

# Oil and Gas Investor

SEPTEMBER 2021



40<sup>th</sup>

ANNIVERSARY

As we celebrate 40 years, independent E&Ps find themselves in a fight to be viable and effective.

HARTENERGY

# BUILDING BLOCKS OF A STRONGER OIL & GAS INDUSTRY

<p>\$500 MILLION</p> <p><b>TALOS ENERGY</b></p> <p>SENIOR SECURED NOTES</p> <p>Senior Co-Manager</p>	<p>\$560 MILLION</p> <p><b>MARTIN</b> WOODSTRAW PARTNERS</p> <p>HAS SUCCESSFULLY CONSUMMATED ITS DEBT EXCHANGE, FINANCING, AND CASH TENDER</p> <p>Financial Advisor</p>	<p>\$535 MILLION</p> <p><b>LONESTAR</b> RESOURCES</p> <p>CHAPTER 11 RESTRUCTURING</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p><b>NPR</b> NP Resources, LLC</p> <p>DEBT RECAPITALIZATION</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p><b>USA RAIL</b> TERMINALS A PORTFOLIO COMPANY OF</p> <p>AND <b>JIM DONNAN COMPANIES</b></p> <p>High Roller Group HAS BEEN ACQUIRED BY <b>alpenglow rail</b> AND <b>CORNER, CLARK &amp; LENO</b> FINANCIAL ADVISORS Financial Advisor</p>												
<p>UNDISCLOSED</p> <p><b>NORTH AMERICAN TRANSPORTATION AND SERVICE PLATFORM</b></p> <p>CORPORATE CARVE OUT</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p><b>INTREPID</b></p> <p>HAS ACQUIRED CERTAIN ASSETS OF <b>gyrodata</b></p> <p>Financial Advisor</p>	<p>\$270 MILLION</p> <p><b>elkpetroleum</b></p> <p>ADVISOR TO THE AD HOC CROSSOVER LENDER</p> <p>Financial Advisor</p>	<p>\$350 MILLION</p> <p><b>VIPER</b> Energy Partners</p> <p>FOLLOW-ON OFFERING</p> <p>Co-Manager</p>	<p>UNDISCLOSED</p> <p><b>PETROFLOW</b> ENERGY</p> <p>ASSET DIVESTITURE</p> <p>Financial Advisor</p>												
<p>UNDISCLOSED</p> <p><b>Excalibur Resources, LLC</b></p> <p>ASSET DIVESTITURE</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p><b>EAGLE FORD MINERALS PLATFORM</b></p> <p>PRIVATE PLACEMENT OF EQUITY</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p><b>AETHON</b></p> <p>ASSET DIVESTITURE</p> <p>Financial Advisor</p>	<p>\$28 MILLION</p> <p><b>VIKING MINERALS</b></p> <p>ASSET DIVESTITURE</p> <p>Financial Advisor</p>	<p>UNDISCLOSED</p> <p><b>ROSEWOOD RESOURCES</b></p> <p>JOINT VENTURE TRANSACTION</p> <p>Financial Advisor</p>												
<p><b>ENERGY GROUP KEY STATISTICS</b></p> <p><b>\$54+ Billion</b> Aggregate Transaction Volume since 2009</p> <p><b>\$320 Million</b> Average Transaction Size</p> <p><b>169</b> Transactions Closed since 2009</p>		<p><b>ENERGY GROUP AGGREGATE TRANSACTION VOLUME</b></p> <table border="1"> <thead> <tr> <th>Year</th> <th>Volume (\$ in billions)</th> </tr> </thead> <tbody> <tr> <td>2011</td> <td>\$4.8</td> </tr> <tr> <td>2013</td> <td>\$18.5</td> </tr> <tr> <td>2015</td> <td>\$32.9</td> </tr> <tr> <td>2017</td> <td>\$42.0</td> </tr> <tr> <td>2020</td> <td>\$54.2</td> </tr> </tbody> </table>			Year	Volume (\$ in billions)	2011	\$4.8	2013	\$18.5	2015	\$32.9	2017	\$42.0	2020	\$54.2
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2017	\$42.0															
2020	\$54.2															

As an active participant in the energy industry with a principal mentality for over 50 years, we understand that capital and ideas are indispensable to a thriving oil and gas industry. Our advisory assignments demonstrate how an independent investment bank, backed by extensive industry knowledge and innovative ideas, can help build stronger, more prosperous energy companies.

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Investment Banking



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The Russian finance minister warned that Russia needs to brace for falling revenues after a stress test showed the global clean energy push could lead to a greater decline for its fossil fuel exports, according to Bloomberg.

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**ABOUT THE COVER:** The concept for *Oil and Gas Investor* was scratched out on a plane ride from Denver to Houston one day in the late 1970s by Hart Energy founder Don Hart, a vision to bring a high-end publication to the oil and gas executives and financiers behind their projects. As we celebrate our ruby anniversary, that vision stands today and going forward. Illustration by Robert D. Avila.

Information contained herein is believed to be accurate; however, its accuracy is not guaranteed. Investment opinions presented are not to be construed as advice or endorsement by Oil and Gas Investor.

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## LATEST CONTENT

### Talos Energy Achieves First Production At Tornado Attic Well

By Hart Energy Staff

Talos Energy executed completion operations for the Tornado Attic well in the U.S. Gulf of Mexico's Green Canyon area and achieved first production in mid-July.

### U.S. Shale Producer PDC Energy Sets 'Ambitious' ESG Goals

By Emily Patsy, Senior Managing Editor

In addition to further reducing its greenhouse-gas and methane intensities, PDC Energy said it also significantly accelerated its commitment in achieving zero routine flaring.

### Shale Gas Producer CNX Resources Achieves Net Carbon Negative Status

By Hart Energy Staff

CNX Resources reported it is net carbon negative for Scope 1 and 2 emissions—unique in the natural gas upstream and midstream sectors, according to the shale gas producer.

### SilverBow Announces Eagle Ford Acquisition

By Hart Energy Staff

SilverBow Resources Inc. announced Aug. 13 it has entered into definitive agreements to acquire oil and gas assets in the Eagle Ford from an undisclosed seller.

### GlobalData: U.S. Shale Producers Remain Disciplined Despite High Oil Prices

By Hart Energy Staff

Throughout the pandemic, U.S. shale producers have remain disciplined with production and capital guidance and have not reacted too quickly to the increase in oil price, according to GlobalData.

## ONLINE EXCLUSIVES

### Carbon Capture and Climate Chaos: Challenges That Lie Ahead

By Faiza Rizvi, Senior Associate Editor

A recent report by Wood Mackenzie shows there is growing momentum for carbon capture in upstream operations, but larger challenges loom amid increasing calls to address climate change.

### Projects Progress, Despite Headwinds

By Joseph Markman, Senior Editor

Navigating the obstacle course of government entities and economic struggles is a challenge, but the midstream sector has chalked up some wins to go with a few setbacks.

### Vine Energy Aims For Haynesville First Through RSG Partnership

By Emily Patsy, Senior Managing Editor

Plano, Texas-based Vine Energy aims to become the first natural gas producer in the Haynesville Basin to certify 100% of its assets as "responsibly sourced" through an agreement with Project Canary.

### 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

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### Energy ESG: Diamondback CFO On The Permian Basin's ESG Standing

In this exclusive video interview, Diamondback Energy CFO Kaes Van't Hof talks about the growing sustainable operations of oil and gas companies in the Permian Basin.

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### Forty Under 40 Honoree Interviews

For your introduction to these role models, we invite you to enjoy these past video and audio interviews, extended narratives and personal insights.

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### PATH FORWARD: Industry Not Moving Away From Oil Anytime Soon

Oil and gas companies are progressing toward "eco-friendly" operations, but there is no reason for them to transition away from fossil fuels, says industry veteran Dr. Jerry Bailey, director of Petroteq Energy and former president of Exxon Arabian Gulf.

[www.hartenergy.com/exclusives/path-forward-industry-not-moving-away-oil-anytime-soon-195505](https://www.hartenergy.com/exclusives/path-forward-industry-not-moving-away-oil-anytime-soon-195505)

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August 2021  
**Enfield Holdings, L.P.**  
A joint venture between  
TPG Capital and  
Goldman Sachs Asset Management  
**Undisclosed**  
Sale of preferred security interest in  
EnLink Midstream Partners, LP  
Sole Financial Advisor

June 2021  
Pending  
  
**\$4,413,000,000**  
Merger with  
Independence Energy, LLC  
Sole Financial Advisor

June 2021  
Pending  
  
**Undisclosed**  
Sale to  
Civitas Resources, Inc.  
Lead Financial Advisor

May 2021  
Pending  
  
**\$715,000,000**  
Sale of Northern Midland Basin assets  
to Laredo Petroleum, Inc.  
Sole Financial Advisor

January 2021  
  
**\$420,000,000**  
Sale of Midland Basin assets to  
Surge Energy US Holdings Company  
Sole Financial Advisor



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# VISIONS OF THE FUTURE



STEVE TOON,  
EDITOR-IN-CHIEF

Forty years of telling the stories of the oil and gas industry. Imagine the epic tales of bold entrepreneurs, the rise and fall and rise again of volatile commodities, capital raises and capital losses, huge mergers and innumerable small asset carve outs, the exuberant successes and those that failed. We've told them all.

Established 1981, *Oil and Gas Investor* was the industry's first publication to target the oil and gas business executives and the capital providers funding them. We still do. This month we celebrate those 40 years of journalistic endeavor in a special anniversary issue.

And yet it's not our intent to look back, but rather to look forward at the coming decades. When *Investor* launched in 1981, no one could have foretold the story that unfolded over the next 40 years, nor foresaw the landscape that exists today. And it would be foolish to think we know how the next four decades will play out. Remember the specter of peak oil? Now we are to fear peak demand.

But we must try, although it's like peering into a dense fog. All good companies must predict and plan for a projected future.

Yet the outlook for the future of the industry at this juncture in time might be the most clouded view than ever in the past 40 years. Those that propose an energy transition away from carbon-based fuels would wish hydrocarbon producers away instantly if possible. And while thinking individuals know reality overrules rhetoric, it's certain that business-as-usual is a model of the past.

Oil and gas strategies in 2050—a line of demarcation for when many governments and organizations would target global net-zero emissions—will be markedly different than now.

In 2050, Pioneer Natural Resources Co. CEO Scott Sheffield foresees global demand much lower than today. Speaking to members of the Houston Producers Forum, Independent Petroleum Association of America and Texas Independent Producers and Royalties Association members in Houston in August, he said, "We could easily lose 25 million barrels a day by 2050" if electric vehicles successfully supplant internal combustion engine cars by then and another 15 MMbbl/d if diesel vehicles are replaced.

That leaves world demand between 50 and 75 MMbbl/d. Of that, he predicts OPEC, other state-controlled oil companies and majors to supply the bulk, with free enterprise vying to supply some 20 MMbbl/d. "We're all going to be fighting for those last barrels."

Alternately, Cimarex Energy Co. CEO Tom Jordan, speaking to a NAPE audience a day later, sees a "healthy demand for our product for many decades to come" as long as free markets are allowed to play out. He added, however, "I never want to underestimate our ability to make terrible public policy."

And while Jordan believes oil and gas companies must adamantly strive to eliminate Scope 1 emissions in the near years, the true future demand for our products is in raising the economic conditions of lives in developing countries. "It would be a crisis for them to not have access to energy," he said.

For our anniversary issue, *Investor* reached out to a number of industry thought leaders for their future perspectives, and most agreed that the next decade would be economically profitable at least to the point where peak demand is predicted by pundits. But they also agreed that the industry must embrace a partnership with energy transition efforts rather than become pariahs.

Industry veteran and former Swift Energy Co. president Bruce Vincent is a calm voice in today's uncertain environment. He said, "The oil and gas industry plays a fundamentally important role today in our domestic and world economies as well as providing energy and raw materials for people to live productive and meaningful lives with significantly improved living standards.

"Over the long run, this will continue to be true despite all the rhetoric regarding the elimination of fossil fuels. While the industry will continue to need to compete for capital and innovate technologically, I believe it can and should continue to play an important role in America and the world for decades to come."

I believe this too. The fervor and capital intensity of the energy transition will likely settle in a decade or so, and oil and gas and non-fossil fuels will ultimately find their balance, with hydrocarbons surviving in some mix. And *Oil and Gas Investor* will be there analyzing the trends, talking to the players and telling the stories of the industry just as we have for the past 40 years.

Thank you for being a part of that tale.

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*The data don't lie: Dealmaking is alive and well in 2021. Join us live and in person for the A&D Strategies and Opportunities Conference at the Fairmont Hotel Sept. 29 in Dallas. See you there. It'll be a dealmaking good time.*



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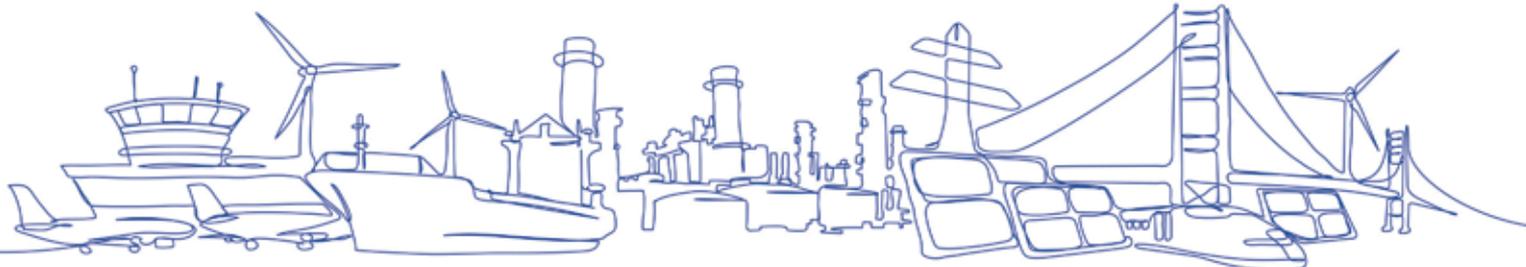
## Typical Size

- Senior debt: \$10 - \$100 million
- Junior debt: \$10 - \$50 million
- Equity: \$10 - \$25 million

Senior Debt

Junior Debt

Equity



# THE DELTA



DARREN BARBÉE,  
SENIOR EDITOR

A brief, dreamlike haze settled into early 2021 as though somehow the pandemic had finally been broken and, though not routed, at least on its heels.

Enter the second quarter of 2021, when the long warned about COVID-19 Delta variant started to wreak havoc, forcing the cancellations of oil and gas industry events.

Isn't it a pity that dumb never takes a holiday?

Essentially there are two problems confronting the world and the pandemic's Delta variant. One is low rates of vaccination abroad. The other is the near-superstitious resistance here in the U.S. to getting a vaccine. In late August, Houston's Harris County started to offer \$100 to people just to get the shot.

Also in August, Tom Petrie, chairman of Petrie Partners, lamented that America was just getting its groove back while the rest of the world was letting the U.S. down.

In "India, Indonesia, other parts of Asia, certainly parts of Africa ... the rates of vaccination are not where it needs to be," Petrie said at EnerCom's The Oil & Gas Conference in Denver.

This is certainly the case. About 13% of India's roughly 1 billion people have been fully vaccinated, according to the BBC. And India's 32 million COVID cases make it the worst affected country in the world after the U.S., which has reported about 35 million infections.

This matters for the industry, of course, as OPEC, supply and demand remain ever unfaithful bedfellows to the industry.

In a rare speaking event (only kidding), Petrie focused on the rapid spread of the COVID-19 Delta variant that is looming like a falling, flaming piano over the industry's head.

It was a disquieting moment of irony as Petrie delivered remarks to perhaps 150 maskless attendees stuffed into a large ballroom.

Petrie said that deaths are likely not going to be on a scale seen a year ago because of improved treatments.

"And with the rates of vaccinations in this country, we're in pretty good shape to take on even the high rate of infection that's involved," he said.

Here, we veer sharply into uncomfortable "not really territory." Petrie's assessment is particularly not true for oil producing states such as Texas and North Dakota. Nationwide, about 62% of U.S. residents have been fully vaccinated. The optimal rate to contain the pandemic is 70%, according to the CDC.

In Texas, about 55% of residents have had at least one dose of the vaccine. In North Dakota, it is 47%, while New Mexico is near to 67%.

In other oil and gas states, such as Oklaho-

ma, the vaccination rate is about 51% and in Louisiana, about 48%.

Highly populated states on the east and west coasts have bulked up the sagging numbers in the Midwest and south.

In Oklahoma, ABC reported a scramble to find beds for COVID patients outside of the state. In Texas, about 87.1% of all hospital beds are in use—the highest level since the start of the pandemic—with 14.1% of those beds occupied by COVID-19 patients, according to the Texas Tribune.

Bad COVID numbers likely mean bad economic numbers, and the market is clearly jittery over the Delta variant. For the week of Aug. 16, oil prices suffered "another gruesome week and [on Aug. 20] another day of blood-letting in the crude markets," said Andrew Fletcher, senior vice president of commodity derivatives at KeyBank National Association.

In August, the International Energy Agency (IEA) said that global refining activity was slowed in July as new waves of COVID-19 "cut into fuel demand while margins remained under pressure."

A second-quarter rally in crude prices also lost steam in July on "fears that new COVID-19 Delta cases and weaker economic indicators could slow the oil demand recovery just as more supply hit the market," the agency said.

The IEA said it expects demand to increase by an average 5.3 million barrels per day (MMbbl) in 2021 to 96.2 MMbbl/d and by another 3.2 MMbbl/d next year.

One transposed letter away, at the Energy Information Administration (EIA), the agency is still predicting solid growth stateside. The nation's GDP will grow by 6.6% in 2021 and 5% in 2022, according to the EIA's August short-term energy outlook.

Brent prices also fell. The EIA said that in 2022, continued supply growth from OPEC+ and accelerating U.S. oil growth will cause prices to fall, with Brent averaging \$66/bbl next year.

Finally, a word about President Joe Biden, who is already building a legacy as the most dispassionately thought of president in history. Biden took some fire recently for suggesting that OPEC+ start pumping more oil to lower prices.

Petrie said that the administration was, in effect, "begging ... that OPEC make sure you increase production so we can get prices down."

Perhaps Biden should take a page from former President Donald Trump, who tweeted in 2019 that "oil prices are too high. OPEC is at it again."

Come on, man. It's all about tone.



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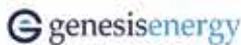
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# LIMITATIONS OF GOVERNMENT



JACK BELCHER,  
CORNERSTONE  
GOVERNMENT  
AFFAIRS

One of the blessings of the U.S. Constitution is that it makes it very difficult to radically change federal law. Major changes to public policies enshrined in legislation must make their way through a labyrinth of checks and balances, including passage from both houses of Congress, presidential approval (or congressional override in the instance of a veto) and judicial scrutiny in the event of a legal challenge.

This labyrinth can be rather frustrating when you are trying to get something done. When I worked on Capitol Hill in the early 2000s, I can recall lamenting with my colleagues over the absence of strong domestic energy production incentives in an energy bill that was in conference between the House and Senate. That experience taught me to keep an eye on the long game, as a provision we added in the next iteration of the bill ultimately helped to prevent the federal government from thwarting the shale revolution before we even knew it was coming.

The system of checks and balances put in place by our founders was designed to prevent radical shifts in public policy from one direction to the other. Importantly, it can also force compromise between political parties, both houses of Congress, and Congress and the executive branch. Compromise is a rare thing these days in Washington because the two parties are so polarized. However, like the viewing of an old movie, elements of compromise have been on display this summer in the form of the much-anticipated infrastructure bill.

While reasonable arguments can be made that the bipartisan infrastructure deal (BID) is too expensive and doesn't sufficiently address "hard" infrastructure needs, the bill does pave the way for significant spending, regulatory permitting and support for carbon capture utilization and storage (CCUS). This is an important signal that the Biden administration and Congress see fossil energy continuing to play a significant role in the U.S. energy future and in lowering greenhouse-gas emissions globally. The BID acknowledges the importance of CCUS "to meeting our emissions reductions goals" and would also provide significant funding into research for carbon capture, transportation and storage technology, facilitate permitting for storage sites, including on the Outer Continental Shelf, and provide funding for four regional direct air capture hubs.

Make no mistake, federal action can be taken outside the sphere of legislation (and the compromise contours associated with it)

that can have real and significant impacts. However, despite such recent actions, including a pause on new oil and gas leasing and permitting on federal lands, shutting down the Keystone XL Pipeline and subjecting all federal decisions to a climate test, the industry has been able to rebound amid firm commodity prices, recovered demand and decent returns. Economic growth driven by markets, innovation and investment has overcome the negative effects of various administrative decisions.

