returning capital to shareholders as early as 2021.

Investor Do you have an absolute debt target?

Rice To be at investment grade metrics we need to get to around $3.6 billion absolute debt. We're at $4.6 billion now. We're going to be able to get there through free-cash-flow generation this year. We've also got the E-tran [Equitran] midstream assets, and some other noncore asset sales potentially to do. But for the most part we can get there just by executing our business plan and generating free cash flow.

We've refinanced a significant amount of our debt—$1.7 billion—starting in January [last year]. We had a $3.3 billion maturity wall that we were facing in 2021 and '22. We've gotten past that, so we've got what we need. It's really just coming down for us to execute.

We were able to access the markets for the Chevron deal. Our equity was priced at a 4% discount where we've seen some peers price equity recently at a 20% discount. We were able to raise $350 million with a 5% coupon. So the markets have been there, though I do think that's a little special with EQT. I think people get the story that we're building a future-driven company and are excited about it.

Investor Are you aiming for a percentage target of free cash flow?

Rice Someday I want to be able to tell our investors that these assets are generating a billion dollars a year of free cash flow, although we're not prepared to go out there and make those statements today. We are still a rate of change story. We're still finding ways to boost our capital efficiency. We are working aggressively every day to hit that target.

Higher gas prices will certainly help that. Every penny that the gas price goes up, that increases our free cash flow by $16.5 million dollars. It's pretty amazing to think of the scale. EQT offers unparalleled exposure to natural gas, and we think that provides an exciting opportunity for investors.

Investor What's your outlook for natural gas?

Rice We're pretty constructive on gas prices. The key is to recognize the mistakes that this industry has made in the past. I don't think people will be chasing short-term pricing for natural gas. People will take a little bit more of a disciplined approach with the fear of the unlimited wave of associated gas off the table as long as oil is sub $50. That gives more control back to and reliance on the Marcellus and in Appalachia to be the lowest cost producer.

What will create the most value for our shareholders is getting our assets valued at a gas price closer to $3 than $2.50. The key to that is just being disciplined and focusing our efforts on running an efficient business—cutting as many costs out as possible and driving free cash flow through efficiency gains, not through production growth.

That type of environment would lead us to see long-term gas prices north of $3. For consumers, there's really not much difference between $2.50 and $3, but for this industry it is a world of difference. You can generate so many more returns. And, quite frankly, I think it's going to be something that is going to strengthen our industry and allow us to achieve some pretty ambitious plans when we start talking about helping solve global climate change goals.

Investor Do you think the call for an energy transition will push out all hydrocarbons, including natural gas?

Rice I think natural gas will continue to play the leading role in our energy future if we take a commonsense approach to the value that natural gas brings. Natural gas has a proven track record of providing reliable, affordable electricity. We have an abundant resource base to give confidence that we'll be able to continue doing this for decades—maybe centuries—to come. It's a proven solution.

Also, under a Biden administration, there's probably going to be a lot more retirement of coal plants. Twenty percent of our electricity still comes from burning coal, so there's a tremendous market opportunity for natural gas and renewables to take on that market share. We're certainly ready and able to pick up any slack that would come with coal retirements. Natural gas is the reason why air emissions in the United States have dropped to the lowest level since the 1990s.

This [presidential] campaign has shown us that energy is important. It got a lot of airtime, and that's great because people take for granted the work that we do as energy providers. You don't see us; you just flip the light switch, and it's there. Now people are talking about it, and we have our eyes set on expanding the market for natural gas.

Air emissions are a global issue. On a world basis, around 38% of electricity comes from burning coal. That's a massive market for us to be able to replicate exactly what we did here in the United States but do it on a global scale. And we've got the tools now, finally, with a robust LNG economy. We're delivering over 11 Bcf a day internationally [of domestic exports] and meeting the climate goals of not just the United States, but of the world. And we think that's a tremendous opportunity. It's one of the reasons why we're excited to be the nation's largest natural gas producer, because we think we can really help the world.

Investor The Obama administration called natural gas a bridge fuel, suggesting it was a temporary solution, and now the incoming Biden administration has promised to work toward phasing out all hydrocarbons. Are you concerned?

Rice People call natural gas a bridge fuel, but call it a long bridge because we definitely see a long future with natural gas. As long as we're burning coal to create electricity, there's a need for gas. As long as there's a deadline to meet air quality standards, there's a need for natural gas. There's just no other resource that can meet the demand of decarbonizing our energy economy faster and more efficiently than natural gas. Everybody's starting to talk about energy. This is our opportunity to shine and talk about all the great things that we do.

The need for natural gas is going to be there. With the push to cleaner energy options, there needs to be something that provides a reliable energy option. Until battery storage or hydrogen [become viable], which is a ways off, natural gas is the only proven solution and the only solution that can be deployed at scale to meet the growing energy needs of this world. The reliability, availability and cost benefits of natural gas are unquestionable, and we think as people start to look at the data, there will be a decoupling of natural gas from other fossil fuels as it pertains to environmental and socioeconomic benefits.

The other thing that we need to be thinking about is the fact that there's over a billion people in this world that don't have access to electricity, and that should get us as motivated to solve that issue as it does to solve our climate issues. That's the social aspect of what we do, and one of the reasons why we got back into this.

It's one of the things that drives me, the higher purpose that we're bringing to this organization, a deep understanding that energy consumption is the driving factor behind human progress. The more energy people use, the longer people live. What we do is such a good thing for the world, and we're passionate about what we're doing, this path of delivering these benefits to people around the world.

Investor With all of the challenges facing the industry today, and considering your success is rooted in a start-up, what advice would you give to someone looking to start their own E&P company for the first time?

Rice When you're thinking about starting your own business, you need two things. You need to have an edge, and you need to have an opportunity to play that edge. A lot of times I hear entrepreneurs say their edge is their grit, their drive and their commitment to work a hundred hours a week. Guess what? That's not an edge. There's a lot of guys like us that have that.

"The Chevron deal marks the transformation of EQT. The company has captured a lot of efficiencies and we've transformed EQT into a modern digitally enabled operator. We're big believers that opportunities will present themselves to continue to do what we've already been doing."

You need to be doing something differently. That could mean looking at a different place that other people aren't focusing on. It could be a different technology. That's how Rice got started. Our edge was the ability to unlock reservoirs with better hydraulic fracturing technology. So you need to have an edge.

One of the things that's happening in the industry today is companies are getting bigger. As private guys, there were always opportunities because larger companies would leave crumbs behind, but companies are starting to learn how to leverage technology, and it's going to make those types of opportunities tougher to find.

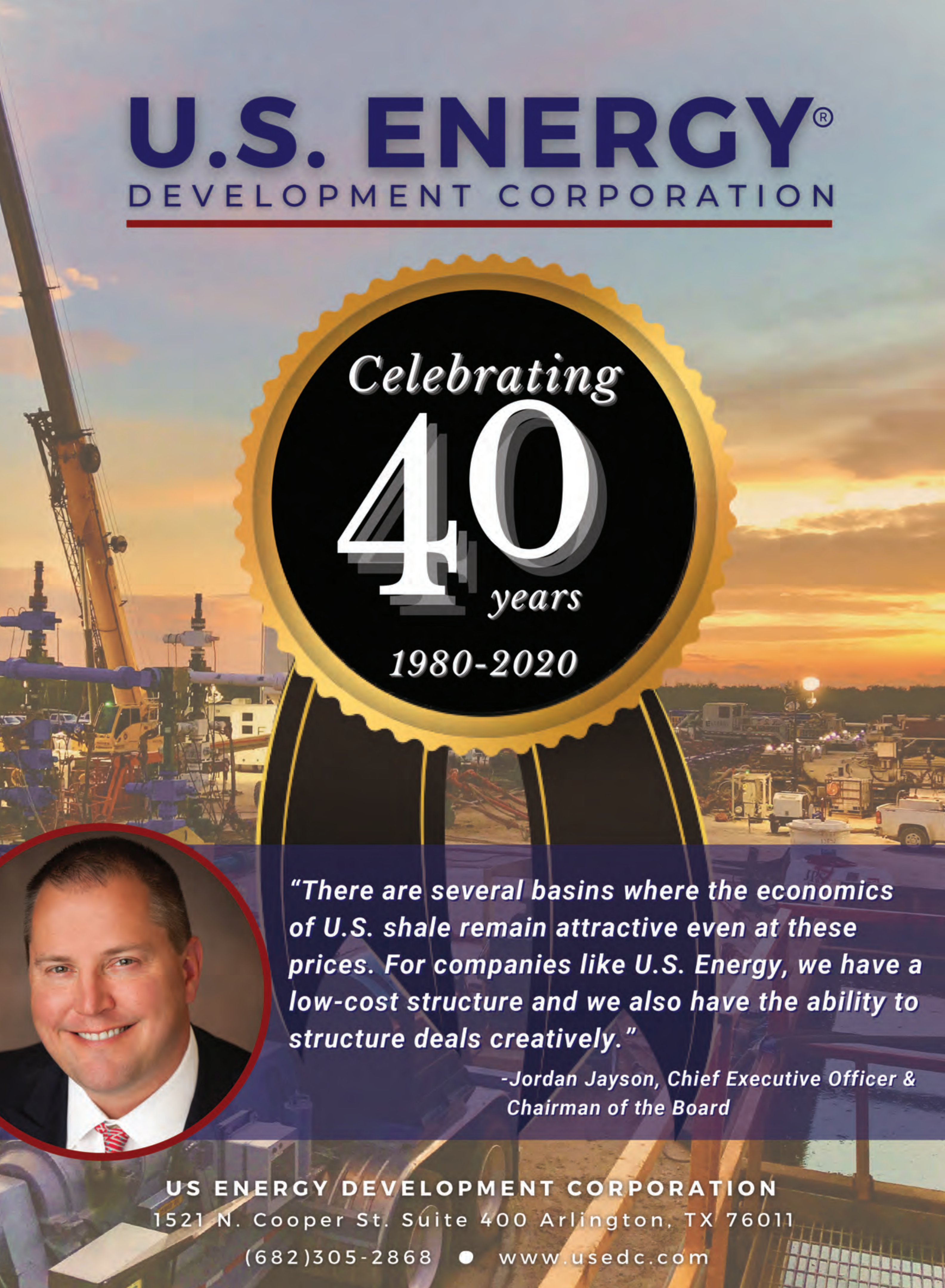
But we certainly need to continue to have people that think outside the box. Think about the world differently. That certainly was a strength of ours, coming in as an outsider, questioning the way that people ran the business. We turned that into a strength, so don't be discouraged.

Investor What do you expect EQT to look like five years from now?

Rice Looking five years out, I want to be able to get up on stage and tell our shareholders that we're generating a significant amount of free cash flow. I want to be able to show that we've consistently grown free cash flow per share year over year. I want to say that we brought stability, that we've been able to capture value from opportunities that are inherent within our core operating footprint. And to show them that we're picking up every penny, nickel and dime that comes in our way.

And then we want to be able to show that we've got a strong future as it relates to natural gas, and showcase why natural gas should play a leading role in our energy future.

This organization is positioned to do what we've done in the past, and that is outperform. We're proud of our track record of outperforming peers by 95% in our time as a public company. And I feel like with this platform, this team and this base of assets, the table is set for us to continue that track record. □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THE NEW DEBT DEAL

Secured-debt lenders have new terms. Some were underway before 2020.

ARTICLE BY
NISSA DARBONNE

A pre-Cyber Monday email arrived from Blank Bank, announcing a 20% sale on Blank gift cards. First thought: Money's on sale? Nah, no way.

Second thought: The sky is falling.

Third thought: This would certainly solve a lot of E&P companies' debt problems, trading $80 for $100.

Fourth thought: The sky is falling.

Of course, yes, the Subject line had been misread, likely due to the "Because 2020" Syndrome: Anything had become plausible by Nov. 29.

Money was not on sale for 20% off. This was comforting; the sky was not falling.

A pre-existing condition

Still, how to solve the E&P debt problem? One producer approached CSG Investments Inc., an affiliate of Beal Bank. Would it refinance its existing bank debt?

Hans Hubbard and other CSG managing directors took a look. What CSG could offer was essentially the same debt amount—with more lender-favorable terms. The producer elected to keep its existing lending relationships.

"We've seen some situations where maybe they don't have to refi," Hubbard told *Investor*. "They're just seeing if they can."

Compared with prior years, the state of E&P borrowing and bank lending is at a standstill, according to lenders. There are few prospective new clients. And asks for cash to pay for asset acquisitions are nonexistent. Many existing reserve-based loans (RBLs) are being guided lower.

CSG Investments managing director Hans Hubbard said his bank has remained "focused on what we consider our key lending principles, which is a loan to value in the 50% to 65% range" and controls on G&A and capex to "ensure truly economic wells are being drilled."

But the new approach to RBL covenants "was going on before the drop in the oil price," said Steve Kennedy, Amegy Bank head of energy banking.

Producers' net well results "were not as advertised," bankers were finding, Kennedy said. "We were headed in this direction already, even if the price of oil had stayed at $60. All this did was just exacerbate that problem, which already existed."

Lenders had been increasingly resisting E&P borrowers' estimates of new-well results, Kennedy said. The merit of banks' independent engineers' position began to manifest.

Shale is far from just a manufacturing process, despite claims just a year ago, he said. "It couldn't be further from the truth." The rock really makes a difference.

"Operators that are next door to each other can and have had very different results."

The borrowers' argument had been "their completion techniques had improved so, therefore, the reserves they were finding were greater." Instead, in "nearly all the cases, they aren't getting near the results that they thought they would," Kennedy said.

Basins are "very heterogeneous. There are streaks in the shale. It's not a homogeneous mass of shale."

Also, completion techniques vary, he noted. "The EUR is substantially less in some cases than what was expected. And that's why investors have lost confidence in the energy sector—because it has not delivered the kind of results that were projected."

Year One

Kennedy was among speakers at Hart Energy's annual Energy Capital Conference in March, held face-to-face before F2F events ended until further notice. It was March 2—four days before spring break in Houston that didn't end until September, the 2.5-mil-

Lenders had already begun pushing back on E&Ps' EUR estimates in 2019. "The EUR is substantially less in some cases than what was expected," said Steve Kennedy, head of energy banking for Amegy Bank.

At present, demand for RBLs is down, said Bryan Chapman, market president, energy lending, with First Horizon. "You're not seeing the historic level of oil and gas property A&D activity with big equity sponsors, writing big checks and adding a new, big bank group for a new, big deal."

lion-attendee RodeoHouston was shut down and WTI began a fastidious freefall from $45 to negative $37.63 in seven weeks.

At the conference, Mike Lister shared a panel with Kennedy. Lister, who is JPMorgan Chase & Co.'s group head, energy and power corporate-client banking, pointed out that "RBL banks lost more money in 2019 than any other year in the history of RBL lending."

"We've talked several times since then," Kennedy said. He and other bankers "agree that these deals are going to have to amortize more from the beginning and not simply be put on a revolver structure that has no principal amortization.

"If we fail to get amortization in Year One, when the cashflow is the strongest," he told *Investor*, "then we may never be able to catch up."

Debt levels "need to come down into that 2.0 times [EBITDA] range before the amortization would stop and before we start allowing investors to take their money out."

Lister said in the conference that RBL charge-offs were between $750 million and $1 billion in 2019, *Investor* reported. "Let that wash over you for a minute," Lister said. "Not 2016, not 2015—that was a relative movement."

Although the price of WTI improved beginning in 2016 and into early 2020, E&P Chapter 11 bankruptcy filings didn't stop, according to Haynes and Boone LLP's "Oil Patch Bankruptcy Monitor" it launched in 2015.

There had been about 50 by the first quarter of 2016; by year-end 2019, there had been roughly 150 more. 2020 filings through Oct. 31 totaled 43, according to the Haynes and Boone count.

E&P secured debt entering Chapter 11 in 2020 through Oct. 31 was about $30 billion; cumulative E&P secured debt in court since 2014 totaled about $80 billion. Secured and unsecured totaled about $180 billion by Oct. 31.

'Holding the bag'

Keith Buchanan concurs with Kennedy: It was already underway.

"It was probably about this time [in late 2019] that we started to see some tightening to the financial covenants," said Buchanan, managing director and head of oil and gas investment banking, KeyBanc Capital Markets. "Primarily the leverage ratio."

The standard had been 4.0 times debt to EBITDA. "Even in late [2019], that started to tighten to 3.5 or less."

Also, the restricted-payment covenant—borrowers' "ability to make any distributions or really have money go out of the system"—has tightened, Buchanan said.

"Typically, that was set at 1.0 turn less than the leverage covenant." If the covenant was 4.0, the restricted payment trigger was 3.0. "Now, it's 2.0 or 2.5 and you have to have a certain amount of availability to make a restricted payment," Buchanan said.

"And that availability used to be 10% to 15%. It's now more like 20% to 30%."

At Amegy, Kennedy is seeing "absolutely a covenant of no more than 3.5 debt to EBITDA. And we're seeing a lower covenant in some new loans." Some are 3.0.

And for new deals, Kennedy said, "Out of the box, the actual debt levels on Day One are generally below 2.5 times EBITDA."

It's largely a reflection of property value. If market value is 4.0 times EBITDA, "and we're at 2.0 times EBITDA, then we have 50% equity, 50% debt. Back when properties sold for 8.0 times EBITDA, we could have a covenant at 4.0 times and still have a property equity cushion.

"It's the same 2-to-1 relationship."

Tough love? It's nothing personal, Kennedy said. "We lost a decent amount of money with the higher parameters.

"We can't let people leverage companies up by taking cash out and then leave us holding the bag as market prices/values drop. So once again, everything's getting adjusted down."

'New owners'

At First Horizon Bank, Bryan Chapman, market president, energy lending, is thinking that, in current market conditions with so much excess capacity, "The industry does not need to grow.

"A company that uses all of their internally generated cashflow to plow back into the drill bit is a scenario that can result in growth." But, in a world flush with oil, "Growth is not needed."

In the past six years, "If you look at how much capital has been destroyed, with all of that high-yield debt getting equitized, you have new owners," Chapman said.

Prior to technological advancements in Lower 48 shale development, growing was "pretty difficult to do. You were really in a resource-constrained world."

E&P executive compensation was tied to growth. But growth is less difficult today than, say, 20 years ago. "With executive management incented to grow and having access to abundant capital, the U.S. oil and gas industry was able to pivot from decades of structural decline to rapid growth," he said.

"And, when everybody grows, inventories can get out of balance quickly, especially when a black swan event" like 2020 happens.

The post-restructuring owners—former bondholders—are "interested in getting a return of their capital," he said.

They "would rather see the company underspend cashflow to maintain production levels, avoid getting overleveraged and return some of that internally generated cash flow [to them and other owners] via dividends."

Basin, intrabasin, commodity

KeyBanc's Buchanan is seeing basin-based variability in lending. "I'm pretty confident we're going to see lower advance rates applied to certain basins. The Permian might get a better advance rate than the Midcontinent or the Gulf Coast."

There is differentiation in valuing proved undeveloped reserves (PUD), he added. "It used to be the PUD basket would be filled up, but you might not fill up the PUD basket in all cases [today]."

Kennedy noted that it isn't very different than how nonshale had become valued in comparison with shale. A peer at another bank noted in a conversation with Kennedy, "Hey, we never loaned the same amount of money to a company that was in the shallow waters of the Gulf of Mexico versus one operating exclusively onshore."

Kennedy said, "We always treated them differently and would lend a little less there because we knew there was a higher risk.

"We need to do the same thing with these shale companies. They're not all the same."

In shale, he said, "If they're not in the core, there could be a significantly higher risk. They could be in the Midland Basin, but if they're not in the core of the Midland, there's a substantially higher risk for that development."

Another risk is spending hundreds of millions on, say, a 24-well pad "before they even know what their results are on the first pad," Kennedy said.

As for natgas-weighted producers, Buchanan said their covenants had already been adjusted prior to 2020. "[Before 2020,] we had relatively high oil prices and relatively low gas prices, so there was probably more consternation amongst lenders for their gas clients."

The disposition toward natgas producers has actually improved, he said. "[It] did a 180 in the second quarter, and gas became the relative strength within portfolios."

Still, the tightened covenants "are essentially being applied across all companies," he added.

Less competition

Lender tightening after WTI-price shocks in 2008 and 2014 didn't last long. After 2014, for example, there was the cash sweep.

But the structure was complicated by the lumpiness of E&P revenue in contrast to the constancy of payroll, according to Buddy Clark, author of "Oil Capital" (2016) and an energy finance attorney with Haynes and Boone.

Will the 2020 edition of covenants stick? Become permanent?

Lending for a couple of decades now, Buchanan said he's "seen the cycles where we swing too far one direction and we swing back and correct."

What might be different now "is you have so many banks leaving the business," he said. "When you've got a lot of competition, banks compete to win business by terms and pricing.

"You have a lot fewer banks competing for this business than there were 12 months ago."

The Haynes and Boone price-deck survey in October showed 20 banks invited and 16 participating. The spring survey published April 1 had 32 banks invited and 21 participating.

A syndicate today may consist of about a third fewer banks, Kennedy said. "If we had 35 banks that used to have a price deck, it would be hard to put maybe a dozen together right now that would come into a loan syndicate.

"Putting together a new syndicate right now is almost impossible."

Amegy has had to step up above its pre-2020 pro rata share in some RBLs, he added—"RBLs that we were already in just to help the [E&P borrowers] cover their borrowing base."

He expects peers' participation will improve this year. But many banks are just working on existing deals—as well as existing problems—"and not really out in the market, trying to do new deals."

Late in 2019, the leverage ratio and restricted-payment convenants on RBLs began to tighten, and that has continued, said Keith Buchanan, managing director and head of oil and gas investment banking with KeyBanc Capital Markets.

FIRST-LIEN TERM LOAN

E&P lending at CSG Investments Inc., an affiliate of Beal Bank, is focused on secured, first-lien term loans. During 2020, "We've seen a shift in preference to debt products more aligned with our focus," said Hans Hubbard, a CSG managing director.

In September, CSG closed a $200 million senior term loan to Kosmos Energy Ltd. with a five-year maturity, secured by Kosmos' Gulf of Mexico assets.

Underwriting standards were unchanged in 2020, Hubbard said. "We remain focused on what we consider our key lending principles, which is a focus on loan to value in the 50% to 65% range, controls on G&A so it stays within reason relative to assets and controls on capital expenditures so we feel like truly economic wells are being drilled."

Each loan contains amortization and an excess-cashflow-sweep concept.

"Our lending approach has not changed in this cycle," as CSG and Beal Bank stick to consistency throughout the business cycle, Hubbard said.

CSG expects continued challenges in the E&P space this year. While its standards won't change, Hubbard expects "further acceptance by borrowers," such as the emphasis on a demonstrated ability to be repaid out of cash flows "versus assuming a refinancing by another lender or by some kind of accretive asset sale."

Refinancing and/or raising cash via asset sales mostly wasn't possible in 2020 and likely won't be this year, so borrowers and lenders "truly need to be able to see a payback out of cashflow," he said.

Farzin Dinyarian, also a CSG managing director, said that, in the Kosmos case, the Gulf of Mexico assets were unencumbered, "so no existing secured debt. That enabled CSG to come in and provide secured financing.

"But the balance of the industry has already encumbered their assets with secured debt, so there's not much for us or other lenders to do at this point in the cycle."

There are queries from potential borrowers, Hubbard said, but most cases "have not been able to bridge the gap on the proposed amount of debt and other terms and conditions."

By mid-November, Amegy Bank itself had done only one new deal since March. "And we were happy to do it, but it was a deal we were already looking at back in March. We just had to put it on hold for a while."

The collateral and covenants reflect the new standards. "It was a perfect deal," Kennedy said. "All natgas, all in the core of the Marcellus."

He expected Amegy would sign more new deals before 2020-end. Actually, a lot of them "look much better than almost anything we currently have in our portfolio," he said in November.

Industry assets are encumbered with secured debt, said Farzin Dinyarian, managing director with CSG Investments, "so there's not much for us or other lenders to do at this point in the cycle."

After the 1980s price collapse, many banks didn't enter or reenter until the late 1990s. Might it take that long again?

Buchanan said, "I do believe so." Some may be gone permanently due to internal ESG-related mandates, especially European banks, he said.

Meanwhile, some syndicate participation is reduced due to lender consolidation—IberiaBank Corp. with First Horizon National Corp., closed in July; SunTrust Banks Inc. with BB&T Corp., closed in December 2019; PNC Financial Services Group Inc. with BBVA USA Bancshares Inc., announced in November.

First Horizon's Chapman said that, "as for trying to put together a syndicate for a large deal, I think that universe is shrinking" due to lender exits from the space and lender mergers.

Meanwhile, though, demand for new RBLs is down, he added. "There's just not as much activity. You're not seeing the historic level of oil and gas property A&D activity with big equity sponsors, writing big checks and adding a new, big bank group for a new, big deal."

Asset activity in 2020 was with equity. "There isn't a big growth opportunity with new private equity-backed companies in the current environment due to constrained access to capital, which is limiting the opportunity for companies to sell properties at attractive prices.

"It's not a frothy deal environment."

2021

RBLs used to have five-year maturities, Buchanan said; "Today, they are three-year maturities." Some borrowers will be at bat this year.

"To the extent they haven't already changed pricing, changed covenants, changed all these other things, they're going to be faced with that to extend maturity," Buchanan said.

Kennedy said new deals have to "check all of the boxes. If it misses one box, we're not going to do it."

It's not that lenders are being too tight, he added. It's just that, "Honestly, every one of us knows that, if we go out and start doing deals that have a problem anytime soon, we can just go look for something else to do.

"There's absolutely no way we can put anything on the books right now that even comes close to being a problem in the next six to 12 months. We, as an industry, were allowing, in some cases, a little too much leverage."

He and other lenders are trying to "let everybody know what's happening—because we love the industry, and we don't want to pull the rug out from under anyone."

Lenders aren't demanding borrowers "get into that [new-covenant] range, that box, right now as an existing deal. But we are trying to guide them lower as we work through all of this with them," Kennedy said.

"We're not trying to create problems. We've got plenty of real problems without artificially creating any." □

BARNETT SHALE, PDP KING

Forty years ago, George Mitchell proved the Barnett Shale can produce gas, kicking off the shale revolution. What's happening in the play now, under new owners?

ARTICLE BY
LESLIE HAINES

It's hard to believe, but it's been 40 years since George Mitchell, the father of the shales, drilled his famous C.W. Slay #1 in Wise County near Fort Worth, proving the concept that the Barnett Shale can produce gas. And it was 30 years ago, in 1991, that Mitchell Energy & Development Corp. drilled the first horizontal well to the Barnett, proving that this shale could produce a lot of gas.

Those pioneering acts ushered in the U.S. shale revolution that is still transforming global oil and gas markets. U.S. dry gas production reached 93.1 Bcf/d in 2019, largely from horizontal wells drilled into shales around the country. It's a performance trifecta: the EIA says U.S. gas production, demand and gross exports hit all-time highs in 2019. Exports alone rose an impressive 29% to 12.8 Bcf/d.

We can thank the Barnett Shale, the granddaddy of gas shales, for that. Mitchell's discovery excited explorers, encouraging them to fan out across the oil patch, where they found even richer gas pays in the Haynesville, the Marcellus and more. "Find me another Barnett," CEOs said.

When it peaked in 2012, the Barnett, designated the Newark East Field, was producing 5.7 Bcf/d from Johnson, Tarrant, Wise, Parker and other counties in North Texas. Its productive area spanned over 5,000 square miles in 18 counties. At its height there were 194 rigs working in the play—fueled by impressive flow rates at the wells, but $12 gas prices fanned the flames.