By no means is the industry out of the woods, however. In addition to lasting effects from the recent administrative actions, some of which are still working their way through litigation, the U.S. Senate is now working on a massive \$3.5 trillion budget reconciliation package that will be a virtual Christmas tree of presents for many special interests and lumps of coal for the oil and gas industry.

As to specific proposals to keep an eye out for, anti-fossil energy groups have been on a campaign for years to eliminate "fossil fuel subsidies." Tax incentives likely to be targets for elimination or amendment include the EOR credit, the marginal wells credit, expensing of intangible drilling costs, the passive loss limitation exception for working interests in oil and gas properties, percentage depletion for oil and gas wells, two-year amortization for geological and geophysical expenditures (shifted to seven years), expensing of exploration and development costs, and capital gains treatment for certain royalties. Some international tax provisions related to oil and gas could also be modified, such as foreign oil related income and foreign oil and gas extraction income. More broadly, a whole host of other tax changes could negatively impact businesses, including an increase in the corporate tax.

Notably, while this legislation will move under reconciliation rules that only require a 51-vote majority for Senate passage, given expected unanimous GOP opposition, elements of compromise will still be necessary in order to ensure that Democrats such as Sens. Joe Manchin (WV) and Kyrsten Sinema (AZ) remain on board. Members like Manchin and Sinema are likely keen on avoiding being associated with a bill seen as overstimulating, overleveraging or otherwise undermining the U.S. economy and global competitiveness.

In other words, that labyrinth of checks and balances once again just might work in our favor and prevent more damage to the industry.

# EVENTS CALENDAR

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

EVENT	DATE	CITY	VENUE	CONTACT
<b>2021</b>				
Mexico Gas Summit	Sept. 7-8	San Antonio	St. Anthony Marriott Hotel	mexicogassummit.com
<b>DUG Bakken and Rockies</b>	<b>Sept. 8</b>		<b>Virtual</b>	<b>dugrockies.com</b>
Energy Workforce & Technology Council 2021 Annual Meeting	Sept. 15-17	Santa Ana Pueblo, NM	Hyatt Regency Tamaya Resort and Spa	energyworkforce.org
GPA Midstream Convention	Sept. 26-29	San Antonio	Marriott Rivercenter	gpamidstreamconvention.org
<b>A&amp;D Strategies and Opportunities</b>	<b>Sept. 28-29</b>	<b>Dallas</b>	<b>Fairmont Hotel</b>	<b>adstrategiesconference.com</b>
OGA Annual Conference	Oct. 4-6	Norman, OK	Embassy Suites	okgas.org
Utica Green Conference	Oct. 12	Canton, OH	Pro Football Hall of Fame	uticasummit.com
<b>Energy Transition Capital Conference</b>	<b>Oct. 18-19</b>	<b>Houston</b>	<b>Westin Memorial City</b>	<b>hartenergyconferences.com</b>
USAAE/IAEE North American Conference	Oct. 31-Nov. 3	Austin, TX	Sheraton Capital	iaee.org
<b>Executive Oil Conference</b>	<b>Nov. 3-4</b>	<b>Midland, TX</b>	<b>Midland County Horseshoe Arena</b>	<b>executiveoilconference.com</b>
<b>Carbon Management Forum</b>	<b>Nov. 3</b>	<b>Midland, TX</b>	<b>Midland County Horseshoe Arena</b>	<b>executiveoilconference.com</b>
WEA Wildcatter of the Year	Nov. 6	Denver	Hyatt Regency at Colorado Conv. Ctr.	westernenergyalliance.org
North American Gas Forum	Nov. 8-10	Washington, D.C.	Hilton Washington, D.C.	energy-dialogues.com/nagf/
<b>25 Impactful Veterans in Energy</b>	<b>Nov. 10</b>		<b>Virtual</b>	<b>hartenergyconferences.com</b>
<b>Energy ESG Conference</b>	<b>Nov. 29</b>	<b>Houston</b>	<b>Westin Memorial City</b>	<b>energyESGConference.com</b>
<b>25 Influential Women in Energy Reception</b>	<b>Nov. 29</b>	<b>Houston</b>	<b>Westin Memorial City</b>	<b>hartenergyconferences.com</b>
<b>DUG East/Marcellus-Utica Midstream</b>	<b>Dec. 6-8</b>	<b>Pittsburgh</b>	<b>David L. Lawrence Conv. Ctr.</b>	<b>dugeast.com</b>
<b>2022</b>				
IPAA Private Capital Conference	Jan. 20	Houston	JW Marriott Galleria	ipaa.org
<b>DUG Midcontinent</b>	<b>March 1-3</b>	<b>Oklahoma City</b>	<b>Oklahoma City Conv. Ctr.</b>	<b>dugmidcontinent.com</b>
CERAWeek by IHS Markit	March 7-11	Houston	TBD	ceraweek.com
<b>Monthly</b>				
ADAM-Dallas	First Thursday	Dallas	Dallas Petroleum Club	adamenergyforum.org
ADAM-Fort Worth	Third Thursday, odd mos.	Forth Worth	Forth Worth Petroleum Club	adamenergyfortworth.org
ADAM-Greater East Texas	First Wed., even mos.	Tyler, Texas	Willow Brook Country Club	getadam.org
ADAM-Houston	Third Friday	Houston	Brennan's	adamhouston.org
ADAM-OKC	Bi-monthly (Feb.-Oct.)	Oklahoma City	Park House	adamokc.com
ADAM-Permian	Bi-monthly	Midland, Texas	Midland Petroleum Club	adampermian.org
ADAM-Tulsa Energy Network	Bi-monthly	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	Bi-monthly	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 Brandy Fidler at [bfidler@hartenergy.com](mailto:bfidler@hartenergy.com).

For more, see the calendar of all industry financial, business-building and networking events at [HartEnergy.com/events](http://HartEnergy.com/events).

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### Minerals Market Bounces Back to Life

Experts say middle-market activity is picking up in the mineral and royalty space with larger deals to follow in late 2021. Join Hart Energy's Mineral Forum on September 28\* and assess the possibility of resurgence in this post-COVID market.

Hart Energy conference sessions historically attract a diverse group of qualified professionals eager to network with like-minded peers and colleagues willing to share the latest industry trends. No other energy-focused events connect such a broad range of key players and decision-makers.

*\*Separate registration is required for the Minerals Forum*

### Topics Being Covered

- Merger Success – A Corporate Consolidator's Story
- The Hot 20 Scorecard – A&D Metrics, Trends and Top Takeaways
- Roundtable Discussion on Consolidation Aftershocks
- Buyer Spotlight on Private Equity's Breakout Role
- Roundtable Discussion on Private Equity's New Groove
- Altering the Permian Landscape – Two Major Players Combine
- Roundtable Discussion on Finding Capital to Fund Transactions
- Navigating the Macro Winds
- Buyers' Panel – The Deals Explained

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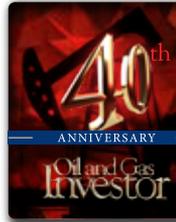
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# NewsWell



## Climate policies unlikely to disrupt oil demand growth, study shows

Despite the push for green energy and the impact of the COVID-19 pandemic on commercial transportation, global oil demand is projected to grow through 2030, a new study revealed.

“As much as we all want to successfully deal with the challenge of climate change, and as big as the impact COVID has had on oil demand, it is really hard to slow down global oil demand at least over the next 10 years,” said Mark Finley, fellow in energy and global oil at Rice University’s Baker Institute who is also one of the lead authors of the study.

Finley told Hart Energy that global oil demand in three of the four scenarios analyzed in the study continued to grow through 2030. Only one scenario bucked the trend, in which the pandemic’s disruptive impact to the global economy and mobility combined with strong government intervention to accelerate alternative technologies shows an oil demand decline after 2025.

The study, conducted by Columbia University’s Center on Global Energy Policy and the University of California, Davis Institute of Transportation Studies, focused on four scenarios to understand how COVID-19 and other political, economic, social and technological drivers may impact transportation activity and global oil demand. The scenarios—developed by leading energy and transportation experts—featured varying speeds of economic recovery, levels of government intervention in energy markets and endurance of mobility trends that started during pandemic lockdowns.

Interestingly, according to Finley, the study shows that the pandemic wasn’t so bad for oil after all. In fact, some aspects of the COVID-19 experience increased oil use.

For example, there was significant substitution away from mass

transit to greater use of personal vehicles, according to the study. There is also some evidence that people left large cities in the U.S. for the suburbs and smaller cities where there is less mass transit available and people drive more for non-commuting activities.

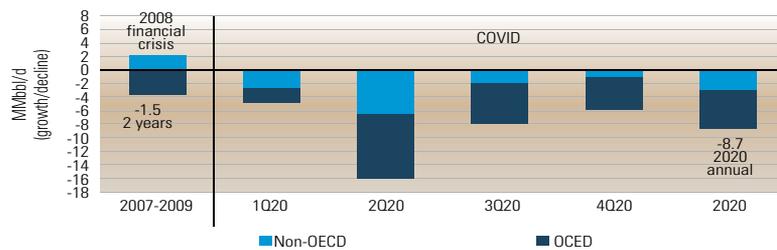
Further, the study noted a large increase in e-commerce deliveries in the U.S. and other nations that buoyed short-haul truck vehicle miles traveled. “While unrelated to transportation, there was also an increase during COVID in petrochemicals used for personal protection equipment and packaging for take-out food and e-commerce deliveries,” according to the study.

Finley noted that another key takeaway of the study is that both government climate policies and innovation would need to progress at a faster pace to impact oil demand. While uncertainty remains about the world’s recovery from the pandemic, the current state of government climate policies and technology innovation are unlikely to reduce global oil demand fast enough to help the world keep within a 1.5 C temperature rise along the net-zero carbon trajectory.

“Both policy and technology along with consumer behavior need to change much more significantly than we could observe so far,” he said.

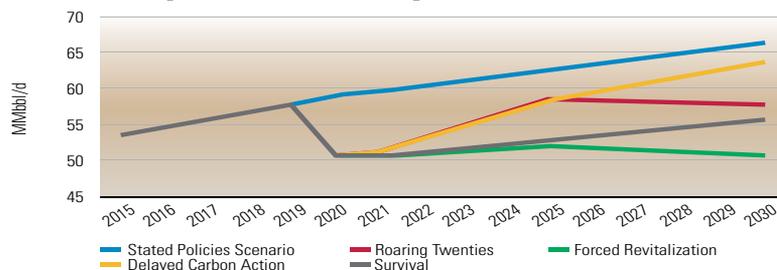
“EV’s aren’t going to solve the oil demand challenge by themselves,” he added about electric vehicles (EVs). “We need to do something about petrochemicals, we need to do something about other modes of transportation.”

## Change In Global Oil Demand: COVID Vs. The 2008 Financial Crisis



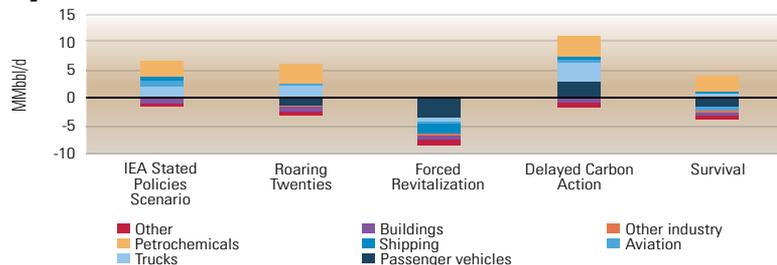
Source: International Energy Agency; Columbia University’s Center on Global Energy Policy; University of California, Davis Institute of Transportation Studies

## Global Transportation Oil Use By Scenario



Source: International Energy Agency; Columbia University’s Center on Global Energy Policy; University of California, Davis Institute of Transportation Studies

## Global Oil Demand Net Growth By Sector, 2019–2030, By Scenario



Source: International Energy Agency; Columbia University’s Center on Global Energy Policy; University of California, Davis Institute of Transportation Studies

The study also shows that China and India will see strong growth in oil demand during the next few years.

“There is a need for a global approach to deal with climate change,” Finley continued. “We can’t just focus on the U.S., Europe and other rich countries of the world.”

—Faiza Rizvi

## **Fighting the fight: Diamondback Energy shares survival tactics**

Getting credit where it’s due is not something the oil and gas industry receives if you ask Kaes Van’t Hof, CFO and executive vice president of business development for Diamondback Energy Inc.

“It’s very hard, difficult for me personally, to wake up every morning and see three articles about the death of your industry when you know it’s not the case,” Van’t Hof told attendees of Hart Energy’s DUG Permian and Eagle Ford Conference and Exhibition on July 13. “Diamondback and the industry, in general, are ready to fight this fight.”

Barrels produced in the Eagle Ford and Permian Basin are among the lowest cost and most sustainable barrels in the world, he said. “That has contributed massively to U.S. economic expansion since the global financial crisis, and it’s going to contribute over the next few years.”

The shale executive shared his thoughts as the industry continues to bounce back from a challenging year, which included a historic oil price collapse. So far in 2021, oil prices have improved by more than 40% thanks to supply cuts by OPEC and allies and rising global oil demand. However, the pressure is still on for E&Ps like Diamondback to not only show capital discipline and generate higher shareholders returns, but also improve carbon footprints and address other ESG concerns.

In the industry’s current state, public oil and gas producers will be judged by Wall Street on LOE and G&A, plus their emissions profile, methane intensity and flaring, Van’t Hof said.

“That generally means as a large public company capital



**Kaes Van’t Hof**

will flow to those that are better actors than worse. ... There is a lot of work being done on the oil field’s emissions profile, and I don’t think it’ll ever get to zero,” he said. “But like we said before, this industry is going to be a leader in terms of carbon capture and sequestration, that’s for sure.”

Diamondback earlier this year said it aims to reduce its Scope 1 greenhouse-gas intensity by at least 50% and its methane intensity by at least 70% from 2019 levels by 2024. The company said it flared 0.75% of its gross gas production in first-quarter 2021, a drop of more than 85% from 2019. That flared gas percentage is 1% when QEP Resources Inc., which was acquired by Diamondback this year, is added to the picture.

Addressing the emissions profile and flaring is not insurmountable, he said, but the industry must work together to get it done by ensuring midstream infrastructure and takeaway is in place.

As part of its ESG efforts, the company is also working to maximize electrification of its gas-driven engines and electrify drilling operations. Diamondback has spent millions on electrifying its fields.

“Carbon management is probably going to be solved by people in this room and by our industry,” he told a roomful of DUG attendees.

“What’s been frustrating to me, from a political perspective is the offshoring of U.S. barrels by an administration that doesn’t want us to produce oil and gas in the U.S. when a barrel produced by Diamondback, Pioneer, Conoco

in the Permian Basin is the lowest carbon emission barrel in the world,” he added. “I think that logic has been lost on Washington, but I think what we need to do as an industry is continue to push our emissions profile down while producing barrels at the lowest cost and the lowest carbon footprint. And that’s what we intend to do because that’s what the shareholders want us to do.”

Van’t Hof also shared views on other topics during the Q&A.

**Improving recovery:** The days of drilling a single well and getting excited about 24-hour IP are gone, according to Van’t Hof. The company has gotten smarter about how it develops Permian resources as it moves to what he called “true manufacturing with large pads, lower costs and really massive operations.”

Efficiency has remained at the core. This includes using simultaneous hydraulic fracturing, or simul-frac, technology that enables two horizontal wells to be stimulated at the same time using one pressure pumping fleet.

“You’re essentially completing twice the amount of lateral feet per day as a conventional frac crew. ... You’re completing more lateral footage at a lower cost,” he said. “It’s kind of cost-neutral to the frac provider but we save some time on location with all the ancillary supplies that we need to frac the well.”

The improved cycle times enabled Diamondback to use fewer rigs, moving from plans to use 11 this year down to nine, also utilizing knowledge from the QEP team. It “not only improves returns on current projects but also opens up other zones that might have lower recoveries to economic development,” Van’t Hof said.

**Capital discipline:** The strides are being made as oil prices continue to climb from historic lows seen in 2020. It may be tempting to ramp up activity, considering hedge losses this year have impacted free cash flow. However, Diamondback—like many of its public peers in the Permian Basin—are staying disciplined. The company plans to produce in total between 218,000 bbl/d and 222,000 bbl/d, spending between \$1.6 million and \$1.75 million.

“Capital discipline produced by the public companies is real, and



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that means if oil goes down \$10 tomorrow, I'm going to have a pretty bad day," said Van't Hof. "But our plan is not going to change. So, there's just so much space now between the oil price that keeps us cash flow neutral to generating positive free cash flow and covering the dividend."

**Consolidation:** Having closed acquisitions of QEP and assets from Guidon Operating LLC during the first quarter, Diamondback has been an active player in the consolidation wave moving across shale plays. Such action will continue in the basin and the industry, he said, calling it a positive for returns and oil price.

"There's going to be a few large basin champions in each basin—majors included," he said. "I think generally that means if all the big guys stay disciplined and don't grow production too much like what we've done in the past, then I think we're set up for a very healthy next couple of years."

Cautioning the industry is still a cyclical business, he added. "OPEC's done a great job managing the market and we need to do our part by staying disciplined, generating free cash and giving it back to our shareholders."

—Velda Addison

## **ESG disruption to shake up the oil and gas market**

Climate change measures enforced by the Paris Agreement will significantly impact oil and gas operations in the coming years. Therefore, to reduce emissions and minimize losses in the long-term, oil and gas companies need to be mindful of strong governance and social practices, which are vital for energy transition, according to a recent report by research and consulting firm GlobalData.

In its report titled, "ESG in Oil and Gas—Thematic Research," GlobalData suggests oil and gas companies adopt measures such as carbon pricing by altering processes across the value chain. The study also reveals that technological innovation and increased consumer mindfulness will make sustainable alternatives to hydrocarbon-intensive products more and more attractive. For example, in transport, which is historically

the largest hydrocarbon-demanding sector, conventional cars will be displaced almost entirely by electric vehicles (EVs).

"Though some demand will remain, survival for most current oil and gas companies will mean transitioning to a new product," said George Monaghan, oil and gas analyst at GlobalData.

"While there are many options for products, with renewable energy being the most popular, companies will only succeed if they invest while demand is there to capitalize on already strong cash flows by the time demand falls. Companies that wait until hydrocarbon revenues dry up will have insufficient cash to fund a transition."

The report said companies will also need effective governance to steer themselves through the disruption over the next three or four decades. The balancing act necessary for companies to meet net-zero objectives while retaining scale demands deft leadership. For example, companies must sustain sufficient cash flows to handle demand volatility, overhaul their asset portfolios, make astute investments and satisfy sustainability-minded stakeholders, all while providing stable dividends.

Monaghan commented, "As millennials come to dominate the consumer base and workforce and begin to assert their preferences, companies that fail to maintain good social practices (toward workers and affected local communities) will struggle to attract and retain customers and employees."

The report shows emission reduction strategies available to oil and gas companies can be divided into two broad approaches: change the process and change the product. It is easy but unwise to underestimate the effectiveness of the 'change the process' approach, which involves multiple small changes that are capable of delivering significant emission reductions. At the same time, meeting 2040 or 2050 net-zero goals and dealing with the increasing unavailability of hydrocarbon reserves will require companies to change the product.

"Scope 1 and 2 emissions represent the majority of emissions for which the oil and gas industry

is responsible. These emissions can be reduced by altering value chain practices," Monaghan explained. "Since the end product is unchanged, this 'change the process' approach requires less R&D and infrastructural investment. It promises short- and mid-term returns."

He continued, "However, other emissions are inextricable from oil and gas, particularly those produced by end-user combustion of the hydrocarbons (termed Scope 3). Technological innovations may reduce the carbon content of the end product, but practically, so long as the end product is oil and gas, the company producing it will be responsible for significant scope emissions. To eliminate these emissions, companies must transition to a new end product. This is the 'change the product' approach."

—Faiza Rizvi

## **What's driving some to consider a Permian Basin exit**

In 2020 the entire E&P industry saw a sharp decline in their total emission levels due to the pandemic, especially in flaring. Although Rystad Energy's Jon Erik Remme warned that "there's lots to be done" in terms of reducing CO<sub>2</sub> emissions, the levels have remained low even with frac activity picking back up.

"We believe this is actually a structural change, really emphasizing the industry's commitment to gradually eliminating flaring and that the industry is actually taking on the challenge of developing the resources in a more environmentally responsible manner, and that this effect should not be underestimated in any way," said Remme, who serves as vice president of upstream research with Rystad, during a virtual roundtable hosted by the research firm on July 21.

Remme was joined on the roundtable—"CO<sub>2</sub>, CCS and Carbon Tax: Positioning North America for future energy systems"—by senior analyst of emerging services research Lein Mann Hansen and host Amir Zaman, head of America's business development, to discuss the oil and gas industry's response to cutting CO<sub>2</sub> emissions as well as

potential solutions for the future of fracking.

Zaman mentioned that recently Shell has been considering withdrawing from the Permian Basin altogether. Remme weighed in on how the company might have come to this decision and why it might be a smart idea economically and environmentally for Shell to leave.

“Shell has said that oil production for them peaked [in the Permian] in 2019, and they are expecting gradual reduction of oil production every year,” Remme said. “It’s also going to be quite capital intensive going forward, and we have to see this in light of their greenfield developments, where a significant portion of their resource base for fields under developments or discoveries are expected to have lower breakevens than the Permian, which could also then be coupled with a larger potential for further emission reductions.”

In the spirit of reducing carbon emissions, companies in the industry have also been talking

about the potential of the U.S. government implementing a carbon tax to push energy companies toward being more sustainable. Remme predicts that this conversation contributed to Shell’s potential departure from the Permian Basin.

“This is one of those cases where you have to think holistically around Shell’s portfolio,” Remme said. “Shell’s Permian activity is renowned when it comes to flaring, but it is overall CO<sub>2</sub> intensive as well. We see a carbon tax of \$50 or \$100 per ton, reducing the overall NPV of Shell’s Permian portfolio, so that is a significant portion that could be hit if [a tax] is to be introduced.”

While energy companies prepare for a potential carbon tax, experts at Rystad have shifted to talking about reusing elements in the field to be more sustainable, namely pipelines. Of reusable pipelines, Zaman said it sounded like it would be a “common theme in this energy transition.”

“Considering all the economics, considering the potential

safety issues of wells and poor economics of reusing offshore platforms, reusing pipelines is where the potential lies,” Hansen added. “Not only that, but the cost can be 1% to 10% the cost of building and installing [new] pipelines, so there’s definitely big cost-saving potential. The supply side of CO<sub>2</sub> pipelines might be a little bit limited, but the value of this infrastructure can really go sky high within years.”

In addition to reusing existing infrastructure, Hansen also mentioned how the Alberta Carbon Trunk Line in Canada is used to store CO<sub>2</sub>. The world’s largest pipeline compresses and stores up to 14.6 MMtons of CO<sub>2</sub> per year, and it serves as a model for other pipelines in the future.

“What is interesting is that they actually built this pipeline with spare capacity for future CO<sub>2</sub> volumes that can be transported through this pipeline,” Hansen said. “There’s all this thinking ahead, not just on this project, but we’re also seeing it in multiple other projects where they take into

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account spare capacity in wells that are drilled and completed.”

Although carbon capture and storage (CCS) comes at higher economic costs, the government is incentivizing companies to be more environmentally friendly.

“One of the biggest issues today is that there’s too little monetary value to CO<sub>2</sub> emission reductions, and deploying CCS comes at a cost,” Hansen said. “The maturity of new projects today that are being announced luckily are incentivized by different programs, placing a value on the CO<sub>2</sub> reductions. There is a lot more uncertainty around these policies, and more financial support is needed, but I’m sure we’ll get there.”

—Madison Ratcliff

### **Experts: Midstream M&A primed to take off**

The big deal in midstream finance is that the big deals are on the way, an M&A expert indicated at the recent DUG Permian

and Eagle Ford Conference and Exhibition.

“I think we’re heading into a constructive period after what has been a very painful period,” Pete Bowden, global head of energy and power at Jefferies LLC, said during a midstream finance roundtable.

Asset-level midstream transactions fell by about 14.5%, or \$24.9 billion to \$21.3 billion from 2019 to 2020, Jefferies found. What was striking, however, was the collapse of the gathering and processing share of transactions.

From 2015 to 2019, gathering and processing entities accounted for about two-thirds of annual midstream asset transaction value. It peaked in 2019 at \$14.8 billion, which constituted almost 60% of that year’s transactions. That figure plunged 96% to only about \$600 million in 2020.

So where did all the transaction money go? Jefferies found that M&A activity in transmission, storage and LNG more than

doubled from 2019 to 2020, from \$10.1 billion to \$20.7 billion.

It won’t stay that way. Bowden’s experience of more than two decades in the sector has allowed him to observe patterns, and one is that midstream typically lags E&P by 12 to 18 months. He sees that as good news for midstream next year as rig counts ramp up and M&A activity moves closer to the well-head. Gathering and processing companies can be expected to return to the transaction realm.

“We have done, at Jefferies, more E&P deals in the last three months than we did all of last year,” he said. “I see that trend continuing. I see better valuations and I think M&A will logically follow.”

Part of the reason is Bowden’s belief that cheap debt may be the most important feature in M&A.

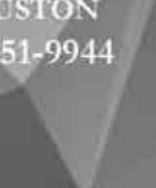
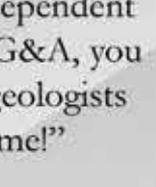
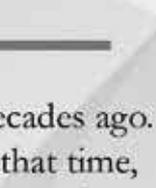
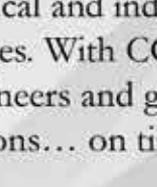
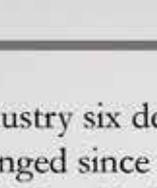
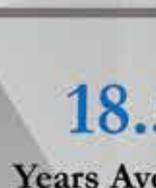
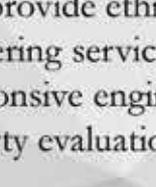
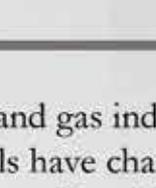
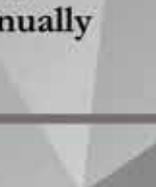
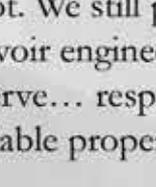
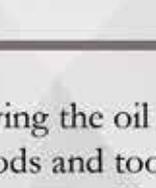
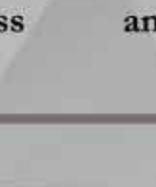
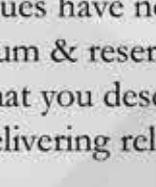
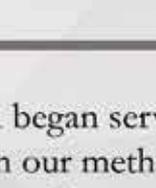
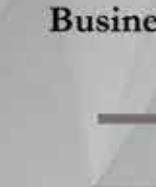
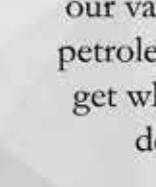
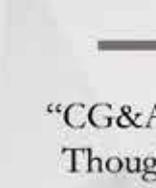
“You’re going to see that really facilitates transactions and, I do expect, help the public companies with stronger balance sheets reenter the fray in terms of M&A,” he said.

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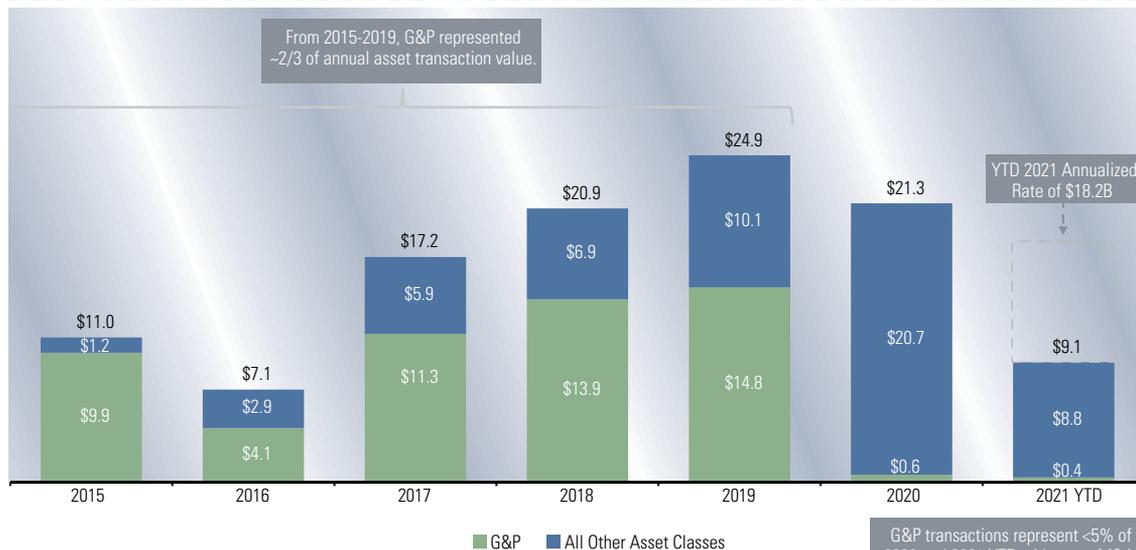


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### Asset-Level Midstream Transactions (\$B)

Wellhead M&A was almost non-existent in 2020 and 2021 YTD, whereas transmission, storage and LNG represented vast majority of transactions.



Source: Jefferies LLC

ESG and climate issues pervaded almost all of DUG Permian’s sessions. In some cases, operators have experienced the sting of rejection in their efforts to attract capital, even from investors who are anything but diehard enemies of hydrocarbons.

“There are some investors that are steering clear of fossil fuels, and they may not be brought back,” Brett Knowles, vice president of EnCap Flatrock Midstream, acknowledged during the discussion. “But I’ve had a lot of really rational conversations with individuals that understand the need for midstream, understand the kind of service we provide, and it often does take a detour into ESG.”

The onus, he said, is on those who operate in the sector to continue to tell its story and continue to enhance ESG initiatives, as he said EnCap Flatrock Midstream endeavors to do.

Bowden said he sees it, too, and noted that the sector needs to confront that reality.

“Unfortunately, you’re seeing very little public activity in the market for midstream ... and you’re seeing that in spite of improved valuations over the last four months and despite the fact that some of these companies have been profitable,” he said.

Bowden does not, however, perceive climate concerns as a problem for the midstream sector.

“I think [the sector] adjusted to the reality that it is actually a

science,” he said. “It’s far from being the worst offender.”

Returns to the investor—meaning not simply improved equity prices but also improving distributions—will come back to the sector because of what Bowden expects will be a 0% interest rate environment for the foreseeable future.

As frustrating as it may be to midstream operators, investors had good reason to keep their distance, he said.

“When you have equity values down by 30%, that’s a tough thing for the buy-side to get excited about,” Bowden said. “They were making money elsewhere—they didn’t have to figure it out. With this rally, I think they’re going to have to figure it out and I think if we can actually improve this performance, we’ll see a return to an acceptable capital market environment in midstream.”

To Bill Brown, managing director and executive vice president of energy banking for Cadence Bank, the downturn for energy began when prices started to soften in late 2019, before the COVID-19 pandemic shut down the global economy in first-quarter 2020.

When the rebound came, though, it was dramatic. Cadence has completed almost 30 deals in the last 18 months, but most of them were in the last six months. Brown broke down the banking activity environment into

pre-COVID, COVID and post-COVID sections.

For example, midstream borrowers often took out revolver loans in the pre-COVID world. That was construction financing in which a portion of the project was funded upfront, contracts were signed and the borrower carried a balance via a revolving credit line.

“We did a number of those deals, had great success with them,” Brown said. “Those deals stopped during the COVID environment, in large part, probably, due to the lack of need for infrastructure. And frankly, it’s unclear whether that structure will come back. It’s been very popular with borrowers, and we’ll just have to see if the market is receptive to that again.”

It is unclear which structures will prevail in the post-COVID environment, he said. They may include amortizing term loans based on the use of proceeds and capital structure. Amortizing term loans are paid off over the life of the loan, typically in equal payments.

“The hardest thing to judge is bank liquidity and capacity in the market,” Brown said. “Obviously, it was very strong for three or four years prior to COVID. All of this came to a dead stop last year, as you might expect.”

The future looks a little hazy at the moment. In June, ABN Amro Bank NV said it would withdraw from oil and gas lending in North America. Bank of Montreal said

in December it would wind down its U.S. oil and gas lending and focus on Canada.

“Frankly, it’s a little unclear right now,” Brown said, referring to the reaction in the wake of decisions by the two big banks. “There are some other banks that are trying to bring their exposure down and really just lending to a list of what they call strategic clients.”

—Joseph Markman

## **Permian production to recover completely by 2022: Report**

Production of crude oil and natural gas from the Permian Basin is likely to exceed pre-pandemic levels by 2022 amid market recovery, GlobalData said in their latest report.

The Permian Basin, which is the most sought-after basin in the U.S., was the most affected play in the country during the COVID-19 pandemic, the research firm said. However, Permian production is finally expected to return to pre-pandemic production

levels, clearly reflecting recovery of the U.S. shale industry.

Gradual recovery in the production has been observed in the basin, despite lagged activities during February amid winter storms. The report shows the Permian Basin is currently producing about 4.6 MMbbl/d and is projected to reach over 4.9 MMbbl/d of crude oil production by mid-2022, which surpasses pre-pandemic production of 4.8 MMbbl/d in February 2020.

“Production in the Permian Basin peaked in December 2019 and the upswing continued during Q1 2020,” said Svetlana Doh, oil and gas analyst at GlobalData. “Since then, however, it started tapering off due to the global ‘demand crash’ caused by the COVID-19 outbreak. The ease of restrictions and travel bans during H1[first half] 2021 have improved the demand prospects, encouraging production activities in the basin.”

Steady production growth coupled with growing capital investment by major players in

the basin is expected to support steady production growth during the next five years, with forecasts of exceeding pre-pandemic levels. In addition, GlobalData expects oil and gas companies to return focus to their core assets in the Permian Basin and ramp up drilling and completion activities.

Commenting on the Permian rig count, Doh said, “Despite WTI price rebounding to the pre-pandemic levels, rigs are still slow in catching up. Permian Basin rig count dropped to its lowest point in August 2020 at 117 rigs. Since September 2020, the basin has seen a slow increase in rig count, about 7%. As of June 2021, there were 235 rigs operating in the Permian Basin compared to only 135 rigs a year ago in June 2020.”

—Faiza Rizvi

## **OFS sector outlook: U.S. shale spending, rig counts rise**

With tailwinds expected to outnumber headwinds, the forecast



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for the U.S. oilfield service (OFS) sector appears positive but risks remain, according to analysis from an independent energy market and investor relations intelligence firm.

“[Based on] all the meetings we’ve had over the last three weeks, we would suggest that you’re going to see another 75 rigs or so in the Permian over the next three or four quarters, which is about 30% improvement,” Sean Mitchell, partner for Daniel Energy Partners told attendees of the DUG Permian Basin and Eagle Ford conference in mid-July. “We would actually take the over on that.”

Similar gains, he said, are expected in the Haynesville, where operators have enjoyed higher natural gas prices than seen in 2020. The rig count, a longtime staple in indicating future output, in other major basins was expected to remain flat.

The U.S. rig count is nearly double what it was a year ago. As of July 23, Baker Hughes Co. (BKR) data showed drillers in the U.S. had added seven rigs from the previous week, bringing the total to 491. The

oil rig count stood at 387 that week with the Permian Basin leading the week’s gains, though Haynesville drillers dropped a rig. Updated numbers are due out July 30.

“Private E&Ps are showing an aggressive approach to securing rigs. ... On the public side, they’re being disciplined,” Mitchell said. He later added, “While E&P capital discipline will likely persist, high commodity prices will translate into higher cash flows and higher spending. Therefore, we think by the middle of ’22, you get to 600 rigs.”

The analysis was delivered amid improved oil prices and demand plus continued economic recovery with global GDP growth of 6.3% forecast this year. Also, fears associated with COVID-19 continue to fade, despite the presence of variants and rising coronavirus infections.

It all bodes well for energy demand and supply, but headwinds threaten to make business challenging for OFS companies. Topping Mitchell’s list was the capital discipline of E&Ps, specifically the public ones.

Still, the firm believes overall E&P capex growth will rise about 10% to 15% year-on-year in 2022 as it continues to recover from the pandemic-induced slowdown, leading to higher rig counts. Privates could drive spending even higher, according to Mitchell.

“The private E&Ps are marching to their own drumbeat,” Mitchell said. “What does that really mean? It means they don’t have public shareholders to really hold their feet to the fire in terms of capital.”

With crude prices between \$70/bbl and \$75/bbl and service costs low, “you’re going to drill wells,” he said. “We’re seeing that in the private rig count.”

The OFS sector has continued delivering on drilling and completion efficiencies and other technologies, saving time and money. It currently takes about 16 days to drill a well in the Permian Basin, compared to 27 days in 2014. The cost per lateral foot is also down to about \$700/ft presently from more than \$1,000/ft in 2018, Daniel Energy Partners’ data show.

Dual-fuel frac fleets along with

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simul-frac and slimhole drilling are strengthening shale operations, but Mitchell said “it feels like we’re getting into the later innings of efficiency gains.”

ConocoPhillips Co., for example, sees cost savings of about \$200,000 per well and a 40% frac cycle time reduction with “zippering zippers” plus about a \$100,000 per well cost savings with dual fuel and 20% noise and emissions reductions with e-frac fleets. Nearly all of ConocoPhillips’ completions will use either dual-fuel or e-frac technologies, according to Jack Harper, president of ConocoPhillips’ Permian business unit.

Industrywide, Daniel Energy Partners also sees an uptick ahead in U.S. completion activity. The firm forecasts an estimated 230 U.S. frac crews by first-quarter 2022, up from about 182 in first-quarter 2021. In mid-July, the active frac crew count was about 215.

However, oilfield labor shortages due to better nonindustry opportunities, oversupplied equipment, OPEC+ moves and public-on-private E&P consolidation are among the risks.

“Completion activity will increase more slowly near-term but should accelerate in 2022,” he said in the presentation. “Companies, we believe, need to increase drilling first to replenish DUC inventories. Also, public companies need to stay within budget and completion costs make up a far greater portion of the total well cost.”

Growth, he added, will be constrained by the DUC shrinkage and E&P capital discipline—specifically from public companies.

“E&P capital discipline within the public companies persists and it’s real,” he said. “When you take capital away from a group where Wall Street was providing capital, it becomes a forced discipline. You just don’t have the money to spend.”

Public companies have vowed to keep spending in check, focusing on paying down debt, increasing dividends and returning money to shareholders. Despite higher oil prices, many are staying disciplined—perhaps falling back into the favor of some potential investors. Many are putting way less back into shale plays than they used to do.

Oklahoma City-based Devon

Energy Corp. plans to reinvest about 45% of its operational cash flow, down from about 60%, Mitche said, citing *The Wall Street Journal*. Devon isn’t alone.

Rystad Energy data show U.S. tight oil maintained a 55% reinvestment rate in fourth-quarter 2020, underspending nearly \$3 billion comparing capex to cash from operations.

In 2014, the reinvestment rate in the Permian Basin was just shy of 300%. By 2020, it was less than 90%.

As for OFS capital spending, it’s still depressed.

“We submit the companies continue to underspend relative to the activity rebound,” Mitchell said in his presentation. “Consider the BKR rig count is double vis-à-vis the trough and the frac crew count is more than triple the trough, yet capital spending is essentially flat year-over-year in 2021. Simplistically, this tells us the industry continues to cannibalize.”

He called it unsustainable. The firm sees service costs rising by 15% to 20% by the end of second-quarter 2022, compared with a year earlier, as consolidation among OFS companies arises.

—Velda Addison

## ***In the Midland Basin, it’s growth o’clock***

Shrug off news that recent prices of Henry Hub benchmark natural gas are the highest since late 2018. And \$4-plus for December 2021 to February 2022? Just a nice holiday gift that, like the 15-year-old Scotch you’ll receive, won’t last.

Instead, focus on this analysis from McKinsey and Co.’s “Global gas outlook to 2050”: “Gas will be the strongest-growing fossil fuel and will increase by 0.9% from 2020 to 2035. It is the only fossil fuel expected to grow beyond 2030, peaking in 2037. From 2035 to 2050, gas demand will decline by 0.4%.”

How natural gas will be used will change as a result of the energy transition, but demand will remain strong for quite a while to come. In fact, one of the principal concerns in the data-heavy McKinsey outlook is the potential shortfall in liquefaction capacity.

That’s the kind of forecast that could inspire somebody to want to

build a gas processing plant somewhere, maybe even in the Midland Basin to take advantage of abundant volumes of associated gas. Turns out, Greg Sargent was already doing just that.

Sargent, founder and CEO of Pinnacle Midstream II LLC, had already succeeded with a project in the Delaware Basin. Backed by Energy Spectrum Capital, he told Hart Energy that he was keeping an eye out for an opportunity elsewhere in the Permian, sticking to the adage of “work hard and network, network, network.”

It was Drew Ward, the company’s chief commercial officer, who found a producer in need of a midstream partner. Then it was just a matter of convincing the E&P that Pinnacle should be that partner.