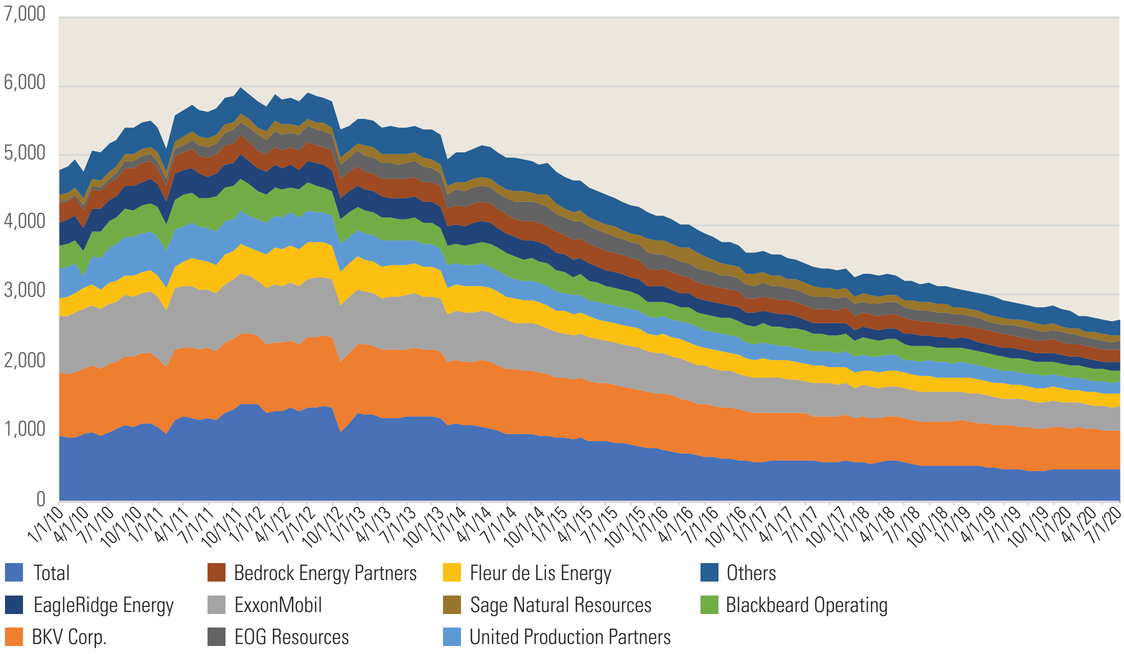
Barnett drivers now

Production in every play declines over time, the Barnett being no exception. It's producing about 2.6 Bcf/d today, about half what it was at the peak. It declines 7% to 9% annually, according to Artem Abramov, partner and head of shale research at Rystad Energy.

Activity has slowed as the play matured, operators have gone elsewhere, and low gas

Following its acquisition of George Mitchell's legacy Barnett assets from Devon Energy, BKV Corp. says plenty of inventory remains with much to study.

Barnett Shale Gross Gas Production (MMcf/d)



Source: Rystad Energy

Barnett Shale production has declined since peaking in 2012.

prices stymied incentives to drill. In mid-November 2019, not a single horizontal rig was drilling in the play, quite a comedown from the heyday, when there were more than 100 operators of record and frenzied leasing deals and joint ventures were announced regularly. At one time, Chesapeake Energy Corp. even drilled on a lease under the DFW airport.

Despite its maturity though, the play still has more to give, and some producers remain interested in its long-life reserves. The University of Texas' Bureau of Economic Geology said in a February 2013 study that the play holds 44 Tcf of recoverable reserves—and that was the estimate before the advent of extended reach laterals of up to 2 miles and the latest completion techniques that might unlock even more gas.

While some of the biggest Barnett producers have left the scene (including Barnett leaders like Chesapeake and Devon Energy Corp.), others have bought in. It illustrates the classic life cycle of a shale play.

Proved developed producing reserves (PDP) are the main attraction now. Further development hinges on the strategy of the newer players, natural gas prices and the feasibility of refracking old wells with the latest techniques.

BKV BARNETT LLC

"We have a ton of workover projects ... there are about 1,000 different opportunities to fine-tune [in the Barnett]," said Chris Kalnin, CEO of BKV Barnett LLC.

"We think there's more upside to gas prices than the current 2021 strip shows, so there's potential for rig growth in the coming year," said David Dubetz, energy analyst for East Daley Capital.

"We're seeing some evidence of this already as [Barnett] applications for permits to drill more than doubled from 2Q to 3Q ...," he told *Investor*. (Most permits were for vertical wells, however, and from private operators. But Total has filed for 22 horizontal permits, according to Texas state data.)

"If those are drilled, the Williams and Summit Midstream G&P systems will see volume growth," Dubetz said. He pointed out that Exxon Mobil Corp., the basin's only super-major, said in December that it will halt activity in its U.S. gas basins, which would be a downside for Energy Transfer Partners LP's Godley gas plant, which gathers about 30% of the latter's gas production, he said.

He forecasts that the Barnett's output will decline another 7% in 2021 from its productive level of 2020.

"We've seen some re-frack programs in the last five to seven years, but they were hardly sufficient to limit the decline rates," Rystad's Abramov told *Investor*. "The play offers some cheap infill drilling options (not very productive, but shallow and cheap wells), but even the best remaining sweet spots can't compete with the Tier 1 inventory in Appalachia and the Haynesville.

"This is one of the main reasons you do not see any dedicated shale gas names in the list of top 10 Barnett producers these days."

Changing of the guard

Private-equity players think that the Barnett's PDPs are undervalued due to lack of interest, thus setting up buying opportunities, Abramov noted. PDP is seen as a safe investment idea, an annuity of sorts. And, one has to wonder: How many of the historic play's wells were drilled years before extended-reach horizontals and new fracturing techniques came along, the very factors that now propel big gas output from the Haynesville and Marcellus, and indeed, associated gas in the Permian Basin? There is possibly some upside if technology unlocks new commercial opportunities in the future.

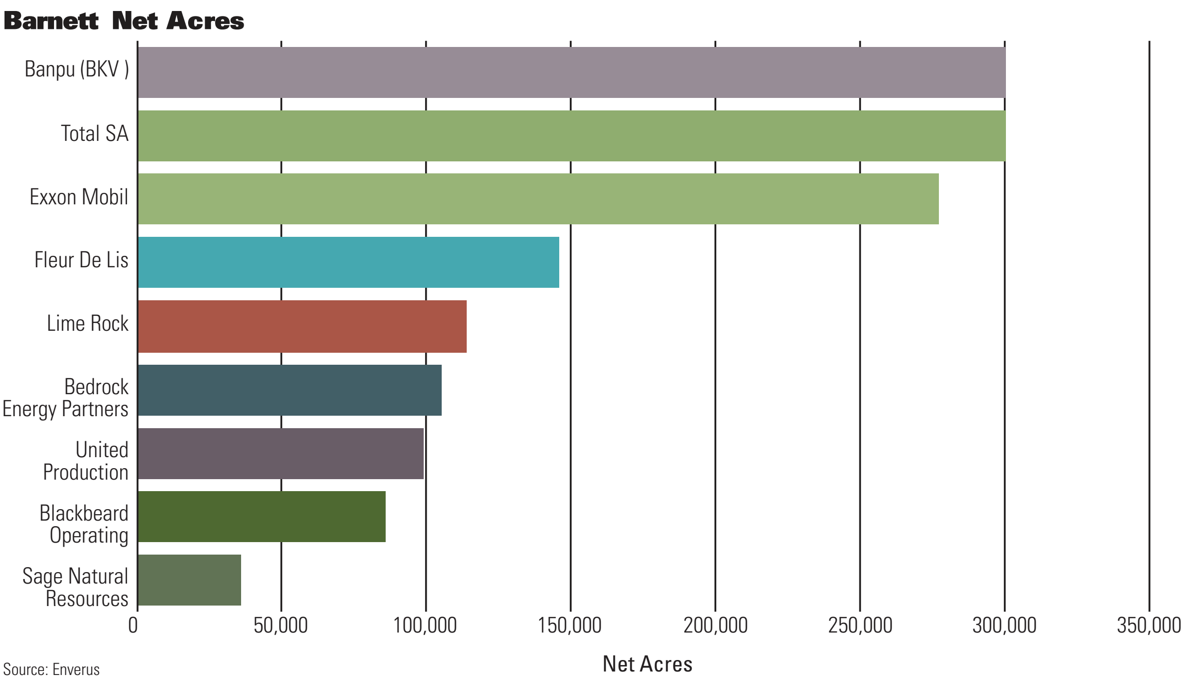
One operator seeing the opportunity, Chris Kalnin, has gone all in. Before now, his company, BKV Corp., has focused on the Marcellus gas play in the Northeast, growing there through several acquisitions. But last fall, BKV Corp. joined with Thai company Banpu to form BKV Barnett LLC to enter another play outside of Appalachia, the Barnett.

They closed their deal in October 2019 to buy the Barnett assets of Devon Energy Corp. for $570 million in cash and up to $260 million in contingency payments, to be paid over the next four years, based on oil and gas prices, with $2.75/Mcf at Henry Hub the trigger.

Devon had grown in the play when it acquired Mitchell Energy & Development Corp. in 2001, when former chair Larry Nichols recognized that "something was up" in Mitchell's North Texas holdings. That landmark deal helped kickstart the Barnett boom, and the play became one of Devon's most important assets for many years. It liked it so much that in 2006 it paid another $2.2 billion to bolster its Barnett position when it acquired Chief [Oil & Gas] Holdings LLC.

Now, BKV Barnett manages that old production, which averaged 600 MMcfe/d net in third-quarter 2019 following Devon's 18-year run.

"We look forward to continuing the wonderful work Devon has established in the Barnett and expanding our investments to deliver high-quality gas production for many years to come," said Kalnin at the time of the deal closing.



Since acquiring Devon's assets, Banpu's venture has become one of the largest acreage holders in the Barnett Shale.

His immediate plans now that he's the largest Barnett producer might be considered cautious, if not ironic.

"I do not see us drilling any wells in the Barnett in 2021," Kalnin said. "Instead, '21 is a massive learning and data analysis year for us. We'll do our homework, establish a baseline and develop a plan. But do we have inventory? Absolutely."

Why the Barnett?

He said Kalnin took almost a year to study the Barnett as part of its normal M&A due diligence process, after deciding it was time to expand outside of the Marcellus. He said the Kalnin M&A team "watches the market likes hawks and looks at everything that is gassy." In his words, their process "is incredibly vigorous," including developing up to a 100-page book on a play that it's considering. Kalnin also brings in consultants to conduct peer reviews of the company's evaluations and processes.

"I'm an ex-McKinsey guy, so I'm obsessed with strategy and thinking about what's going to happen in the marketplace next," he said.

"We studied the market for over a year after forming in 2016 and that led us first to Pennsylvania. We had concluded gas was going to go big from a demand side. Second, we looked at what I call 'the arc of pain' or the midstream constraints that we saw would be a major issue all over the country. That elevated the Barnett because it has a lot of infrastructure, and it's close to some demand centers."

Kalnin determined the Haynesville fit some of these criteria, but the prices the market was asking there in 2018 and early 2019 "were insane," so he took a pass.

Finally, Kalnin said he looked at risk and return in the same sentence. That reinforced a company decision to go after PDP reserves such as the Barnett.

"We looked back at what we've done by developing PUDs vs. acquiring PDP, and we found that acquiring PDP was way better. We showed our board that on a risk-adjusted basis. That convinced us to chase PDP-heavy deals."

What he also liked about the Barnett was its wealth of data from literally thousands of wells, "and that it had been nicely taken care of" by Devon. His team even scattered about the play to take photographs of every pad. "We did the work, we saw the opportunity, we did the research, it had access to demand and critical mass."

The plan now

Kalnin is cautious on the future of natural gas prices, believing there is going to be an oversupply coming out of 2021 and going into 2022. Recent higher gas prices have encouraged a few more rigs to drill in gas plays, and as the industry recovered from the pandemic in 2021, he expects more supply to surface.

"We have two main initiatives," Kalnin said. "One is to spend on capital efficiency projects where if you put in a dollar, you get it back quickly. The second thing is, study, study, study. We'll look at this basin with fresh eyes. What people forget is that information is flowing in constantly, and we'll see whether there are additional zones we can target, or refracs we can do."

BKV Corp. typically spends about a third of its EBITDA on capital projects, he said, with the rest distributed back to its investors—or to build up a war chest for the next deal. The Barnett projects will include putting in more artificial lift equipment and using algorithms to automate these systems. Kalnin will try different sands in completions and different tubing settings and optimize gas compression as well.

"Right off the bat, of the 2,000 horizontal wells we have, at least 10% were sub-optimally completed, and the remainder we are still studying. We're actively exploring that right now," he said.

Of the ins and outs of the Barnett deal, Kalnin said, "Someday I'm going to write a book."

Other recent results

The best wells in the Barnett were mostly announced years ago when the play was new, but good wells are still possible. TEP Barnett USA, a unit of France's Total, unveiled a well in January 2020, the #3 Carden-Heidi-Little, with an IP of 6.17 MMcf/d in Tarrant County. Total entered the play via a joint venture with Chesapeake in 2009 and added to that in 2016 when it took over 100% of the joint venture assets as Chesapeake exited. TEP now has over 2,800 wells on some 750 pad sites and 200,000 mineral acres.

In November 2018, ConocoPhillips exited the Barnett by selling its assets there to Lime Rock Resources, the E&P arm of the private equity firm, for $230 million. Lime Rock has made a business out of acquiring production—through 2019, its cumulative purchases have been 72% PDP, so the Barnett fits right in. The Barnett position it acquired, 114,00 net acres in four counties, was liquids rich and flowing cash. Production had averaged about 9,000 boe/d, 55% gas and 45% NGL, before the deal closed that year.

Lime Rock Resources reported four wells in Denton County in January 2020, the Shifflet wells on the Crawford pad, each with 1.5-mile laterals. Their average IPs ranged from 4.4- to 5 MMcfe/d.

Privately held Fleur de Lis operates about 1,000 wells in the Barnett on 146,000 acres spread over Johnson, Tarrant and Parker counties. It reports less than a 10% annual decline and a recent production rate of 210 MMcfe/d. The assets were acquired in 2018.

Several other private operators continue to manage Barnett assets, and they wait for the time natural gas prices move high enough to justify more capital spending. Meanwhile, the play contributes nearly 3 MMcf/d to U.S. gas production. □

Drilling Permits Issued In Newark East Field

2000	276
2002	965
2004	1,114
2006	2,510
2008	4,065
2010	2,128
2012	1,182
2014	1,004
2016	31
2018	91
2020	35*

*Through November
Source: Texas Railroad Commission

PRESSURED PUMPERS

As well completions companies gear up for a new year following unprecedented times in the oil patch, analysts and industry executives shed light on the path ahead. Is this beleaguered sector regaining strength or just powering through?

ARTICLE BY
VELDA ADDISON

"You're going to see an industry that's tougher, more resilient, that's more efficient, that has a smaller footprint on location," says John Jameson, a senior consultant for Energy & Industrial Advisory Partners.

A new year means new beginnings for oilfield services companies, but whether the start of another decade includes a rewrite of the past or the unexpected remains to be seen.

The road back to normalcy—which is still taking shape—has been challenging for pressure pumpers. Stressed by market forces and rattled by a demand-altering pandemic, cash-strapped U.S. shale players slowed activity in 2020, sending hydraulic fracturing spreads plummeting from about 350 to 50 by midyear, analysts say.

Some pressure pumpers cracked under pressure. A few left the business altogether, while some sought bankruptcy protection. Others found strength in consolidating with peers or forming partnerships. Still, technology remained a focus for many, looking to captivate E&Ps with efficiency gains and cost-effective offerings too good to bypass as conditions slowly improved and prices stabilized.

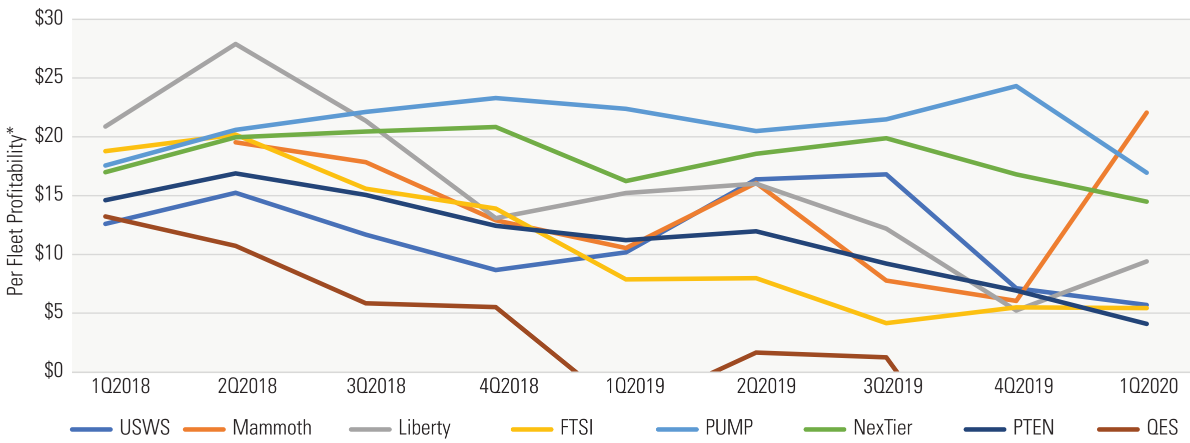
By year-end the frac spread count had inched up to about 130 by the estimates of Energy & Industrial Advisory Partners (EIAP), a Houston-based energy consulting firm. Looking ahead, uncertainty remains. Winter threatens to bring more COVID-19 cases, slowing energy demand, even as pharmaceutical companies race to bring vaccines to the market.

Despite significant uncertainty given new lockdowns and other moving parts, frac spreads are not expected to drop in 2021 to levels seen in March through May 2020, ac-

EVOLUTION WELL SERVICES

Evolution Well Services largely attributes the company's success to long-term partnerships, built around innovation, with its E&P clients, says Carrie Murtland, the company's COO. "During this challenging market cycle, we collaborated closely with key vendors to further reduce costs, increase efficiencies and create a more digital hydraulic fracturing operation," she said.

Public OFS Per Fleet Profitability



*Adjusted EBITDA per spread except NexTier (adjusted gross profit) and PTEN (margin). Some pumpers report EBITDA per spread differently (Ex. USWS excludes fluid end maintenance.)
Source: Energy & Industrial Advisory Partners

cording to Sean Shafer, a managing partner for EIAP. He forecasts the count will stay in the 130 to 150 range for most of 2021 with oil prices in the $40s. There might even be an uptick in the third quarter, he said, particularly in natural gas-focused basins such as the Haynesville Shale and Appalachia Basin.

The increase, far below levels seen during times of record U.S. oil and gas production, would be a welcomed improvement for pressure pumpers.

"COVID-19 has significantly disrupted the industry in an unprecedented way, but the industry was already under a significant amount of pressure prior to COVID-19," he said, referring to the pullback in outside investment that slowed completions and the oversupplied market.

Though this is a hard time to talk about pressure pumpers in general, it is not all doom and gloom, said John Jameson, a senior consultant for EIAP and former president of the Pressure Control division for Weir Oil & Gas.

"There are some green shoots in the pressure pumping world," he said.

Bucking trends

Unlike conventional fleets, few companies laid down electric fracturing, or e-frac, fleets when the latest market downturn began in 2020. Of the 130 or so frac fleets running in November, between 12 and 15 e-frac spreads continued to run alongside a reasonable number of dual fuel spreads, EIAP data shows.

E-frac pure-player Evolution Well Services was pumping with all seven of its e-frac fleets in the Eagle Ford Shale and Permian, Marcellus and Utica basins.

"Being an electric frac company vs. conventional actually affords us a bit of a tailwind currently, particularly as the ESG movement gains momentum," said Carrie Murtland, COO for Evolution Well Services.

The company is eyeing opportunities for growth but remains mindful of the discipline and strategy required during today's challenging market cycle, according to Murtland.

"While the down market of 2020 has resulted in minimal opportunities to grow our business, we have found a silver lining during this time," said Murtland. "Evolution has taken this opportunity to focus on our people, existing client relationships and digital technology development to strengthen our pumping performance for our customers. As a result, we have reduced our pumping nonproductive time by 50% since February."

The company, which celebrated in October the completion of over 20,000 frac stages with its natural gas-powered e-frac technology, is also working on rolling out new technology. Its latest applications include two machine learning systems.

"We are keenly aware of how rapidly the completions space changes, which means that our technology must constantly improve to keep up with the opportunities in front of us," Murtland said. "Currently, our technology focus has been centered around enhancements that will help us pump higher rates, simultaneous frac ops and ultimately achieve more pumping hours in each day."

The efforts come as others also look to advance technology and execute long-term contracts.

Houston-headquartered NexTier Oilfield Solutions Inc. teamed up with oilfield service provider National Oilwell Varco Inc. (NOV) to collaborate on field testing NOV's electric fracturing system.

Following a successful trial of its Clean Fleet technology, U.S. Well Services said in April it had inked a three-year contract for e-frac services with top Appalachian Basin gas producer EQT Corp.

"This partnership will allow EQT to capture proven operational efficiencies to deliver on our well-cost targets while decreasing our carbon footprint and opening the door for future innovation as we evolve the way we operate," EQT CEO and President Toby Z. Rice said in a news release at the time. "This agreement secures one-third of our planned activity levels, preserving EQT's operational flexibility for the future."

Todd Bush, head of U.S. unconventionals for Westwood Global Energy Group, placed

"One of the big drivers right now for profitability as a pressure company is the extent that you can automate things that remove people from location and reduce nonproductive time," says Sean Shafer, managing partner for Energy & Industrial Advisory Partners.

EVOLUTION WELL SERVICES

With affiliated Dynamis Power Solutions, Evolution Well Services' patented green technology currently conserves an estimated 33 million gallons of diesel fuel annually, according to a company release.

U.S. Well Services and Evolution among the select few pressure pumpers that are winning business thanks to their lower emissions electric fleets. The bright spots emerge as investors demand sustainable development of resources amid building ESG pressures.

Despite the strides, the segment—like its conventional counterparts—is not without challenges.

"They're not able to charge more yet," Bush said, noting e-frac providers are likely on the leading edge of the recovery for pressure pumpers. "If they're able to charge more, I think that will also enable others to begin increasing their pricing or maybe just get the pricing back to a level where it's sustainable."

Gaining strength

Similar to other oilfield service providers, pressure pumpers have been convinced by financially struggling operators to lower costs over the last few years. Some are planning to try their luck again, although costs have fallen dramatically. The odds may be against them this time.

"As E&Ps are consolidating there's already been a couple of companies that have stated they're going to try and push service costs lower," Bush said. "We don't see too much opportunity there because the frac pricing is lower than it has been in years."

Shafer shared similar sentiments.

"There's not really any meaningful room for continued price concessions for pressure pumpers," he said. "There's just not really any meat left on the bone."

The only avenue Shafer sees for a reduced price point is a complete remake of how work is done on location. Most E&Ps realize that asking for a further 20% to 30% lower pricing is not sustainable now, he said.

There are ways pressure pumpers can strengthen their business.

Some movement in prices to build in the margin needed to reactivate crews and repair equipment could help, according to Bush. So could technology utilizing real-time data and analytics to help improve performance and cost structures, while perhaps developing deeper relationships with E&Ps.

"First and foremost, they have to drive efficiency on location," Jameson said. That means being capable of pumping 16 to 20 hours in a 24-hour period and cutting nonproductive time. "There are some pressure pumpers out there that do it better than others … Liberty Oilfield Services is one example of driving efficiency in their people, processes and equipment design."

Industry players sometimes get caught up in how many stages are pumped in a 24-hour period, said Jameson, who has been in the business for about 40 years. Hours pumped is the more important metric in terms of significantly improving profitability as well as benchmarking efficiency on location, he said.

Removing equipment from the oversupplied market is also a must.

"We as an industry have done a pretty poor job of retirement. Frac pumps tend to either have nine lives or the endurance of a cockroach," Jameson said. "Literally, it just never, never gets retired. It either goes to the back of the yard and then gets pulled out again on occasion or is sold to a competitor."

However, that changed with the latest downturn as equipment is being retired and cut up.

Pressure pumpers should also be realistic about customers' lack of desire for certain services. Five or six years ago, pressure pumpers were expected to provide sand, diesel and chemicals among other things. The majority of these products have been decoupled from frac treatments to the detriment of many companies that developed organizations and infrastructure to provide sand, storage and chemicals on location, he said.

"Customers are now buying these products directly from suppliers effectively decoupling them from the price charged for the treatment," Jameson said. "Pressure pumpers have to do the same thing and delete those types of services and their associated costs that just don't add any value anymore."

EIAP said pressure pumpers must streamline their business models and balance sheets to the "absolute essentials" for customers while also maintaining capital and pricing discipline.

"Pumpers with good operational performance should be willing to decline jobs to emphasize to E&Ps that in the long run, cheaper pricing from a pumper with poor operations does not save money," EIAP wrote in a 2020 report. "Pumpers should view all bids through financial metrics including return on capital employed and EBITDA per spread and not accept dilutive contracts unless there is a strong strategic reasoning."

Jameson admits that that—pressure pumpers declining jobs—is difficult to implement in real life given many are in survival mode, competing for a limited number of jobs.

ESG issues should not be ignored, Jameson added. Companies should be proactively looking for ways to reduce carbon footprints on location and modify or replace equipment to improve emissions.

"Companies can no longer just focus on profits but now must publicly prove their commitment to caring—caring about the environment, caring about people and caring about how responsibly their business is managed," Murtland said, adding the industry must find ways to attract outside investment. "This can only be done by adjusting our industry's operating practices to meet investors' evolved views on ESG and profitability thresholds."

She anticipates Evolution's peer group will roll out more self-imposed goals and targets, raising the bar for everyone in the industry.

"Five years from now, we expect to see social and environmental factors playing into the product and service development lifecycle much earlier in the design process, ensuring that all new roll-outs will have ESG engineered in from the start."

Becoming 'efficiency fanatics'

Perhaps key to it all for pressures pumpers, however, is becoming what EIAP called "efficiency fanatics." Think proactive maintenance programs, upgrading pumping equipment and embracing key technologies such as real-time diagnostics, vibration analysis and enhanced frac iron.

"One of the big drivers right now for profitability as a pressure company is the extent that you can automate things that remove people from location and reduce nonproductive time," Shafer said.

A side benefit, he added, is safety with fewer people on site operating frac spreads. "That'll help drive costs down, increase profitability. Overlapping with that automation is comprehensive maintenance programs that keep pumps working longer, predict failures so that they can pull a pump from the line before it fails."

Automated equipment can also reduce or eliminate manual processes like lubricating valves.

"The smart pressure pumpers strive for efficiency, look for ways to improve their overall ESG footprint and embrace technology that will help toward that end," Jameson said.

The ability to make such moves could set the survivors apart from the departed.

Whether operators would be willing to pay more for technology remains to be seen.

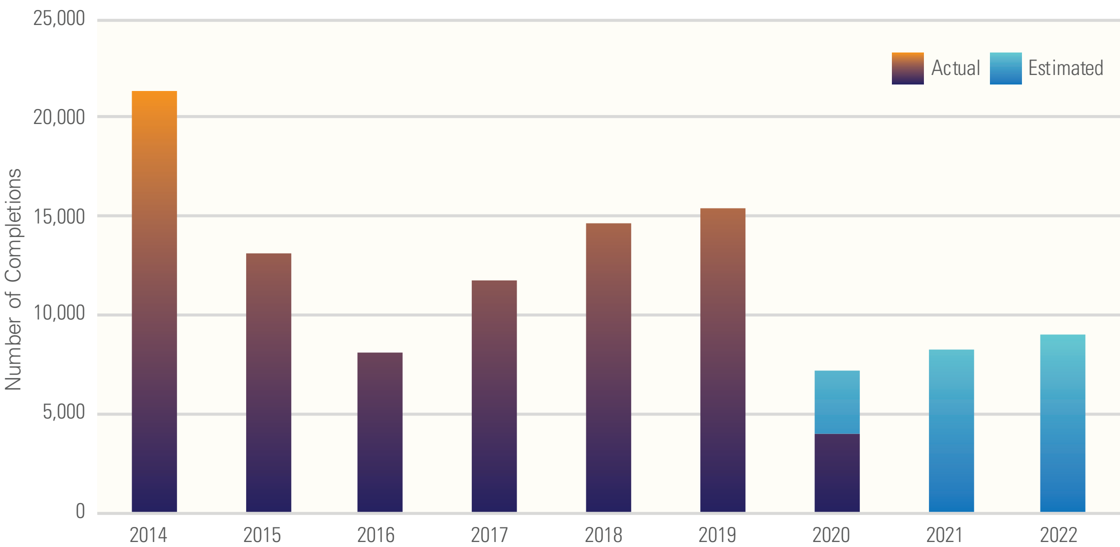
"I'm not going to say that the oil and gas operators are not willing, but there has to be a very strong economic benefit for them to try that," he said.

Technologies that improve HS&E are an even tougher sell right now—not because there is no interest but because it is already expected. "If you don't have solid HS&E performance, you're not going to work for most oil and gas operators."

Looking ahead

Analysts expect most of frac demand will be in the Permian, Haynesville and Marcellus. Westwood data showed active frac crews were up from about 130 in third-quarter 2020 to about 145 in the fourth quarter. More than 80 of those crews were in the Permian Basin, rebounding from lows of about 18 to 20 in June as E&Ps paused during the pandemic, Bush said.

Frac Completions Outlook



Source: Energy & Industrial Advisory Partners

2020 completion activity is projected to be half of 2019 levels, but uncertainty around the future of unconventional activity levels tempers the outlook for completions.

The energy consulting firm forecasts the number of frac crews will be about 170 in 2021, up from an expected 160 or so at the end of 2020. As crews return to work, the DUC count is also falling—moving in the Permian from about 3,000 DUCs to what Westwood expects will be in the 2,000 range in 2021.