“We went overboard with our preparedness to make a presentation to the producer that made us stand out,” Sargent recalled. The plan worked and the result was the Dos Picos System, a high-pressure, large-diameter gathering and compression facility in the Midland Basin that began operations in the first quarter.

Phase 2 of Dos Picos will be a natural gas processing plant with capacity of 200 million cubic feet per day (MMcf/d). Its targeted in-service date is second-quarter 2022.

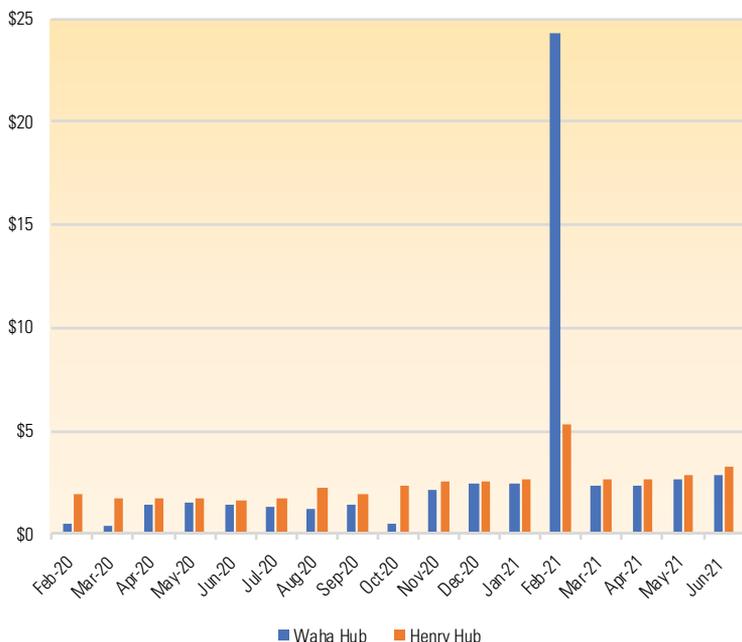
And if McKinsey’s expectation is correct, Dos Picos can meet the moment. It is capable of growing along with global gas demand and producer output in the Permian. For now, the company will wait and see.

“We’re not going to get so far over our skis that we have a bunch of idle capacity sitting around,” Ward told Hart Energy. “We’ll be opportunistic in the market and contract up with producers who need expansion facilities. We have a strong commitment from our investors that we can keep up with the growth that shows up, so we want to be mindful of our capital as well as taking care of our customers.”

The plant comes in a standard skid package so growing capacity would be akin to plug and play. The facility will likely be sized to handle more than 200 MMcf/d, Ward said, so if demand warrants, a second package can be integrated into the facility.

Pinnacle will base future decisions on demand, not price swings. “Gas is trading over \$4 right

## Natural Gas Average Monthly Price



Source: Texas Alliance of Energy Producers, U.S. Energy Information Administration

now, so I think the demand is high but I also think it's cyclical," Ward said. "There's a lot of people trying to replace gas that was in storage during the winter storm, as well as

we're dealing with a hot summer, so naturally gas is going to be coming out."

While the chart showing Waha and Henry Hub prices during the

past 17 months is somewhat distorted by February (on one day during the Texas freeze, Waha's price eclipsed \$200/MMBtu), a steady increase in the average monthly price is apparent.

But future trends also favor Dos Picos. Most of the gas from the complex will head to the Waha Hub, and from there to the West Coast and Mexico, as well as markets in South Texas and the Gulf Coast petrochemical complexes.

McKinsey forecasts an increase in use of natural gas for transportation countered by a decrease in use for power generation in Europe, Japan and North America. The outlook also expects growth in industrial and petrochemical usage after 2035.

Biden administration policies regarding oil and gas production do make many in the industry nervous, but the real impact so far appears to be muted. Ward noted that there was plenty of activity on the New Mexico side of the Permian Basin as producers work through permits already approved by the Bureau of Land Management.

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And the Midland, where Dos Picos makes its home, has Energizer Bunny-like status among producing basins.

“If you look all the way through to when COVID started and oil went negative for a few days, the activity levels in a lot of other basins diminish fairly quickly,” Ward said. “The unique thing about where our asset base is, while the Midland Basin saw its fair share of reduced activity, it didn’t drop as much as everywhere else, and when people started feeling better about themselves, the economy and what’s going on, the Midland Basin really picked very, very quickly.”

Ironically, the current regulatory uncertainty could do the region a huge favor.

“Obviously, if the administration wants to do something on federal lands, I do think that Midland and the Midland Basin would be a direct beneficiary of that, just because it is a fairly friendly place to operate,” he said.

Sargent, for one, is happy to be there.

“We truly believe that the

Midland Basin is one of the best resources in the nation,” he said. “With the crude economics and the associated gas that goes with it, we believe that drilling is going to continue in the Midland Basin for far longer than anywhere else, so we’re very bullish on the Midland Basin.”

—Joseph Markman

### **U.S. shale players talk growing efficiency, inflation**

Efficiency improvements are diluting the impacts of inflationary pressure seen in U.S. shale plays, executives say, as operators reap the benefits of simul-fracs, improved cycle times and longer lateral lengths.

How long the streak lasts remains to be seen.

The topic surfaced during second-quarter earnings calls this week with shale players such as EOG Resources Inc., ConocoPhillips Co., Diamondback Energy Inc. and Pioneer Natural Resources Co. fielding questions from analysts. Oil producers have been reporting

higher quarterly profits and cash flows alongside continued efficiency gains as the world’s energy demand rises.

EOG has been taking a forward-looking approach while focusing on operational efficiencies by drilling wells faster and completing more lateral feet per day.

The company is also seeing savings in sand costs and from water reuse and super zipper completions, which comprise about one-third of its well packages, according to COO Billy Helms.

“We continue to see operational improvements outpace the inflationary pressure in the service sector,” Helms told analysts in August.

A key component to EOG’s approach is locking in lower prices early such as for tubulars.

“Last year, we were very fortunate to take advantage of pre-purchasing of tubulars we needed for this year’s program and benefited greatly from that,” Helms said.

“As costs go up in the future, we use the same approach and try to take an opportunistic look at when to secure tubulars for the



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next coming drilling program. ... Undoubtedly, it is likely that the cost for tubulars will be higher next year than they are this year.”

Inflation on diesel, steel and other materials is visible. It’s also evident for labor.

By year-end, inflation could hit 12% or more for the North American shale sector, Citigroup analysts said in a Bloomberg report. Analysts said steel prices for drill pipe could rise about 50% this year. Competition among oilfield service companies was among the factors for why service providers haven’t raised prices.

Spending on such services has been flat as producers hold production steady, instead opting to reduce debt and increase shareholder payouts despite improved oil prices.

However, companies aren’t seeing inflation everywhere.

“If you’re a pure-play, one basin kind of operator, you’re probably going to experience certain categories of spend that are inflating,” ConocoPhillips CEO Ryan Lance said during the company’s Aug. 3 earnings call.

“I think the advantage ConocoPhillips has right now is we’re still capturing a lot of the best practices and the synergies from the Concho transaction, plus the fact that we’re a global diversified company. Other areas around the world are not inflating, maybe like some of the economies that are leading the recovery from the COVID pandemic.”

He called the inflationary issues imminently manageable this year and into 2022.

“I think the important point is that we still have wind in our sails from the transaction,” added Dominic Macklon, senior vice president of strategy and technology for ConocoPhillips. The company in late June 30 said it now expects Concho-transaction synergies and savings of \$1 billion annually.

“That does not mean we are done with sourcing supply chain efficiencies and operational efficiencies,” Macklon said.

He acknowledged seeing some inflation in tubulars and cement in the Lower 48 plus some pressure on frac crews, but said ConocoPhillips

is “well-placed to manage inflationary effects” given deflation elsewhere and momentum from the transaction.

Efficiency remains a key driver in companies’ ability to do more with less.

“We’ve decreased our drill times from spud to total depth by over 30% and are averaging just over 10 days to drill a 2-mile well in the Midland Basin. On the completion side, we’re now running three simul-frac crews, which lowers our downtime and improves our pad efficiencies,” Stice said. “We are currently completing approximately 2,800 lateral feet per day in the Midland Basin, an improvement of nearly 70% as compared to our early zipper frac designs. All of these operational advances translate to our ability to do more with less.”

Such efficiencies have more than offset cost increases, he said, enabling the company to decrease the number of rigs and crews needed this year and lower its full-year capital guidance by \$100 million.

—Velda Addison



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# THE FUTURE OF THE INDEPENDENT

The E&Ps have endured since day one. Where do recent signposts lead them next? If a barrel or Mcf is needed, an indie will supply it.



ARTICLE BY  
LESLIE HAINES

**J**oe, senior VP, drilling: “Siri, we’re ready to start the zipper, dual fuel e-frac in 45 minutes on Pad 12.”  
Siri: “Okay. Sending group text to Pad 12 crew and Ricky at SchlumberHal.”

This year *Oil and Gas Investor* celebrates the fact that it made its first appearance in 1981. Forty years on, the independent E&P universe we cover has changed considerably. Now seemingly at a crossroads, what lies ahead for these companies in the next 10, 20, 30, (dare we say 40) years?

After we spoke to a variety of observers, two things became clear: All are concerned; all are optimistic. As they said in one voice, oil demand is not going away entirely. There are few viable substitutes of scale—yet.

Besides, they said, independents are fighters. They always have been, ever since the first entrepreneurs fought off the aggressive business tactics of John D. Rockefeller’s Standard Oil Trust. They have shown they are flexible, so they will adapt to new technologies and new regulations.

Their optimism shines whenever they make that phone call ordering a rig.

“I think the smaller independents will be around—they have always been the backbone of this industry,” said Harold Hamm, chairman of Continental Resources Inc., an independent in business for 54 years. “They are very tough. The industry will be around, but it will change.

“We know 85% of the oil is still left in the source beds, so everything we’ve used up in the last 150 years with our best technology is part of that 15%. So, there’s a lot of oil left to go.”

Still, independents face many new challenges today, from delivering ESG best practices to meeting heightened investor demands, managing limited capital availability and the whole energy transition theme, which raises plenty of questions about the future of the oil and gas industry itself.

“Oil and gas is going to be here for a long time—hydrocarbons are the lifeblood of the worldwide economy,” said EnCap Investments L.P. partner Kyle Kafka. “The U.S. in particular benefits immensely from the low cost of energy that our industry provides. It will remain a vital part of a growing energy need even as the energy transition continues to gain traction and realizes broader commercialization.

**This rig was drilling for Grenadier Energy Partners II in the Permian Basin. The company was sold to Surge Energy US Holdings Co.**



GRENADIER ENERGY PARTNERS III

“Two driving themes over the last few years are an increased focus on ESG, and a move away from growth and a shift toward shareholder returns. We believe these will remain central tenants of the industry for the long term. To maximize returns and insulate from the next downturn, companies need to be nimble (low overhead and operating costs), avoid leverage, allocate capital to highest returning projects, use immense data set to make smart and predictive decisions, and proactively engage with stakeholders and incorporate ESG into the fabric of company decisions. We do believe the right teams and assets can generate extremely attractive returns following this playbook, and the returns of high performing companies (and the associated yield) will be tough to ignore in a yield starved world.”

“This is a cycle whose measuring tools have changed,” said Cameron Smith, principal, CO-SCO Consulting LLC, who has years of experience in private equity and running independent E&Ps.

“Value creation and market capture [during the shale boom] were good, but in terms of cash-on-cash returns, no. But there’s no way that 40 years from now, there would be no demand

### A Few Enduring Independents

Company	Year Formed	HQ City
Conoco	1875	Houston
Killam Oil Co.	1920	Laredo, TX
Murphy Oil Co.	1921	Houston
Lario Oil & Gas Co.	1927	Denver
Hess Corp.	1933	Houston
Hunt Oil Co.	1934	Dallas
Davis Oil Co.		Houston
Fasken Oil & Ranch	1953	Midland, TX
Apache Corp.	1954	Houston
True Oil LLC	1954	Casper, WY
Mewbourne Oil Co.	1965	Tyler, TX
BTA Oil Producers	1967	Midland, TX
Continental Resources Inc.	1967	Oklahoma City
Henry Resources	1969	Midland, TX
Hilcorp	1989	Houston
Pioneer Natural Resources Co.*	1997	Midland, TX

\*Parker & Parsley Petroleum Co. (founded in the 1950s) and Mesa Petroleum Inc. (founded in the 1960s) merged to form Pioneer Natural Resources Co.

**Many of these companies began as small, family-owned enterprises that grew over the decades. Several changed their names. Many sold their assets, often, but kept going under a revised name to build anew. Surviving for decades is no guarantee of future success, but these companies offer positive role models and optimism.**



***"This is a cycle whose measuring tools have changed," said Cameron Smith, CEO, COSCO Consulting LLC.***

for petroleum-based products. My concerns are not about the industry's ability to make money and 'survive.'"

But he is concerned about the focus on ESG matters and wonders how that can be measured and if it will actually create any real value. "There's so much money, time and talent being used in the energy transition; that money would have been used 10 years ago to find oil and gas, and now it's not."

His advice for the future? Go back to the basics and do what you have to do to attract the capital you need.

Analysts have noted that most public independents in the first quarter generally delivered the highest free cash flow in a decade, after a disastrous prior two decades, as far as investors are concerned. After 2020, one of their worst years ever, they are rallying.

"Public independent oil producers' profits will set a record this year, surpassing the levels reached when crude oil hit an all-time high near \$150 a barrel more than a decade ago," according to Rystad Energy. "Combined free cash flow from the sector is expected to surge to \$348 billion, beating the previous high of \$311 billion in 2008," Rystad said.

But indies are also being judged by new standards: not just production numbers, but financial metrics like costs per foot drilled and returns to shareholders. Not just reserves growth, but environmental metrics like emissions reductions or flaring as a percent of gas production.

"We're in a period of real adaptation. I think there is some degree of alarm out there. The pressure for people to be sensitive to things like emissions is very high and probably not going away," said Tom Petrie, chair and co-founder of Petrie Partners. He's been involved in the industry as an award-winning equities analyst, M&A and corporate advisor and investment banker for about 40 years.

"I do believe the independent sector is in the process of quite a transition, but there's a real good role for them. I do think there's some question about what independents have to do to become viable and effective.

"Will the industry survive another 10 to 20 years, what with net zero? It will be a real test."

### **Consolidation**

Most experts foresee a lot of consolidation ahead. Even decades ago, think tanks were predicting the nature of the business would eventually change such that there would be only two or three large-scale operators per basin. It may not get to that, say sources we talked to.

"Post-shale, scale becomes very important. And there are too many competitors. Competition is a wonderful thing, but there needs to be a rebalancing of the number of players and their scale," Petrie said.

"We're in a contraction, but I don't think there will be total elimination," he said. "The advantages of scale will be very important, not least because of government policy issues, environmental compliance issues. The

mid-sized company universe certainly shrinks, to my mind."

"We think consolidation will continue, but we don't expect to see only mega-independents dominating the core basins," said EnCap Investments partner Brad Thielemann. "Basins like the Permian, Eagle Ford and Bakken have a significant number of years of very high-quality and high-returning inventory."

"There will always be smaller, nimble operators seeking to unlock the absolute best way to develop each unique acre of a play in ways that a massive operator cannot," added his colleague, EnCap partner Kafka. "This is currently evident in the market as we see larger operators selling acreage they view as noncore to smaller operators who are willing to spend the time and resources to maximize the value of the asset."

Geoff Davis, who has 40 years in the business as an investment banker, now consulting for Morgan Stanley as needed, noted the need to consolidate will grow stronger in the future.

"When we [Morgan Stanley] go to the Middle East [to do business], we talk to one company in Qatar, one company in Saudi Arabia. We talk to five in Argentina. But when we do business in the U.S., we have to talk to a thousand companies? We're an entrepreneurial society, but is this a sustainable business model? Are investors willing to invest in this model in 40 years?"

"But for anything to happen, a thousand management teams have to blink, and CEOs don't want to blink."

### **Resilience and changes**

Oilmen like to joke that in good times the family eats steak and during the price busts, it's back to cheap hamburgers. Twenty, 30 or 40 years from now, will they be eating fake meat grown in a lab somewhere?

Since 1859, they've ridden the ups and downs of the economic cycles that drive demand, endured the Depression, recessions, war, OPEC price shocks and more. They have adopted the splashy technical advances that drive oil supply, and they have managed around oil prices that ranged from nearly zero to \$147/bbl, navigating geopolitical storms and everything in between.

There is no reason to assume they won't continue in this vein, especially since the industry is populated by so many thousands of entrepreneurs with the dream of using oil and gas to accumulate wealth. Independents are not going away, but they may change.

The biggest ones are changing already, because when you're big enough, you can command new things to happen. You've got the balance sheet; you've got the people; you've got the technology. You may even have international operations to supplement U.S. ones.

If you count all its predecessor companies, ConocoPhillips Co. is one of the oldest indies around, with a founding date of 1875. Recently, CEO Ryan Lance said on a conference call that it aims to be the premier indie. That means maintaining great, consistent financial returns,

# OIL DEMAND

The future of the independent depends on what oil demand will be in the future. Jude Clemente, the Pittsburgh-based editor of RealClear Energy, clarified our thinking by writing this recently: "Let's start with the obvious: Oil is the world's most important fuel, supplying 35% of all energy and over 95% of transportation needs.

"More than 6,000 everyday products contain oil as their core ingredient. Simply put, oil has no significant substitute, and it won't for a long time. Massive amounts of wind and solar won't displace 'black gold' because these sources compete only in the power-generating sector, where oil effectively plays no role."

Bernstein Research did a deep dive on the topic, looking at the data and projections of a handful of the usual suspects: the Energy Information Administration, the BP Annual Statistical Review and the International Energy Agency. In a business-as-usual scenario, oil demand will grow by 1% to 1.5% per year during the next 40 years. The analysts said this scenario is not the most likely one, however.

The report said that if electric vehicles (EVs) were to reach half of all car sales by 2030, oil demand could plateau later in this decade, but then grow slowly with increasing petrochemical demand. "If EVs reach only 15% to 20% of sales in 2030, then total demand could still grow by 1% per year."

The EIA's startling report called for oil demand by 2050 to be only a fourth of what it was in 2019, before the pandemic.

But many observers remain calm.

"If you are worried about electric vehicles, don't be!" said Thurmon Andress. "The upcoming motorization rate of China and India will dwarf the U.S. and Europe's motorization. The number of electric vehicles will definitely grow in absolute numbers but as a percent of total vehicles the numbers are surprising. In 2020, EVs accounted for 3.25 million of the 77.5 million sold globally (4%). Currently, out of the total 1.4 billion vehicles there are 10.5 million EVs, or about 1% of all vehicles on the planet. No matter how many times you compound their growth, you will not even stay up with population growth."

A Cowen & Co. analysis in June looked at EV growth projections from 22 automakers and the current trajectory of EV adoption and how that may affect oil demand. "Transportation is the largest component of oil demand at about 60% of total demand; passenger demand accounts for about 40% of that 60%, the largest component and the one expected to transition to EVs the quickest.

"We conclude oil demand is unlikely to peak by 2030 as a result of EV penetration, bringing into question the most aggressive strategic pivots from large hydrocarbon companies while seemingly justifying more balanced approaches."

The company concluded that oil demand may be reduced by about 2 million barrels a day by 2030.

great ESG metrics, a net-zero emissions goal by some future date, maybe even a move into solar, wind, EV charging stations or other alternative business lines.

"We want to be the most relevant, sustainable E&P company in the business," he said. "We believe there's a valuable role for companies like Conoco in the energy transition."

Similarly, many other public companies have made vows to reduce flaring, other emissions, and carbon footprint. Diamondback Energy Inc. has pledged to be a net-zero producer in Scope 1 emissions immediately; Devon Energy Corp. pledged to cut its emissions in half by 2030.

"Tackling methane represents an opportunity for the United States to develop increased global climate, geopolitical and economic influence, leveraging the technological skills and leadership of our industry to capture greater global LNG market share," said Toby Rice, president and CEO of EQT Corp., the nation's largest gas producer. EQT has joined an international group called the Oil & Gas Methane Partnership 2.0, which represents about 30% of global gas production, to help the industry achieve net-zero emissions.

It also announced targets to achieve net-zero Scope 1 and 2 greenhouse-gas (GHG) emissions in its production segment operations by or before 2025.

At some point in the next decade, carbon capture, storage and sequestration will become the norm and may not generate big headlines anymore. Commercial, large-scale hydrogen businesses will emerge, some based on natural gas. (For more on this, see *Oil and Gas Investor's* July 2021 issue.). Renewable diesel and renewable, certified natural gas will be the norm. If new technologies enable it, even crude oil might become certified in some way.

"There are revolutionary but exciting changes going on. I do believe we have the talent in this industry to deal with all this," said Dennis Petito, CEO, Montrose Energy Capital Advisors LLC. "The next five or 10 years will be extraordinarily challenging, and those that make it through will not resemble the current lot [of E&P companies]."

## Carbon management

Petito told *Oil and Gas Investor* he thinks the industry may compartmentalize to the extent that an indie will find the hydrocarbons and then flip those to a much larger E&P or service company that will operate carbon capture and storage facilities and make a new business out of that. "I think carbon capture, utilization and sequestration (CCUS) will be a big factor ... and I think it will happen faster than we think. The era of poor stewardship is going to come to an end and do so very quickly."



"We're in a period of real adaptation," said Tom Petrie, principal, Petrie Partners.

*Killam Oil drilled this well, Paul E. White B, in Duval County, Texas, in March 2020, some 100 years after it was founded.*

KILLAM OIL CO., LTD.  
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WELL No. 154  
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RR# ID #



Another example of this came when Occidental Petroleum Corp. CEO Vicki Hollub spoke during a virtual IHS CERAWEEK presentation in December 2020. She mentioned how the long-lasting company (founded in 1920) is changing to become, in her words, “a carbon management company.” Although it still has domestic and international E&P and marketing and chemical operations, new things are being added to the Occidental roster.

“Where we got the idea of ‘green oil’ was the fact that it takes more CO<sub>2</sub> injected into the reservoir than the barrel of oil that is produced from that CO<sub>2</sub> emits when burned. The fact that more injected and less burned means that you are either carbon neutral or negative. It depends on the reservoir as to how much CO<sub>2</sub> offset difference there is between the injection and the emission.

“Ultimately, I don’t know how many years from now Occidental becomes a carbon management company, and our oil and gas would be a support business unit for the management of that carbon. We would be not only using [CO<sub>2</sub>] in oil reservoirs [but] capturing it for sequestration as well. I expect that in the not too distant future our OxyChem business will also be involved in some way to use CO<sub>2</sub> in products that they make. We’d have three ways to manage the CO<sub>2</sub> with both OxyChem and the oil and gas business being a support for that. I believe this industry is going to be huge,” Hollub said.

### **Does size matter?**

A Goldilocks scenario is evolving where many people we spoke to think the very largest indies will change, diversify, survive and thrive, and the thousands of smaller ones, such as family-owned entities, will survive as they always have. The even smaller private mom and pops will survive, although probably fewer numbers. It’s the future of the public ones in the middle that are not too small, yet not big enough, that seems to be in question.

“I think the most uncertain part of the industry is the fate or role of the smaller E&Ps, public and private, although that could be helped by higher commodity prices that help the economics of having lesser-quality acreage,” said Tom Biracree, co-founder of Oil & Gas Financial Analytics LLC.

“The average size to be a survivor is moving up, but it’s hard to define it. It’s the companies in the middle that seem more at risk. I think the small or midsized public is most challenged and could find it harder to grow,” said Steve Hendrickson, president of Ralph E. Davis Associates, an Opportune LLP company, with a long history dating from 1924. He started his career at Shell Oil and worked at several independents as well, including Sonat (acquired by El Paso Production Co.) and Eagle Rock Energy Partners LP.

### **ESG matters**

Stephens Inc. guru Jim Wicklund noted in his weekly newsletter that ESG topics are in the forefront at most conferences he attends

and many headlines he reads, dominating the conversation. That will change, he said.

“I consider ESG somewhat akin to Sarbanes Oxley—something we questioned and complained about a lot, but today that rarely prompts a question. I fully expect that in three to five years, we won’t hear or read about ESG anymore than we talk about Sarbanes Oxley or 10-K disclosures. But it will be a key part of the industry ‘ratings’ for a long time.”

“There’s not been one drop of oil or one Mcf of gas that’s disappeared in the U.S. yet,” said Morgan Stanley’s Davis. “We all recognize the importance of being green, and carbon capture is something we need to do, but I think the rhetoric is going faster than the reality.”

COSCO’s Smith said that if you are a private company living off cash flow, you simply have to do less than a public firm regarding meeting ESG criteria, which he thinks will be very expensive for the larger public companies.

### **Other trends**

A few recent news items illustrate how the upstream industry is changing and adapting to ensure its future. Intriguing deals, joint ventures (JV), carbon capture, emissions reduction—all are on the table.

This summer, Riley Exploration Permian Inc. said it will focus on EOR using CO<sub>2</sub> captured from power plants, in a pilot project in Yoakum County, Texas.

Priority Power Management LLC, an independent energy services provider, announced it will provide solar power via a solar development services agreement to FireBird Energy LLC, an E&P operating numerous properties in the Midland Basin.

Midstream giant Williams inked an upstream joint venture with privately held Crowheart Energy of Denver in the venerable Wamsutter Field of the Greater Green River Basin. The JV consolidates three legacy operating assets from BP Plc, Southland Royalty and Crowheart itself, totaling over 1.2 million net acres, over 3,500 operating wells and more than 3,000 potential development locations.

The deal creates a larger, contiguous footprint that enables the companies to deliver cost savings and synergies. Combining all the reserves will enhance the value of Williams’ midstream and downstream natural gas and NGL infrastructure in the field and give Crowheart plenty of running room as the operator, with a 25% stake. Williams, with 75%, will continue to operate and retain full ownership of its midstream assets. But, with such a huge portion of the JV, Williams retains significant governance rights, including control of the selection and pace of operations pursued by Crowheart and the ability to exit its upstream ownership position.

“I think the private independents are going to be OK. They are a different cluster—they have options that the publics do not, and they’ve always been so scrappy,” said Michelle Michot Foss of the University of Houston’s Bauer



***Independents are a scrappy bunch, said Michelle Michot Foss, a longtime energy guru now at Rice University.***



***“There will always be a spectrum of different types of companies, whether they are private equity-backed or Exxon [Mobil]. I think there is room for everybody,” said Cliffe Killam, partner, Killam Oil Co.***



**Patrick Noyes, 45 years in the industry, is a serial entrepreneur. He formed Grenadier Resources III recently after selling version II in January.**

School of Business and a fellow in energy, minerals and materials at Rice University's Baker Institute.

The former University of Texas fellow is co-author of a new book released in May, "Monetizing Natural Gas in the 'New Deal' Economy," which draws on her 40 years of experience analyzing national and global energy economics and trends. She believes natural gas will have a huge role in the energy transition, thereby assuring independents of a continuing business. After all, someone has to produce hydrocarbons to make the steel, metal and plastic found in wind farms or solar equipment and electric vehicles, she said.

She still sees an independent oil patch and one with somewhat better prospects for private firms than publics. Both will have to contend with public outcry if price hikes from under-supply become a problem in five or 10 years.

"The idea that people will stop using these hydrocarbons is nonsense.

"If I was a small public, I'd figure out how to go private because the publics are so much more exposed to the politics of energy and climate," Foss said. "If you are a private indie, you can fly under the radar and get business done. They can move into new locations others have forgotten about. You have to pick your battles."

## Two business models

Nick Cacchione and Tom Biracree, analysts formerly with John S. Herold and other firms, have watched the independents for years, ranking them with numerous metrics. They have recently formed Oil & Gas Financial Analytics LLC to track 40 public E&Ps. They believe indies of the future have to do more of what they've just begun to do: get their balance sheets in order, target relatively low-growth production with cash flow, lower debt and deliver returns to shareholders.

"What they don't want to do—and we have a perfect example in the coal industry—is never get off their tendency to overdevelop when prices are high and then end up with a surplus that tanks prices. For coal, their only business plan seems to be pleading with the government to save a dying industry," said Biracree.

Two business models seem to be emerging, he said: larger companies such as ConocoPhillips or Pioneer Natural Resources Co. will continue to more responsibly develop the shales, observing ESG practices. Smaller E&Ps like Northern Oil & Gas or Diversified Gas & Oil will consolidate and act almost like a master limited partnership, to buy older producing properties.

"At \$70 oil and rising gas prices, it can be lucrative to buy producing assets and manage them down to the end of their life, with minimal capital investment," Biracree said.

## TWO INDIES SPEAK

Patrick Noyes was present at the dawn of the Shale Age, lucky to be working for George Mitchell's firm when the thought of shale was sketchy at best. Fast forward to 2021, when Noyes launched Grenadier Energy Partners III with a \$400 million commitment from EnCap Investments L.P. He recently sold Grenadier II to Surge Energy US Holdings Co. for \$420 million. Both companies are Permian Basin-focused.

"In a perfect world, we'd be right back in the Permian," he told *Oil and Gas Investor*. The NewCo will be buying PDP so it can immediately distribute cash flow back to investors.

As for the industry's future, and his place in it? At age 67, he has succession plans in place, and he's been dealing with investor demands and ESG matters for years.

Like many others, he thinks private equity-backed companies such as Grenadier will be few and far between compared to the past. "None of these issues are surprises to us. We've made changes to our operations to account for that and mitigate that. For example, we converted all our instruments from gas to air ... as we go forward, we'll take [ESG matters] into account in whatever assets we buy."

As he started Grenadier III, he recognized going digital would be more important than ever, and he has hired accordingly. "It's good to have a balance of people who've seen a lot, but I can't manipulate that data like these young folks can."

Cliffe Killam is a partner in the business his great-grandfather started in 1920, Killam Oil, in Laredo, Texas. In 1924, he sold some production to Magnolia, a forerunner of Exxon Mobil Corp. With the latter company, in the 1950s he drilled what was the deepest gas well in the world at the time.

"We have multigenerational thinking; I'm the fourth generation, so we don't mind doing things where it's OK if it doesn't pay out in five years," Killam said. "Maybe your grandchildren will benefit from it. One lesson we've learned is not everything pays off, but if you buy something right it can have a long duration. That's part of our family culture."

Today the conservative company—built for longevity—operates out of cash flow with zero leverage, and it hedges. It's all based on family money with no outside investors, which affects how it assesses risk.

"During the good times we put away cash into stocks, bonds, ranches to diversify. We're able to harvest these and redeploy that cash into oil and gas, so we can weather the storm," Killam said. Nearly all its operations are in conventional plays, although it is looking at other opportunities, he said. It also buys minerals and makes acquisitions.

For the future of independents, Killam is optimistic.

"There is going to be a path for independents to be active and prosperous. There will always be a spectrum of different types of companies, whether they are private equity-backed or Exxon [Mobil]. I think there is room for everybody. The key to success is going to be how you adapt and manage risk.

"And, the industry has a moral imperative to state its case."

It will be up to the larger indies to determine how much Tier 1 investing (drilling) is done and how to lengthen the time frame that the business lasts, added Cachione. That search for inventory will drive M&A action. Examples include Pioneer's purchase of DoublePoint Energy LLC or Southwestern Energy Co.'s acquisition of Indigo Natural Resources LLC—both deals meant to add inventory.

They'll farm out their Tier 2 or 3 inventory to smaller entities as the properties become more mature. The one danger: getting bigger, but not getting better.

"I think renewable energy is not the focus of the small and mid-cap E&Ps," said Biracree. "I think their response is to shore up their financial picture and produce more efficiently and maintain modest capex. I think if they do that, they'll have tremendous cash flow and they'll be investible."

### The future

We cannot presume to know what the world will look like in 40 years, but it will take some energy to keep things rolling. "The really big issue we will face is price shocks [from underinvestment] and the increased scrutiny that always brings," said Foss.

We think the energy future could look pretty good in 10 or 20 years: There should be more widespread access to plentiful, affordable energy from oil, natural and renewable gas, sun, wind, water, hydrogen, nuclear and biomass. Probably not coal. Carbon capture, sequestration and storage will become a distinct industry sector with widespread use, whose growth trajectory and profits looks much like the advent of the midstream, water capture-recycling treatment and sand sectors that took place in the 2000s and 2010s.

Global oil demand may be lower than it is now, although we doubt it, but some level of demand will still be there, and especially if drilling underinvestment continues, not to mention the inevitable resource depletion that occurs in every producing field.

"The oil and gas industry has a future. Perhaps it will find a sweet spot—a level of production that's neither high enough to destroy demand nor low enough to eliminate profits. But in that sweet spot, oil will be smaller, both as an energy source and as a raw material for industry. It will also be less relevant as a financial resource," said Tom Sanzillo, director of financial analysis of the Institute for Energy Economics and Financial Analysis. (IEEFA is an organization dedicated to a profitable and sustainable energy transition.)

Thurmon Andress, president and CEO of Andress Oil & Gas, expressed the thought of many when he told *Oil and Gas Investor* that the independent will be the last man standing. With at least 45 years in the business, he should know. He founded, managed and sold several public and private E&Ps and was inducted into the All-American Wildcatters in 1996, among other honors.

"When you think about it, 40 years in the future would be the same as looking at the indus-

try as someone would have in 1980 and trying to project where we would be today. In 1980, with many believing in M. King Hubbert's peak oil projections, you might have thought there would not be any E&P business at all in 2060. But we did not know that George Mitchell would change the world," Andress said.

"Technology has always saved our industry, and there is no reason to think it will be any different in the future. We probably have no concept of where it will take us by 2060. Can you imagine that technology might lead us to be able to recover 20% to 40% of the oil in place in shale plays instead of the current 10%?"

"The data I have seen shows we will need to replace about 60% of our current production of oil and gas just to meet global demand by 2035.

"In short, I would not worry about the independents as they are the most resilient, entrepreneurial group in existence and will always be able to navigate the headwinds and the opportunities that come their way."

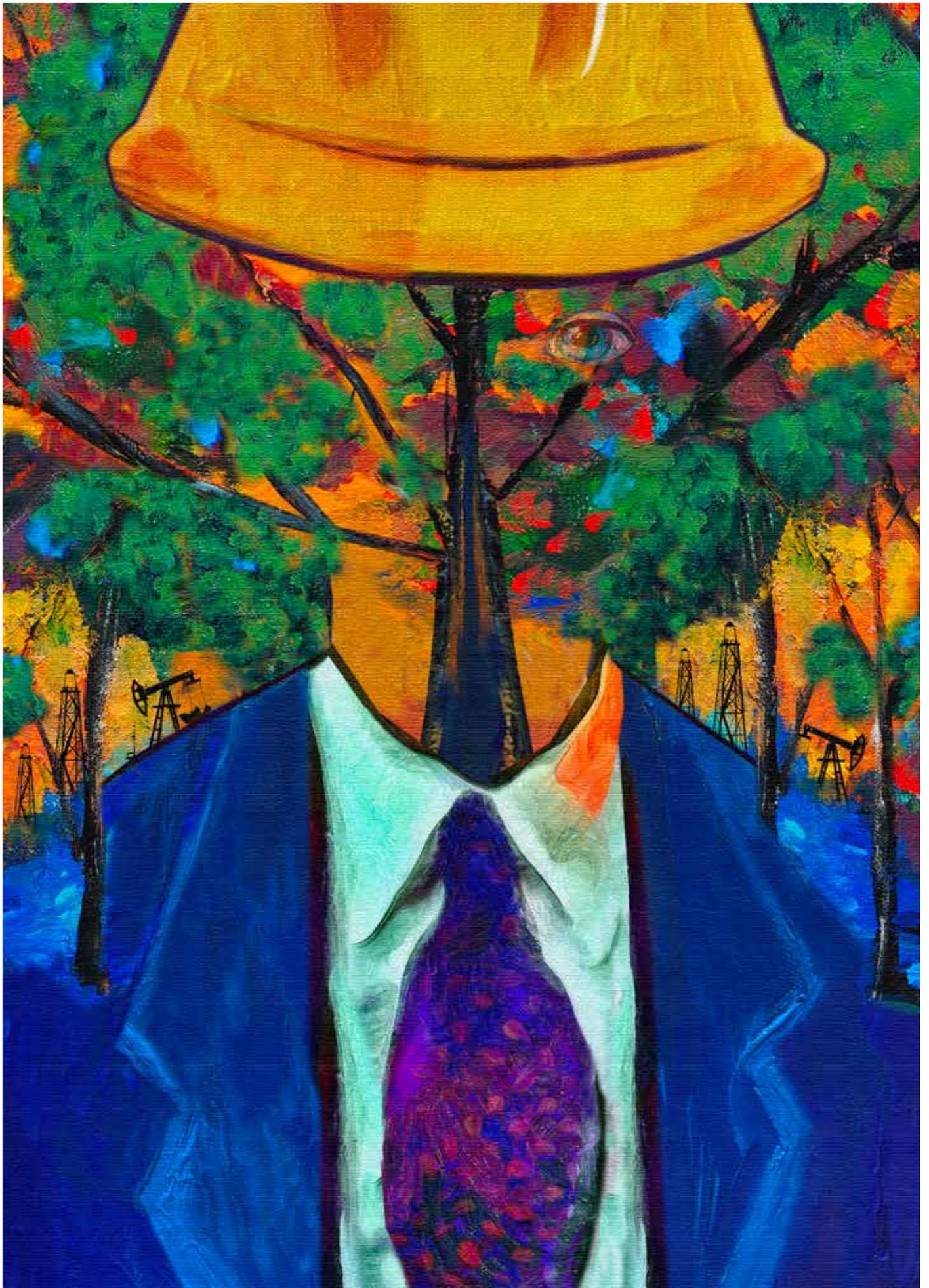
Anti-fossil fuel thinking permeates headlines these days, but most oilmen are having none of it. "It's very hard, difficult for me personally, to wake up every morning and see three articles about the death of your industry when you know it's not the case," Kaes Van't Hof, Diamondback Energy CFO, told attendees of Hart Energy's DUG Permian and Eagle Ford Conference and Exhibition in July.

"Diamondback and the industry, in general, are ready to fight this fight," Van't Hof said. "Where I come down in my final analysis is that in 40 years, the independent might just be the last man standing in our industry, especially when it comes to the United States." □



KILLAM OIL CO.

**Killam Oil has several oil and gas wells on production in South Texas, along with ranching and other investments.**



# THE UNMASKED OILMAN

The industry is on a new—and better—path, the wildcatter says. “It’s honestly probably an easier route than the treadmill that we were on.” Here’s the 2021 update and a look at his new shale gas E&P.

INTERVIEW BY  
NISSA DARBONNE

ILLUSTRATION BY  
ALEXA SANDERS

*In early April 2020, Oil and Gas Investor reached out to Dick Stoneburner: “We’re looking for anonymous, fully unfiltered thoughts on the oil and gas industry in the midst of this commodity price collapse. Who might do this?”*

*The idea was to focus on what every oilman might be thinking at the time—a representation, rather than featuring just one’s thoughts.*

*Stoneburner replied, “I’ll do it.”*

*The result was the May-issue article, “The Masked Oilman,” the most-clicked article at HartEnergy.com in 2020.*

*We decided to check back with Stoneburner for a 2021 update.*

*In the business for more than four decades now, beginning as a wildcatting geologist, Stoneburner is now chairman of Australian-shale developer Tamboran Resources Ltd. while continuing as a senior advisor to Pine Brook Road Partners. He was a co-founder, president and COO of startup Petrohawk Energy Corp. and, after its \$15.1 billion sale to BHP Group Ltd., was BHP head of North American shale.*

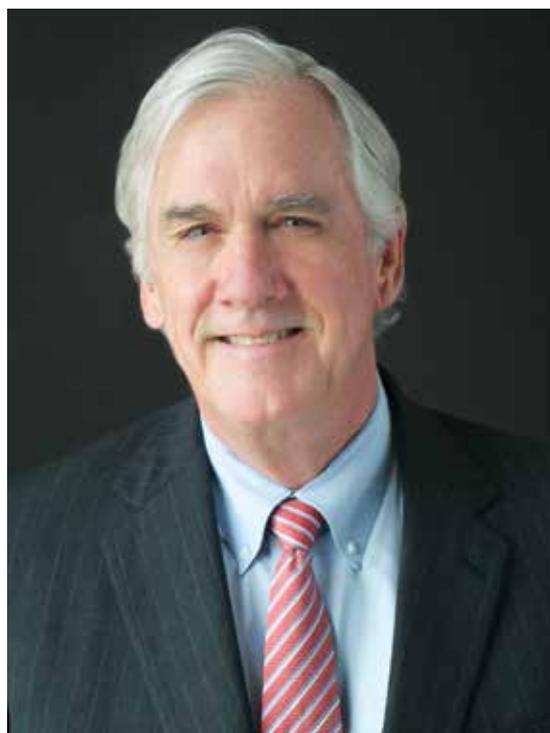
*Joining Stoneburner on the board at newly public Tamboran (pronounced “tam-boar-an”) is Fred Barrett, co-founder of Bill Barrett Corp.*

*Tamboran’s management team includes CEO Joel Riddle, formerly an executive at Cobalt International Inc., and COO Faron Thibodeaux, who was general manager of Apache Corp.’s Australian business unit.*

*Did the oil and gas industry exit the market disaster of 2020 better than in 2019? “I don’t know if I would say ‘better.’ I don’t think we’re any worse. I think you could say we’re better in the sense that we’ve had another two years to ‘get the message,’” Stoneburner said.*

*That message to oil and gas producers is to focus on returning cash flow to investors and focus less on production growth. “That’s an easy lesson to speak; it’s a harder lesson to learn,” he added.*

*But “it’s honestly probably an easier route than the treadmill that we were on—looking for 25% production growth and trying to find the*



**“What Tamboran is uniquely situated to do is to provide what very well could be a high-volume resource with time.”**

**—Dick Stoneburner,  
Tamboran Resources Ltd.**

*capital to do it. It’s not really all that smart. But that’s what we were told [by shareholders] to do during my time at Petrohawk.”*

*The industry’s pause during 2020 “probably made the whole model of returning capital to shareholders our first and foremost objective.*

*“I think we, as an industry, have done that and, therefore, I would then kind of back up and say, ‘Yeah, I think we are a better industry because of that.’”*

*Here’s more from Stoneburner as well as a look at the shale gas opportunity for Tamboran.*



“The key here too in Tamboran’s net-zero CO<sub>2</sub> vision is that Tamboran doesn’t have any facilities yet. We are starting with a clean slate. Every facility we build will be focused on minimizing methane leaks, have the ability to sequester carbon whenever possible and utilize any and all renewable sources for field operations.”