The new year could also bring more restructuring and reduced frac capacity.

Shafer recalled Halliburton had announced significant reductions in its frac capacity prior to the COVID-19 pandemic. Superior Energy Services and Basic Energy Services exited the pumping services market.

A handful of small players without the balance sheet and capital to sustain them through tough times are also potentially at risk.

Continued consolidation and acquisitions are anticipated and needed, analysts say.

Following the $1.8 billion all-stock merger of C&J Energy Services and Keane Group in 2019, M&A continued in 2020. Notables included the merger of KLX Energy Services Holdings Inc. and Quintana Energy Services Inc. as well as Liberty Oilfield Services' purchase of Schlumberger's OneStim fracking business.

However, "I don't think we're going to see significant volumes of new equipment orders just given the state of the industry," Shafer said.

That doesn't bode well for builders of conventional pressure pumping or e-frac equipment, despite equipment improvements and cost savings.

Finding 'green shoots'

While the environment is not the best for pressure pumpers in general, it is not all bad, according to Jameson.

There have been exponential improvements in efficiency and operational performance in our industry over the last five to seven years, he said, before highlighting some of the so-called "green shoots" in the pressure pumping world.

Five years ago, pressure pumpers pumped 10 hours to 12 hours per day with extended nonproductive times between stages. Now, they're pumping at higher rates and pressures for more than 18 hours per day. Pads have grown from an average of three wells per pad to well over eight wells at some sites. Overall efficiency has improved along with safety performance, footprints are smaller and productivity is higher, Jameson said.

Multiple companies are making the needed adjustments due to this market and will emerge stronger as a result of this downturn, he added.

Pressure pumping has become more of an efficient manufacturing type of operation where repeatability of results matters alongside safety performance and minimized downtime, Shafer said. But the big question lingers around sustainable activity levels for U.S. unconventionals going forward.

"Will the market support 350 to 400 frac spreads? Is it 130 or 150 frac spreads? I would say, more likely than not, it's somewhere between those two," he said. "But I don't think we're going to get to where we were in 2018-to '19, barring some major geopolitical change in the oil markets. So, everyone's going to have to adapt to whatever that new normal is."

Many say the industry will look different with fewer players.

"You're going to see an industry that's tougher, more resilient, that's more efficient, that has a smaller footprint on location. That is reducing overall emissions on location," Jameson said. "These are going to be the competitors that are going to do well in what the next chapter holds for pressure pumping. The frac industry still has a viable future for those who adapt." □

FREEZEFRAME/SHUTTERSTOCK.COM

A frac stack is shown in the Permian Basin, where Westwood Global Energy Group estimates the DUC count will fall from about 3,000 DUCs into the 2,000 range in 2021.

HOW E&Ps CAN UNLOCK VALUE

2020 has been tough for oil and gas, but challenges extend beyond COVID-19.

ARTICLE BY
PAUL GOYDAN,
ILLSHAT KHARISOV
AND
RAMYA
SETHURATHINAM

In response to the pandemic, E&P companies have cut costs, embraced remote working and prioritized employee safety. But longer-term demand, price and social pressures highlight the need for holistic strategies to unlock further value.

COVID-19 has squeezed E&P operators. Though WTI futures prices have partially rebounded from April lows, they currently sit well below January levels. But even pre-pandemic, upstream players consistently underdelivered shareholder returns relative to historical performance. Majors' median upstream return on capital employed has plunged from 27% in 2006 to just 3.5% in 2019 despite similar oil prices.

While 2020's cost reduction efforts will preserve value in the short-term, BCG's research shows that companies pursuing both cost and future positioning boast up to 14% higher revenue growth and 7% higher EBIT growth versus laggards.

IAROSLAV NELIUBOV/SHUTTERSTOCK.COM

Beyond financial pressures, companies' social license to operate is also under fire. Regulators, investors, employees and a spectrum of societal stakeholders are demanding action on climate and scrutinizing E&P operators' decarbonization plans.

Oil demand declined by 26.4 MMbbl/d in April year over year as COVID-19 raced around the world and governments forced lockdowns. This is nearly 10 times the drop from the worst of the Great Recession. Rapid initial recovery is now slowing as countries grapple with successive waves of infection and weakened economies.

Demand Oculus, BCG's proprietary crude oil demand sensing model, predicts that demand will take at least three years to fully recover. Continued demand pressure means operators must move beyond 2020's cost reductions to position for a competitive post-COVID recovery.

Winning in the next decade will demand bold vision, innovative strategy and urgent action. BCG has identified four ways to build strategic resilience and unlock value.

Streamline workflows and break down silos

COVID-19 has transformed work in most industries, driving flexibility and technology adoption, and reducing travel. Since before the pandemic, however, leading companies have been pioneering better ways of working—new levers to reinvent and sustain value. These include digitally enabled teams, agile teaming principles, automated processes and distributed ownership and empowerment.

Documented benefits are impressive—more effective teams, stronger cross-functional collaboration and erosion of silos, streamlined internal processes and workflows, greater productivity and robust innovation, all of which translate into value via lower costs, increased efficiency and more agile pursuit of revenue generating opportunities.

In 2020, E&P companies focused on activity reduction including cutting capital spend, leveraging economies of scale and 'traditional' improvements like lean sigma and streamlining workflows. But the opportunities for value creation using 'new ways of working' remain largely untapped.

Fully automated and remote-controlled field operations, use of artificial intelligence and machine learning for initial well/project design, automation or outsourcing of noncore activities, complete adoption of Agile to build dynamic platform organizations and use of strategic supplier relationships with a focus on breakthrough technologies can help double productivity in E&P.

BCG's work shows that these new work practices can increase workforce efficiency by more than 30% in technical functions and up to 50% in support departments. Success will

The opportunities for value creation using 'new ways of working' remain largely untapped.

increasingly rely on company culture emphasizing flexibility, adaptation and outcomes over processes.

Consolidate

Increased deal activity in the sector highlights consolidation as key to unlocking value, particularly in the fragmented North American unconventional resource plays. Chevron Corp.'s acquisition of Noble Energy Inc. was followed by four major transactions totaling about $50 billion: ConocoPhillips Co.-Concho Resources Inc.; Pioneer Natural Resources Co.-Parsley Energy Inc.; Devon Energy Corp.-WPX Energy Inc.; and Cenovus Energy Inc.-Husky Energy Inc. All are structured as stock transactions, allowing buyers to avoid additional leverage while minimizing related oil-price risk. The deals' lower premiums, in the 7% to15% range, reflecting today's financial realities, are worlds away from the 62% Occidental Petroleum Corp. paid for Anadarko Petroleum Corp.

All-equity structures link value creation tightly to post-merger integration and cost reduction. As underlying business values decline, G&A reductions emerge as key. However, BCG's extensive work supporting post-merger integrations shows it is critical to pursue all synergy levers, not just opex but also capex, market access, talent, etc. It is important to assess asset performance before launching sweeping improvements.

Front loading key IT/tech decisions, consistent focus and resourcing for legal and HSE compliance and appropriate attention to corporate culture and change management are key enablers of successful deal value delivery.

We should expect more consolidation in the coming months, both in the Permian, where there are multiple candidates with strong, scalable operations and only moderate debt, and in places with a fragmented E&P landscape. Applying lessons from prior integrations will be a key differentiator of success.

Recognize decarbonization as value-accretive

Beyond new ways of working and consolidation opportunities, E&P companies must also recognize decarbonization as value-accretive, not as a threat to their social license to operate. Historically, upstream players have viewed decarbonization with hesitation. Today, the most innovative companies are exploring how carbon abatement can create value while strengthening their reputations for corporate social responsibility.

BCG's extensive work with upstream operators reveals the opportunity to reduce carbon intensity by 20% to 40% in the next decade. Value-accretive decarbonization levers span the entire value chain from exploration (eliminating high carbon intensity exploration) to design and sourcing (lean operations, carbon-based supplier incentives, etc.) and operations (electrification, reduction in flaring, carbon capture, etc.).

Several independent E&P players, most recently ConocoPhillips, have announced their intention to achieve net-zero carbon. To do so, they will need a detailed, de-risked decarbonization roadmap and specific levers.

Operators need to urgently act to develop a clear starting point of their carbon footprint and a company-specific abatement curve to equip them to respond in a value-accretive manner. This can then enable a longer-term journey of decarbonization, such as the evolution in exploration decisions based on carbon intensity, incorporation of carbon as a metric in capital decisions and a transformative change in the portfolio.

Enhance employer value proposition and attract diverse talent

A strong talent pool is key to acting effectively on these value creation levers. E&Ps must continue to enhance their employer value proposition, promoting a new culture of trust, delegation and flexibility that empowers middle management and attracts a young, diverse talent pool. Talent diversity increases both innovation and value.

Talent diversity can range in skill sets and demographics. As companies prioritize lower operating cost structures, they must protect and deliver on diversity and inclusion goals. COVID-19 has proven an unlikely ally, with remote work allowing greater flexibility and fewer offshore rotations in technical/field jobs to help drive gender balance. There is also a need to attract digital talent to enable the required innovative disruption and shift away from traditional talent pools (e.g., petroleum engineers).

E&Ps are struggling against current financial pressures and long-term structural weakness. 2021 promises to be challenging given COVID-19 uncertainty. However, stronger players that can focus both on immediate priorities and longer-term transformation to navigate the crisis, will deliver robust shareholder value.

Transcending the status quo will be essential, and operators that can shift their paradigms will come out ahead. The time to act is now. ☐

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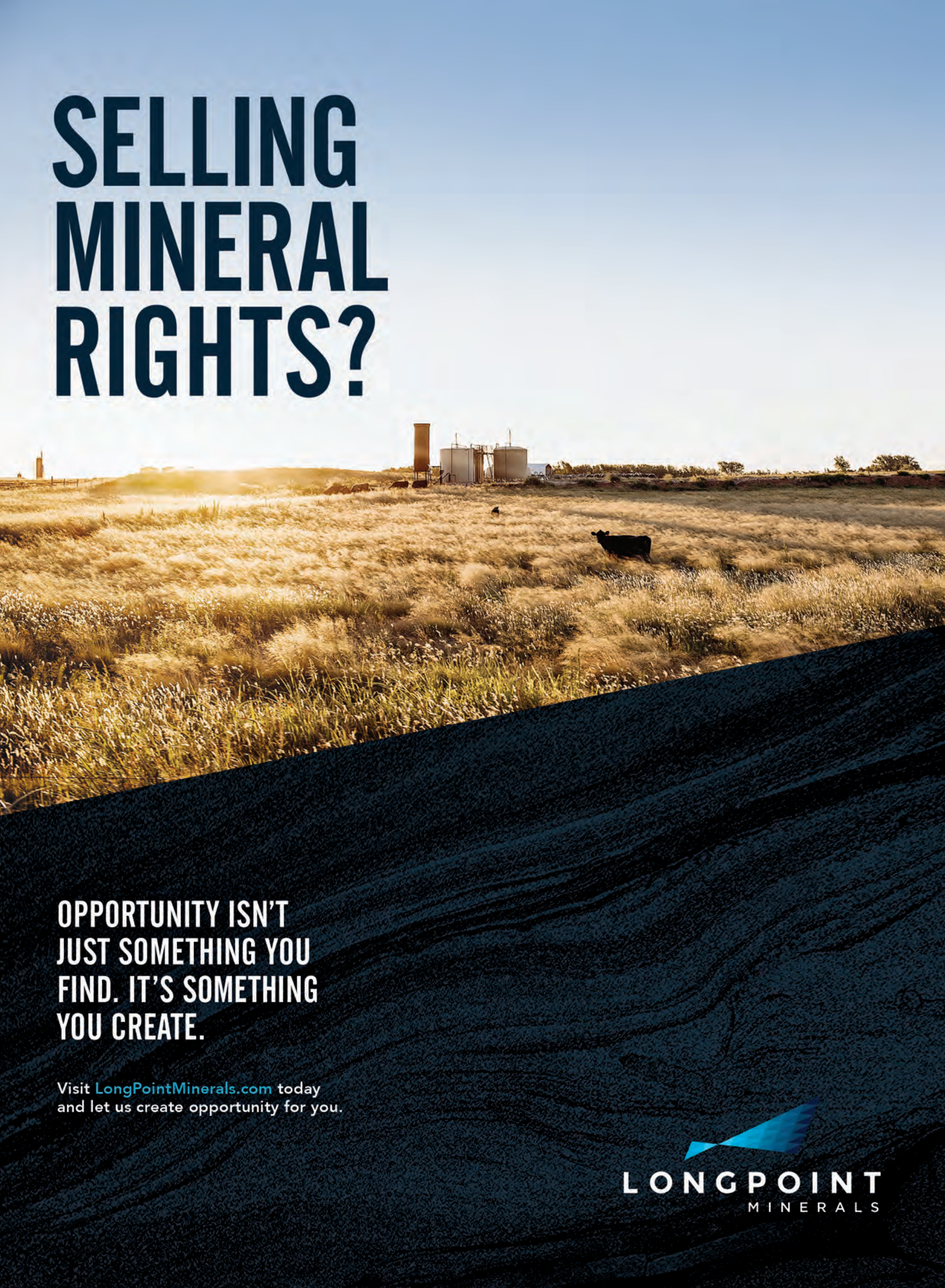
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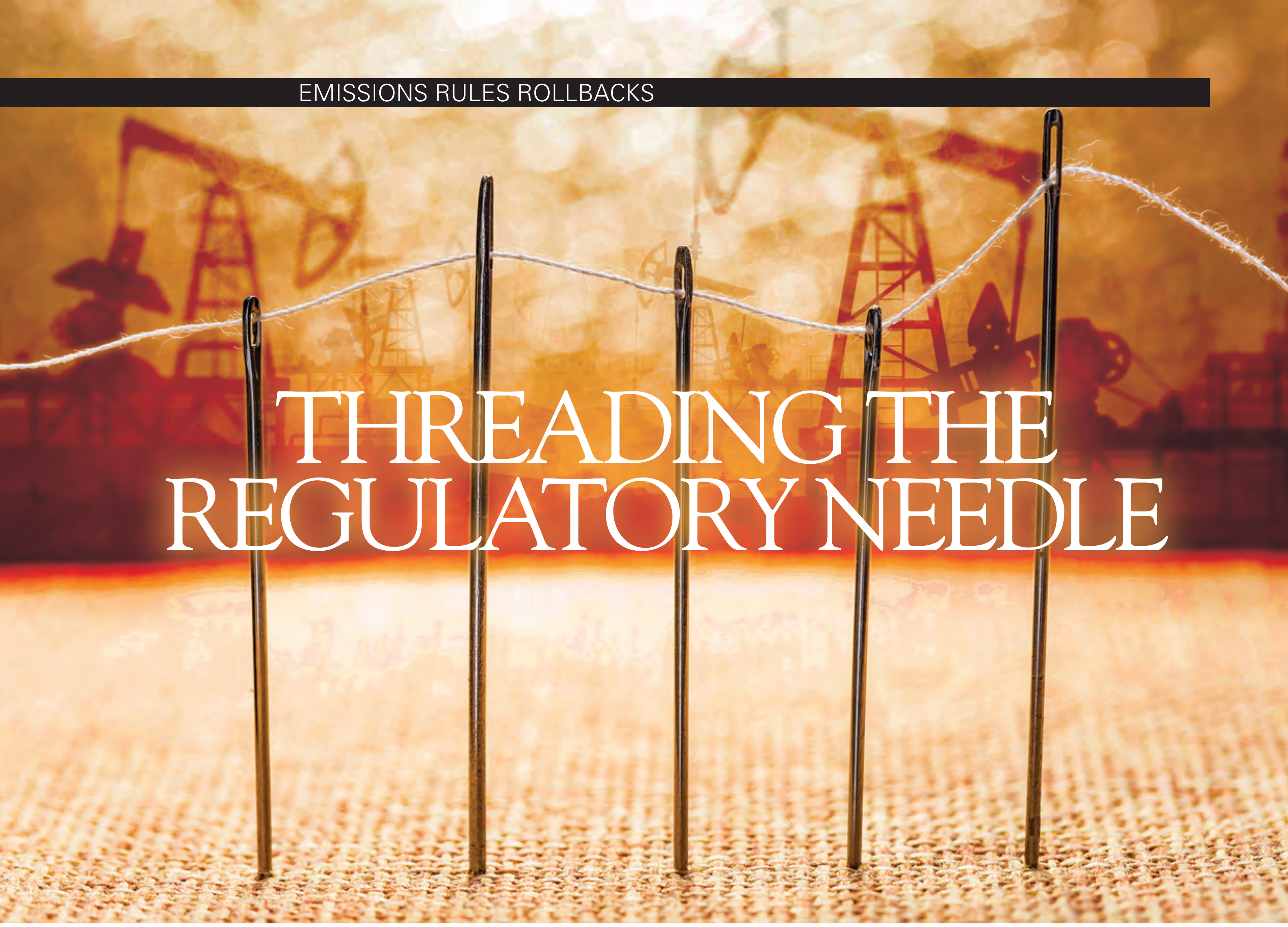

THREADING THE REGULATORY NEEDLE

The oil and gas industry needs to position itself strategically to attract investments while working to achieve low-carbon goals.

ARTICLE BY
MICHAEL BLANKENSHIP, ERIC JOHNSON AND STEPHANIE SEBOR

ILLUSTRATION BY
ROBERT D. AVILA

The oil and gas industry, particularly the E&P and oilfield services subsectors, have faced significant headwinds over the last few years, most recently with the simultaneous demand destruction resulting from COVID-19 and supply shock from the Saudi Arabia-led price war. These recent events, combined with capital flight out of the industry and demands for capital discipline by remaining investors, have accelerated the push by company stakeholders, regulators and others for energy transition initiatives.

But the energy transition journey will take decades. The industry, as a whole, needs to strategically position itself to remain profitable in oil and gas while concurrently evolving over time to meet the demands of a lower-carbon future. Oil and gas will retain a significant role in the global energy mix, particularly for developing nations. However, in the U.S. and Europe, alternative energy sources will expand and take capital—both financial and human—with them.

To successfully navigate this long-term evolution, the industry needs to focus on three key areas, simultaneously emphasizing both the present and the future.

Conflicting frameworks

From a regulatory perspective, the oil and gas industry finds itself facing conflicting frameworks, interests and objectives as it pursues its energy transition initiatives. Local and state regulatory regimes are becoming more restrictive while federal regulations are currently relaxing, although the Joe Biden administration could quickly alter the landscape. Within the broader energy industry, traditional oil and gas and alternative energy, historically adversarial, are now looking to come together to push regulatory agendas, but it will be some time before the industry can truly establish the necessary "big tent."

Even within oil and gas, many companies and subsectors are moving in different directions, pursuing their own best strategies and timetables for energy transition. To ensure the smoothest and most just transition, the oil and gas industry needs to exhibit an extraordinary amount of cooperation and forward thinking in its regulatory efforts as it threads the needle between the present and the future.

An excellent example of these conflicting regulatory frameworks, interests and objectives is the recent rollback of the President Barack Obama-era methane emission regulations. Environmental regulations applicable to the oil and gas industry have been subject to many amendments during the President Donald Trump administration, which has solicited a wide range of responses from the oil and gas industry and interested stakeholders. The reactions to the most recent changes to the air emissions standards in the New Source Performance Standards (NSPS) for the oil and gas industry have been particularly divisive, with some members of the E&P industry praising the changes and others expressing disappointment in the regulations as undermining decarbonization efforts.

On Aug. 13, 2020, the EPA issued two final rules relaxing methane gas emissions requirements applicable to various segments of the oil and gas industry.

The first of these rules, known as the policy amendments to the NSPS regulations, removes the NSPS requirements for the transmission and storage segment of the oil and gas industry altogether, including rescinding both volatile organic compound (VOC) and methane emissions standards for transmission and storage sources.

This final rule concludes that the oil and natural gas production source category only includes the production and processing segments of the industry. Because the EPA did not find that emissions from the transportation and storage segment cause or significantly contribute to air pollution that may be reasonably anticipated to endanger public health or welfare, the EPA improperly regulated emissions from the transportation and storage segment.

In addition, the EPA also rescinded the methane emission standards for the production and processing segment of the oil and gas industry, although VOC standards applicable to the production and processing segment remain in effect.

The second rule, known as the technical amendments, addresses the EPA's reconsideration of four aspects of the NSPS regulations: fugitive emissions requirements, wellsite pneumatic pump standards, requirements for certification of closed vent systems by a certified engineer and the application process for the use of an alternative means of emissions limitation. In addition, the technical amendments include other efforts to streamline implementation of the NSPS regulations as they relate to well completion, onshore natural gas processing plants, storage vessels, and record-keeping and reporting requirements. Paired with the policy amendments, oil and gas companies are no longer required to monitor and repair methane leaks from production and processing operations.

While the API praised the rulemaking as "consistent with the requirements of the Clean Air Act," others, such as bp, criticized the rule.

> From a regulatory perspective, the oil and gas industry finds itself facing conflicting frameworks, interests and objectives as it pursues its energy transition initiatives.

"BP believes methane should be directly regulated by the EPA" and that "the best way to tackle [climate change] is through direct federal regulation, ensuring that everyone in the industry is doing everything they can to eliminate methane leaks," the company said.

BP's statement comes after its February 2020 pledge to zero-out its carbon emissions by 2050, with Shell also announcing its intention to be a net-zero carbon emissions business by 2050. Shell called the rulemaking "frustrating and disappointing" and has previously urged the Trump administration to directly regulate methane emissions from existing onshore oil and gas assets. Many players within the industry, for strategic, reputational, marketing and other reasons, did not see eye to eye on the rollback of the regulations.

And, unsurprisingly, the regulatory rollback has set off a flurry of litigation, with states, municipalities and environmental groups challenging the new federal rule in several cases filed on Sept. 14, 2020. Environmental groups also filed a motion for an emergency stay of the rule during the pendency of the litigation, which was granted by the District Court.

Moving forward

The varied reactions to the methane emission regulatory rollback are not surprising. And Winston & Strawn expects, in the short term, more conflict on regulatory issues rather than common ground.

But for the energy industry to move forward effectively and efficiently, everyone is going to have to come together, both in support of traditional oil and gas and our lower-carbon future. Threading the regulatory needle will be a key to industry success. □

Mike Blankenship focuses on corporate finance, mergers and acquisitions, private equity, and securities law matters, and regularly counsels public companies on strategic transactions, capital markets offerings and general corporate matters. He has experience in transactions involving special purpose acquisition companies (SPACs), acting for issuers, sponsors and underwriters in SPAC IPOs as well as for acquirers and targets in SPAC business combinations. In addition, he has advised numerous clients on many ESG matters, including ESG due diligence and developing and implementing long-term ESG strategies.

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Angelo Gordon provides energy companies with the capital required to refinance existing debt, bolster liquidity, fund growth, complete acquisitions and finance development drilling.
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'NEW MAP' FOR THE ENERGY TRANSITION

IHS Markit vice-chairman Dan Yergin talks oil, natural gas, the energy transition, climate and his new book. Spoiler alert: Oil and gas are going to be around for a long time.

ARTICLE BY
LEN VERMILLION

If you read Daniel Yergin's book "The Prize: The Epic Quest for Oil, Money & Power," you already know a lot has happened since it was published in 2008. Called "the best history of oil ever written" by Business Week, upon its publication the shale boom hadn't happened yet; climate change wasn't as much in the forefront as it is today; and the country wasn't as fragmented in terms of political thought as it is in 2020. Of course, there wasn't a global pandemic in sight at the time either.

This year, the winner of the Pulitzer Prize, IHS Markit vice-chairman, leader of CERAWeek and energy industry icon, knew it was the right time to reexamine the global energy landscape. In "The New Map: Energy, Climate, and The Clash of Nations," Yergin looks at how the shale revolution transformed the American economy but also introduced a "turbulent new era." These days, energy's role in climate change is ushering in a second revolution of sorts—the search for a low-carbon future.

Yergin logged on and spent some significant time with Hart Energy to discuss not only his latest book but also the new energy landscape for the 2020s and beyond. The following is a transcript of a video interview that originally aired on Nov. 18. You can view the full video interview on HartEnergy.com.

Why was it the right time to write a new book on the energy landscape?

The reason is because so much has changed, beginning with something that you all at Hart Energy know very well—the shale revolution, the U.S. going from importing 60% of its oil to being basically energy independent, the world's largest producer.

So, there was that happening, but also the Paris Agreement in 2015, which is really having an effect in 2020, and the falling cost of renewables, the rise of the electric car—

which 10 years ago was an artifact of Thomas Edison.

Then I would also say the growing geopolitical tension between the United States and China, which I think is profoundly important for world order, and it's also really important for the energy business.

In the book you examine the difference of the various "maps" of the energy landscape, particularly the big four: Americas, Russia, Middle East and China. Do you see the energy transition playing out differently in all of those?

It's interesting because I mean map in a literal way because the maps are really important. One of the things that got me thinking about this was seeing the change in the trade flows of U.S. oil and gas—in exporting rather than importing, the map of trade and pipelines. It was also a metaphor for change in the world that's been happening and this new terrain that I'm talking about.

Energy transition is everywhere. Every discussion seems to be about it. It means different things to different countries. Different countries are positioned differently for it. There's a lot of disagreement as to what it actually means, how long it's going to take and how much it's going to cost.

Along those line, how does it hold different meaning for different sectors in the U.S., for example, independent shale versus majors? Can there be different roads taken, or can everyone get there together?

There will be different roads. There are objectives out there that we would call very ambitious, but the U.S. gets 80% of its energy from fossil fuels.

This is a big economy and a lot of infrastructure. The average car stays on the road for 12 years. Getting to scale is going to be a challenge.

Different people see it differently. The role of carbon capture is important. I think natural gas and oil are still going to be big parts of the energy picture down the road, so that's why carbon capture is significant.

But there's a different attitude in the Northeast. New York State won't allow a natural gas pipeline to pass through it, so Massachusetts imports LNG. There are different attitudes from that in Texas. The renewables industry sees things one way, but others see that you need natural gas to balance out wind and solar. So, there are a lot of different perspectives.

Of course, with the Biden administration and the $2 trillion climate plan it will be, if I may use this metaphor, stepping on the gas on renewables.

Let's add alternative fuels into that mix; can they all work together on this road ahead? Does there have to be winners and losers?

The conclusion I come to in "The New Map" is we're going to have a mixed energy system. Right now, we see electric utilities in the country pretty committed to renewables and moving 2035 to 2050 to net-zero carbon. They can get partway there, but you need natural gas to balance out the intermittency of renewables until such time as you can have big batteries that can store electricity for long periods of time.

Ambitions and the numbers are thrown out, then there are realities of keeping our economy going and keeping it working.

I have a line in "The New Map" where I said, some people aren't going to like hearing this, but oil is going to be around for a long time. We see it, at IHS Markit, that LNG is going to grow substantially—3% a year—for the next 20 years.

A fear that oil and gas producers might have is whether they are going to be able to be part of this conversation. What do you think they need to do to ensure that are?

It's going to be a challenge in a Biden administration because you have two things. You have those who are totally climate focused and may not have a good grasp of the overall numbers in the economy and how it works. But they are very vociferous and feel that Biden owes his victory to them. Then there are people who are more centrist, who have a greater sense of the technology and how the parts of the energy economy and the overall economy fit together to work, and who also say that Biden owes his victory to his ability to appeal to the rest of the country, not just to one segment of the Democrat Party. I think that's going to be the tug-of-war, or the battle, within the Biden administration.

There's a reality here that this is an industry that before the virus hit 12-and-a-half million people, it's a big contributor to the improvement to the balance of payments, over $200 billion in new investments in factories, very important for the manufacturing industry in the United States, a big source of revenue, a big contributor to energy security, and a big contributor to a better position for the U.S. in terms of foreign policy. All of those are factors that will need to be weighed in the balance if we are going to see a battle within the Biden administration.

Of course, things will depend upon the Senate as well. But it's important that the full story of this sector's role in the overall economy be told, and that needs to be on the table when decisions are made. It can't just be waved away.

The other big story, among many in this eventful year, is the oil price crash back in the spring. What is the relationship with American shale with OPEC and OPEC+ like now and going forward as we go through this energy transition?

When shale first appeared, it was dismissed as a bubble or something that would go away. I think it's now recognized that shale is going to be one of the cornerstones of the global oil industry going forward.

It's not going to grow at 2 million barrels a day or a million-and-a-half barrels a day, but at the end of the year [2020], we'll be down 2 million barrels a day more than we were in February 2020. But when we see the vaccine and it gets widely deployed, maybe the middle of [2021,] we'll see shale start to grow again.

It's a geopolitical change. For decades and decades, it was OPEC versus non-OPEC. Then it became OPEC+, but now it's really the big three. It's the United States, Russia and Saudi Arabia.

We saw the big three at work in the spring when the oil price collapsed—it went negative—it was the U.S. that stepped in, with some senators taking a strong stance, and the Trump administration negotiated a deal. Russia and Saudi Arabia were in a price war. Afterward the Saudi petroleum minister said, "Now at least we don't need to go to the divorce lawyers."

Instead of negative prices we've been in this thing that I've started calling "the virus alley" of oil prices in the high-$30s to high-$40s, and we're going to be boxed in a virus alley until there's greater confidence about the virus and about vaccines.

Where do you see demand going?

I definitely have views on demand. It's different than what's out there, this kind of pessimism. Commuting will be changed and how much people work in offices. I think every company is struggling with that question about the return to work and how to manage it.

With the downturn that's come with the lockdowns in Europe and the increase in illness in the United States, that hits demand.

But on the other side are two factors that are important. One is named China and one is named India. My colleagues in our office in Beijing say that Chinese oil demand was higher this September than it was a year ago. We just did our annual India Energy Forum with Prime Minister Modi and several ministers, and the message there too is India oil demand is higher in October than it was October before the virus.

So, there may be some surprises on the demand side once the virus is under control. So much does depend upon vaccines and their deployment.

In your book you talked about the developing world and demand. What about demand in any other areas of the world?

There's concern about how hard hit the continent of Africa is going to be long term. What I do find in emerging markets of the developing world are different attitudes toward those two words, energy transition, than you hear in North America—U.S. and Canada—and western Europe.

It's because [developing countries] have lots of poor people and for them the biggest environmental problem—this is what the World Health Organization said—is indoor air pollution from people using waste wood, animal waste, crop waste. You're talking about 3 billion people who do that.

"Energy transition is everywhere. Every discussion seems to be about it. It means different things to different countries. Different countries are positioned differently for it. There's a lot of disagreement as to what it actually means, how long it's going to take and how much it's going to cost."

For those countries—and I have a chapter that focuses on that—what they are saying is we need more commercial energy. We need more natural gas. We need more oil, in order to address poverty and to address health.

I have a great quote from the Nigerian petroleum minister saying it's great if you live in the Netherlands or Germany because you can go in that direction. We have a lot of people whose income needs to be improved, whose health needs to be improved, and we have to get natural gas to them.

You devoted part of your book to the role of technology in the future, so can you say what you think the importance of breakthrough technology will be for this industry?

I think two things. One is technologies don't happen overnight. Shale took 18 years of obsession and rebuke in the face of a lot of skepticism directed to George P. Mitchell. In my previous book "The Quest," I went back and asked where the modern wind and solar industries came from, and they are both from the early 1970s. It took about 40 years until it became commercial. Now they're very commercial and competitive.

We need new technology. IHS Markit did a study with Ernie Moniz, the former energy secretary. What are the technologies that aren't there? We identified a lot of them, and they're not going to come overnight. In terms of where a lot of people want to move on energy transition, we're going to need new technology, and that's going to take time.

What do you think for the service sector going forward?

If you think back to the late-'90s when oil prices collapsed, you got the consolidation that led to the supermajors to bring down costs and scale. That's what we are now going to see and are seeing in shale. It's inevitable. It's smaller companies that make it happen, and there will still be some small companies, and people will start new small companies, but you'll see a lot of consolidation.

You won't have that helter-skelter growth—a million-and-a-half to 2 million barrels a day. I think for the service industry, it's already gone through a very difficult period, but with a re-

> "What I do find in emerging markets of the developing world are different attitudes toward those two words, energy transition, than you hear in North America—U.S. and Canada—and western Europe."

covery there will be a recovery in the service industry. It will not be on the same scale and same intensity of activity that we saw. There will be more of a focus on the environmental aspects of it.

You can't have an oil and gas industry without a service industry. The service industry needs to come back and it will come back, but it won't come back on the same scale as when it was really boom times.

But, and I want to emphasize this, we will see U.S. output start to improve in the second half of [2021].

One of the things we do here at Hart Energy is champion the next generation of oil and gas executives. How do we get more people involved with this industry?

Given all of the language that's out there, it is a challenge. I spoke to the Society of Petroleum Engineers and one of the questions was, what do we tell our petroleum engineers? We tell them that the oil industry is going to continue to be a substantial industry, and it will continue to be a global industry.

It actually had a resurgence in the United States. If you go back to 2008, back then there was no future in the U.S. It had to be elsewhere. I think there will be an industry. It does go through these cycles, and that creates a lot of pain. It's going to need a new generation of people coming in and seeing the importance of this industry in terms of making the economy continue to work.

Are we at a watershed moment with oil and gas?

Yes, in the sense that the energy markets are going to be competitive in a way that they were not before. They'll be competitive with wind and solar, competitive with electric cars—although the view I take in "The New Map" is it's going to take a long time.

In 2050 there will probably be as many gas powered cars as there are today, but there will also be 600 million electric vehicles.

That's a very interesting way to see it, that it is a much more competitive landscape and public policy is going to be much more active in it. Companies will adapt to that, but I think if wind and solar took a long time, carbon capture will have to be part of it because oil and gas are going to be a big part of the energy mix in 2040 and 2050. □

JAMES DURBIN

THE 2021 TOP 50 INDEPENDENTS

In an era where many would like to wish hydrocarbon-based energy away, we at *Investor* celebrate the American independent producers that supply much of our world's existing energy needs. And, just for fun, we're going to rank you.

ARTICLE BY
STEVE TOON

One thing is clear when compiling a ranking of the Top 50 U.S. independent producers in 2020—the racing field is contracting. A group of 50 public E&Ps is almost all-encompassing, with a range of market capitalizations from a high of $41 billion to a mere $98 million. And while the quantity of oil and gas companies has condensed in the last two years since *Investor* last performed a market rank check, so too have the valuations. By a lot.

Alas, it almost feels like a scene out of Avengers: Infinity War when half of the universe's life forms dissipated into a cloud of ash.

The 2021 OGI Public E&P Top 50 ranks the largest publicly held U.S. based independent producers by market capitalization, a simple and straightforward measurement of how Wall Street values companies in a moment of time. Market caps were researched in mid-November 2020 using data from Yahoo Finance. Changes shown in the accompanying table are against the 2019 Top 50, in which market capitalizations were researched in November 2018.

Since then, the XOP index of U.S. E&Ps has dropped by 57% over two years while the S&P 500 has climbed

36%, a data point that encapsulates the ongoing woes of the proud sector that powers the world. The combined market caps of the 50 largest U.S. companies in 2019 were $460 billion; this year, $195 billion. Some $262 billion evaporated.

Ostensibly, the oil and gas sector is in the midst of a shrink-to-grow phase, one that could take a few years to play out. The anti-fossil fuel movement would hope this is a shrink-to-die moment in history in favor of noncarbon forms of energy. And while alternative fuels will undoubtedly gain market share—as they should if they're economically viable—oil and gas will continue to play a role in the energy mix for some time to come.

This current cycle, while painful, will strengthen the sector, which had gotten bloated and off course during the roaring shale days. It will burn away debt burdening the system and tighten cost efficiencies as producers strip out unnecessary costs and consolidate portfolios to maximize G&A. What was old is new again as the sector relearns how to make money rather than spend willy nilly on credit. We're watching a period of winnowing, where the strongest survive.

That said, since our last Top 50 ranking, while a number of those from two years ago dropped out of the list due to bankruptcies and restructurings, amazingly, considering the storms that have swept over the landscape, only three ceased to exist. Anadarko Petroleum was absorbed in a $57 billion made-for-TV-deal by Occidental Petroleum Corp.; Noble Energy Inc. packed its Permian, Eagle Ford and Israel bags and moved in with Chevron Corp.; and Appalachian midcap Montage Resources Corp. hooked up with Southwestern Energy Inc. in a pure-basin merger. The remaining 47 remain in the race, though not all in the Top 50.

The 2021 Public E&P Top 50 tells a dramatic tale of transition. Business strategies are being retooled, and many are taking pit stops to exchange pure production speed for more durable, value-driven engines. All are seeking relevance in the eyes of Wall Street to attract public capital back into their fuel tanks. Some are succeeding and trending up; some struggle and find themselves getting lapped. The individual stories are gripping with outcomes undetermined. Let's take a look.

The Big 10

While volatility best describes the past two years, seven of the companies appearing in our

The merger of Pioneer Natural Resources and Parsley Energy, among other large independent E&P mergers, helped set the tone for consolidation in 2020.

Top 50 Public E&Ps

Rank	Company	Ticker	Market Cap 2021 ($MM)*	Market Cap 2019 ($MM)	% change 2YoY	2019 Rank	YoY Rank	Net Boe/d	Key Plays
1	ConocoPhillips	COP	41,843	76,822	-46%	1	0	1,066,000	Permian, Eagle Ford, Alaska, GOM
2	EOG Resources	EOG	26,211	61,186	-57%	2	0	377,600	Eagle Ford, Powder River, D-J, Bakken, Midcon
3	Pioneer Natural Resources	PXD	15,555	27,233	-43%	5	2	354,968	Midland Basin
4	Hess Corp.	HES	14,135	17,726	-20%	8	4	321,000	Bakken, GOM, Guyana, Southeast Asia
5	Occidental Petroleum	OXY	11,985	56,245	-79%	3	-2	1,256,000	Permian, D-J, GOM
6	Concho Resources (sale pndg)	CXO	11,123	27,151	-59%	6	0	320,000	Permian
7	Cabot Oil & Gas	COG	6,672	11,043	-40%	14	7	40,100	Marcellus
8	Diamondback Energy	FANG	5,962	11,234	-47%	13	5	287,300	Midland Basin
9	Continental Resources	CLR	5,431	18,870	-71%	7	-2	297,000	Bakken, Midcon
10	Parsley Energy (sale pndg)	PE	4,913	7,752	-37%	18	8	183,200	Permian
11	Devon Energy	DVN	4,881	16,795	-71%	9	-2	326,000	Delaware, Eagle Ford, Midcon, Powder River
12	Marathon Oil	MRO	4,334	15,238	-72%	10	-2	370,000	Eagle Ford, Bakken, Midcon, Delaware
13	Apache Corp.	APA	4,167	14,073	-70%	11	-2	445,241	Permian, Suriname
14	EQT Corp.	EQT	3,969	9,134	-57%	15	1	663,333	Marcellus, Utica
15	WPX Energy (sale pndg)	WPX	3,652	6,531	-44%	20	5	207,700	Delaware, Bakken
16	Cimarex Energy	XEC	3,475	8,613	-60%	16	0	294,400	Permian, Midcon
17	Ovintiv Inc.	OVV	3,178	8,419	-62%	17	0	510,000	Permian, Eagle Ford, Midcon
18	CNX Resources	CNX	2,113	3,168	-33%	29	11	209,600	Marcellus, Utica
19	Southwestern Energy	SWN	2,032	3,291	-38%	26	7	222,333	Appalachia
20	Range Resources	RRC	1,828	4,335	-58%	24	4	365,666	Marcellus, Utica
21	PDC Energy	PDCE	1,602	2,973	-46%	32	11	192,000	Delaware, D-J
22	Magnolia Oil & Gas	MGY	1,450	2,860	-49%	33	11	54,306	Eagle Ford
23	Murphy Oil	MUR	1,438	5,363	-73%	21	-2	156,000	Eagle Ford, GOM
24	California Resources	CRC	1,284	1,344	-4%	45	21	106,000	California
25	Comstock Resources	CRK	1,102	879	25%	54	29	193,888	Haynesville
26	Matador Resources	MTDR	1,062	3,090	-66%	30	4	73,000	Delaware, Eagle Ford
27	Antero Resources	AR	1,042	4,979	-79%	22	-5	628,666	Marcellus, Utica
28	Denbury Resources	DEN	935	1,338	-30%	46	18	49,686	Gulf Coast, Rockies
29	Diversified Gas & Oil Plc	DGOC	786	N/A	N/A	N/A	N/A	107,000	Appalachia
30	Oasis Petroleum	OAS	754	2,976	-75%	31	1	54,100	Bakken, Delaware
31	Whiting Petroleum	WLL	717	3,283	-78%	27	-4	32,333	Bakken
32	Kosmos Energy	KOS	636	2,618	-76%	35	3	56,700	GOM
33	Talos Energy	TALO	597	1,235	-52%	48	15	48,600	GOM
34	Enerplus Corp.	ERF	519	2,387	-78%	37	3	91,022	Williston, Marcellus, Canadian Waterfloods
35	Bonanza Creek Energy	BCEI	505	580	-13%	58	23	26,200	D-J
36	SM Energy	SM	358	2,556	-86%	36	0	126,300	Midland, Eagle Ford
37	QEP Resources	QEP	317	2,152	-85%	40	3	76,700	Permian, Bakken
38	Callon Petroleum	CPE	298	2,369	-87%	38	0	102,000	Permian, Eagle Ford
39	Berry Corp.	BRY	270	321	-16%	N/A	N/A	27,600	California
40	Baytex Energy	BTE	269	1,092	-75%	50	10	77,814	Eagle Ford
41	Centennial Resources	CDEV	268	4,891	-95%	23	-18	68,934	Delaware
42	Contango Oil & Gas	MCF	253	146	73%	78	36	17,200	Delaware, Eagle Ford, GOM
43	W&T Offshore	WTI	249	883	-72%	53	10	34,459	GOM
44	Northern Oil & Gas	NOG	243	1,166	-79%	49	5	29,051	Bakken
45	Earthstone Energy	ESTE	221	529	-58%	60	15	16,959	Midland, Eagle Ford
46	Goodrich Petroleum	GDP	146	179	-18%	76	30	20,916	Haynesville
47	Penn Virginia Corp.	PVAC	134	976	-86%	51	4	24,295	Eagle Ford
48	Laredo Petroleum	LPI	133	1,292	-90%	47	-1	25,120	Midland
49	Battalion Oil Corp.	BATL	120	573	-79%	59	10	17,076	Delaware
50	SandRidge Energy	SD	98	393	-75%	64	14	22,300	MissLime, NW Stack, North Park Basin, Permian

VALUATIONS, RELATIVELY SPEAKING

In a brutal two years for oil and gas equities in which E&P valuations trended in the dark, dark reds across the board, two companies stand alone with positive valuation growth: Contango Oil & Gas and Comstock Resources. For literally all others in the sector, a good year is measured in the not-too-negative category. Keep in mind the XOP index is off 57% on average in that time period, so any company above a minus 57% is relatively positive, relatively speaking.

Best Performing Valuations

No.	Company	Market Cap 2021 ($MM)	Market Cap 2019 ($MM)	% Change
1	Contango Oil & Gas	253	146	73%
2	Comstock Resources	1,102	879	25%
3	California Resources	1,284	1,344	-4%
4	Bonanza Creek Energy	505	580	-13%
5	Berry Corp.	270	321	-16%
6	Goodrich Petroleum	146	179	-18%
7	Hess Corp.	14,135	17,726	-20%
8	Denbury Resources	935	1,338	-30%
9	CNX Resources	2,113	3,168	-33%
10	Parsley Energy	4,913	7,752	-37%

Worst Performing Valuations

No.	Company	Market Cap 2021 ($MM)	Market Cap 2019 ($MM)	% Change
1	Centennial Resources	268	4,891	-95%
2	Ring Energy	44	508	-91%
3	Laredo Petroleum	133	1,292	-90%
4	Sundance Energy Australia	13	108	-88%
5	Callon Petroleum	298	2,369	-87%
6	Penn Virginia Corp.	134	976	-86%
7	SM Energy	358	2,556	-86%
8	Harvest Oil & Gas	38	266	-86%
9	QEP Resources	317	2,152	-85%
10	Amplify Energy	34	212	-84%

2019 list retain their status in the highest echelon. By design, those that lead the pack are the best performers. Yet only six of the Top 50 E&Ps clock in with a market cap higher than $10 billion, a demarcation of scale that will put them on investors' radars. ConocoPhillips Co. and EOG Resources Inc. stay atop the rankings in the Nos. 1 and 2 positions, respectively, as before.

1. *ConocoPhillips*—ConocoPhillips, a former diversified major, far outpaces the pack with a $41 billion market cap, boasting a major-like international and domestic portfolio that generates gobs of cash flow. The Houston-headquartered company presciently pivoted to a returns-driven model after the 2014 downcycle when the other cool kids were still driving growth models. In the past four years it has consistently delivered 40% of free cash flow back to investors, which is why many investors have stuck with the company while exiting the oil and gas sector otherwise.

Conoco shook the market most recently, however, when it heralded its pending combo with Permian pure-play and Midland, Texas-favorite Concho Resources Inc., currently No. 6 of the top operator rankings. The pairing will make the 800-lb E&P gorilla even bigger.

"We'll be a nearly $60 billion enterprise that is uniquely positioned to create sustained value by embracing what we believe are the three essential future mandates for our sector," ConocoPhillips CEO Ryan Lance said in the company's third-quarter conference call. "These mandates are: providing affordable energy to the world; committed to ESG excellence; delivering competitive returns. We believe the transaction accelerates our ability to successfully and simultaneously deliver on all three of these mandates. That's how we will win."

2. *EOG Resources*—EOG, a distant second in overall valuation with a $26 billion market cap, is the perennial poster child of producer excellence, setting the example for all other E&Ps as to what they'd like to be when they grow up. Touting its ability to grow organically and thumbing its nose at those calling for M&A, EOG unveiled its South Texas Dorado gas play in November, targeting Austin Chalk and Eagle Ford formations in Webb County, as one of the best gas plays in the U.S.

"No one was looking for a South Texas gas play other than EOG?" one analyst snarkily queried. Yet the Houston company sees low well costs with an advantaged position to export markets via LNG and Mexico. Could the company be signaling a growing strength in natural gas?

But EOG can be contrarian as well. In an environment when other E&Ps are messaging little to less than 5% growth to appease investors skittish of oversupply, EOG plans to nose ahead at an 8% to 10% growth pace—and is modeling $50 oil in their outlook.

"Take a step back, take a deep breath, and think about the future that could be $50/bbl or higher oil," said Heikkinen Energy Advisors namesake David Heikkinen in a followup report. "That seems to be what EOG did and honestly it made me happy when my mind went to that happy place."

CEO Bill Thomas was confident and defiant in his third-quarter opine.

"Notably, we are not playing defense in the current challenging environment. In fact, the opposite is true: We are aggressively moving EOG forward, advancing new plays, identifying innovative solutions to lower costs and improve well productivity, sharpening our technological edge and further demonstrating our commitment to sustainability.

"All of this is driven from the bottom up by a decentralized organization and a unique culture.

JAMES DURBIN

Parsley Energy Inc. proved to be an early leader in developing the outlook of the independent E&P sector on issues such as ESG.

This year more than ever, we are focused on investing in our people and enhancing our culture to sustain our competitive advantage and enable EOG to play an increasingly vital role in meeting the long-term global energy needs."

But even the two largest and most investor-friendly independent E&Ps were not protected from the equity flight seen by the entire sector. ConocoPhillips' value dropped 46% over a two-year period, and the fan favorite EOG, 57%. Some would say that makes them a good bet on a rebound in oil.

3. *Pioneer Natural Resources Co.*—Pioneer, based in Dallas, jumps two spots into the No. 3 position, vacated by Oxy and Anadarko, which downdrafted after their high-profile merger, with a $15.5 billion valuation. Perhaps the most significant event of Pioneer's past two years was the return of Scott Sheffield as CEO following a brief retirement to navigate the company through turbulent headwinds. Quickly following a fact-gathering roadshow with investors, Sheffield jammed the brakes on Pioneer's aggressive growth program and hard shifted to delivering returns back to investors.

More recently, Pioneer joined the second-half '20 consolidation-fest in a pairing with Permian counterpart Parsley Energy Inc., which owns the No. 10 ranking presently, in a $7.6 billion deal including debt. The manifestation creates the largest Permian Basin pure play at 930,000 net acres and adds a Delaware Basin footprint to Pioneer's Midland kingdom.

"Plainly, this acquisition establishes Pioneer as the leading Permian pure-play E&P and enhances the company's ability to generate peer-leading free cash flow for the base-plus-variable dividend strategy going forward," noted John Freeman, Raymond James analyst. "We reiterate our Strong Buy rating."

4. *Hess Corp.*—For No. 4 player Hess, at $14 billion market cap, the discoveries just keep stacking up on its 30% working interest in Stabroek Block offshore Guyana. The Redtail-1 and Yellowtail-2 wells announced in September total 18 discoveries on the 6.6 million-acre find—equal to 1,150 Gulf of Mexico blocks and purported to hold some 8 Bboe recoverable. The New York-headquartered Hess also keeps rigs running on cash cow assets in the Bakken Shale, the Gulf of Mexico and in Southeast Asia.

In April, as U.S. storage began to fill, Hess commissioned three very large crude carriers at 2 MMbbl each to take on three months of its Bakken production to sell into higher priced markets, a slingshot move to enhance returns. But unlike other operators retooling to live within cash flows, Hess is keeping the capex flowing as it builds out Guyana. The uptake: longer cycle, lower decline massive production vs. shale.

With its breadth, will it be a buyer? "We're always looking to optimize our portfolio, but we see nothing in the M&A market that will compete for capital against our existing portfolio of high return opportunities," CEO John Hess told analysts on the 3Q call. It's all just that good. Hess moves four ranks higher than in 2019.

5. *Occidental Petroleum Corp.*—Perhaps no producer wishes for a global COVID-19 vaccine and a return of crude demand more than Occidental Petroleum. Occidental falls three spots to No. 5 but remains in the Top 10. Then considered a safe mini-major investment with an impenetrable dividend, the theretofore steady paced Houston oil and chem company sought grandeur and scale with its play for Anadarko, the No. 4 independent at the time, with visions of becoming "a $100-plus billion global energy leader," according to its victorious announcement.

Unfortunately, it was not to be—at least yet. Instead, the high-premium, debt-heavy deal was akin to a python devouring an alligator, leaving Occidental immobile with a bad case of merger indigestion. Occidental paid $57 billion with a 57% premium and a $30 billion additional debt load. Hindsight is 20-20, of course, but at the time WTI fetched $63/bbl with an upward bias and Occidental anticipated a quick $8.8 billion sale of Anadarko's African assets to immediately lighten the load. As fate would have it, the Mozambique government scuttled about half of the planned asset sales, and oil began an epic downward slide.

Rather than propelling itself into the No. 1 spot of being the global powerhouse it desired, Occidental's valuation instead has fallen almost 80%, from $56 billion pre-deal to $12 billion. Since the deal, Occidental's agenda has focused on debt reduction by asset sales and refinancings.

6. *Concho Resources*—Concho Resources is the big Midland company with a small-town attitude. Formed in 2004 by Tim Leach and IPO'd in 2007, it grew to No. 6 of biggest public companies through a steady stream of acquisitions and organic fortitude. With 550,000 net acres scattered across the whole of the Midland and Delaware basins, everybody was a neighbor to Concho.

At our last ranking its market cap reached $27 billion, but like the rest of its peers, it dipped nearly 60% to $11.1 billion currently. When the call from Wall Street came for the industry to consolidate, most thought Concho would be an acquirer. Instead, it is selling up to No. 1. The $9.7 billion deal was for all COP stock, so CXO investors are hoping to ride the rising tides on ConocoPhillip's boat.

7. *Cabot Oil & Gas Co.*—At No. 7, Cabot is the top ranked gas-weighted producer on the list and forces its way into the Top 10 with an upward move of seven notches. At $6.6 billion market cap, it is also the first to come in below the $10 billion capitalization mark, making it the largest E&P midcap, which says more about the current appeal of the industry to the investment community than the company itself.

The Northeast Pennsylvania producer, though, stands out among peers as a low-cost operator forged out of necessity over several years of producing into a low-priced commodity. In a year in which regional Appalachian differentials resulted in averaged prices below $2/Mcf, Cabot still anticipated generating more than 50% return of capital from free cash flow, it reported. In fact, 2020 marked the fifth consecutive year it has done so.

Cabot is also testing a "new" shale play, the Upper Marcellus, in which it has drilled some 60 wells. EURs indicate 2.7 Bcf per 1,000 lateral foot.

8. *Diamondback Energy Inc.*—Coming in at No. 8 just shy of $6 billion and moving up five clicks, Diamondback bolstered its heft with two acquisitions two years ago. In back-to-back swings, it took in privately held Ajax Resources for $1.2 billion and Alabama-based Permian player Energen Corp. for a cool $9.2 billion.

However, currently, Diamondback is again fodder for consolidation discussion—either as consolidator or target. CEO Travis Stice bristles at the prodding to buy scale. "Getting bigger does not always translate to getting better," he preached in his quarterly call. "Better is what should matter to shareholders."

A well drilled in the Permian Basin by Diamondback today will be quicker, less expensive and operated with the lowest cost structure in the business, he stated, "so we do not need to increase our scale to further reduce our cost structure. … Diamondback is not getting left behind if we don't do anything today, and we prefer not to make rash decisions at the bottom of the cycle."

9. *Continental Resources Inc.*—Bakken and Midcon powerhouse Continental Resourc-es. slips two spots from the last measuring but holds firm in the Top 10 with a $5.4 billion cap. This year, executive chairman Harold Hamm spearheaded a new crude benchmark—the American GulfCoast Select—to try and get an uplift for waterborne exports vs. landlocked WTI, and jousted with Saudi Arabia, Russia and oil traders over shenanigans that collapsed oil pricing in April.

So it's good news that Continental's cash flow breakeven is now $32 with a projected cash flow reinvestment target of 65% to 75%. The excess Bens will go to debt pay down, the company said. This past year marks the fifth consecutive year of free cash flow generation.

And maybe nobody caught the pivot, as everyone knows Continental churns out oil production, but in the chaos that was May, the company shifted all of its Oklahoma rigs to the Anadarko Basin gas window. "Our assets afford commodity optionality and give us the capability of pivoting quickly and nimbly as demonstrated this quarter to take advantage of higher natural gas prices," said Hamm on the call. At $3 Henry Hub, those gassy producers deliver over 50% rate of return. We haven't heard Continental speak Henry Hub in some time.

Underinvestment in the oil and gas space has created a huge opportunity for today's investors, Hamm emphasized, and he'd like you to know, "Continental Resources should be your number one choice."

10. ***Parsley Energy Inc.***—The previously mentioned Parsley, at $4.9 billion, rounds out the Top 10 producers, rising eight spots before stepping out via pending merger. The company, launched by the son of the acquirer and seeded by the grandfather's legacy assets, will return to the family fold, for a slight premium. Just call it destiny. And synergy.

Looking up

Two companies fall out of the Top 10, but only just barely.

Devon slips from No. 9 to No. 11 following a 71% market cap dive two-years-over-year, now at $4.9 billion. The Oklahoma City producer began trimming its portfolio in early 2019, selling its Canadian oilsands business for some $2.2 billion and its legacy Barnett Shale position for $570 million.

Its biggest news, however, is the announced and still pending merger with WPX Energy Inc., a $5.7 billion valuation. The market results of that combo will be reflected in the years ahead—and likely propel Devon back into the upper 10 considering the added scale combined with the swan songs of Concho and Parsley above.

"This strategic combination of Devon and WPX is transformational," said Devon CEO Dave Hager in the company's quarterly call. He added, "To win in the next phase of the energy cycle, a successful company must deploy a financially driven business model that prioritizes cash returns directly to shareholders."

Marathon drops two from No. 10 to No. 12 but, similar to Devon, suffered a stomach-wrenching 72% plummet in Wall Street favor at $4.3 billion. In the 3Q call, CEO Lee Tillman assured, "Now is not the time for panic, but rather a time for healthy companies to press their advantage and not prematurely react to what is at best a distorted and transitory market.

"Not only have we pulled the necessary levers to protect our balance sheet, liquidity and to generate free cash flow this year in a difficult environment, we have also materially improved the resilience of our business and have dramatically enhanced our ability to generate robust financial outcomes."

Those that joined other teams

Consolidation seems to be a constantly discussed theme, but it plays out in bumps of activity. That's certainly the case over the past two years. Eight independents appearing on that list are part of another independent today, freeing up eight spots for new entrants.

TOP 50 BY VOLUME

Oxy's valuation may have suffered following its merger, but the heft of Anadarko's assets shows up in its volumes. The company now tops independents in the total production category, including its global assets. For this group, we excluded majors, but included companies undergoing bankruptcies if still producing while restructuring. For those operators reporting equivalent volumes in Mcfe, *Investor* converted 6,000 cubic feet of gas to 1 bbl of oil.