**Investor** Early April 2020 versus July 2021. What’s your outlook now?

**Stoneburner** Given the number of vaccinations, there’s just not the same level of risk now. I’d like to think it’s largely behind us. In the spring of 2020, there was great concern—with good reason—that it could take several years or more to get the disease—then, the economy and our industry—under control.

We got a vaccination in relatively short order. It’s been a real testament to science, the government, the private sector and the medical community. Politics aside, I think we ought to be pleased with where we are.

The demand for our products has basically returned.

**Investor** The RBL [reserve-based lending] banks that quit: Will they return? Many are still holding the bag.

**Stoneburner** RBLs are a little bit of an albatross these days. Many companies still have them, and we’ll still have them in the future. The banks have had to create lifelines that allowed companies to have more duration—to just extend the company and allow them time to get back on their feet, back to drilling and getting cash flow to where it was.

The banks have done a pretty good job of giving enough of a lifeline. There were certainly a lot of bankruptcies. I would venture to say there were probably not as many as the market might’ve thought we’d have.

Today, there are still some circumstances out there where the lenders and borrowers are having to continue that effort.

**Investor** You said that the May 2020 WTI contract would go to zero. That happened. And it fell to *less than* zero. Were you shocked?

**Stoneburner** Well, the negative \$37 was just a financial situation. You had people [at closing] who just didn’t have enough buyers of those contracts. People were just having to get rid of them. While it’s very newsworthy and historic, it was a one-day event.

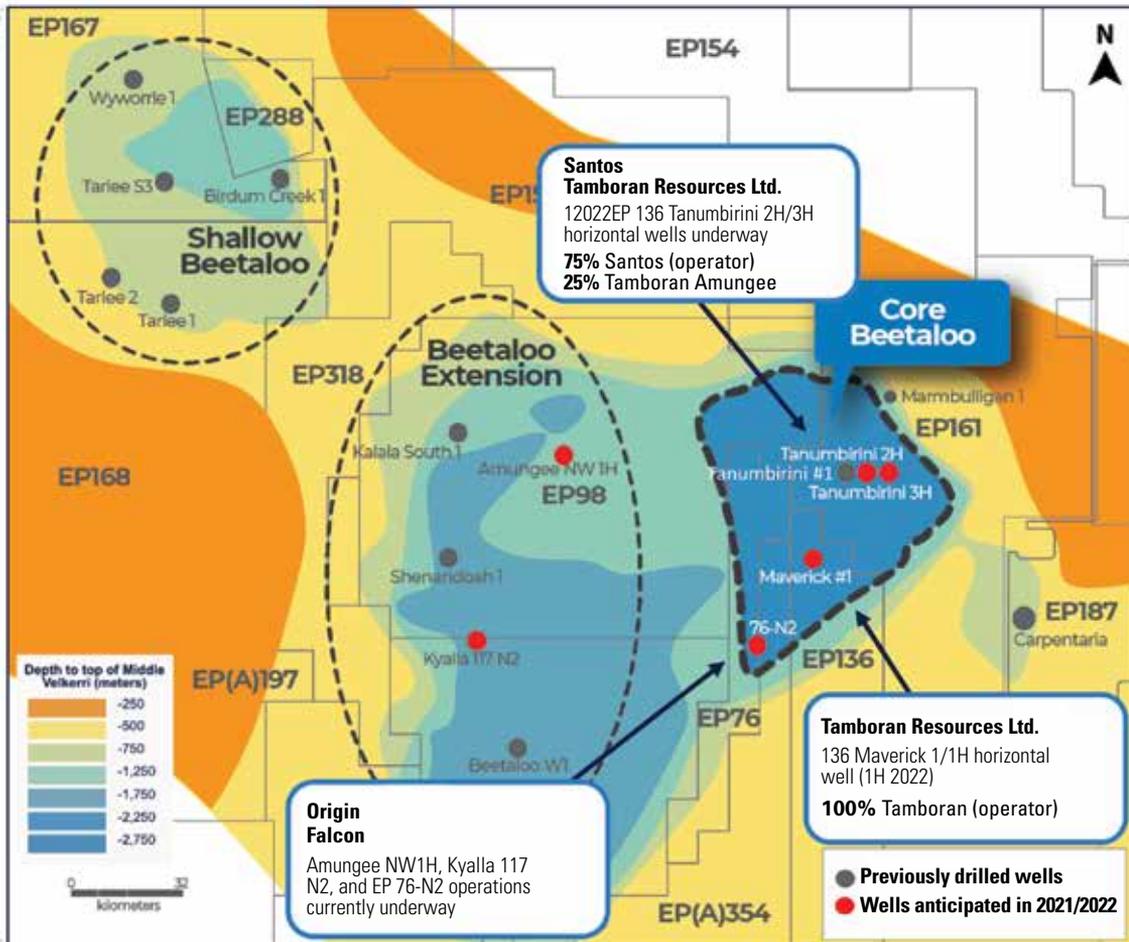
But it doesn’t diminish the fact that it was really \$20 a barrel—the weighted average—during that period. I mean, nobody was making any money.

**Investor** You’re chairman now of Tamboran, focused on Australian natural gas for in-country use and LNG export. Natural gas seems to

### Tamboran Resources Wells Location Map

Beetaloo Basin Regional Map (Mid-Velkerri Shale)

**Tamboran’s natural gas target is 2% to 3% CO<sub>2</sub> and just a few-day tanker trip to Singapore and Tokyo.**



Source: Tamboran Resources Ltd.

have a great future even if without the transition to blue and green fuels.

**Stoneburner** No doubt. We still have [U.S.] domestic supply to tap as we need it. And the LNG supply is continuing to grow—almost at breakneck speed.

And that's a great thing because it's a worldwide commodity. We need to get it to developing nations. We need to get it to people who don't have a source of energy to help improve quality of life.

What Tamboran is uniquely situated to do is to provide what very well could be a high-volume resource with time. This is going to supply not only the Australian domestic market, but it's perfectly situated to provide the Asia-Pacific region with much more competitive LNG. It is only a three-day trip to Singapore and nine days to Tokyo from Australia.

It looks like a world-class resource in a pretty good spot of the world. Given that Australia is a free-market economy and an OECD country, the resource is clearly advantaged. And it's low-CO<sub>2</sub> natural gas.

It's a gas resource that could really make a difference in that part of the world.

**Investor** Speaking of what it "looks like," you were at a Core Lab program in 2007 when you saw a core sample Encana [Corp.] pulled in 2006 from the Haynesville Shale. You immediately recognized the Haynesville held incredible resource. How did the Tamboran sample from the Beetaloo/McArthur Basin compare?

**Stoneburner** That's a great question. Tamboran logged their #1 Tanumbirini, the vertical discovery for the field, while I was visiting them in Sydney in 2014. I looked at the log and, about a year later, saw the core analysis from Core Lab and the report from Netherland Sewell [& Associates] on the resource potential.

The long and short of it is that, from a purely petrophysical standpoint and an original gas in place standpoint, this resource is comparable to the best resources in North America.

It became apparent to us—and I think it's becoming more apparent to not only the Australian E&P community, but to the Australian government—this really has the potential to change the game for the country in terms of a supply that they can count on.

It's much like the supply that North America has counted on in all the different gas basins—from the Montney to the Haynesville to the Marcellus—that have just basically changed the whole dynamic of North American gas supply.

**Investor** Would Tamboran be interested in owning U.S. natural gas resources, but those are simply all owned up already?

**Stoneburner** We're an Australia-listed public company that is hyper-focused on our asset in the Beetaloo. So we really don't want to be distracted by working on two continents.

The advantaged proximity of Tamboran's asset can't be overlooked. We are about 500 kilometers from the Darwin LNG facility. We also have the Gladstone LNG facility in Queensland, north of Brisbane. Both are operated by our partner, Santos Ltd.

The proximity of those two facilities to vast markets in Southeast Asia is incredible.

We also have a JV with Jemena, one of the largest pipeline operators in Australia. It recently built a pipeline perfectly located to help us commercialize the resource when we're ready to deliver the volumes.

As long as we can make the resource competitive and drive down the costs like producers in the U.S.—getting it off the ground on an F&D [finding and development] basis, then simply on the cost of transportation on the water—we should be much more competitive than the LNG that the U.S. is supplying.

**Investor** And compared with Middle Eastern LNG?

**Stoneburner** Now [the Middle Eastern suppliers'] F&D is hard to beat. And that's the challenge we will have.

But, if we prove this resource to be commercial, that's going to be the proof that this is truly a competitive resource for the Australian market and, more broadly, Asia-Pacific.

**Investor** You mentioned Tamboran's gas prospect is low CO<sub>2</sub>.

**Stoneburner** The gas is only 2% to 3% CO<sub>2</sub>. It's a fraction of what most natural gas has in Australia.

The key here too in Tamboran's net-zero CO<sub>2</sub> vision is that Tamboran doesn't have any facilities yet. We are starting with a clean slate. Every facility we build will be focused on minimizing methane leaks, have the ability to sequester carbon whenever possible and utilize any and all renewable sources for field operations.

That's how we will achieve net zero. We're starting from a point without any old facilities. The facilities will have net-zero standards from day one.

So the combination of a very low CO<sub>2</sub> resource and the ability to manage carbon and to use renewables, we feel like we can be a net-zero producer in a relatively short order.

**Investor** Good point. You're starting from "2021 and beyond" standards.

**Stoneburner** No baggage at all.

**Investor** Tamboran was drilling its first horizontal this summer.

**Stoneburner** We're participating in two wells with Santos this year with a 25% interest. The first one, the drilling is completed; we're drilling the second one now. They both should be flow-tested by early fourth quarter.

We're going to drill our first operated well in the first half of 2022.

We were drilling the first horizontal while we were completing our IPO. What I think the market embraced—as much as the market can embrace a non-revenue energy IPO—was the fact that we will be putting these dollars to work into this resource that the government, the industry and Australia fully recognize as probably the most exciting opportunity the country has to create a significant gas resource, not only for domestic use, Natural gas is becoming widely accepted as a bridge fuel to a world with lower emissions. And Australia has a chance to join the list of countries that can help make that happen. □

# TO THE RESCUE

After long-standing bank reserve-based lending began to retrench in 2020, alternative capital providers look poised to step up, or even take over, the funding need.

ARTICLE BY  
DARREN BARBEE

It may be that the swan song for reserve-based lending (RBL)—the seemingly indefatigable financial legs of the oil and gas industry—will play out with a slightly befuddled shrug.

RBL financing helped create the shale run that fueled U.S. oil production growth of more than 960% in the past decade, according to Federal Deposit Insurance Corp. (FDIC) data.

Yet after years of solid support, banks are finally edging toward the door, their RBL loans in tatters after years of bad prices, bad luck and bankruptcies.

An Opportune LLP headline seemed to lament the ugly breakup of the E&P companies and their banks: “Reserve-based lending: What went wrong?”

Clearly, part of the reckoning rests at the feet of the pandemic and simultaneous price war that took WTI prices on a bewildering dive into negative prices last year. More uncertainty was sown by mixed well results, inventory down-spacing, well interference and so much spending for so little return.

In 2020, out of the S&P 500 Index’s 11 sectors, energy came in dead last again, frozen below the equity market’s X-axis and watching the rest of the S&P 500 manage a 17.4% gain.

But as banks either part with RBL portfolios or tighten the screws on covenants, new capital providers see the twilight of RBL financing as a potential sweet spot with an eye toward providing relief or replacements for RBL instruments.

Most if not all lenders have seen shale’s bad days.

Damon Putman, managing director of energy at Angelo Gordon, said that most lenders are well acquainted with the ways in which down cycles have eroded their confidence, whether in 2015 to 2016 or in the past 12 to 18 months. Those cycles have left a lot of alternative providers uninterested in providing second lien debt.

“A lot of second liens are now called equity,” Putman said. “It is the reality of the situation, and those are very fresh memories for us. So, the further you are down in the capital structure, the more risk you take in.

“Today, there’s not a lot of interest from alternative providers to really do a second lien.”

Capital providers are instead looking at areas where capital can assist companies that may have difficulties with a bank group, such as a maturity that is coming due.

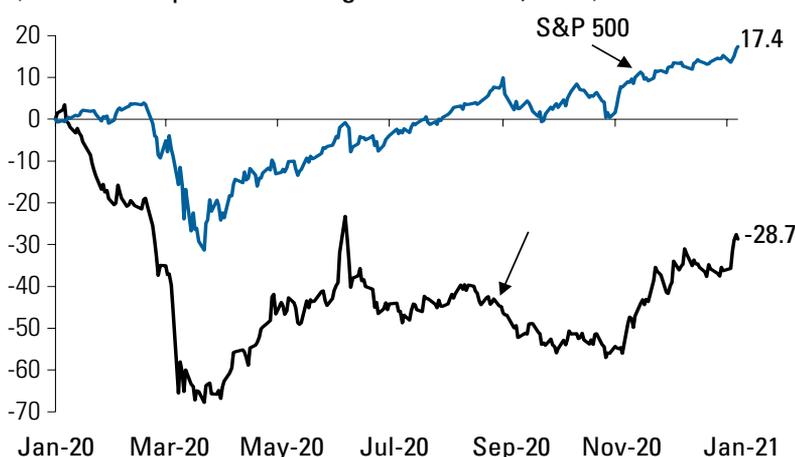
“Where we’re looking to put capital is really to help companies that ... have an issue with a bank group, such as an upcoming maturity,” he said. “Truthfully, I think that’s going to be a big part of the next two to three years for where we find opportunity.”

Putman noted that many RBL loans are set to mature. In 2022 and 2023, about \$175 billion of oil and gas industry debt is set to mature after a flurry of refinancing in first-half 2020, according to S&P Global Ratings.

Oil and gas operators are already eyeing different funding sources as borrowing base re-determinations appear likely to trail commodity price improvements. An April survey by Haynes and Boone LLP found that executives largely expected banks to keep borrowing bases flat or increase them moderately.

## Equity Market Performance

(Cumulative percent change from Jan. 2, 2020)



Source: S&P (Yahoo Finance).

Note: Daily data are from Jan. 2, 2020, through Jan. 8, 2021.

**Oil and gas sector financial performance improved somewhat in the fourth quarter but has been exceedingly weak throughout the pandemic, according to the FDIC.**

Producers said they are looking at various sources of funding, including debt from capital markets, banks, alternative capital providers and private equity, according to the Haynes and Boone survey.

Other operators have already suffered through tough redeterminations last year, according to Haynes and Boone. In 2020, companies were rattled as banks hastily withdrew support. In a matter of months, E&Ps saw borrowing base redeterminations sap billions from their borrowing power capacity.

In one striking revision last year, Antero Resources Corp. saw its credit facility slashed to \$2.85 billion from \$4.5 billion. In May, Centennial Resource Production LLC's borrowing base was reduced to \$700 million from \$1.2 billion. Extraction Oil and Gas Inc.'s borrowing base was reduced to \$650 million from \$950 million. Chaparral Energy Inc.'s borrowing base slid to \$175 million from \$325 million, creating a borrowing base deficiency.

Vying to fill the void, alternative capital providers say they have a variety of ways to step up to meet producers' needs, albeit at a higher price point.

Christina Kitchens, managing partner at 3P Energy Capital, said so-called rescue capital is meant to bridge senior debt and larger debt issuances. Such debt would offer funding with a coupon rate of between 7% and 10%.

That alternative capital could then "take the place of what you would call rescue capital, where senior debt perhaps could be restructured, and you're not stepping too far out from the cost of capital," she said.

Such funding would give operators more flexibility—if it's available.

"From a capital perspective, there will be more than that," she said. "And it's certainly coming, and then I see that with the funds that I work with and family offices, especially, looking to place that type of capital."

But Kitchens cautioned that there's still a gap between funding needs and availability.

"There's a lot more demands I hear frequently and looking for the type of capital, and there's just not enough of it yet."

### **The new RBL?**

As traditional funding sources rethink their strategy for E&Ps—or abandon the space altogether—some capital providers envision staking out a role for their firms that is larger than mere stopgap lenders.

In part, that's because the reliance on RBL financing may be coming to an end as banks either try to reduce their exposure.

"The certainty of an RBL type of capital no

longer truly exists, especially through a cycle and having to think through every six months whether your borrowing base is actually going to be redetermined flat or down," Putnam said. "That's the case even in a currently appreciating commodity price environment."

Don Dimitrievich, managing director, HPS Investment Partners, said the phrase rescue capital is probably a misnomer, and even alternative capital no longer applies to the needs of the industry.

The aftermath of the pandemic and other downturns has taken its toll. The number of traditional sources of capital that historically funded businesses, such as the bank RBL market, is dwindling. Capital markets have been, if nothing else, volatile, he said.

"At the times we've needed the capital the most, that's when they've actually been completely shut," Dimitrievich said.

Even private equity, which has seen some resurgence, has not been able to raise a significant amount of new capital to invest, he said.

What capital providers are offering, however, is less rescue capital or even alternative capital, according to Dimitrievich.

"Ultimately the capital that we're providing here, you can call it alternative capital. I think it's more mainstream capital that you're going to see over time where lenders or capital providers such as us can provide creative capital."

Lenders would provide developmental capital so that producers can convert their inventory into producing assets, or solutions could include a unitranche hybrid loan structure that combines senior and subordinated debt.

"You're effectively taking a bank group to either provide incremental capital or address a problem or a challenging commercial lender that's looking to exit the credit," Dimitrievich said. "Direct lending is a combination of all those things where you're in a senior position in the capital structure [and] you provide a customized solution that allows the company to develop their asset base."

Two realities are now facing oil and gas producers and other sectors of the industry: the amount of capital committed to the space, especially through RBLs, and a coinciding drop among the ranks of lenders willing to risk capital.

"It's not that capital is going to shrink," Putnam said. "It is shrinking and will continue to shrink. And, therefore, our dollars, our cost of capital is going to have to go up commensurately."

"It's notable that a lot of borrowing bases are remaining flat, even though we've seen a significant



**"Today, there's not a lot of interest from alternative providers to really do a second lien," said Damon Putnam, managing director, energy, Angelo Gordon.**



**Christina Kitchens, managing partner at 3P Energy Capital, said so-called rescue capital is meant to bridge senior debt and larger debt issuances.**

"Limited access to capital markets and high borrowing costs will continue to strain E&P credit quality and liquidity, especially as banks try to limit their exposures to the energy sector by curtailed lending to E&P companies."

—Federal Deposit Insurance Corp.



**Don Dimitrievich, managing director, HPS Investment Partners, said the phrase rescue capital is probably a misnomer, and even alternative capital no longer applies to the needs of the industry.**

improvement in the underlying commodity of the past 12 months,” Putnam said.

Operators will now have to find more flexible capital that allows them to potentially develop assets and create value, “even though our cost of capital is more expensive,” he said.

Dimitrievich said that expense is typically an area of resistance for borrowers that HPS Investment Partners tries to address.

“We always hear that it’s so much more expensive than traditional RBL capital,” he said. “But when you take a step back and sort of factor in all the different considerations, it can actually be more accretive to the equity the longer term relative to the historic RBL model.”

Ideally, lenders and borrowers will begin to look at their relationships as something more akin to a marriage, Kitchens said.