No.	Company	Net Boe/d
1	Occidental Petroleum	1,256,000
2	ConocoPhillips	1,066,000
3	EQT Corp.	663,333
4	Antero Resources	628,666
5	Ovintiv Inc.	510,000
6	Apache Corp.	445,241
7	Chesapeake Energy	445,000
8	Cabot Oil & Gas	401,000
9	EOG Resources	377,600
10	Marathon Oil	370,000
11	Range Resources	365,666
12	Pioneer Natural Resources	354,968
13	Devon Energy	326,000
14	Hess Corp.	321,000
15	Concho Resources (sale pndg)	320,000
16	Continental Resources	297,000
17	Cimarex Energy	294,400
18	Diamondback Energy	287,300
19	Southwestern Energy	222,333
20	CNX Resources	209,600
21	WPX Energy (sale pndg)	207,700
22	Comstock Resources	193,888
23	PDC Energy	192,000
24	Parsley Energy (sale pndg)	183,200
25	Gulfport Energy	165,330
26	Murphy Oil	156,000
27	SM Energy	126,300
28	Diversified Gas & Oil Plc	107,000
29	California Resources	106,000
30	Callon Petroleum	102,000
31	Enerplus Corp.	91,022
32	Extraction Oil & Gas	87,086
33	Baytex Energy	77,814
34	QEP Resources	76,700
35	Matador Resources	73,000
36	Centennial Resources	68,934
37	Riviera Resources	58,333
38	Kosmos Energy	56,700
39	Magnolia Oil & Gas	54,306
40	Oasis Petroleum	54,100
41	Denbury Resources	49,686
42	Talos Energy	48,600
43	W&T Offshore	34,459
44	Whiting Petroleum	32,333
45	HighPoint Resources (sale pndg)	31,111
46	Silverbow Resources	30,500
47	Northern Oil & Gas	29,051
48	Berry Corp.	27,600
49	Bonanza Creek Energy	26,200
50	Laredo Petroleum	25,120

THE BIGGEST MOVERS

If rank is all about bragging rights, the position matters. Some moved up in big leaps. Most downward movers only slightly. We didn't include current bankrupt companies that fell off the bottom as equities were completely wiped out.

Moving Up

No.	Company	2021 Rank	2019 Rank	Change
1	Contango Oil & Gas	42	78	36
2	Goodrich Petroleum	46	76	30
3	Comstock Resources	25	54	29
4	Bonanza Creek Energy	35	58	23
5	California Resources	24	45	21
6	Denbury Resources	28	46	18
7	Talos Energy	33	48	15
8	Earthstone Energy	45	60	15
9	SandRidge Energy	50	64	14
10	CNX Resources	18	29	11
10	PDC Energy	21	32	11
10	Magnolia Oil & Gas	22	33	11

Sliding Down

No.	Company	Rank 2020	2019 Rank	YoY Rank
1	Centennial Resources	41	23	-18
2	Antero Resources	27	22	-5
3	Whiting Petroleum	31	27	-4
4	Occidental Petroleum	5	3	-2
5	Continental Resources	9	7	-2
6	Devon Energy	11	9	-2
7	Marathon Oil	12	10	-2
8	Apache Corp.	13	11	-2
9	Murphy Oil	23	21	-2
10	Laredo Petroleum	48	47	-1

Of past Top 50 players that have become one with another, Anadarko Petroleum, valued at $29 billion market cap and No. 4 in our last ranking, is the largest to exit. The Woodlands, Texas-based producer with a diverse asset base across the Permian, D-J Basin, Gulf of Mexico and international was a prized target first sought by Chevron Corp. before being top bid by Occidental. Occidental paid $76 per Anadarko share for $38 billion, with another $19 billion in assumed debt. A great deal for Anadarko stakeholders on the surface, but that equity portion in Oxy shares has taken a hit in the interim.

Chevron, which extracted itself from the Anadarko bidding fray and graciously accepted a $1 billion consolation prize in the form of a break-up fee, a year later got cozy with Noble Energy Inc. It paid $13 billion total equity and debt to enjoy taking Noble's Permian, D-J and Mediterranean assets for a spin. Noble was No. 12 in our 2019 ranking. Management noted an unclear path to shareholder value creation in the existing commodity price environment vs. its debt load in its decision to leave the track.

Energen, as aforementioned, tipped its cap in farewell as its assets joined Diamondback's team. Energen ranked No. 19 last time around as the sale was pending at press time. The deal included 179,000 net acres across the Midland and Delaware basins with 97,400 boe/d production.

We all remember Newfield Exploration fondly, the late '80s start-up of the late Joe Foster. Newfield exited the racetrack in a $7.7 billion takeout by Encana Corp., since rebranded as Ovintiv Inc. Ovintiv, based in Calgary with footprints in various U.S. basins including its prime Midland Basin position, stepped out with the Newfield deal by planting a flag in the Anadarko and Arkoma basins in Oklahoma. It ranks 17th on the scale today, the same position as before, with a $3.1 billion valuation.

Jagged Peak Energy, No. 34 previously, was acquired by Parsley Energy and now is soon to be part of Pioneer's portfolio.

Wildhorse Resource Development (No. 39 in 2019) became one with Chesapeake Energy Corp., which is currently undergoing restructuring through Chapter 11 bankruptcy and currently out of this year's rankings.

SRC Energy (No. 41 then) accepted PDC Energy's proposal to increase in scale in the Niobrara, giving PDC an 11-point boost in the rankings to No. 32.

Carrizo Oil & Gas is now drafting with Callon Petroleum following a $3.2 billion all-stock payout. Callon holds its same rank as before at No. 38 following the deal but suffered an 87% drop in valuation post deal.

Those that spun out

It's a sign of the times reflecting sustained low commodity prices through 2020 combined with bloated balance sheets carried over from free-flowing credit of days gone by. And while some 89 U.S. E&Ps have succumbed to the bankruptcy courts in the two years since the last data was collected, according to law firm Haynes & Boone LLP's analysis, only seven of the 2019 Top 50 producers needed a financial engine overhaul since then. With some irony, we consider that good news.

Whiting Petroleum is the former highest ranking E&P to go down. Previously ranked No. 27 with a $3.2 billion cap and one of the largest acreage holders in the Bakken Shale, Denver-based Whiting emerged from restructuring this August with a new board and management, led by former SRC Energy and Kodiak Energy CEO Lyn Peterson. With a much smaller market cap of just $717 million, Whiting still makes the cut at No. 31.

Close behind at No. 28 in 2019, Chesapeake Energy Corp. finally succumbed to the inevitable. Once the largest gas producer in the nation, for years it struggled to operate efficiently under a massive debt load as high as $18 billion with no help from commodity prices. New

management and aggressive asset sales knocked that load down to $12 billion, but the COVID-19-induced demand downturn forced the lagging company into the wall. It has remained sidelined since June but retains a host of premier acreage in multiple shale plays.

Oasis Petroleum, Gulfport Energy, Extraction Oil & Gas, California Resources Corp. (CRC) and Denbury Resources round out the other familiar names that pitted with extended mechanical repairs to their balance sheets. Of these, Gulfport and Extraction remain stalled, but three of these have since exited the Chapter 11 pit road and are launching back up to racing speeds.

Denbury exited restructuring in September with a truncated name—just Denbury Inc. The CO_2 EOR specialist lightens the load by $2.1 billion and retains its top management in the driver's seat. With a $938 million market cap, Denbury re-joins the Top 50 in the No. 28 position, well above its previous rank of 46, albeit with a 30% capitalization haircut by comparison.

CRC likewise accelerated out of the pit in late October with $4.4 billion converted to new owner interest, a new board and legacy management. The company—with low-decline assets in renewable-friendly California—had carried some $6 billion in debt in its trunk since its spin-off from Occidental Petroleum in 2014 and is now free from that drag for the first time. CRC rejoins the Top 50 at No. 24 with a $1.2 billion cap, only slightly off its 2019 valuation when it ranked No. 45.

Last out of the pit for this year's standings is Oasis. The Houston-based, Bakken-focused Oasis flushed $1.8 billion of debt out of the system and re-entered in November with a new board and new equity holders but also the same management as before. Oasis roars back into the pack at No. 30 and an upward trending $754 million valuation.

The new kids

After all that jostling for preferred positions, only 11 new names join the lineup of 50 top companies. Or maybe a 20% turnover might be considered high. In the E&P world, however, companies historically come and go—the nature of the entrepreneurial wildcatter to exit for profit and seek new horizons. Perhaps that trend is waning as investors seek more scale and stability from the sector.

25. *Comstock Resources Inc.*—On the outside looking in last round, Comstock Resources powers its way halfway through the pack 29 spots to settle at No. 25 with a $1.1 billion valuation.


TOM FOX

Comstock's recent story is tied to Dallas Cowboy's owner Jerry Jones, a new majority owner of Comstock as well. Jones bought into the Ark-La-Tex gas producer in 2018 taking public investors along for the ride with him. In 2019, Comstock got serious with a $2.2 billion takeout of privately held Covey Park Energy, an East Texas player. With capital to spend, Comstock is a favorite spectator pick to further consolidate Haynesville Shale operators.

And CEO Jay Allison doesn't disagree. "I think you're going to have some stranded Haynesville producers that need to do something," he said on the most recent conference call, suggesting market cap growth was a motivator. Commenting on future opportunities for Comstock: "Brighter days are ahead of us," he said. "Our rearview mirror is pretty small, and the windshield is really big—and gas prices look really good."

29. *Diversified Gas & Oil Plc*—The London-listed Diversified calls Birmingham home, but that's Alabama and not the U.K., just to be clear, y'all. The company debuts on the Top 50 board this year at No. 29 with a $786 million market cap. This producer of long-lived Appalachian assets IPO'd on the London AIM in 2017 and slipped below the radar at our last ranking. However, bolstered by European investors and a promise of steady dividends based in cash flows from low-decline production, in that time it's made some $2 billion in acquisitions to raise its standing in the ranks.

"The company is bigger, but we continue to stay true to our strategy," Hutson told *Investor*. "We continue to acquire producing properties and target low-cost, long-lived, low-decline assets on the conventional and unconventional sides. And we don't apply value to undeveloped resources; all of our value is attributable to the PDP."

Additionally, Diversified recently secured a $1 billion commitment from Oaktree Capital for further acquisitions.

35. *Bonanza Creek Energy Inc.*—Although its market cap dropped 13% since 2019, Bonanza Creek jumps 23 notches up the board to No. 35 with a $505 million valuation. Bonanza Creek cleared the books of debt in a 2017 Chapter 11 and has worked to rebuild its equity since. More recently, the Colorado operator has faced uncertainty around the state's shifting regulatory regime, but is secure in its 62,000 net-acre sweet spot in rural Weld Co.

Late in 2020, however, Bonanza Creek revealed its intent to acquire fellow Niobrara producer HighPoint Resources Corp. out of bankruptcy for $376 million. The deal would more than triple its footprint.

Seven new names fill out the final 10 spots in this year's Top 50, all falling into the realm of microcaps with valuations below $300 million.

The last time *Investor* performed a market check, Berry Petroleum was in the process of re-IPO'ing following a 2017 restructuring. The Bakersfield, Calif.-based producer not only trimmed its debt but also its name, losing the

"Petroleum." It holds conventional assets in California, Colorado and Utah. Berry Corp. joins the club at No. 39 with a $270 million cap.

At a $253 million market cap, movements in the tens of millions of dollars create big percentage jumps for Contango Oil & Gas Co. But Contango's positive 73% increase over two years is not accidental. It has engaged in several acquisitions and a joint venture in the interim, including the late-2020 announcement that it will combine with Mid-Con Energy Partners. It is gradually and meticulously building scale, entering the Top 50 at No. 42—all the way from 78 previously.

Perennial Gulf of Mexico producer W&T Offshore has been around almost as long as the Gulf, it seems, but its valuations have taken a hit, sliding to $249 million compared to $883 two years prior, a 72% equity deflation. COVID-19 shut-ins and storm shutdowns have hammered 2020 production, and exiting 2020 it had all rigs idled. Its portfolio, however, paints a picture of more heft: 413,000 net Gulf of Mexico acres and 139 MMboe proved reserves. The Houston floater cash flowed every quarter in 2020 and bought back $72 million in senior debt at discount.

Tracy Krohn, CEO, said in public comments that he remains optimistic during this challenged environment. "We look for ways that will continue to add value to W&T as we've done this far in 2020 through debt repurchases at discount, integrating acquisitions, reducing LOE costs and closely managing our capital spending." WTI this year moves up a full 10 clicks to No. 43.

Earthstone Energy shut in more than half its production and all its Midland Basin rigs during the oil price shock of 2020, but managed to deliver free cash flow nonetheless. Although seemingly small at $221 million valuation, it acts big with a lease operating expense of $4.51/boe and a debt load close to 1x. And building scale is the goal, said CEO Robert Anderson in November. "We're definitely seeing a continued flow of opportunities, most of which are in some stage of distress, but we are optimistic that we'll be able to add scale in this environment and drive shareholder value." Earthstone leaps 15 clicks to No. 45.

Haynesville Shale producer Goodrich Petroleum Corp. burns rubber an amazing 30 ranks to land in the Top 50 at No. 46 this year. At $146 million market cap, its valuation drops just 18% from 2019, a sector win by any measure these days. Like its larger peers, Goodrich is targeting free cash flow generation and debt paydown in 2021. Its 24,000 net North Louisiana acres are 75% undeveloped.

This time last writing No. 47 Penn Virginia Corp. was scheduled to be acquired by Denbury Resources for $1.7 billion. The deal didn't happen, and the Eagle Ford player kept its nose to the drill bit until the pandemic slowed down the world. Since, private-equity firm Juniper Capital has infused $150 million cash and $38 million in asset contributions into PVAC in exchange for a 59% controlling interest. "This transaction further solidifies our position as a leader in the small cap E&P space," said CEO Darrin Henke in the announcement. Penn Virginia moves up four with a $134 million market cap.

After two bankruptcies, the former Halcón Resources changed its ownership, management team and name while keeping its Permian Basin assets. The new Battalion Oil Corp. with a market cap of $120 million, squeaks into the back of the pack 10 places better than the last vetting. The goal is more, per CEO Richard Little. "We continue to look for opportunities for responsible, strategic M&A to create scope and scale," he said in the last quarterly call.

Finally, Sandridge. The Oklahoma City operator and Mississippi Lime specialist has had a storied and volatile history and brought in a turnaround artist earlier in early 2020 to "right size" the cost structure. This, following a revolving door of CEOs coming and going over several years. After six months of debt paydown including selling its headquarters, new CEO Carl Geisler touted in the 3Q call, "We now find ourselves in the happy position of being one of the few, if not the only, small-cap publicly traded oil and gas companies transitioning to an increasing net cash positive balance."

In November, Sandridge traded its outstanding bank debt for $30 million from Icahn Enterprises, owned by 13% stakeholder Carl Icahn. With a nanocap $98 million in market equity, Sandridge climbs 14 to eke into the final spot at No. 50.

ON THE BUBBLE

By the time you peak below No. 50 in the public E&P space, you're rooting around in the micro- and nanocap stock space. Nonetheless, three of our Top 50 are due to be smashco'd by the end of the first quarter, leaving at least three open spaces at the lower tier. Let's figure there's destined to be even more consolidation up and down the valuation chain in the months ahead, so who's on the bubble looking to come in?

Pedevco Corp.	$97MM
Evolution Petroleum	$86MM
Epsilon Energy	$75MM
Silverbow Resources	$69MM
Ring Energy	$44MM

The checkered flag

Energy now comprises just 2.5% of the S&P 500, and U.S. independents a fraction of that. Oil and gas stocks are down more than half in two years, turning once large-cap independent producers into mid-caps or lesser.

But if you like a fast and furious sport, the adrenaline of high-pitched engines, the smell of burned rubber, the occasional spectacular crash and watching the players fight for pole positions, then E&P Wall Street spectating is for you. The only thing more exciting is to be in the cockpit. ☐

Select earnings calls comments sourced from seekingalpha.com.

Granite Washout: Maverick Merges FourPoint's Vast Western Anadarko Empire


FOURPOINT ENERGY

THE SPRAWLING WESTERN Anadarko Basin portfolio amassed over the past six years by George Solich's **FourPoint Energy LLC** now resides in the coffers of Houston's **Maverick Natural Resources LLC**. The merger, for undisclosed terms, comes following a debt restructuring that shifted controlling interest of FourPoint to its bondholder, which in turn flipped the E&P and midstream assets to Maverick in December.

Earlier this summer, Denver-based FourPoint negotiated a restructuring agreement with **EIG Global Energy Partners**, which held its senior secured notes, to exchange outstanding debt for equity ownership in a consensual agreement, per Solich. EIG also holds a majority interest in Maverick, and the portfolios were merged under one management team.

In conjunction with the all-equity merger, FourPoint's E&P assets became a subsidiary of Maverick and were renamed **Unbridled Resources LLC**. Unbridled is now the largest producer in the Western Anadarko Basin.

The deal includes approximately 50,000 net boe/d (47% liquids) from Western Oklahoma and the Texas Panhandle. The Unbridled position spans 700,000 acres across the core of the Granite Wash and Cleveland Sand plays.

The acquisition also includes **MidPoint Midstream LLC** and **Wheeler Midstream LLC**, which provide midstream services in the Western Anadarko Basin.

Chris Heinson, Maverick CEO, said in a release, "The acquisition of FourPoint demonstrates Maverick's ability to translate its best-in-class operational proficiency into significant growth."

Maverick itself is a reincarnation of the former MLP **Breitburn Energy Partners** following emergence from bankruptcy in early 2018 with new management. Since then, the company has become a leader in reducing costs in mature assets, Heinson said.

"Maverick's transformation process allows us to rapidly deploy technology and analytics to drive reductions in G&A and lease operating expense. By renaming FourPoint Energy to Unbridled Resources, we are signaling a shift from the traditional shale model to Maverick's margin-focused operational strategy. These assets add to Maverick's substantial portfolio of long-lived assets."

The combined company's pro forma 2020 debt-to-EBITDA is approximately 0.5x following the all-equity transaction, said Heinson. Maverick operates in seven producing areas across the U.S. and produces approximately 35,000 bbl/d.

FourPoint launched in 2014 on the experience of the former **Cordillera Energy Partners** team. Cordillera, the third iteration for the team, exited to **Apache Corp.** in 2012 for $2.8 billion. Over the next four years it would aggregate some $4 billion in acquisitions across the play, becoming the predominant player in a basin the team knew well.

Solich, FourPoint president and CEO, said the straw that broke the start-up's back was debt. "From a capital structure standpoint, we only had 30% of our capital structure in debt, but with prices falling like a knife we couldn't grow fast enough or drop costs enough to really get out from under even a 30% debt-to-cap," he told *Investor*.

Solich said the company worked for the last nine months to avoid bankruptcy. "Bankruptcy has become sort of a strategy, but it's definitely a marker for where our industry is," he said, adding that he wanted to return as much as possible to FourPoint shareholders instead.

As part of the negotiated restructuring, the FourPoint Energy name will revert to Solich and it will retain its existing office headquarters in Denver. It will also continue to manage the assets of **LongPoint Minerals**,

LongPoint Minerals II and execute the master service agreement it retains with FourPoint Permian LLC in relation to its Permian Basin joint venture, **DoublePoint Energy**.

The transfer of the core assets won't be the end for Solich and FourPoint Energy, however, he said. It's a chance to reinvent itself. "Yesterday's trophies won't win tomorrow's games. It will no longer be enough to be in the right rocks," he said.

While Solich did not tip his hand on what FourPoint plans for the future, he remains resolute that the company and the industry have a bright future ahead.

"Differentiation comes from assets, people and performance. Of those three, having talented, hardworking and resilient people is the most important and the most enduring," Solich said of FourPoint. "We built a company starting from zero and we grew production tenfold, and we tripled reserves. We became the third largest producer in Oklahoma. We did it with really great people and very complex assets."

Following the FourPoint integration, Heinson indicated Maverick will continue to be a consolidator of proved developed producing assets. "With our proven track record of safe, environmentally responsible operations and significant operational scale, we are exceptionally well-positioned to acquire additional producing assets."

As part of the merger, EIG is adjusting the Maverick board composition to support the increased scale of the company and the plans for continued growth and strategic development. Linda Z. Cook, managing director of EIG and CEO and board member of Harbour Energy, will join the Maverick board as chairman. Jim Blackwell, an industry veteran who is also a board member of **Harbour Energy**, will join as well.

Gibson, Dunn & Crutcher LLP advised Houlihan Lokey as financial adviser in Maverick's acquisition. The Gibson Dunn team was led by Houston partner Hillary Holmes.

—Hart Energy staff

S&P Global To Buy IHS Markit In All-Stock Deal Valued At $44 Billion

S&P GLOBAL AND IHS Markit entered into a definitive merger agreement on Nov. 30 to combine in an all-stock transaction that values IHS Markit at an enterprise value of $44 billion, including $4.8 billion of net debt.

HART ENERGY/SHUTTERSTOCK.COM

The landmark deal combines two of the world's largest providers of data. The combined company will be headquartered in New York with a substantial presence in key global markets across North America, Latin America, EMEA and Asia Pacific.

"Through this exciting combination, we are able to better serve our markets and customers by creating new value and insights," Douglas Peterson, president and CEO of S&P Global, said in a statement. "This merger increases scale while rounding out our combined capabilities and accelerates and amplifies our ability to deliver customers the essential intelligence needed to make decisions with conviction. We are confident that the strengths of S&P Global and IHS Markit will enable meaningful growth and create attractive value for all stakeholders. We have been impressed by the IHS Markit team and look forward to welcoming the talented IHS Markit employees to S&P Global."

Peterson will serve as CEO of the combined company. Lance Uggla, chairman and CEO of IHS Markit, will stay on as a special adviser to the company for one year following closing. Richard Thornburgh, current chairman of S&P Global, will serve as chairman of the combined company. The remaining members of the combined company's leadership team will comprise senior leaders from both organizations.

Under the terms of the merger agreement, each share of IHS Markit common stock will be exchanged for a fixed ratio of 0.2838 shares of S&P Global common stock. Upon completion of the transaction, current S&P Global shareholders will own approximately 67.75% of the combined company on a fully diluted basis, while IHS Markit shareholders will own roughly 32.25%.

The combination is expected to close in the second half of 2021. The transaction requires the approval of shareholders of both S&P Global and IHS Markit and is not subject to any financing conditions.

Goldman, Sachs & Co. LLC is lead financial adviser to S&P Global. **Citi** and **Credit Suisse** are also serving as financial advisers to S&P Global. **Wachtell, Lipton, Rosen & Katz** is legal adviser to S&P Global.

Morgan Stanley & Co. LLC is lead financial advisor to IHS Markit. **Barclays, Jefferies LLC** and **J.P. Morgan Securities LLC** are also serving as financial advisers to IHS Markit. **Davis Polk & Wardwell LLP** is legal adviser to IHS Markit.

—Emily Patsy

Contango Oil & Gas Snags Oily, Low-Decline Assets

CONTANGO OIL & GAS Co. recently agreed to acquire a bundle of oily, low decline assets at what Contango CEO Wilkie S. Colyer described as an "attractive valuation."

The Fort Worth, Texas-based company will pay $58 million in cash for the acquisition of proved developed producing heavy reserves located in in the Big Horn, Permian and Powder River basins made via a bank-owned liquidation of assets. The transaction represents more than a 50% discount to producing reserve value, according to a company release from Nov. 30.

"This opportunity became actionable as a result of our proprietary pipeline of assets owned by nonnatural owners, and our hope is that, as in this case, sellers view us as a solution provider as much as they do a counterparty in looking for a new home for stranded assets," Coyler said in a statement.

The deal adds 182,000 net acres and 7,500 boe/d (55% liquids) of production to Contango's portfolio in the Big Horn, Permian and Powder River basins, where the company already has existing operations. Contango paid about $7,700 per boe/d for the acquisition, according to estimates made by analysts with **Enverus**.

The largest property in the package, the Elk Basin Field within the Big Horn Basin, is a conventional asset which has been producing from multiple horizons for over 100 years. The field currently produces approximately 2,000 boe/d (87% oil and 100% liquids), having exhibited low single-digit decline rates for several decades, according to Contango.

The second largest asset in the portfolio, located on the Central Basin Platform and Northwest Shelf areas of the Permian Basin, currently produces 3,800 boe/d (40% oil and 59% liquids).

Contango estimates unlevered payback period on the mature conventional assets to be 2.7 years at Nov. 27 strip. Further, Coyler believes Contango has the expertise to maximize the value of the assets via its technical staff formerly at **Mid-Con Energy Partners LP**, which the company is in the process of acquiring through an all-stock deal announced in late October.

"This is another step for us in consolidating upstream assets in a difficult environment for the industry as a whole," Coyler added in his statement on Nov. 30. "We will continue to be on the lookout for transactions accretive to our shareholders, defined as ones which increase intrinsic value per share, whether they be cash purchases, M&A, reorganizations or distressed debt acquisitions in what continues to be a target-rich environment for us."

On Nov. 30, Contango also announced a private-equity capital raise with a select group of institutional and accredited investors. The company said it plans to use the expected approximately $22 million of proceeds from the sale of about 14.2 million shares of its common stock to fund the acquisition of assets in the Big Horn, Permian and Powder River Basins from an undisclosed seller.

The bank-owned liquidation transaction is expected to close Dec. 31 and have an effective date of Aug. 1.

Contango expects its acquisition of Mid-Con Energy to close by early 2021.

—Emily Patsy

Ameredev Texas Closes Deal For Lilis Energy Assets

LILIS ENERGY INC. entered bankruptcy in June with a prepackaged restructuring plan that would have provided it with options that included a path to operating as a private company. Instead, the company will exit into the ether after funding fell through and the company initiated a court-supervised sales process.

In November, **Ameredev Texas LLC** was named as the winning bidder to acquire substantially all company assets for $46.6 million. Lilis said on Dec. 2 that it had closed the sale of its Permian Basin assets in West Texas and southeastern New Mexico.

In connection with the transaction, the company terminated its registration with the U.S. Securities and Exchange Commission on Dec. 7.

Lilis Energy was a Fort Worth-based independent E&P with a roughly 20,000-acre position in the Delaware Basin.

Throughout 2019, Lilis struggled


AMEREDEV II

to generate returns and even temporarily suspended drilling and completion operations toward the end of the second quarter. Despite reporting improved operational efficiencies and G&A cost savings in its third-quarter 2019 results, by late last year, the company said it had hired **Barclays Capital Inc.** as financial adviser to explore strategic alternatives.

In January, Lilis missed payments on its revolving credit agreement resulting in a borrowing base deficiency. The company sold off some Permian acreage in New Mexico's Lea County to fund repayment of a "substantial portion" of its borrowing base deficiency. However, the company was unable to make the final payment of $7.75 million due June 5 and entered into forbearance.

Lilis had received a commitment from its bank lenders under its credit agreement to provide up to $15 million in debtor-in-possession financing.

The restructuring plan was contingent on **Värde Funds**' election to provide by mid-August an agreed equity commitment and additional debtor-in-possession financing. Ultimately, that funding fell through.

Vinson & Elkins LLP served as legal adviser to the company, **Barclays Capital** served as investment banker for the company and **Opportune LLP** served as restructuring adviser. **Bracewell LLP** served as legal advisor to Ameredev.

—Darren Barbee

EOG To Import Shale Know-How To Oman

EOG RESOURCES IS STAKING claims in Oman as it looks to broaden its operations in a lower cost theater of operations that the E&P believes are necessary for profitability.

In November, **Tethys Oil** said it entered into a farm-out agreement with a subsidiary of EOG to obtain 50% interest in the exploration and production sharing agreement that covers Block 49 onshore Oman. The expansive block covers roughly 3.8 million acres. That comes in addition to a separate third-quarter 2020 acquisition by EOG.

The agreement gives EOG the option to assume operatorship of the block and increase its interest to 85% for any operation related to unconventional hydrocarbon resources. The agreement requires government approval.

"We are excited to partner with Tethys to evaluate an oil-rich basin for both conventional and unconventional potential," William R. "Bill" Thomas, chairman and CEO of EOG, said in a news release. "This agreement expands EOG's footprint in Oman which also includes Block 36 and provides us with an attractive opportunity to explore a basin with significant potential upside for the company."

The deal comes as Tethys was preparing to spud a well, the Thameen-1, in mid-December, about three years after first acquiring rights in the block. Tethys will continue as operator for the first exploration period.

The agreement gives EOG access to the data from several thousand linear kilometers of 2D seismic grids, two recently acquired 2D and 3D seismic surveys, nine exploration wells and additional geotechnical studies and reports.

In consideration for the 50% interest and access to data, EOG will refund all costs incurred on the Block and fund the Thameen-1 exploration well, up to a combined amount of $15 million in U.S. currency.

On a Nov. 6 earnings call, Ezra Y. Yacob, EOG's executive vice president for exploration and production, said the company had entered Oman in the third quarter with the acquisition of 4.6 million net acres in Block 36.

"Block 36 is in the southwest portion of the country. It's located in the Rub Al Khali basin, which is a well-known hydrocarbon-bearing basin," Yacob said, according to a Seeking Alpha transcript.