“You have to look at compatibility for the long haul,” she said. “It’s more important than ever just to be sensitive and look out for the structure and be purposeful.”

#### **Bank drain**

What appears to be clearer to borrowers is that the RBL lifeline for oil gas companies has finally snapped.

RBLs were on the minds of E&P executives in December and June as they were surveyed by the Dallas Federal Reserve. More than 70% of surveyed executives anticipated late last year that borrowing base redeterminations would hinge on changes in price deck valuations, while 46% anticipated changes in advance rates on proved developed producing (PDP) and other producing and undeveloped reserves.

In June, an E&P executive told the Dallas Fed the “inability to access credit from reserve-based lending” was affecting the business.

RBL banks continued to retrench during the initial wave of the pandemic while public lenders and public markets have been far more selective on the size of what they will invest in.

As those sources of capital have backed off from oil and gas, or at least been pickier about funding, capital allocation to companies has moved more toward private capital’s wheelhouse.

Mukul Hariharan, director at Houlihan Lokey, said that the two traditional sources of capital for operators have continued to pull back for roughly a decade.

“The way we think of it, private capital is an asset class, and it’s an asset class on the investor side,” Hariharan said. “Again, it’s been growing for the past 10 years. It’s not something that’s only available to certain companies at certain times. It’s available to all companies at all times.”

The landscape of upstream companies has changed such that producers are better suited to take advantage of shorter bursts of interim capital.

Hariharan said operators need to rethink capital availability and the “idea that there’s no other alternative.

“The reality is that there are other alternatives, and in many cases, private capital is the best alternative ... in terms of flexibility, stick-to-itiveness of the capital.”

And the equity markets will continue to play a factor as well, he said.

#### **No confidence vote**

The news for operators remains mixed.

Despite intensified uncertainty after last year’s pandemic and price war, traditional energy stocks have made headway and recovered and, in some cases, pulled ahead of their peers in the S&P 500. Public and private markets are “still around and aren’t going anywhere,” Putnam said. “Public capital remains available, and it appears ready to be accessed.”

But last year still played havoc with financial performance, and operators dealt with high leverage and low oil prices. In 2020, roughly \$53.8 billion of energy debt was taken into bankruptcy in the 11 months through November 2020, the highest amount since 2016, according to the FDIC.

“Limited access to capital markets and high borrowing costs will continue to strain E&P credit quality and liquidity, especially as banks try to limit their exposures to the energy sector by curtailed lending to E&P companies,” the agency reported in its 2021 risk report.

Spring 2020 borrowing base redeterminations were particularly focused on limiting the risks and losses from energy portfolios, which potentially limits their willingness to continue lending to the industry, the FDIC said.

“For a number of E&P companies, this reluctance will mean curtailed access to capital and reduced liquidity as borrowing bases are redetermined,” the report said.

More recently, Haynes and Boone’s April borrowing base redeterminations survey of producers, oilfield service companies, financial institutions, private equity firms and other industry participants found modest optimism for redeterminations in the spring of 2021.

Price improvements in recent months have motivated both producers and their lenders to protect against the downside, while the upstream oil and gas industry has settled into a new normal as it raises capital, the survey reported.

While expectations regarding capital sources stayed consistent, respondents said they expected a significant increase in debt from capital markets.

Those surveyed also said they expect the Permian Basin, Eagle Ford Shale/Austin Chalk and Haynesville Shale to attract the most capital during the next two years.

Buddy Clark, co-chair of Haynes and Boone LLP, noted that the consensus among energy bankers is they are no longer giving any value to anything other than PDP. “The days of booking 20% of PUD [proved undeveloped] reserves to juice the borrowing base are gone,” at least for now, he said.

The FDIC said that banks could reduce

their risk to the energy sector by reducing their energy loan books, using more conservative price assumptions in the redetermination process and ascribing less value to PUDs.

Putnam noted that many European banks are also no longer interested in “being in the space, basically selling out their portfolios to other alternative capital providers.”

That trend has been noted by reports looking at lending for traditional energy lending. An October 2020 report by the Institute for Energy Economics and Financial Analysis (IEEFA) said that financial institutions, particularly those based in Europe, are limiting their involvement in certain aspects of the oil and gas space.

IEEFA reported tracking 50 significant global financial institutions that announced oil and gas investment restrictions, specifically on oil-sands exploration as well as Arctic drilling.

An April report by CNBC, relying on data from the Banking on Climate Chaos 2021 report, found that 27 of the 60 largest banks had reduced funding to fossil fuel companies. Overall, funding fell in 2020 by 9% compared to the previous year, the reports said.

Even alternative provider numbers are thinning, Putnam said.

“It’s not dissimilar from our market as well,” he said. “There could have been 30 to 35 institutions like ours seven or eight years ago. Then there were probably 15. And now there’s maybe five or 10.”

Clark noted that several lenders were exiting the space. Whitney Bank sold most of its \$500 million energy portfolio last year to Oaktree Capital Management at a 50% discount. Huntington Bancshares and Texas Capital Bancshares have reportedly actively marketed their energy loan portfolios. Cadence Bank and Prosperity Bank have also re-evaluated their energy loan portfolios.

The Bank of Montreal, one of the foreign energy banks with the longest presence in Houston since 1962, announced last November it was exiting the U.S. oil and gas space to concentrate on Canadian producers, Clark said. European exits are partly motivated by recent losses but also due to regulatory, political and investor concerns over funding hydrocarbon projects.

But Kitchens said she expects new entrants into the capital space as the segment shows it the ability to make returns.

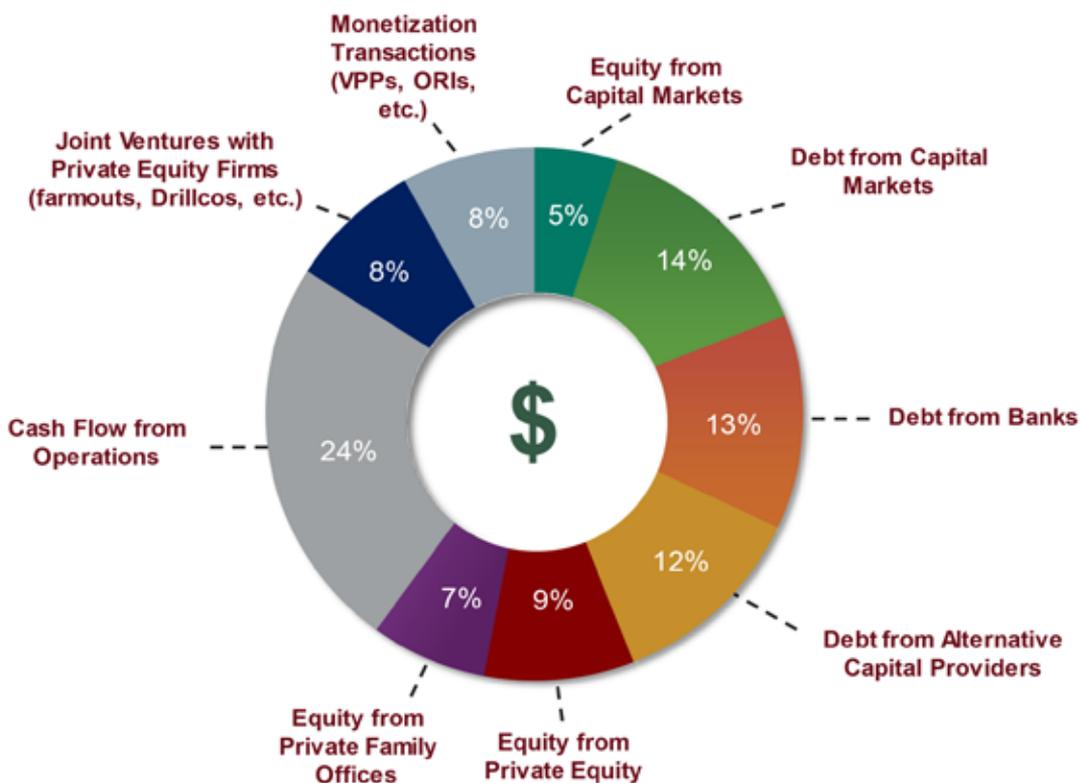
“One of the things I saw was how bespoke the capital is today,” she said. “I think it will become more customized. And there’s a little bit of a wait and see in the marketplace right now and across the board from a capital perspective.”

How upstream performs, and whether it remains within its cash flow generation parameters, is something capital providers are “patiently watching, waiting and wanting to see, when’s the right time to really expand.” □



**Mukul Hariharan, director at Houlihan Lokey, said operators need to rethink capital availability and the “idea that there’s no other alternative.”**

**Where Producers Plan To Source Capital From In The Next 12 Months**



Note: Respondents could select more than one option. Based on 444 responses. The figures in the chart above indicate the percent of total responses for each option. Source: Haynes and Boone Borrowing Base Redeterminations Survey: Spring 2021

# CREATING LEGACY OUT OF OPPORTUNITY

**Congratulations, Rich Eichler  
and the Hart Energy team for  
celebrating 40 years of delivering  
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# BLUE HYDROGEN

Made from natural gas, the superior Btu fuel remains most practical and efficient for its current uses rather than in transportation. For example, the boiling point is colder than Jupiter, it doesn't like hard steel and it needs a nearly entirely new infrastructure.

ARTICLE BY  
NISSA DARBONNE

Hydrogen is on the table as the best next fuel for transportation. And it has street cred: It's the highest-performing fuel among the options.

Transition to it comes with many challenges. They're resolvable. But doing so will take much time and money for global replacement of crude oil in transportation.

"Vintage people like me might be wondering, 'Hydrogen again, huh? How long is this going to last this time?'" Susan Stuver, GTI (formerly known as Gas Technology Institute) senior manager, Hydrogen Technology Center, said in the institute's hydrogen webinar, "The Role of Hydrogen in a Decarbonized Future," in July.

The lure of hydrogen is justified, though, she added: "It can be used to support the decarbonization of hard-to abate sectors—those that are energy-intensive or require high heat applications, such as heavy industry. Places where electrification just isn't going to work."

In transportation, Chevron Corp. and Cummins Inc. have teamed to promote hydrogen. Andy Walz, president, Americas fuels and lubricants, Chevron, said in a press release, "Hydrogen is just one lower carbon solution we are investing in that will position our customers to reduce the carbon intensity of their businesses and everyday lives."

Chevron is also collaborating with Toyota Motor Corp., which has teamed with several other companies in various industries.

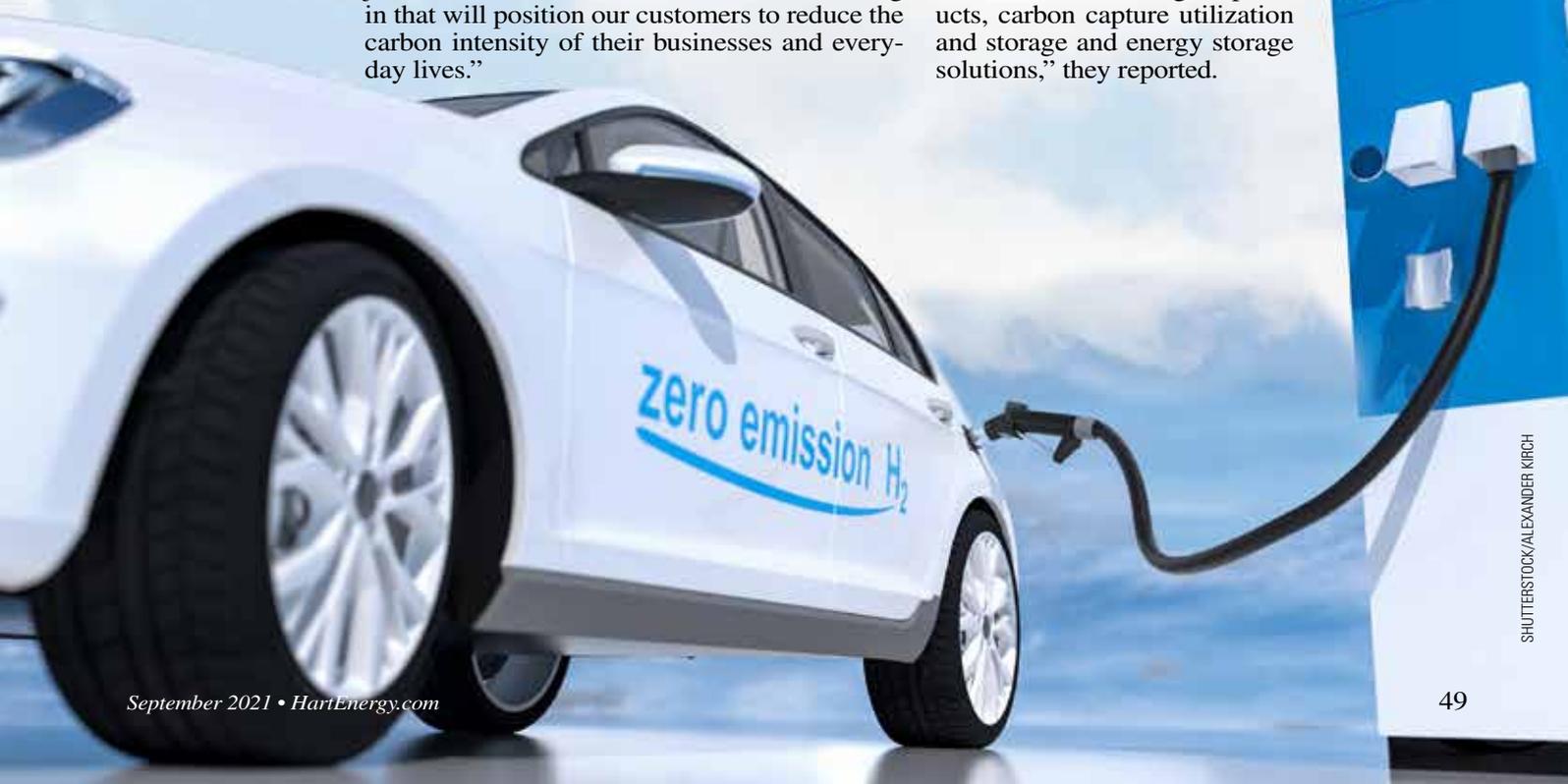
In marine application, TotalEnergies SE (formerly Total SA) and Technip Energies NV are collaborating on hydrogen use in existing and new LNG facilities as a carbon offset toward Total Energies' plan to be carbon neutral by 2050.

In commercializing hydrogen, Baker Hughes Co. and Bloom Energy Corp. plan pilot projects in several decarbon areas, including hydrogen production. "The companies will target applications such as blending hydrogen into natural gas pipelines, as well as onsite hydrogen production for industrial use," they reported.

"These efforts are geared toward accelerating the transition to the hydrogen economy."

In hydrogen compression, Baker Hughes is also collaborating with Air Products & Chemicals Inc.

The Williams Cos. Inc. and Microsoft Corp. have teamed to "explore lower carbon opportunities with a focus on the development of a hydrogen economy, renewable natural gas products, carbon capture utilization and storage and energy storage solutions," they reported.





***“The reason why the Houston/Texas Gulf Coast area is rapidly growing for hydrogen is because it’s already a base for hydrogen in the U.S.,” said Susan Stuver, GTI senior manager, Hydrogen Technology Center.***



***More than 90% of hydrogen demand is for use in ammonia, refining and methanol. For cars and trucks, a hurdle is consumer “station anxiety,” said Brian Weeks, GTI senior director of business development.***

In North Dakota, midstream natural gas operator Bakken Energy LLC and Mitsubishi Power Americas Inc. plan to build “a world-class clean hydrogen hub,” they reported.

“This hub will be composed of facilities that produce, store, transport and consume clean hydrogen. It will be connected by pipeline to other clean hydrogen hubs being developed throughout North America.”

It will produce “blue hydrogen,” which uses natural gas while capturing and sequestering the carbon part of the CH<sub>4</sub>.

North Dakota Gov. Doug Burgum said in a press release, “Blue hydrogen represents a huge opportunity for synergies with our existing energy development. And these are exactly the innovative strategies that will bring North Dakota one step closer to being carbon neutral by 2030 with an all-of-the-above energy approach.”

Mike Hopkins, CEO of Bakken Energy, said, “We believe that clean hydrogen derived from natural gas, with the carbon captured and with its cost advantages, is the best way to accelerate the adoption of hydrogen.”

#### **Texas Gulf Coast**

GTI’s Stuver said in the July webinar. “The reason why the Houston/Texas Gulf Coast area is rapidly growing for hydrogen is because it’s already a base for hydrogen in the U.S.”

The region produces about a third of what’s used in the U.S.

And “it’s home to about 48 hydrogen production plants, more than 900 miles of pipelines and a subsurface storage system using salt caverns,” she said.

Brian Weeks, GTI senior director of business development, noted that more than 90% of hydrogen demand is for use in ammonia, refining and methanol. For cars and trucks, a hurdle is consumer “station anxiety,” he added.

Meanwhile, there is opportunity in marine use, he said. The International Maritime Organization has adopted a goal of reducing sulfur content in marine fuels. Weeks said, “Hydrogen (itself) is not being looked at currently as an option in marine fuel, but ammonia could be.”

A hurdle is also in hydrogen transport. “There’s increasing interest in using existing natural gas pipeline infrastructure,” Weeks said. “Either blend it, replace the line as a pure hydrogen pipeline or put the hydrogen pipeline in the existing natural gas right of way.”

Outside of commercial prospects, an incentive to the pipeline operator is that it would be decarbonizing its portfolio.

“By combining hydrogen,” Weeks said, “particularly generated from renewable resources (that is, water, using wind and/or solar), the pipeline operator can then honestly make claims that it is decarbonizing its product by adding a zero-carbon Btu carrier among its products.”

Currently, most hydrogen pipeline projects are in the EU; one is in California.

As for storage, it’s primarily in salt-dome

caverns. “We have not tried storing hydrogen in depleted reservoirs or aquifers yet,” Weeks said. “The jury’s out whether we can modify existing caverns for hydrogen use, but we do believe the potential is tremendous.”

Embrittlement is a concern with existing pipeline infrastructure, Stuver added. “Hydrogen can actually diffuse through steel.”

There are grades of steel that can handle hydrogen. But the current infrastructure’s specs are “one of the reasons why ammonia is easier to transport.”

Weeks added that the boiling point of ammonia is minus 28 F, while the boiling point of hydrogen is minus 423 F, “just a few degrees above absolute zero.”

Like “deep space,” Stuver added.

It has to be transported at low pressure. “You pressurize it; the boiling temperature is higher,” Weeks said.

But, “we have been operating hydrogen pipelines for decades and safely” at low pressure and using softer steels, he added. Needing to transport hydrogen isn’t “a roadblock to hydrogen injection. It can be mitigated.”

#### **Commercialization**

Mitsubishi is working to develop a salt-dome storage hydrogen hub in Utah, it reported in a press release. And it has a deal with Texas Brine Co. LLC toward hydrogen storage in salt caverns on the East and Gulf coasts.

In a Zoom session in May hosted by the Global Alliance Powerfuels association, Tahmid Mizan, manager, global regulatory affairs, for Exxon Mobil Corp., was asked how hydrogen will become cost-competitive.

Mizan said blue hydrogen is a traditional industrial hydrogen “with carbon capture bolted onto it. That’s one option that’s probably deployable in large scale.”

Its cost is more than grey hydrogen and less than green hydrogen, he said.

Still, all three “require additional technology to make them more and more competitive,” he added. “I think, early on, and maybe for a significant amount of time, policy support will be required to commercialize them.”

Two oil and gas executives planned a special purpose acquisition company (SPAC), Integrated Energy Transition Acquisition Corp., to buy assets in natural gas midstream, LNG and blue hydrogen. Chris Close was CFO of Preferred Sands Inc.; Richard Westerdale II was joint-venture rep for Exxon Mobil in the Gorgon (Australia) LNG project. The planned SPAC’s board includes Angela Minas, formerly CFO of DCP Midstream Partners LP.

In the S-1 filed earlier this year, Integrated Energy acknowledged that, “while hydrogen, in itself, is a clean fuel, the process of producing hydrogen is energy-intensive and has carbon byproducts.”

But, it noted, blue hydrogen, while made from natural gas, includes capturing and storing the carbon byproduct.

NASA was the first space agency to choose hydrogen as its rocket fuel back in the 1950s. NASA also uses hydrogen in powering spacecraft.

Upon returning from Earth’s thermosphere in July, Jeff Bezos said in the post-flight conference that liquid hydrogen, which was used in the New Shepherd rocket, is too much power for just a suborbital flight.

But his startup, Blue Origin, chose it for the first-generation rocket because it’s what will be needed to fuel the bigger missions, using the planned New Glenn rocket then the next iteration, New Armstrong.