"We've been looking really outside the U.S. for the right opportunity to apply our expertise in tight oil development and we view Oman [as] really offering that," he said.

The country offers low geopolitical risk and access to competitively priced oilfield services and equipment that EOG management says will be required to make tight oil successful.

"As part of the agreement, we plan to drill two test wells in the next two years to evaluate the potential of the acreage," Yacob said. "We're very excited about the low-cost of entry in Oman and the option to evaluate a basin with significant potential upside."

The agreement with Tethys was not mentioned on the call.

—Darren Barbee

FINANCING OIL & GAS

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Deepwater
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TRANSACTION HIGHLIGHTS

LOWER 48

■ Denver-based **FourPass Energy LLC** has teamed up with **Oaktree Capital Management LP** to acquire and operate large-scale, oil-weighted producing oil and gas assets, the partners said on Nov. 19.

Oaktree's $900 million pledge includes $600 million in initial equity, with an option to upsize the commitment by $300 million.

FourPass is led by former **Felix Energy** executives Ben Jackson and Andrew Dunleavy, alongside a team of operations and subsurface leaders with extensive experience across the sector.

In a challenging market cycle from 2013 to 2020, Felix Energy assembled, operated and sold over $6 billion in assets, including upstream, midstream and mineral assets.

FourPass intends to build from these experiences by applying its team's collective expertise to the current market opportunity, focusing on a low-cost operating model.

PICEANCE BASIN

■ **Terra Energy Partners LLC** agreed in late November to purchase assets out of bankruptcy from **Ursa Piceance Holdings LLC** and various subsidiaries for $60 million, according to bankruptcy documents.

A federal bankruptcy judge in Delaware approved the sale, which is expected to close on Dec. 22 or soon after.

Ursa, backed by **Denham Capital**, holds about 41,000 net acres of oil and gas properties in the Piceance Basin. The acreage is concentrated in Boies Ranch, Battlement Mesa and other areas.

The company reported owning 579 gross wells, which produce natural gas, NGL and oil. In June, the company averaged about 75 MMcfe/d.

Terra Energy's largest previous deal was the 2016 purchase of Piceance Basin assets from **WPX Energy Inc.** for $910 million.

That deal included about 200,000 net acres with 11,000 gross drilling locations in Colorado.

ANWR

■ In an attempt to hold a drilling auction ahead of the transfer of leadership, the Trump administration on Dec. 3 said it would issue a sale notice for oil leases in the Arctic National Wildlife Refuge (ANWR), an ecologically sensitive area, shortly before President-elect Joe Biden takes office.

The move is the latest step toward pulling off the first ever sale of oil and gas leases in a pristine area of the Arctic before Biden, a Democrat who opposes energy development there, becomes president on Jan. 20.

Opening ANWR to drilling is an important pillar of outgoing Republican President Donald Trump's agenda to expand domestic fossil fuel production. But green groups and Democrats have cast it as a giveaway to Big Oil that would harm the Arctic's unique ecosystem and native people.

The sale notice, published on Dec. 7, sets up a sale to be held on Jan. 6 via video livestream, the U.S. Bureau of Land Management said in a statement.

The announcement comes a little more than two weeks after Trump's Republican administration issued a request to energy companies to identify what specific areas in the refuge should be offered for sale.

The companies had 30 days to respond, and a sale notice was not expected to be issued until the end of that period.

SERVICE & SUPPLY

■ Production equipment and oilfield tubular goods provider **Petrosmith** has acquired the assets of **Wellflex Energy Solutions LLC**, an engineering, procurement and construction management company, on Nov. 23, for an undisclosed amount.

Wellflex, headquartered in Fort Worth, Texas, provides engineering, fabrication and project management services.

"We believe Wellflex's design and project management solutions are best-in-class and will be in high demand as the energy sector gets back on track. Combining the Wellflex process with Petrosmith's quality fabrication and services will provide our operators and customers an efficient and effective process to reduce facility expenses as the market returns.," Chris Thomas, CEO of Petrosmith, said.

PetroSmith is based in Abilene, Texas.

GABON

■ **Vaalco Energy Inc.**, Houston, plans to acquire **Sasol Gabon SA**'s 27.8% working interest in the Etame Marin block offshore Gabon, the company said on Nov. 17. In addition, Vaalco is acquiring Sasol's 40% nonoperated participating interest in Block DE-8 offshore Gabon.

Total consideration is $44 million, with future contingent payments of up to $6 million. Funding will be from cash on hand and cash from operations.

In the deal, Vaalco will acquire an additional 27.8% working interest in the Etame Marin block offshore Gabon, increasing total working interest to 58.8%.

Since Vaalco currently owns and operates a 31.1% working interest in Etame, the transaction will almost double Vaalco's total production and reserves.

The deal increases the company's net revenue interest production from 4,850 bbl/d to 9,150 bbl/d based on current month production; increases year-end 2019 SEC reserves from 5 MMbbl/d to 9.4 MMbbl/d of oil; and increases year-end 2019 independent 2P CPR reserves from 9.2 MMbbl to 17.5 MMbbl of oil.

MIDSTREAM

■ Midstream operator Easton Energy LLC has agreed to buy a petrochemical pipeline system that runs from Houston to Corpus Christi from oil major Exxon Mobil Corp., moving to capitalize on South Texas' growing petrochemical market.

The South Texas Pipeline System has 720 miles of pipeline and runs from Exxon Mobil's Clear Lake and Katy Gas Plants to Energy Transfer LP's King Ranch Gas Plant and the Port of Corpus Christi.

The line has historically been used to transport everything from oil and natural gas liquids, but most recently shipped refinery grade propylene.

The system will also connect to Easton Energy's 50-million-barrel salt dome storage facility in Markham, Texas, which is located between the petrochemical markets in Houston and Corpus Christi.

The acquisition is anticipated to close early next year. The companies did not disclose a price on the deal.

EASTERN US

1 An Illinois Basin wildcat has been scheduled by ***Pioneer Oil Co. Inc.*** in eastern Jackson County, Ill. The #1 Simonds has a planned depth of 4,000 ft and is targeting oil pays in Clear Creek. The exploratory test will be drilled in Section 28-8s-1w. According to IHS Markit, nearby oil production in this part of Jackson County is about 7 miles to the north-northeast: #1 Overholt in Section 22-7s-1w was tested in 1941 pumping 12 bbl of crude per day from Bethel Sand at 1,997-2,011 ft. The Elkville Field well was drilled to 2,387 ft. Pioneer's headquarters are in Lawrenceville, Ill.

2 IHS Markit reported that ***Dan A. Hughes Co.*** is nearing completion at a Smackover exploratory test in eastern Conecuh County, Ala. The Little Cedar Creek Field venture, #1 CCLT 29-5, was directionally drilled to 11,010 ft with no other details available. The wildcat is in Section 29-5n-13e. The Beeville, Texas-based company was active in this part of Conecuh County in 2019 at #21-16 Mattair in Section 21, which was abandoned at 10,730 ft.

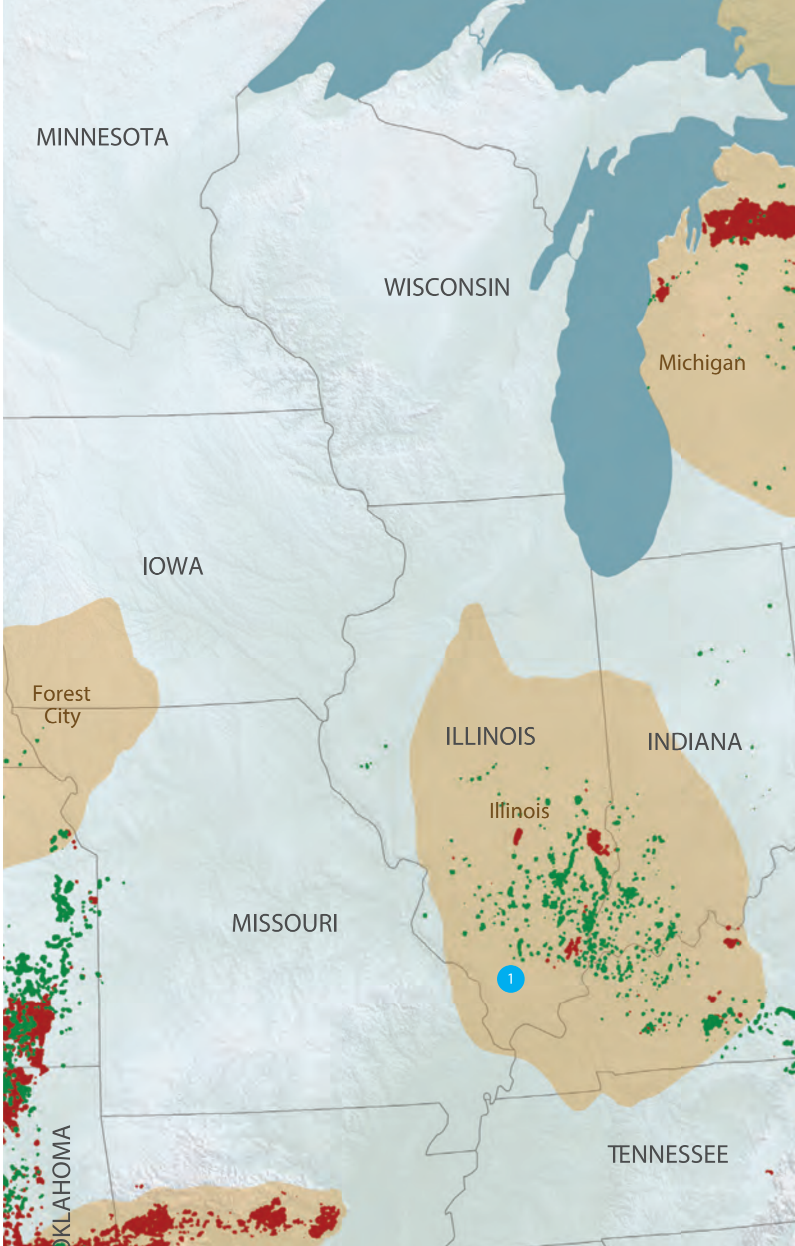
3 A Harrison County, Ohio, Utica Shale completion was announced by ***EAP Ohio LLC***. The #6H Wallace K 4-11-6 is in Section 4-11n-6w. It was tested flowing at a 24-hour rate of 1,457 bbl of oil, 14.749 MMcf of gas and 343 bbl of water. The Forks South Field well was drilled to 26,744 with a true vertical depth of 8,357 ft. Production is from perforations between 8,282 ft and 26,594 ft. EAP's headquarters are in Houston.

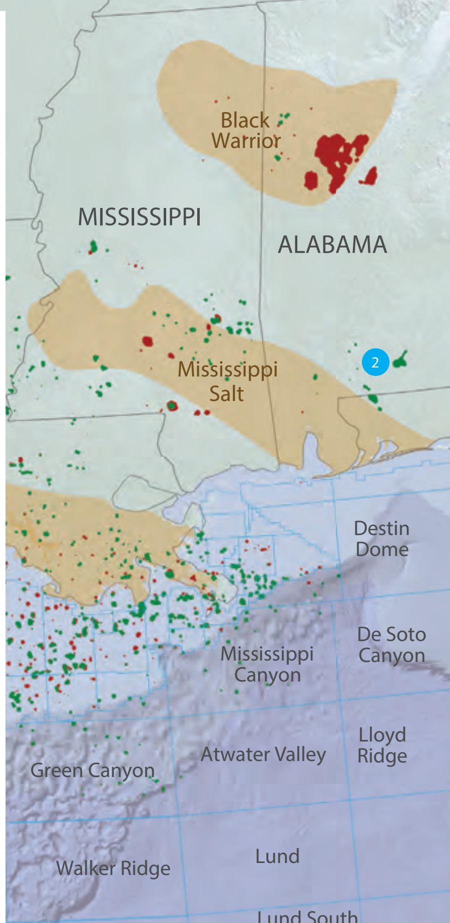
4 Stavanger-based ***Equinor*** announced results from three Utica Shale completions in Monroe County, Ohio. The Hannibal Field wells were drilled from a pad in Section 8-3n-4w. The #4 S-UH Collectors Triangle was drilled to a total depth of 30,530 ft, 10,892 ft true vertical. It flowed 20.14 MMcf of gas and 405 bbl of water per day from acidized and fractured perforations at 11,467-27,499 ft. The #5 S-UH Collectors Triangle was drilled to 29,121 ft, 10,826 ft true vertical, and flowed 24.752 MMcf of gas and 128 bbl of water per day from acidized and fractured perforations at 11,151-28,748 ft. The #3S-UH Collectors Triangle was drilled to 27,487 ft, 10,857 ft true vertical. It produced 23.629 MMcf of gas with 624 bbl of water daily from perforations at 10,924-27,173 ft.

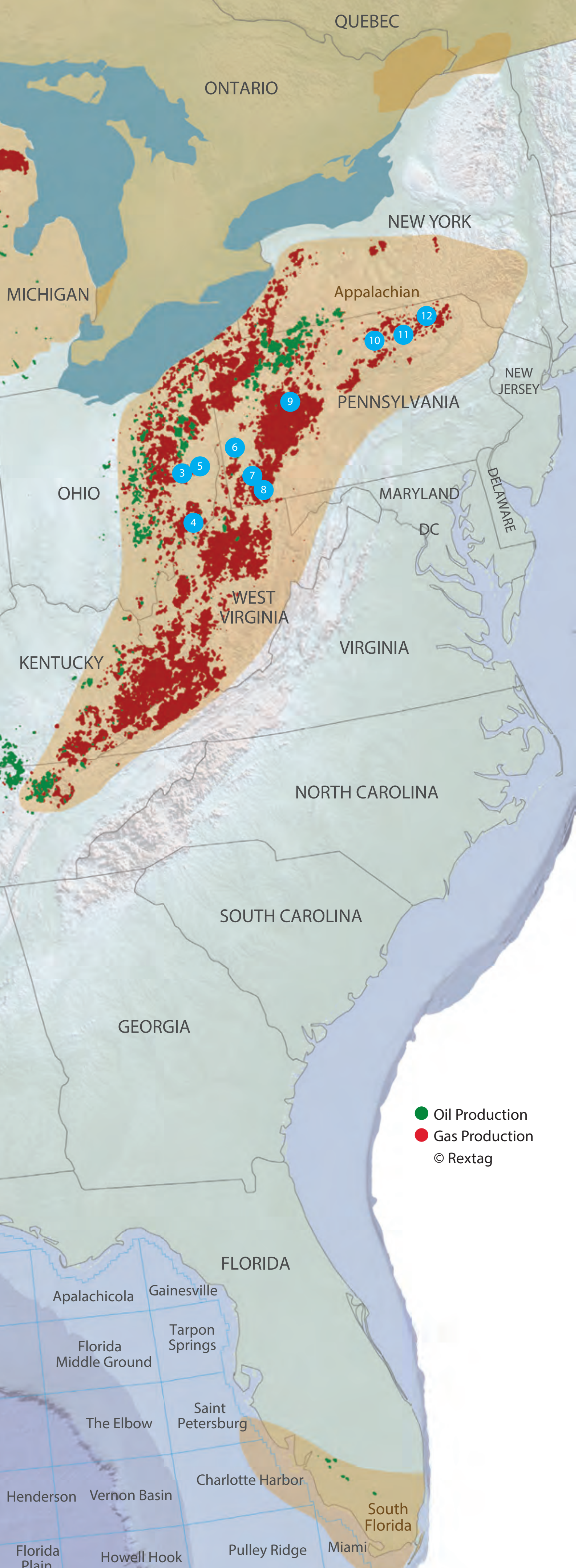
5 ***EAP Ohio LLC*** completed a Utica Shale venture in Ohio's Harrison County. The #3H McBride 20-11-4 was drilled in Section 20-11n-4w. The Kilgore Consolidated Field well was tested flowing 34.793 MMcf of gas with 24 bbl of water per day. Production is from an acidized and fractured zone at 8,792-21,442 ft. The well was drilled to a total depth of 21,588 ft, and the true vertical depth is 8,377 ft.

6 ***Range Resources*** completed two Beaver County, Pa., Marcellus Shale wells. The new field discoveries were drilled from a pad in Section7, Aliquippa 7.5 Quad, Independence Township. The #1H Jodikinos Carol 11380 Unit was drilled to 25,315 ft (5,129 ft true vertical) and was tested after 95-stage fracturing flowing 12.785 MMcf of gas per day from perforations at 6,725-25,231 ft. The offsetting #3H Jodikinos Carol 11380 Unit was drilled to a total depth of 24,532 ft, 5,128 ft true vertical. It flowed 13.303 MMcf of gas per day from perforations at 5,779-24,456 ft and was tested after 96-stages of fracturing. Range's headquarters are in Fort Worth.

7 In Washington County, Pa., ***EQT Production*** announced results from three Marcellus Shale completions in Daniels Run Field. The discoveries were drilled from a pad in Section 1 Ellsworth 7.5 Quad, Bethlehem North Township. The #4H Captain USA flowed 32.496 MMcf of gas per day. Production is from perforations at 8,461-23,377 ft. It was drilled to 23,512 ft, 7,998 ft true vertical, and was tested after 77-stage fracturing. The #2H Captain USA produced 15,109 MMcf of gas per day after 67-stage fracturing from perforations at 9,044-23,559 ft. It was drilled to 23,6,92 ft, 8,011 ft true vertical. The #6H Captain USA initially flowed 24.357 MMcf of gas per day. It was drilled to 24,227 ft. 8,009 ft true vertical, and was tested after 82-stages of fracturing from a perforated zone at 8,174-24,089 ft. EQT's headquarters are in Pittsburgh.

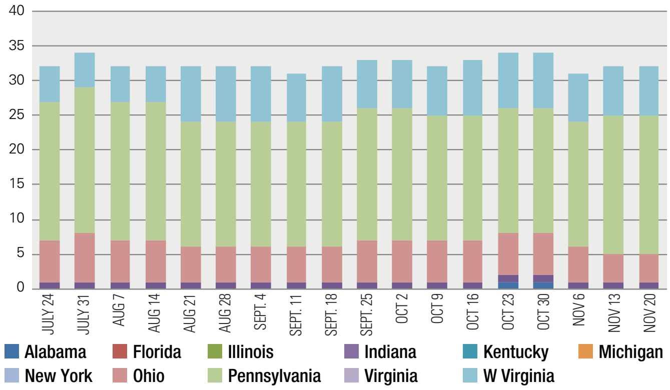






Eastern US Rig Count

July 24, 2020-Nov. 20, 2020



Source: Baker Hughes Co.

8 A Greene County, Pa., a Marcellus completion was reported by ***EQT Production Co***. The #79H20Matt Nicholoff was tested flowing 10.457 MMcf of gas per day. The Jefferson Field well was drilled to 23,940 ft with a true vertical depth of 7,898 ft in Section 5 Mather 7.5 Quad, Morgan Township. Production is from fractured perforations between 10,147 and 23,807 ft.

9 Results from a second Armstrong County, Pa., Marcellus Shale well were announced by Kittanning, Pa.-based ***Snyder Brothers Inc***. The #7H Reesedale Ridge produced 14.4 MMcf of gas from fracture-treated perforations at 7,315-15,826 ft after 49-stage fracturing. The Limestone Run Field discovery was drilled to 15,907 ft, and the true vertical depth is 6,746 ft.

10 ***Southwestern Production Co.*** completed two Tioga County, Pa., Marcellus Shale wells. The new field discoveries were drilled from a pad in Section 4, Liberty 7.5 Quad, Liberty Township. The #2H Connolly B was drilled to 14,732 ft (7,058 ft true vertical) and flowed 20.616 MMcf of gas per day from perforations at 7,244-14,658 ft with a shut-in casing pressure of 3,213 psi after 37-stage fracturing. The offsetting #7H Connolly B was drilled to 14,519 ft (7,028 ft true vertical). It flowed 22.56 MMcf of gas per day with a shut-in casing pressure of 3,151 psi. Production is from a perforated zone at 7,474-14,442 ft and was tested after 35-stage fracturing. Southwestern's headquarters are in Spring, Texas.

11 Houston-based ***Chief Oil & Gas*** announced results from two more Marcellus Shale wells drilled at a Bradford County, Pa., drillpad. The Slaughtering Ground Field wells are in Section 1, Overton 7.5 Quad, Overton Township. The horizontally drilled #1H Hoffman NW Unit produced 7.044 MMcf of gas per day from a fractured and perforated zone at 9,490-17,841 ft. It was drilled to a total depth of 17,997 ft and a true vertical depth of 8,423 ft. The offsetting #3H Hoffman NE Unit flowed 8.915 MMcf of gas daily. It was drilled to 17,325 ft (8,473 ft true vertical). Production is from fractured perforations at 8,924-16,400 ft.

12 A Herick Field-Marcellus discovery was announced by ***Chesapeake Operating Inc.*** in Pennsylvania's Bradford County. The #106HC Brown Homestead initially flowed 44.238 MMcf of gas per day with a shut-in casing pressure of 3,414 psi. It was drilled in Section 7, Laceyville 7.5 Quad, Wyalusing Township, to 18,120 ft, 7,251 ft true vertical, and was tested after 31 stages of fracturing. Production is from perforations at 7,508-18,106 ft. Chesapeake is based in Oklahoma City.

GULF COAST

1 Houston-based ***EOG Resources Inc.*** announced results from two Eagle Ford Shale wells and one Austin Chalk well completed at a Webb County (RRC Dist. 4), Texas, drillpad in Section 1450 Antonio Gonzales Survey, A-57. The #500H BFMT West was drilled to 19,165 ft (10,533 ft true vertical). It flowed 16.416 MMcf of gas and 1,416 bbl of water per day from Eagle Ford perforations at 10,696-19,079 ft. Tested on a 34/64-inch choke, the respective flowing casing and shut-in casing pressures were 4,063 psi and 4,195 psi. The #501H BFMT West was drilled to 18,850 ft (10,192 ft true vertical) and produced 15.144 MMcf of gas and 624 bbl of water per day from Austin Chalk at 10,257-18,025 ft. Gauged on a 30/64-inch choke, the flowing casing pressure was 3,911 psi, and the shut-incasing pressure was 4,016 psi. The #503H BFMT West was drilled to 18,914 ft (10,518 ft true vertical), and it flowed 16.44 MMcf of gas and 1,296 bbl of water daily from Eagle Ford at 10,639-18,832 ft. It was tested on a 30/64-inch choke with a flowing casing pressure of 4,483 psi and a shut-in casing pressure of 8,785 psi.

2 A Webb County (RRC Dist. 4), Texas, Austin Chalk producer was reported by Denver-based ***SM Energy Co***. The #910B H Galvan Ranch is in Lorenzo Field in Section 2182, Joaquin Galan Survey, A-65 60828. It was drilled to 21,161 ft, 8,442 ft true vertical, and was tested flowing 1,193 bbl of 54° API condensate and 10.854 MMcf of gas per day. Production is from a fractured and perforated zone at 8,865-21,067 ft. Gauged on a 32/64-inch choke, the flowing casing pressure was 2,792 psi.

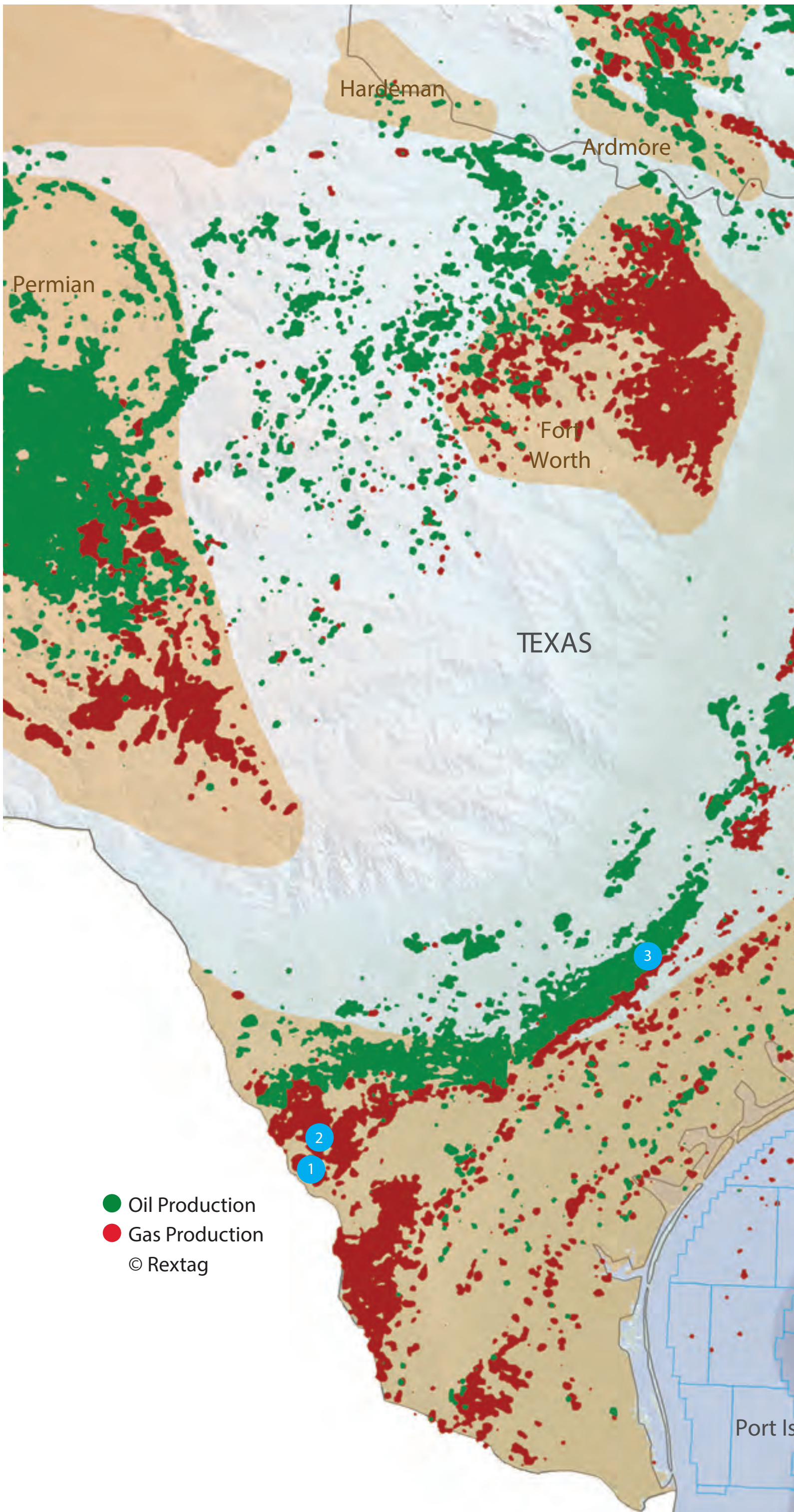
3 Three Gonzales County (RRC Dist. 1), Texas, Eagle Ford wells were reported by ***EOG Resources Inc.*** The Eagleville Field discoveries were drilled at a pad in Daniel Gray Survey, A-517. The #3H Caspian C was drilled to a total depth of 9,874 ft and a true vertical depth of 12,215 ft. It produced 2,347 bbl of 45° API oil and 3.242 MMcf of gas per day from perforations at 12,459-19,790 ft. Tested on a 34/64-inch choke, the flowing tubing pressure was 1,983 psi, and the flowing casing pressure was 935 psi. The #4H Caspian D was drilled to 19,400 ft (12,208 ft true vertical) and flowed 2,540 bbl of 45° API oil, 3.283 MMcf of gas per day from perforations at 12,369-19,304 ft. Gauged on a 34/64-inch choke, the flowing tubing pressure was 2,034 psi, and the flowing casing pressure was 851 psi. The #1H Atlantic A was drilled to 20,248 ft, 11,610 ft true vertical. It produced 1,976 bbl of 45° API oil, 1.913 MMcf of gas per day from perforations at 12,300-20,178 ft. Tested on a 34/64-inch choke, the flowing tubing pressure was 1,470 psi, and the flowing casing pressure was 512 psi.

4 A Harrison County (RRC Dist. 6), Texas, Haynesville producer was tested flowing 23.127 MMcf of gas per day. Houston-based ***Sabine Oil & Gas Corp.***'s #1H Furrh-Findley-Harper was drilled in Anderson Bailey Survey, A-30, to a total depth of 21,612 ft with a true vertical depth of 11,022 ft. The Carthage Field well was tested on a 30/64-inch choke, and the flowing ceasing pressure was 6,353 psi, and the shut-in casing pressure was 6,658 psi. Production is from a perforated zone at 11,288-21,563 ft.

5 According to IHS Markit, ***GEP Haynesville*** has completed the two strongest Haynesville Shale wells drilled to date in North Louisiana's Holly Field. The De Soto Parish discoveries were drilled from a single pad in Section 18-14n-14w. The #1-Alt Land & Knowles 7-6HC flowed 45.062 MMcf of gas from a fracture-treated zone at 12,340-22,035 ft. Tested on a 35/64-inch choke, the flowing tubing pressure was 7,828 psi. It was drilled to 22,103 ft (11,906 ft true vertical), and it bottomed about 2 miles to the north in Section 5. The offsetting #1-Alt Land & Knowles 8-5HC produced 40.846 MMcf of gas per day from perforations at 12,348-22,040 ft. It was drilled to 22,104 ft, and the true vertical depth is 11,953 ft. It bottomed about 2 miles to the north in Section 6. GEP's headquarters are in The Woodlands, Texas.

6 A Bossier Parish, La., Haynesville Shale well was announced by ***Comstock Oil & Gas*** flowing 31.672 MMcf of gas per day. The Swan Lake Field well, #1-Alt Allums 7-6 HC, is in Section 7-15n-10w. It was drilled to 21,727 ft with a true vertical depth of 11,763 ft. Gauged on a 29/64-inch choke, the flowing casing pressure was 8,347 psi, and production is from a fractured and perforated zone at 11,942-21,671 ft. Comstock's headquarters are in Frisco, Texas.

7 Two Haynesville Shale discoveries in Natchitoches Parish,

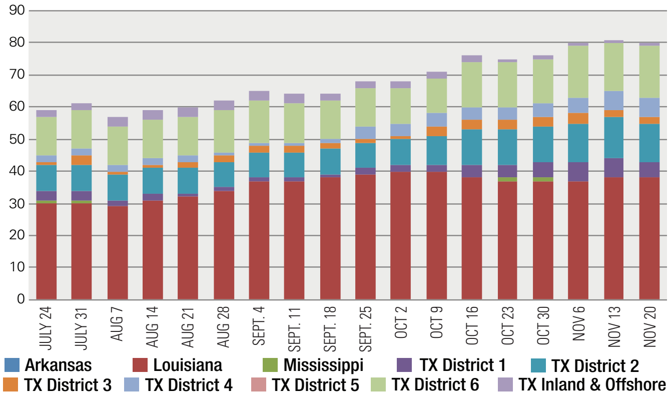


La., were announced by Houston-based ***Indigo Minerals***. The San Miguel Creek Field wells were drilled from a pad in Section 29-10n-10w. The #1 Wel 30&31-10-10H flowed at a daily rate of 21.75 MMcf of gas per day from a fracture-treated zone at 14,175-20,363 ft. It was drilled to 20,428 ft (13,439 ft true vertical) and bottomed about 1.5 miles to the south in Section 31. Gauged on a 21/64-inch choke, the flowing casing pressure was 10,563 psi. The offsetting #1 Wel 29&32-10-10H produced 26.006 MMcf of gas per day from perforations at 12,124-21,109 ft. Drilled to 21,695 ft (13,401 ft true vertical), it bottomed about 1.5 miles to the south in Section 32.

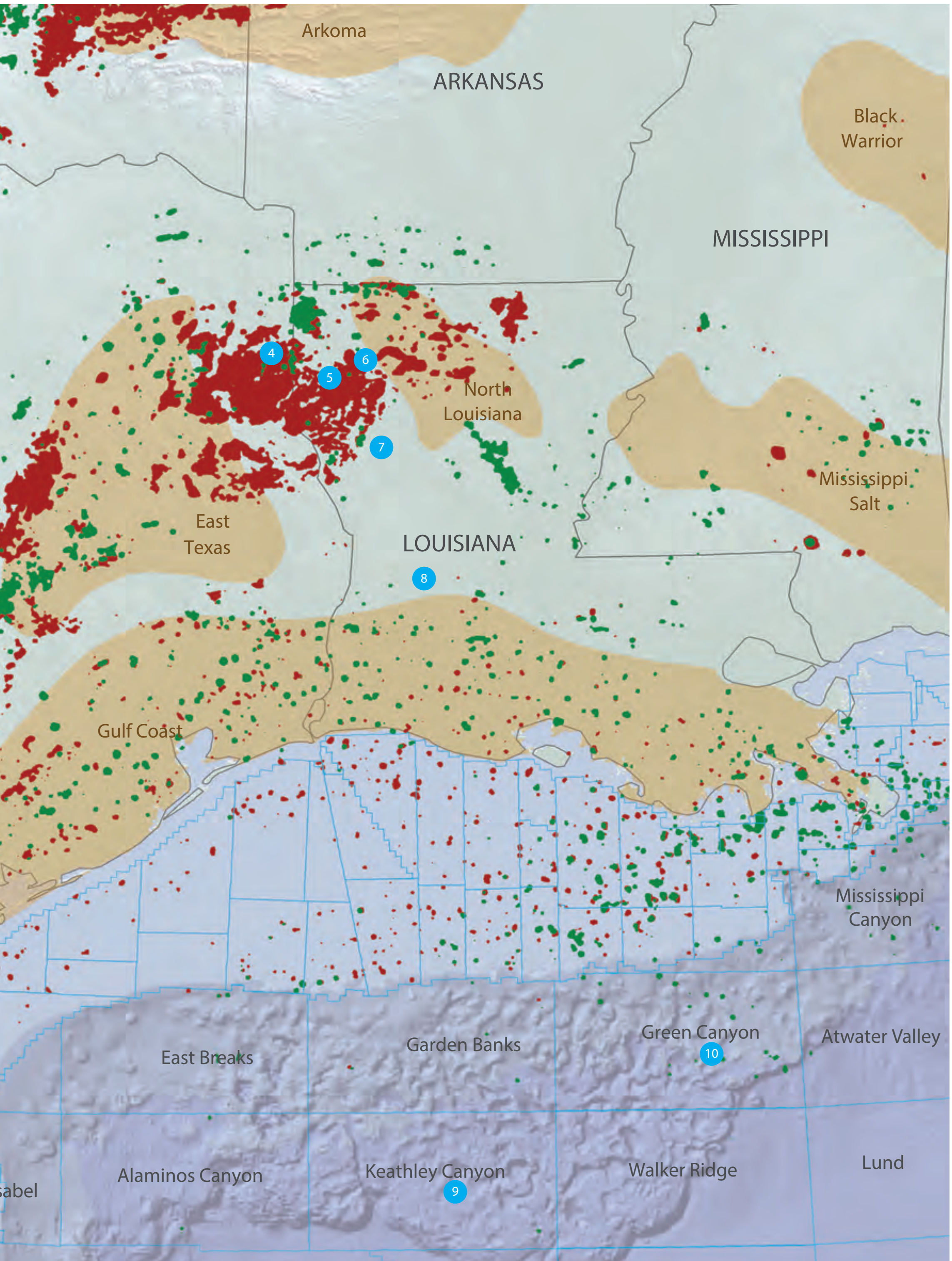
8 ***Prime Rock Resources*** has completed an Austin Chalk oil well in Vernon Parish, La. IHS Markit reported that #1 Crosby 10 flowed 1,824 bbl of 46° API crude and 5.4 MMcf of gas per day from fracture-treated perforations at 16,186-22,249 ft. Tested on a 40/64-inch choke, the flowing tubing pressure was 5,075 psi, the flowing casing pressure was 775 psi and the shut-in casing pressure was 7,406 psi. The Sugartown Field well is in Section 10-2s-6w, and it bottomed within 2 miles to the south in Section 32-2s-6w in neighboring Allen Parish. It was drilled to 22,360 ft (15,650 ft true vertical). The Midland, Texas-based company's well was sidetracked out of an initial horizontal hole that was junked and abandoned at 14,901 ft.

Gulf Coast Rig Count

July 24, 2020-Nov. 20, 2020



Source: Baker Hughes Co.



9 IHS Markit announced that ***Anadarko Petroleum Corp.*** has scheduled another development test in Lucius/Hadrian North Field. The #3 OCS G32654 will be in the far western portion of Keathley Canyon Block 919, with a planned bottomhole to the west in Keathley Canyon Block 918. Water depth in the area is 7,400 ft. The Lucius project includes portions of Keathley Canyon blocks 874, 875, 918 and 919. Field production currently comes from nine active wells, yielding crude from a range of Pliocene and Miocene zones at 16,940-21,065 ft. First production was reported in January 2015. The area was initially developed by Anadarko, with ***Occidental Petroleum*** taking over operations following the company's 2019 acquisition of Anadarko.

10 ***Eni*** has permitted a development test in Pegasus Field in the northern part of Green Canyon Block 385. The Rome-based company brought the reservoir brought online in 2008. The #3 OCS G25142 will be drilled in 3,600 ft of water. Production in the field comes from two subsea wells in the northern half of the tract. In July 2020, reservoir output was 32,649 bbl of crude and 51.8 MMcf of gas from Williana (Pleistocene) at 12,660-12,952 ft and Miocene at 13,165-13,260 ft.

MIDCONTINENT & PERMIAN BASIN

1 ***Tamaroa Operating LLC***, according to IHS Markit, has completed the first horizontal well in Elkins Field in New Mexico's Chaves County. The #002H Bonanza pumped 174 bbl of 33° API crude and 134,000 cu ft of gas per day from fracture-stimulated San Andres perforations at 2,705-6,820 ft. The well was drilled to 6,915 ft and is in Section 21-7s-28e. The discovery is on the Northwestern Shelf of the Permian Basin. The initial pilot hole was drilled to 2,700 ft, while the horizontal leg bottomed about 1 mile to the south at a true vertical depth of 2,353 ft. Tamaroa is based in Plano, Texas.

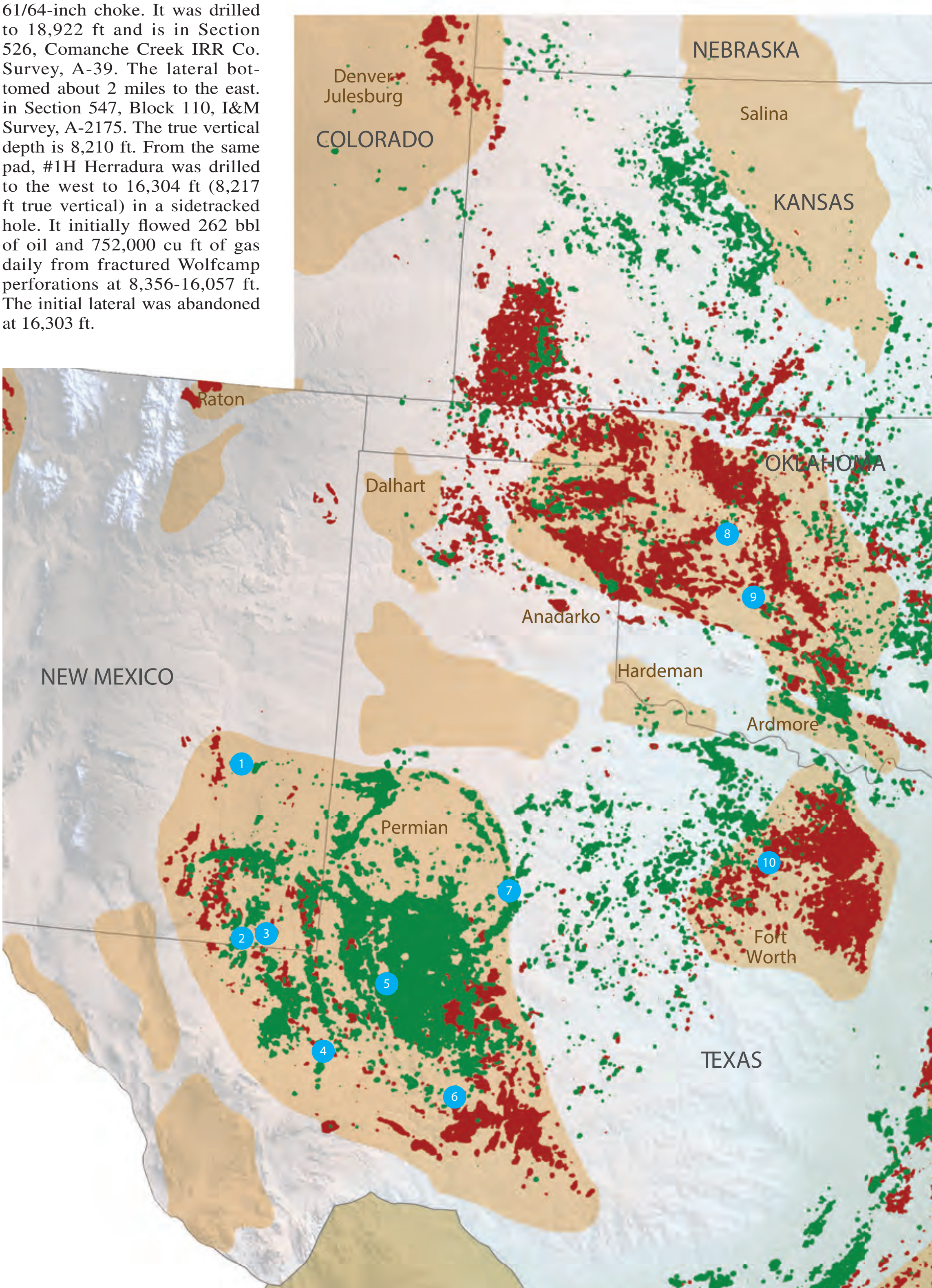
2 Houston-based ***Chevron Corp.*** completed a Wolfcamp A well in Culberson County (RRC Dist. 8), Texas. The #0031WA Hay Alex 16/21 is in Ford West Field. It was tested flowing 3,544 bbl of 49° API oil, 3.544 MMcf of gas and no reported water per day and is located in Section 9, Block 58, T&P RR CO A-2643. The well was drilled to 20,207 ft, 9,449 ft true vertical, and production is from fractured perforations at 9,764-20,002 ft. Gauged on a 128/64-inch coke, the flowing tubing pressure was 329 psi, and the shut-in casing pressure was 1,067 psi.

3 In Lea County, N.M., ***EOG Resources Inc.*** completed three Permian Basin wells from a pad in Section 24-25s-35e — two are Wolfcamp producers and one is a Bone Spring producer. The #722H Valiant 24 Fed Com flowed 2,659 bbl of oil, 7.486 MMcf of gas per day from Wolfcamp at 12,585-20,051 ft. Drilled to 20,077 ft (12,512 ft true vertical) it was tested on a 54/64-inch choke with a flowing tubing pressure of 1,307 psi. The #705H Valiant 24 Fed Com produced 3,116 bbl of 41° API oil, 6.744 MMcf of gas from Wolfcamp fractured perforations at 12,450-19,822 ft. It was drilled to 19,848 ft (12,254 ft true vertical) and tested on a 66/64-inch choke with a shut-in casing pressure of 1,114 psi. The Bone Spring producer, #701H Valiant 24 Fed Com, flowed 3,059 bbl of 41° API oil, 6.82 MMcf of gas per day from perforations at 12,330-19,520 ft. It was drilled to 19,541 ft, 12,200 ft true vertical. EOG's headquarters are in Houston.

4 ***Gordy Oil***, based in Houston, completed two Pecos County (RRC Dist. 8), Texas, wells as it delineates its horizontal Wolfbone acreage in the Delaware Basin. According to IHS Markit, the company's most recent and southernmost completion, #1H Salitos, was tested flowing 846 bbl of 44.3° crude and 569,000 cu ft of gas per day from fracture-stimulated Wolfcamp perforations at 8,566-18,816 ft. The flowing casing pressure was 604 psi during testing on a 61/64-inch choke. It was drilled to 18,922 ft and is in Section 526, Comanche Creek IRR Co. Survey, A-39. The lateral bottomed about 2 miles to the east. in Section 547, Block 110, I&M Survey, A-2175. The true vertical depth is 8,210 ft. From the same pad, #1H Herradura was drilled to the west to 16,304 ft (8,217 ft true vertical) in a sidetracked hole. It initially flowed 262 bbl of oil and 752,000 cu ft of gas daily from fractured Wolfcamp perforations at 8,356-16,057 ft. The initial lateral was abandoned at 16,303 ft.

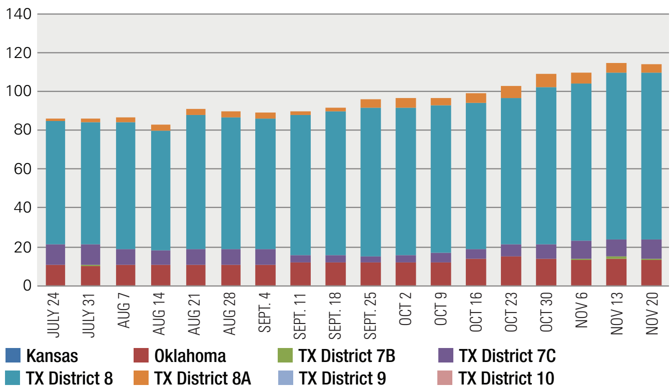
5 In Upton County (RRC Dist. 7c), Texas, ***COG Operating LLC*** completed a Pegasus Field-Wolfcamp well. The #4803BH TXL-Powell A7 initially flowed 1,266 bbl of 41.6° API oil, with 1.548 MMcf of gas and 1,439 bbl of water per day. Production is from perforations between 9,857 ft and 20,240 ft. It was drilled in Section 11, Block 41, T&P RR CO Survey, A-491 to a total depth of 20,360 ft with a true vertical depth of 9,464 ft. COG is based in Midland, Texas.

6 ***Barron Petroleum*** has scheduled a Val Verde Basin test in Ozona Field in Texas' Crockett County (RRC Dist. 7C). The #4 Sahota will be drilled to 7,700 ft on a 1,000-acre lease in Section 9, Block XX, GC&SF RR Co Survey, A-3139. According to the unapproved permit, the test will target either the Canyon Sand in Ozona Field or a wildcat zone. Ozona Field currently produces from over 1,700 wells, and producing formations include the Spraberry; Clear Fork; Canyon and Ellenburger. Barron recently completed a Val Verde Basin discovery in Val Verde County (RRC Dist. 1) at #1 Sahota Carson 20BU, which hit about 70 ft of gas-bearing pay in Strawn. According to Barron,



Midcontinent & Permian Basin Rig Count

July 24, 2020-Nov. 20, 2020



Source: Baker Hughes Co.

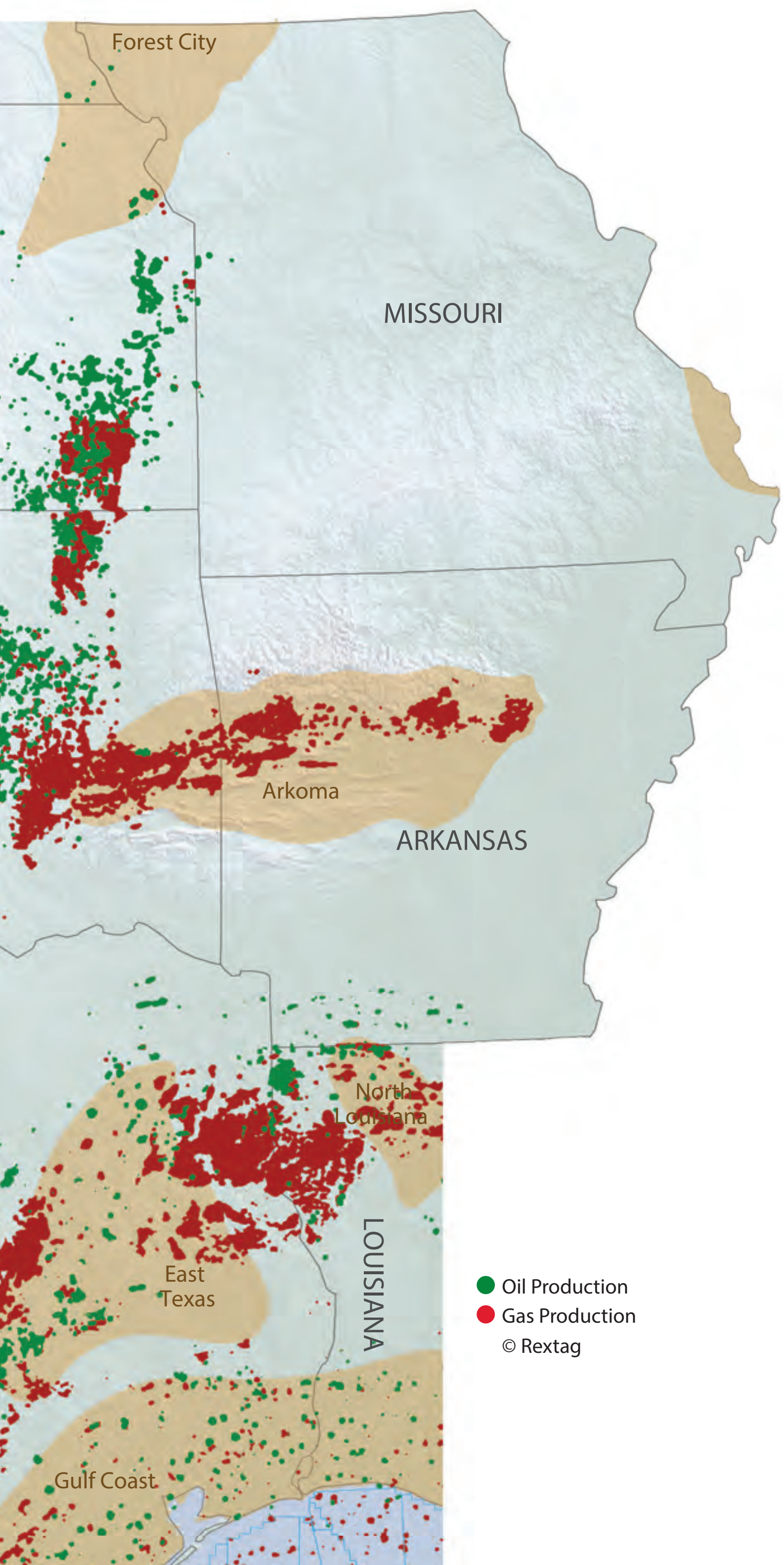
the 13,000-acre project holds an estimated 74.2 MMboe in oil and gas reserves and has identified 67 high-graded Strawn locations on the acreage and Barron could potentially develop Canyon at 9,000 ft and Ellenburger at 16,000 ft.

7 On the Eastern Shelf of the Permian Basin, ***Clear Fork Inc.*** has completed another horizontal Garden City South Field well in Scurry County (RRC Dist. 8A), Texas. The #2H Echoes 142 was tested pumping 375 bbl of 41° crude and 358,000 cu ft of gas per day from fracture-treated perforations in Strawn at 6,792-11,945 ft. It was drilled to 12,020 ft out of a 7,430-ft pilot hole in Section 142, Block 3, H&TC RR Co Survey, A-1633. The lateral bottomed about 1 mile to the south-southeast in the same section with a true vertical depth of 7,163 ft. Clear Fork is based in Abilene, Texas.

8 Two Kingfisher County, Okla., Mississippian completions were reported by Oklahoma City-based ***Devon Energy Corp***. The Altona Field wells are in Section 17-16n-9w. Devon's #5HX Privott 17_20-16N-9W initially flowed 592 bbl of 45° API oil, 1.605 MMcf of gas and 398 bbl of water per day. It was drilled to a total depth of 19,267 ft and a true vertical depth of 9,316 ft. Tested on a 20/64-inch choke, the flowing tubing pressure was 1,419 psi. The offsetting #6HX Privott 17_20-16N-9W produced 426 bbl of 45° API oil, with 1.876 MMcf of gas and 292 bbl of water daily from perforations at 9,508-19,304 ft. Drilled to 19,529 ft, the true vertical depth is 9,506 ft.

9 Two Union City Field-Woodford wells were completed at an Anadarko Basin pad in Canadian County, Okla. by ***Citizen Energy III***. The pad is in Section 8-11n-8w. The #1H-8 Jensen flowed 94 bbl of 62° API condensate and 1.395 MMcf of gas per day from fracture-treated perforations at 12,380-17,380 ft. Gauged on a 14/64-inch choke, the flowing tubing pressure was 2,545 psi. Drilled to 17,481 ft, it bottomed about 1 mile to the south-southwest, and the proposed true vertical depth was 11,750 ft. The offsetting #2H-8-17 Jensen flowed 125 bbl of 59° API condensate and 1.817 MMcf of gas daily from perforations at 12,147-21,965 ft. the venture bottomed 2 miles to the south in nearby Section 17. It was tested on an 18/64-inch choke, and the flowing tubing pressure was 2,842 psi. The total depth is 22,065 ft, and the true vertical depth is 12,283 ft. Citizen's headquarters are in Tulsa.

10 Two Newark East Field-Barnett Shale wells were completed in Tarrant County (RRC Dist. 5), Texas, by Arlington, Texas-based-***TEP Barnett***. The #5H Ziegler was drilled in George Ashabranner Survey, J A-7, to 11,830 ft with a true vertical depth of 7,339 ft. It initially flowed 2.885 MMcf of gas per day from perforations at 8,344-11,668 ft. Tested on a 36/64-inch choke, the flowing tubing pressure was 505 psi, and the shut-in tubing pressure was 799 psi. Within 10 miles to the north in Stephen Richardson Survey, A-1266, #2H Little Bear A was drilled to 16,554 ft (7,684 ft true vertical) and flowed 5.418 MMcf of gas per day from a perforated zone at 8,216-16,444 ft. Gauged on a 49/64-inch choke, the flowing tubing pressure was 901 psi, and the shut-in tubing pressure was 1,249 psi.



WESTERN US

1 ***Kebo Oil & Gas Inc.*** has received permit to drill a wildcat in Nevada's Nye County. The #1 Ragged Ridge will be in previously undrilled Section 3-9n-57e. The vertical test has a planned depth of 7,000 ft in the Railroad Valley Basin of the Eastern Great Basin Province. This will be the Portland, Texas-based company's first test in Nevada. Nearby production is about 2 miles to the north at the abandoned one-well Currant Field, which was opened in 1979 with the completion of #1 Currant. The 7,800-ft discovery was tested pumping 34 bbl of 12.9° API oil per day from perforations at 7,038-80 ft in a volcanic section within Lower Sheep Pass (Cretaceous). The zone produced a total of 561 bbl of crude.

2 A permit has been issued to Denver-based ***Twin Bridges LLC*** for a remote Paradox Basin wildcat in Emery County, Utah. According to IHS Markit, the #36-1 Bowknot State is targeting Leadville (Mississippian) and will be in Section 26-25s-16e. The directional gas test is expected to bottom 1 mile to the southeast in Section 36-25s-16e. The proposed total depth is 8,728 ft (6,700 ft true vertical). The nearest drilling in the area is at #14-5 Bowknot Unit about 2 miles to the southeast in Section 5-26s-17e. The test was abandoned after recovering some hydrocarbons from Mississippian between 6,290 ft and 6,466 ft. The total depth is 6,498 ft.

3 In Sweetwater County, Wyo., ***FDL Operating*** announced results from a Patrick Draw completion, #37-34D Monell Unit. It was drilled in Section 34-19n-99w to a total depth of 4,734 ft with a true vertical depth of 4,530 ft. It was tested flowing 101.8 bbl of oil and 22.5 bbl of water per day from Almond at 4,490-4,530 ft. Additional completion information is not currently available. FDL is based in Irving, Texas.

4 Two Campbell County, Wyo., Parkman wells were completed by Houston-based ***EOG Resources Inc***. The wells were drilled from a Crossbow Field pad in Section 5-42n-72w. The #0508-01H Congo was drilled to 16,820 ft with a true vertical depth of 7,446 ft. It produced 1,017 of 58° API oil, 1.459 MMcf of gas and 1,095 bbl of water per day from perforations at 7,854-16,754 ft after 22-stage fracturing. The offsetting #0508-02H Congo was drilled to 17,356 ft, 7,467 ft true vertical. It flowed 1,210 bbl of 57° API condensate, 1.079 MMcf of gas and 987 bbl of water daily after 24-stage fracturing. Production is from perforations at 7,619-17,292 ft after 24-stage fracturing.

5 ***Anadarko Petroleum Corp.*** completed two Weld County, Colo., wells in the Denver-Julesburg Basin. The Wattenberg Field discoveries were drilled from a single pad in Section 7-1n-67w. The #7-10HZ Ranger produced 29 bbl of 43° API oil, with 63,000 cu ft of gas and no reported water per day from commingled Codell (8,499-13,496 ft), Fort Hays (10,412-12,022 ft) and Niobrara (10,850-11,079 ft). Drilled to 13,541 ft, the true vertical depth is 7,867 ft. It was tested on a 14/64-inch choke with a flowing tubing pressure of 1,500 psi and a flowing casing pressure of 2,500 psi. The #7-9HZ Ranger was drilled to 13,344 ft (7,744 ft true vertical) and flowed 30 bbl of 43° API oil and 63,500 cu ft of gas per day from Niobrara at fractured perforations at 8,412-13,306 ft. Gauged on a 16/64-inch choke, the flowing tubing pressure was 1,538 psi, and the flowing casing pressure was 2,000 psi. Anadarko is a subsidiary of Houston-based ***Occidental Petroleum***.

6 Denver-based ***Extraction Oil & Gas Inc.*** reported results from two Niobrara-Wattenberg Field producers drilled at a Weld County, Colo., pad. The #20W-25-18 AD Fed Library is in Section 21-5n-65w and has a total depth of 19,816 ft and a true vertical depth of 7,007 ft. It produced 558 bbl of 55° API condensate, 3.388 MMcf of gas and 64 bbl of water daily. It was tested on an 18/64-inch choke with a flowing tubing pressure of 3,180 psi and a flowing casing pressure of 3,327 psi from a perforated zone at 7,598-19,766 ft. In nearby Section 20, #20W-25-17 AD FED Library was drilled to 19,702 ft, and the true vertical depth is 6,935 ft. It flowed at a daily rate of 414 bbl of 55° AI condensate, 2.5 MMcf of gas and 46 bbl of water. During testing on an 18/64-inch choke, the flowing tubing pressure was 3,223 psi, and the flowing casing pressure was 3,346 psi. Production is from perforations at 7,487-19,663 ft.

7 Denver-based ***Whiting Oil & Gas Corp.*** completed a Middle Bakken well, #11-29-3H Rauser, in North Dakota's McKenzie County. The venture was drilled to 21,400 ft with a true vertical depth of 11,246 ft. It produced 3,504 bbl of oil, 5,232 MMcf of gas and 5,730 bbl of water per day. The Pembroke Field well is in Section 29-149n-98w, and production is from a perforated zone at 11,660-21,236 ft. Gauged on a 40/64-inch choke, the flowing casing pressure was 2.100 psi.

8 ***Whiting Oil & Gas Corp.*** completed a Middle Bakken discovery in Pembroke Field. Located in McKenzie County, N.D., #31-27H Berg Trust flowed 3,072 bbl of oil, 6.288 MMcf of gas and 3,504 bbl of water per day after acidizing

and fracturing. It was drilled to 21,460 ft, 11,322 ft true vertical, in Section 27-149n-98w. Gauged on a 42/64-inch choke, the flowing casing pressure was 2,750 psi. Production is from perforations at 11,673-21,236 ft.

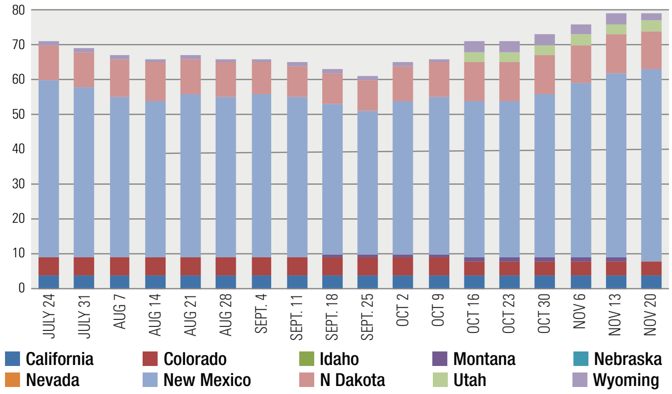
9 A Hawkeye Field completion by ***Hess Corp.*** initially flowed 4,082 bbl of 40° API oil, with 7.107 MMcf of gas and 1,302 bbl of water per day from Middle Bakken. Located in Section 34-152m-95w in McKenzie County, N.D., #152-LE-95-3427H-1 HA-Nelson A was drilled to 21,294 ft, 10,698 ft true vertical, and production is from a perforated zone at 11,155-21,113 ft. It was tested on a 42/64-inch coke, and the flowing casing pressure was 2,044 psi. Hess Corp. is based in New York City.

10 ***WPX Energy Inc.*** completed two McKenzie County, N.D., Williston Basin wells. The Squaw Field wells were drilled from a pad in Section 25-149n-95w. The #24-13-12HIL Omaha Woman was drilled to 26,767 ft (11,004 ft true vertical). It flowed 3,720 bbl of 42° API oil with 1.237 MMcf of gas and 1,612 bbl of water per day from fractured Middle Bakken perforations at 11,603-26,672 ft. Tested on a 28/64-inch choke, the flowing casing pressure was 2,950 psi. The #24-13-12HY Omaha Woman was drilled to 26,763 ft, and the true vertical depth is 11,207. The Three Forks producer flowed 4,794 bbl of 42° API oil, 2.637 MMcf of gas and 8,364 bbl of water per day. Tested on a 52/64-inch choke, the flowing casing pressure was 2,850 psi, and production is from a fracture stimulated zone at 11,627-26,602 ft. WPX is based in Tulsa.

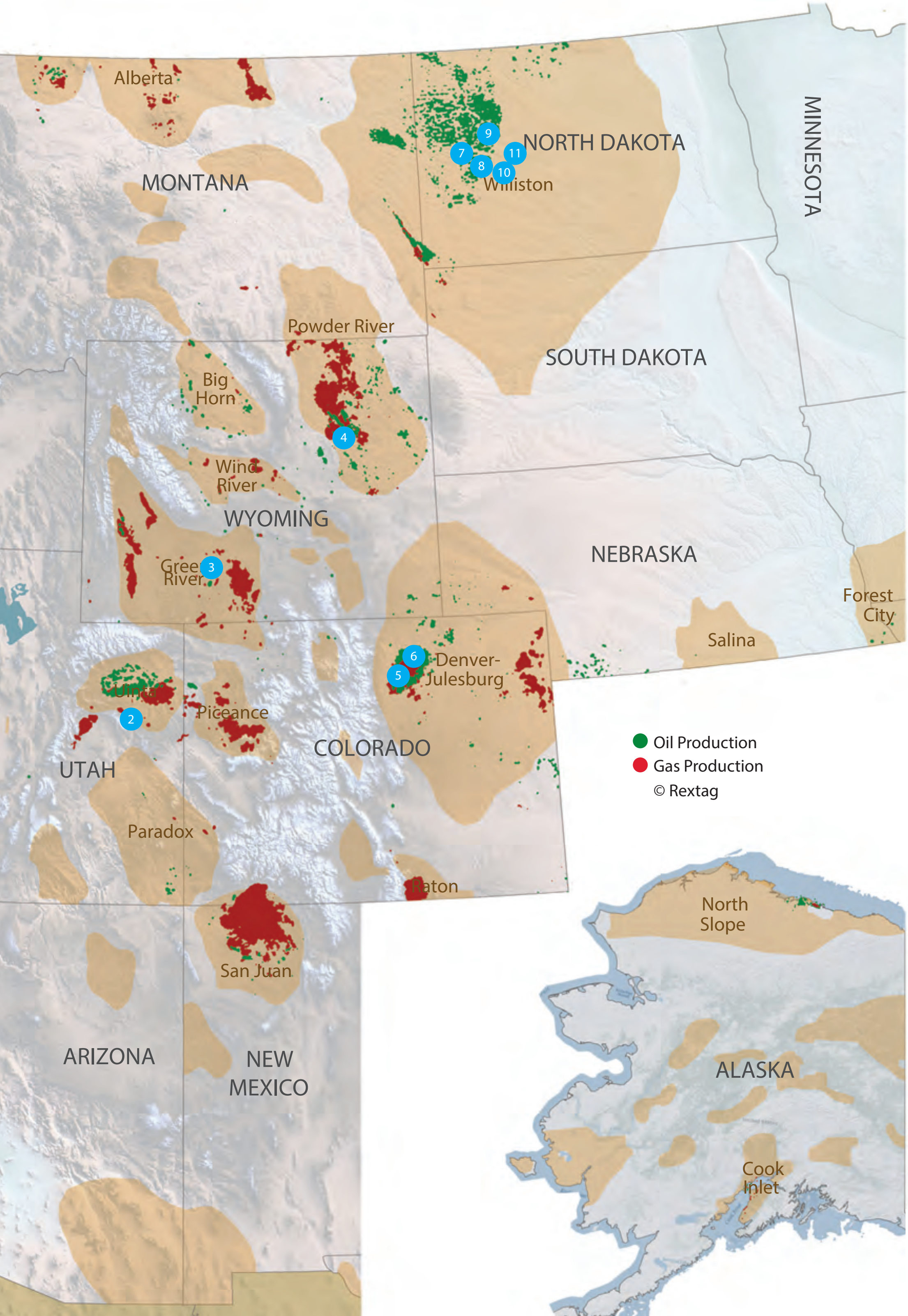
11 Two Mountrail County, N.D., wells were completed by Houston-based ***Marathon Oil Co***. The Reunion Bay wells were drilled from a pad in Section 21-151n-93w. The #34-21TFH Donaason USA was drilled to 21,103 ft, 10,695 ft true vertical, and produced 3,257 bbl of 41° API oil, 2.945 MMcf of gas and 9,456 bbl of water per day from Upper Three Forks at 11,102-20,968 ft. Tested on a 64/64-inch choke, the flowing casing pressure was 950 psi. The #34-21H Nokelby USA was drilled to 21,073 ft, 10,596 ft true vertical, flowing 5,324 bbl of 41° API oil, 4.107 MMcf of gas and 7,174 bbl of water per day from Middle Bakken at 11,063-20,940 ft. Gauged on a 64/64-inch choke, the flowing casing pressure was 1,600 psi.

Western US Rig Count

July 24, 2020-Nov. 20, 2020



Source: Baker Hughes Co.



INTERNATIONAL HIGHLIGHTS

Renewed COVID-19 restrictions on personal movements in Europe, along with a mild winter weather forecast, are continuing to lower oil demand.

According to an IHS Markit forecast report, the preliminary and revised November outlook for fourth quarter world oil demand is down by an additional 1 MMbbl/d compared to their October outlook.

This decrease is also likely to delay OPEC+ members from their planned January 2021 production increase of 2 MMbbl/d. If prices are in the low- to mid-$30s during the December OPEC+ meetings, then a production cut from current output levels would become the focus of debate.

There is some hope for improved world oil demand. The East Asia markets have fairly successfully contained the spread of COVID-19, including the critical mainland China market.

Mainland China's economic momentum continued to increase in September with industrial sector output expansion rebounding to surpass the pre–COVID-19 pandemic rates.

The report raised mainland China's real GDP growth forecast to 1.9% for 2020 and 7.3% for 2021. Chinese oil demand is expected to continue but is only a small portion of demand weakness in Europe and North America.

—Larry Prado

1 *Colombia*

GeoPark announced results from an appraisal test in Colombia's Block CPO-5. The well, #2-Indico, was drilled to 10,925 ft and was flowed 5,200 bbl of 35° API oil per day from Une (LS3). It was tested on a 40/64-inch choke, and the well-head pressure was 330 psi. According to the Calgary-based company the well bottomed within one-half mile to the north and 151 ft down-dip of a previous test, #1X-Indico, which hit a net pay zone of approximately 161 ft. Additional production testing is planned. The drilling rig is being moved to the nearby Aguila exploration prospect in the block to test several targets in Une (LS3). Up to six more wells are planned for the block by GeoPark.

2 *Argentina*

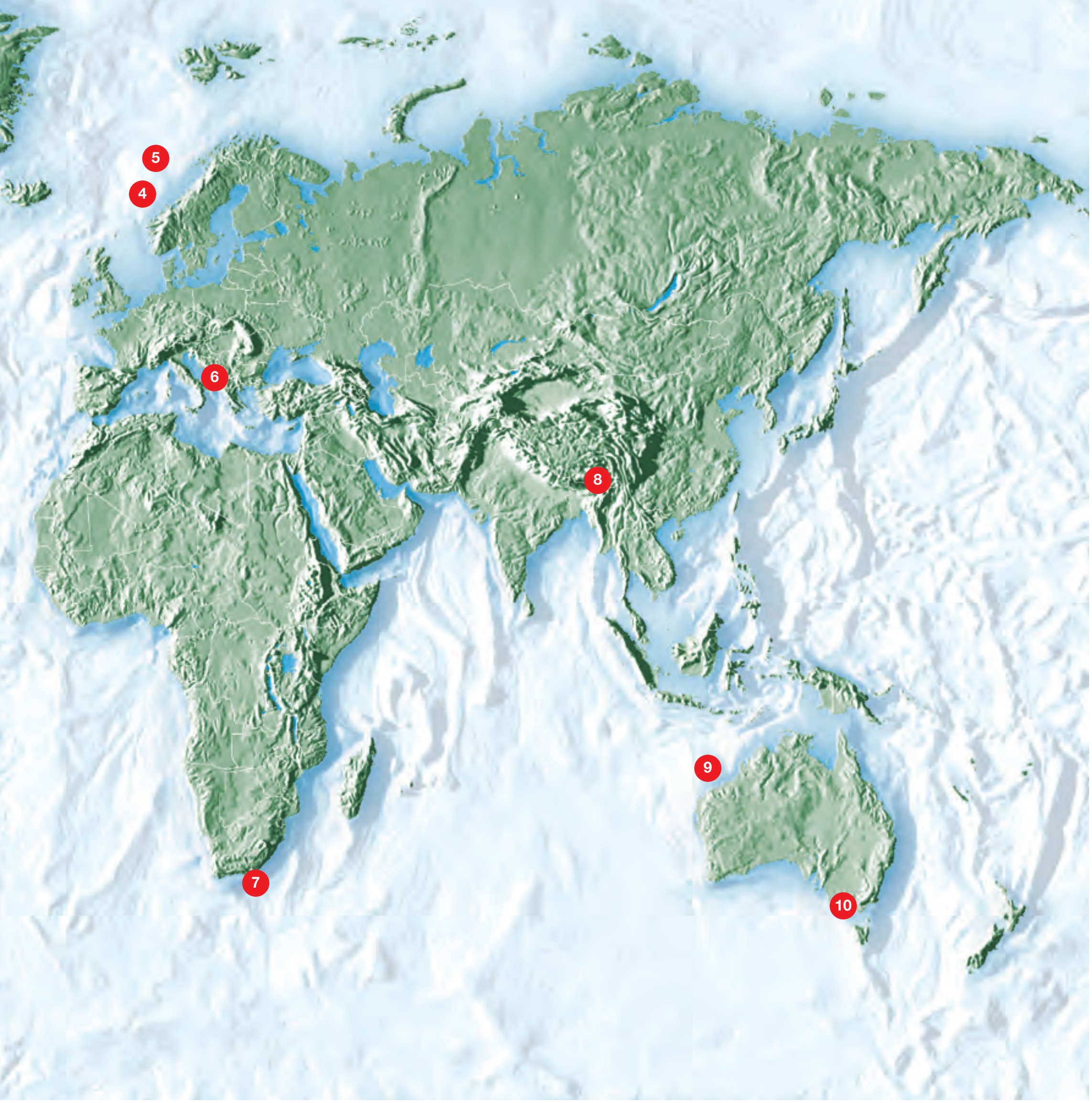
President Energy reported test results from exploration well #1-xEVN near Estancia Vieja Field in northern Rio Negro Province, Argentina. Two pay intervals in the previously untested Estancia Vieja North structure were confirmed by well logging, with an unreported amount of 36° API oil and gas flowing to the surface. The preliminary testing indicated that initial production levels can be expected in line with P50 pre-drill expectations of more than 200 bbl of oil per day plus associated gas from this lower interval. The well is near the main Estancia Vieja pipelines and facilities. Additional exploratory drilling and testing are planned. President Energy is based in Leeds, U.K.

3 *Canada*

Equinor announced that it made two offshore Newfoundland oil discoveries. The two wells at the Cappahayden and Cambriol prospects in the Flemish Pass Basin have proven the presence of hydrocarbons; however, it is too early to provide specific information on volumes. The #1-Cappahayden well was drilled in about 1,000 m of water, and the #1-Cambriol well was drilled in 600 m of water. Equinor was the operator for the wells. As part of the 2020 exploration campaign, Equinor has also drilled a top-hole at the Sitka prospect. Stavanger-based Equinor operates three discoveries with partner ***BP*** in the Flemish Pass Basin — Bay du Nord, Harpoon (discovered in 2013) and Mizzen (discovered in 2010).

4 *Norway*

Neptune Energy, operator of production license PL 586, has drilled wildcat well #6406/12-G-1 H, which is an extension of an observation well for #6406/12-3 A (Bue) oil discovery. The well is in Fenja Field, and it did not encounter reservoir rocks in either the primary or secondary exploration target. However, the well hit a total oil column of 38 m just above the secondary exploration target in the lower part of Intra-Melke, of which about 20 m were of moderate to very good reservoir quality. The preliminary calculation of #6406/12-3 A (Bue) is now between 0.2 MMcm and 1.6 MMcm of recoverable oil equivalent, while the estimate for the new oil discovery is between 0.5 MMcm and 3.2 MMcm of recoverable oil equivalent. The well's primary exploration target was to reduce uncertainty in the resource estimate. The secondary objective was to prove petroleum in Middle Jurassic reservoir rocks (sandstone in the lower part of Melke). The well was not formation-tested, but extensive data acquisition was carried out. Neptune is based in London.



5 *Norway*

ConocoPhillips announced a new gas condensate discovery in the Norwegian Sea in production license 1009, Block 6507/4, near Victoria Field and northwest of Heidrun Field. The Warka discovery well, #6507/4-1, was drilled in 399 m of water to 4,985 m. Preliminary estimates indicate the discovery holds between 50 MMboe and 190 MMboe of recoverable gas condensate. The primary and secondary exploration targets for the well were to prove petroleum in reservoir rocks from the Albian and Aptian ages and in the early Intra Lange sandstones (Cretaceous). In the primary exploration target, the well hit a 27-m gas column in sandstone layers in Lange with moderate but uncertain reservoir quality. No gas-water contact or reservoir rocks were encountered in the secondary target. Additional appraisal work is planned. After completion, the rig will be moved to drill exploration well #6507/5-10S (Slagugle) in PL891, north-northeast of Heidrun Field. Houston-based ConocoPhillips is the operator of the lPL1009, Block 6507/4, and the discovery well, with 65% interest in partnership and ***PGNiG*** holding the remaining 35%.

6 *Montenegro*

Eni has scheduled two shallow water exploration wells in the Montenegro sector of the Adriatic Sea. The ventures will be the first in the four-block concession (Blocks 4118-4; 4118-5; 4118-9 and 4110-10). The blocks encompass an area of 1,228 sq km and were acquired by Eni and partner ***Novatek*** in 2016 as jointly operated concessions (50% interest each). The drillsites were selected from geophysical data acquired in 2018. Eni is based in Rome.

7 *South Africa*

Total announced a gas condensate discovery on the Luiperd prospect, offshore South Africa. The #1-Luiperd was drilled to about 3,400 m and encountered 73 m of net gas condensate pay in well-developed, good quality Lower Cretaceous reservoirs. Coring and wireline logging are planned to assess the dynamic reservoir characteristics and deliverability. The discovery is on Block 11B/12B in the Outeniqua Basin, and it follows the adjacent play opening Brulpadda discovery, which proved a significant new petroleum province in the region. Water depth at the site is 1,795 m. The venture operated by Paris-based Total with a 45% working interest, along with ***Qatar Petroleum*** (25%), ***CNR International*** (20%) and ***Main Street***, a South African consortium (10%).

8 *India*

Oil India Ltd. reported an oil and gas discovery at exploration well #1-Dinjan in the Tinsukia District of India's Assam state. The venture is in Tinsukia Petroleum Mining Lease in the Upper Assam Basin. It encountered multiple sands in Kopili, Narpuhand Lakadong and Therria formations with a total net pay of about 10 m. It flowed approximately 4,061 cu ft of gas per day from perforations at 3,614 m with a flowing casing pressure of 3,750 psi. Additional testing is planned by Noida, Uttar, Pradesh-based company.

9 *Australia*

London-based ***BP*** is under way at exploration well #1-Ironbarkl in exploration permit WA-359-P in the Carnarvon Basin. The offshore Western Australia venture will be drilled in about 300 m of water and will test the Ironbark gas prospect, which has a best estimate of 15 Tcf prospective recoverable gas resources. The primary target is the Deep Mungaroo at approximately 5,335 m. Several additional reservoir objectives within the same formation will also be tested. The operator is planning an extensive logging while drilling program, and it will be plugged and abandoned following the completion of operations. Joint venture partners are BP (42.5%); ***Cue Energy*** (21.5%); ***Beach Energy*** (21%) and ***New Zealand Oil & Gas*** (15%).

10 *Australia*

Beach Energy announced a gas discovery in the Otway Basin at exploration well #1-Enterprise in license VIC/P42(V). The well was drilled from an onshore location about 3.5 km north of Port Campbell, Victoria, and was directionally drilled using extended-reach techniques with a 3.2 km step-out. It was drilled to 4,974 m and hit the primary reservoir target, Upper Waarre. The well encountered a 146-m gas column, including 115 m of net gas pay with no gas-water contact identified. The well will be cased and suspended as a future producer. Adelaide-based Beach is the operator with 60% interest, and ***O.G. Energy*** holds the remaining 40%.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EQUITY

Company	Exchange/ Symbol	Headquarters	Amount	Comments
FourPass Energy LLC	N/A	Denver	$900 million	Formed with a $900 million commitment from **Oaktree Capital Management LP** that includes $600 million in initial equity and an option to upsize the commitment by $300 million. Proceeds will be used to acquire and operate large-scale, oil-weighted, producing oil and gas assets.
Humble Midstream LLC	N/A	Denver	$300 million	Secured an initial capital commitment from **EnCap Flatrock Midstream**. Proceeds will be used to support its strategy focused on acquiring and building midstream assets in conventional and unconventional plays across North America. **King & Spalding LLP** served as legal adviser to Humble. **Locke Lord LLP** represented EnCap Flatrock.
Bellatorum Resources LLC	N/A	Spring, Texas	$100 million	Launched **Sentinel Energy Investments LP**, its eighth fund. Proceeds will be used to purchase productive oil and gas royalties in Texas including in the Permian Basin, Eagle Ford Shale, Haynesville Shale and Barnett Shale. Minimum investment is $10,000, and up to 2,000 accredited investors will be allowed to participate. Investors will receive an 8% preferred annualized return before Bellatorum is able to start sharing in the profits. After the preferred return is met, all profits will then be split at a rate of 80/20 with 80% going to the investor, and 20% to Bellatorum. A 15% to 20% IRR, or annualized return for investors, is being targeted by Bellatorum.
Contango Oil & Gas Co.	NYSE American: MCF	Houston	$22 million	Executed an agreement with a select group of institutional and accredited investors to sell approximately 14.2 million shares of common stock in a private placement. Proceeds will be used to fund the purchase price of a concurrently-announced acquisition of assets in the Big Horn, Permian, and Powder River basins from an undisclosed seller and general corporate purposes.

EQUITY

Company	Exchange/ Symbol	Headquarters	Amount	Comments
Talos Energy Inc.	NYSE: TALO	Houston	N/A	Commenced an underwritten public offering of about 8.3 million shares of common stock of the company. Underwriters have been granted an option to purchase up to roughly 1.3 million additional shares of stock. Proceeds will be used to facilitate its general financing strategy and to repay a portion of its outstanding borrowings under its reserves-based lending facility as well as for general corporate purposes. **BMO Capital Markets Corp.** is sole underwriter.

DEBT

Company	Exchange/ Symbol	Headquarters	Amount	Comments
Double Eagle Energy Holdings LLC	N/A	Fort Worth, Texas	$650 million	Closed a private placement to eligible purchasers of 7.75% senior notes due 2025. Proceeds will be used to fully repay both its term loan and amounts outstanding under its revolving credit facility and the remainder for general company purposes.
Blue Racer Midstream LLC	N/A	Dallas	$550 million	Intends to offer for sale senior notes due 2025 in a private offering to qualified institutional buyers. Proceeds from the sale, along with borrowings under its revolving credit facility and, if necessary, cash on hand, will be used to fund its obligations under the separately announced tender offer for any and all of its outstanding 2022 notes, including fees and expenses in connection therewith, or redeem any of the 2022 notes that remain outstanding thereafter.
CNX Resources Corp.	NYSE: CNX	Pittsburgh	$500 million	Closed a private placement of its 6% senior notes due 2029. Proceeds will be used for general corporate purposes, including to repay existing indebtedness under its revolving credit facility. **UMB Bank N.A.** acted as trustee.


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FOREIGN AFFAIRS

LESLIE HAINES, EXECUTIVE EDITOR-AT-LARGE

Welcome to a new year, where we hope to see a big reboot of the U.S. economy as we gradually get the pandemic under control. Many uncertainties remain.

But by now, the energy industry knows what to expect with Joe Biden in the White House: the U.S. will rejoin the Paris Climate Accord, which is now five years old, and Biden will push for strengthening it. Environmental regulations that were killed or diluted in the past four years will be reinstated, if not strengthened. Pipeline permitting may take even longer with environmental analysis being a bigger part of the equation.

It's important to remember that this country has already made more progress in reducing its CO_2 emissions than any other nation has, and it was done in the marketplace (using more natural gas and less coal), not by government. As the API and IPAA have pointed out, the oil and gas industry played a big part in this, even if proponents of green energy don't like to admit it.

But beyond whatever Biden plans to do directly about energy, there is another big factor that might affect the industry, and that's his foreign policy actions. Once again, international affairs and energy will intersect. So said Jason Bordoff, writing in Foreign Policy.

Speaking for Columbia University's Center for Global Energy Policy, he pointed out in a recent article that Biden's foreign policies could have as much effect on oil prices as any other actions he might take.

Even if Republicans control the Senate and create roadblocks to his domestic agenda (which was not yet clear at this writing), Biden can use foreign policy as a tool to achieve some of his climate aims, Bordoff said. One of the areas where he has authority is in issuing executive actions. Giving former Senator and Secretary of State John Kerry a seat at the cabinet as a climate emissary is also strong proof of the high priority placed on environmental issues that cross borders.

"The policy shifts that result—in areas as diverse as international trade, development finance, [nuclear] nonproliferation and diplomacy—will do at least as much as his domestic agenda to shake up global energy markets," Bordoff wrote.

Inserting heightened environmental and energy criteria into U.S. trade policies can expand clean energy efforts and create jobs here and abroad, and we can export the right technologies to countries like China and India that are struggling to contain rising emissions. Biden has also promised to impose border tariffs on carbon-intensive imports. The EU is already planning to do this, Bordoff added. If the U.S., in turn, can prove it has less carbon-intensive fuels to export, that's a win for us.

No relationship is more important than that which we have with China. The U.S. and China dominate the global economy, and together they account for nearly half of global emissions. Both have pledged to one degree or another to cut emissions and move to using cleaner energy sources, and to achieve net-zero emissions in the next decades.

Bordoff said that as the Biden administration re-engages with the international community, it will have more influence with multilateral financial institutions, such as the World Bank and International Monetary Fund, to make climate change factors part of economic decision-making and lending.

If through negotiations the U.S. returns to the Iran nuclear agreement, that will affect oil markets as more Iranian oil could flow, further oversupplying the market just when economic recovery seems possible in second-half 2021.

Russia, now a partner in OPEC+, would be likely to get even closer to Saudi Arabia in light of all this, especially if Biden places further sanctions on Russia if the relationship further deteriorates.

"One of Biden's most enduring legacies in global energy markets may be how diplomacy and geoeconomics tools in international finance, development assistance, trade and innovation will have brightened the outlook for clean energy and expanded opportunities for U.S. firms in the sector," Bordoff concluded.

"Progress at home will enhance U.S. credibility abroad," he said.

For progress at home, 42 corporations have sent Biden an open letter urging him and Congress to work together, and urgently, to enact what the letter called "ambitious, durable, bipartisan climate solutions." The companies were from diverse sectors of the economy including consumer giants Amazon, Unilever and Walmart, and energy or chemical firms such as Dow, BP, Cargill, NRG and Shell.

Talk is cheap, but in the letter, these companies said they recognize that the climate issue is "a business imperative" and that managing it will create new jobs. Addressing climate challenges will enable them to attract employees, investors and customers, they said.

That's where the oil and gas industry will come in. By controlling methane emissions and developing economic ways to capture, store and recycle CO_2, the industry can continue to deliver energy that's needed while chasing down pollutants that are undesirable, thereby setting an example for the world for years to come.


Oil and gas is here to stay.
And so are we.
The last few months have challenged everyone in extraordinary ways as a virus temporarily crushed demand. As we begin to ramp back up, our country and the world will need oil and natural gas, especially the light, sweet crude and abundant, clean-burning natural gas our domestic producers provide. Our industry continues to demonstrate its ability to adapt and to succeed. At Continental, we are built to meet all challenges and seize every opportunity. You would expect nothing less from America's Oil Champion. To learn more about us and our new ESG approach, visit clr.com.
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