“It’s the most powerful, highest-performing rocket fuel in the world,” Bezos said.

Also, when used alongside liquid oxygen, “it’s the most environmentally benign propellant you can choose. When you burn liquid hydrogen with liquid oxygen, you get H<sub>2</sub>O. It’s water.”

In Earth-based vehicles, Integrated Energy reported to prospective shareholders that hydrogen fuel cells “are two to three times more efficient than an internal combustion engine running on gasoline and produce zero emissions.”

It added that South Korea and Japan have hydrogen transportation plans. Meanwhile, “China, the largest hydrogen producer in the world, has forecasted that it will see hydrogen demand more than double in 20 years.”

**Yes, but no**

Jefferies Group hosted a hydrogen webinar in July with Paul Martin, a Canada-based chemical process engineer who writes frequently on alternative fuels and describes himself as a “tireless advocate of a fossil fuel-free future.”

With hydrogen, though, he’s not on board. “[Martin] does not see hydrogen as a viable means of solving the energy decarbonization problem due to fundamental inefficiencies with its development cycle,” reported Jefferies analysts Ahmed Farman (utilities), Philippe Houchois (auto) and Giacomo Romeo (oil and gas).

“By combining hydrogen, particularly generated from renewable resources (that is, water, using wind and/or solar), the pipeline operator can then honestly make claims that it is decarbonizing its product by adding a zero-carbon Btu carrier among its products.”

—Brian Weeks, GTI

Instead, he “sees hydrogen’s applications in energy storage/transport as limited and believes the long-term solution lies in more widely connected grids, renewables and improvements in battery technology.”

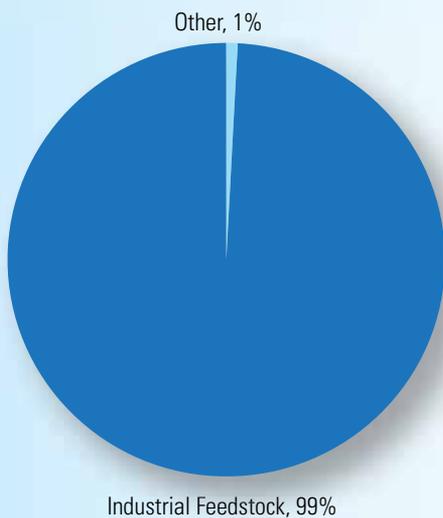
Martin converted his 1975 Triumph Spitfire into an electric vehicle. Most of the challenge appeared to be in derusting the body and replacing the rotted frame. (Spoiler: It was soon totaled by a Dodge Ram 2500.)

Martin said producing a hydrogen fuel cell results in 63% energy loss in a best case and using it as a source of heat results in 37% energy loss. “With this, the expert sees hydrogen as an extremely inefficient means of storing/transporting energy and therefore unviable,” the Jefferies analysts reported.

In cars, Martin “sees hydrogen as neither effective nor efficient. For trucks, a similar argument is made for short distance, while for long distance the fuel logistics are seen as a major barrier.”

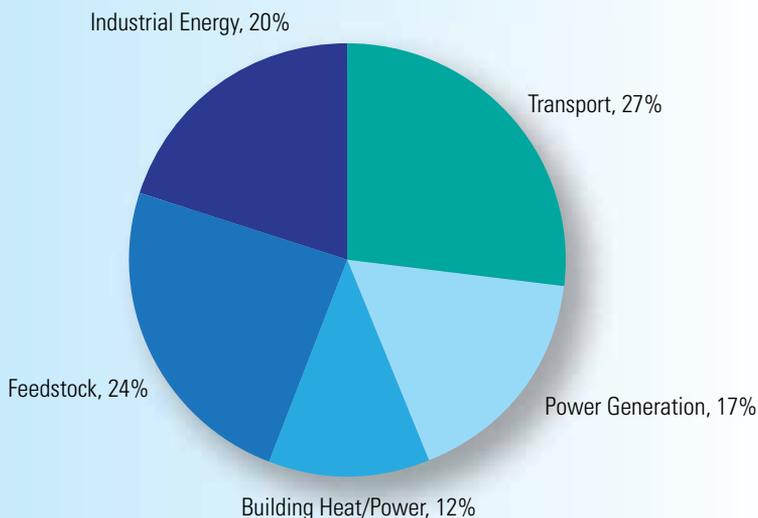
In pipeline transportation, a blend of 20% hydrogen in a natural gas pipe, “the medium- and high-pressure pipes—made from hard steel—would have issues transporting hydrogen.

**Current Hydrogen Demand**



Source: Hydrogen Council, Bernstein Research

**Projected Hydrogen Demand, 2050**



Source: Bernstein Research

“Hydrogen is abundant and carbon-free. Most importantly, it has an immensely high energy density per unit of mass, which makes it versatile as a fuel and an ideal replacement for hydrocarbons in hard-to-decarbonize sectors such as transport, industry and heating.”

—Bernstein Research

“Secondly, as hydrogen is less energy dense than natural gas, replacing the latter with 20% of hydrogen leads to a 14% energy loss. Overall, the expert believes that electrification, via heat pumps, is a more suitable solution for decarbonizing heating than hydrogen.”

The best use of hydrogen? Pretty much how it’s already used, which is, according to the Energy Information Administration (EIA), petroleum blending, metals, fertilizer, food processing and rocket fuel.

The Jefferies analysts wrote that, according to Martin, “using hydrogen to make e-fuels, via a reverse of thermodynamics, while possible, is a weak-efficient solution.”

#### **‘Station anxiety’**

The current EIA findings are that hydrogen in vehicles has to overcome what Weeks at GTI said: “station anxiety.”

The EIA wrote that “people won’t buy those vehicles if hydrogen refueling stations are not easily accessible, and companies won’t build refueling stations if they don’t have customers with hydrogen-fueled vehicles.”

Of the roughly 50 hydrogen refueling stations in the U.S., nearly all are in California, according to the EIA.

Toyota’s position is that cars and trucks should be hybrid electric/gasoline rather than fully electric, “the industry’s strongest voice opposing an all-out transition to electric vehicles,” according to a New York Times report.

The automaker’s position has been surprising in the sector. “Even as other automakers have embraced electric cars,” The Times reported, “Toyota bet its future on the development of hydrogen fuel cells—a costlier technology that has fallen far behind electric batteries—with greater use of hybrids in the near term.”

Bernstein Research analysts prepared a 274-page report on the potential of hydrogen in the push to net zero.

“Hydrogen is abundant and carbon free,” they wrote. “Most importantly, it has an immensely high energy density per unit of mass, which makes it versatile as a fuel and an ideal replacement for hydrocarbons in hard-to-decarbonize sectors such as transport, industry and heating.”

The cost is falling, they added. A great deal of platinum is needed in hydrogen fuel cells and other metals are needed in hydrogen infrastructure. But the Bernstein analysts believe sourcing these metals will not be an issue. □



SHUTTERSTOCK/SCHARSINN

# THE CHANGING WORLD OF ENERGY FINANCE

As any reader of this magazine understands, the oil and gas business is very cyclical. Having dedicated much of our professional careers to serving this industry, we have assisted clients in adapting to this ever-changing environment through multiple commodity price swings.

Over the years, industry participants, lenders, and their advisors have creatively crafted a number of debt capital alternatives for exploration and production (E&P) companies supported by the anticipated cash flow streams derived from hydrocarbon producing interests. Reserve-based lending arrangements (RBLs) have been the most traditional form of debt financing for E&P companies, particularly for those unable to tap the public debt markets.

However, due to the recent commodity price crash and issues surrounding the global pandemic, we are once again seeing companies turn to these alternative financing arrangements, such as production payments, direct lending and mezzanine structures, and the securitization of working interests.

Today, lenders have become more sophisticated in assessing the risk of lending into this industry. The last couple of years have been notably trying for oil and gas, and, as a result, a number of commercial banks have now exited the market. Whether they will return at some point remains to be seen. Many expected non-traditional lenders to replace those commercial banks that exited, and some have. But many of the commercial



**Shad E. Sumrow, Partner,  
Baker Botts, Dallas**

banks stayed the course, and some even sought to increase their market position through new loan growth and loan portfolio acquisitions.

Nobody knows exactly what the future holds for the energy markets, but regardless of whether energy capital sources continue to be furnished by



**Richard Sitton, Senior Counsel,  
Baker Botts, Houston**

Having dedicated much of our professional careers to serving this industry, we have assisted clients in adapting to this ever-changing environment through multiple commodity price swings.

commercial banks or non-traditional lenders, we at Baker Botts are equipped with the skills and expertise needed to address your most complex legal needs.

Baker Botts attorneys have experience in every aspect of energy finance and stand ready to help our clients face the challenges of addressing the ever-changing world of energy finance. □

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# RILEY PERMIAN'S GO-PUBLIC PLAY

The Northwest Shelf operator attained an IPO through a rare reverse merger without much fanfare.

ARTICLE BY  
BRIAN WALZEL



***“As we grew the company, we attempted the IPO route a couple of times over that period, and just a traditional IPO never really was available or materialized for the company just because the markets weren’t there,” said Kevin Riley, president, Riley Permian.***

In an era where few privates are finding exits for IPOs, one Permian Basin operator bucked the trends and entered the public markets through an approach rarely seen in the industry. In February, Riley Permian completed a reverse merger with Tengasco Inc. in an all-stock transaction that provided the Oklahoma City-based Riley Permian the IPO it had sought for years and without much fanfare.

In March, the new company began trading on the New York Stock Exchange under the symbol, “REPX.”

“Starting in January 2020, we got introduced to Tengasco as a reverse merger candidate,” said Riley Permian president Kevin Riley. “We’d seen other reverse merger candidates along the way, but everyone seemed to have a little bit of hair on them, or we couldn’t get evaluations done right, or they had assets which clouded the picture. So, we were never really able to move very far along with other opportunities. But once we saw Tengasco—a pretty clean company with a very small asset base in Kansas—we thought it probably made sense.”

Once the merger was complete, Riley Permian offloaded the Kansas assets and established its board. Its members now consist of chairman and CEO Bobby Riley, independent director Bryan Lawrence, director and CFO Michael Rugen, independent director Brent Arriaga and independent director E. Wayne Nordberg.

ROTH Capital Partners served as financial advisor for Tengasco, while Truist Securities represented Riley Permian. di Santo Law and Thompson & Knight served as legal counsel on the deal.

Under the terms of the merger agreement, Tengasco issued about 203 million shares of Tengasco common stock to Riley members at the closing of the transaction. At closing, Tengasco conducted a 1-for-12 reverse stock split, resulting in a reduction of outstanding shares of the combined company to about 18.7 million shares of common stock.

Riley Permian announced in its fiscal second-quarter financial report (ending March 31, 2021) that it had raised its dividend, which it has been paying—as a private company—for 10 consecutive quarters, to \$0.28 per share.

## **Making a move**

The go-public move for Riley Permian was the culmination of two years of start-and-stop IPO flirtations.

“Riley was formed with the intent of eventually becoming a public company, and that was back in 2017,” Kevin Riley said. “And as we grew the company, we attempted the IPO route a couple of times over that period, and just a traditional IPO never really was available or materialized for the company just because the markets weren’t there.”

In 2018, Riley Permian, whose equity sponsors included Yorktown Partners, Bluescape Energy Partners and Boomer Petroleum, launched a \$115 million IPO with more than 6.6 million shares of common stock, but ultimately pulled that back because of unfavorable market conditions. “Riley attempted to do an initial public offering in a traditional way in 2018, but the market turned on them,” said Alex Montano, managing director, investment banking at ROTH Capital Partners and advisor to Tengasco on the deal. “After that, we were engaged to do a modified IPO for them in late spring of 2019. We went out, we tested the waters, we had feedback. The decision was made for Riley to commence paying a quarterly dividend.”

ROTH believed that strategy would transform the story a bit, but eventually deferred on the IPO.

“But what we knew from that experience was that Riley was ready to go public,” Montano said. “We knew that Riley was a good public company candidate. On the flip side, we’ve been developing a relationship with Tengasco over a number of years.”

Montano said that Tengasco was a “very tiny” E&P company, but “very clean” with no concerning liabilities.

“They were basically not bleeding money,” he said. “So it was a good public platform. We knew that the [Tengasco] board had looked at a number of deals over the years. None of them really checked all the boxes. So we were engaged by [Tengasco] in late 2019 to do a formal strategic review process.”

That process kicked off for Tengasco in

early 2020, and one of their first calls was to Riley Permian.

“We knew that they wanted to be public, and they were ready to be public,” Montano said. “I think it took a bit of convincing from Yorktown and Bluescape, the public equity backers, that this was a viable way for them to accomplish their going-public goals.”

The parties reached a preliminary agreement in early 2020 and then COVID-19 hit. At that point, everything went on hold. According to Securities and Exchange Commission filings, negotiations between the two paused between March and June. The motivations for Tengasco to pursue the merger meant additional capital, additional exploration opportunities and benefits to the company’s stockholders, among several other issues.

For Riley Permian, in addition to the IPO Tengasco offered, there existed the opportunity to take on very few assets.

“[Tengasco] was relatively clean,” said Philip Riley, executive vice president of strategy and of no familial relationship to other Riley executives. “It was a clean entity without a lot of legacy liabilities, a clean balance sheet and a small set of assets in Kansas, which we subsequently divested in April. Not a large number of employees to integrate, not a lot of corporate leases and headquarters. It allowed for a cleaner merger that wasn’t as costly.”

Riley Permian was initially formed as a wholly owned subsidiary of Riley Exploration Group (REG) in June 2016, which was backed by Yorktown Partners. During 2017, a series of transactions were consummated in which working interests in oil and gas properties and related real property assets in Yoakum County, Texas, were contributed by several parties in exchange for corporate ownership in the newly formed Riley Permian.

Initially, REG and Boomer Petroleum, a family office group in Calgary, contributed their assets in January 2017. Then, in March 2017, Bluescape and DR/CM contributed the remaining working interests on the same set of assets. The 2017 transactions—essentially a merger itself—brought together these disparate interests, which had been governed under standard joint operating agreements among unaffiliated parties, to a cohesive corporate organization, which allowed for more efficient development of the field.

“Simultaneous with the March 2017 merger, the three primary owners—Yorktown, Bluescape and Boomer—invested \$40 million of preferred equity to fund the initial development of this asset.” Philip Riley said. “In September 2017, we did a little follow-on of \$10 million with the same group.” At the time, Philip Riley was a managing director for Bluescape and led the investment in Riley Permian, serving as a director of the company until joining as an executive in March of 2021.

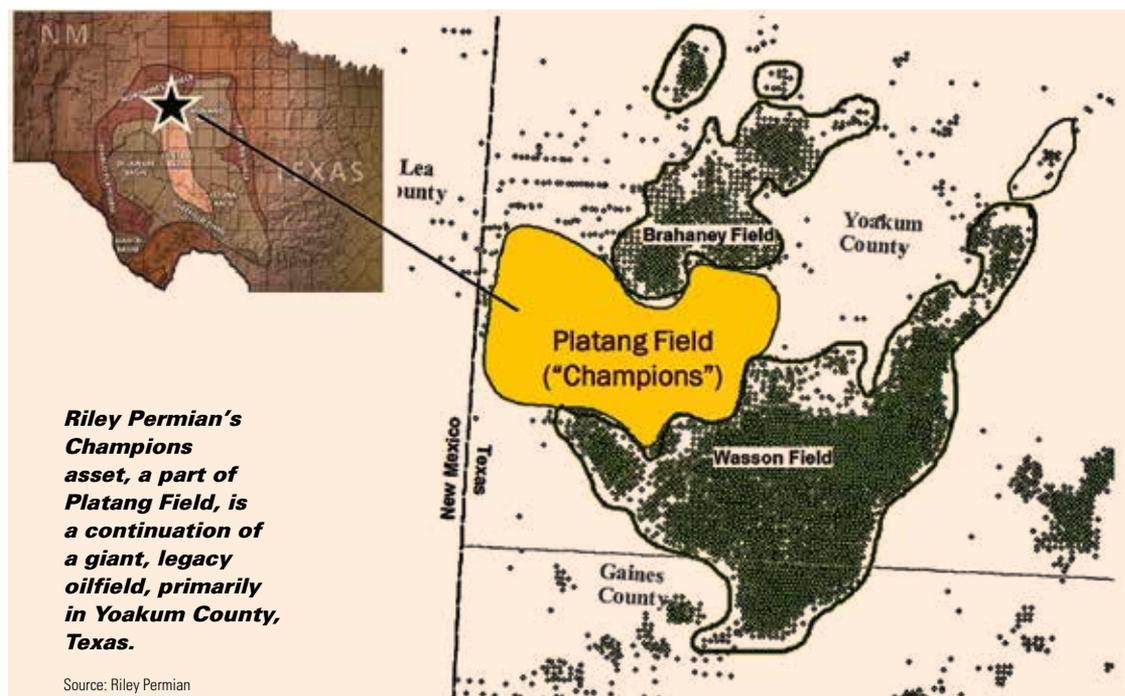
He said the new company saw the potential for capital discipline and to combine that with a dividend as the new model that just recently came into favor in the industry.

“One of the original objectives was to form a company that could find and develop reserves for less than \$10 a barrel,” Philip Riley said. “Fortunately, we met and improved upon that objective. The capital discipline that’s now prevalent in the industry was becoming our standard almost two years ago. As is customary with most startups, we invested more than our cash flow during the first few years to build a production base. But then starting in late 2019, we began investing less than our cash flow, as many companies did during the pandemic, but we were still able to grow meaningfully, unlike most companies.”



**“Riley attempted to do an initial public offering in a traditional way in 2018, but the market turned on them,” said Alex Montano, a managing director at ROTH Capital Partners.**

### Riley Permian’s Champions Asset





***“Having grown up in the service sector in the drilling business, this business goes through very extreme cycles, and the service sector especially when the drilling rig is laid down,” said Bobby Riley, CEO, Riley Permian.***

### **Third-generation oilman**

Having served as CEO at REG, Bobby Riley was appointed CEO of the new company, as well as chairman of its board of directors and president, in June 2016. Over the course of nearly four decades, he has worked in the oil and gas industry in North America, South America, Europe, Africa and Asia.

Bobby Riley began his career in oil and gas on the service side of the business with Cameron Iron Works in Houston in 1974. Starting in 1991, he served as president of a service company that specialized in well design and reservoir data acquisition. The technologies were deployed in Nigeria, Venezuela and Norway. He founded his first independent E&P, Durango Energy, in 1984. That company operated as many as 150 wells in Oklahoma.

“I was third generation,” Bobby Riley said. “My father was in the drilling business, my grandfather was in the drilling business. And I’m the first one that stepped aside from the service sector and moved into E&P, and I have been doing that for the last 20 years.”

He said he learned early on the ups and downs of the oil and gas business and how to sustain through the times.

“Having grown up in the service sector in the drilling business, this business goes through very extreme cycles, and the service sector especially when the drilling rig is laid down,” Bobby Riley said. “You’re relying upon the

rig running and having a customer to work for. And when oil prices are good, the rigs are busy, everybody’s happy, but when oil price takes a dip and everybody lays the rigs down, it’s a layoff.

“But one thing I figured out being on the E&P side is that once you establish production, even though the price of the product may be depressed, you still have a source of revenue coming in, and you can survive to fight another day. I was looking for slower growth and being able to live through the cycles—that was the main reason I went from the service side to the E&P side,” he said.

### **Permian footprint**

Riley Permian’s core assets focus on developing conventional non-shale assets on 65,000 net acres in the Northwest Shelf, with horizontal development in the San Andres. According to its second-quarter 2021 financial report, the company believes the San Andres’ moderate depth leads to lower drilling costs compared with much of the Permian Basin, including the Wolfcamp.

“We don’t consider ourselves to be just any other horizontal San Andres play, which saw a flurry of private equity activity in 2015 with a lot of failures,” Philip Riley said. “We see our asset as an extension of a giant field. We’re sandwiched between the Wasson and Brahaney fields. We’ve got relatively similar subsurface



***Producing in the Northwest Shelf’s San Andres play, Riley Permian has gone public through a reverse merger with Tensasco Inc.***

properties as those [fields] with permeability, porosity and oil saturation.”

Second-quarter production for the year averaged about 6,000 bbl/d, with full-year oil production guidance estimated to average 6,300 bbl/d to 6,500 bbl/d. Capex guidance for 2021 was estimated to range from \$54 million to \$56 million.

Among the allocations for that capital was a seven-well drilling and completion program and investment of \$9.1 million in drilling and completion capex, which resulted in drilling five gross wells and the completion of two gross wells.

Riley Permian’s decline profiles compare favorably to vintage wells in the Permian Basin with initial production beginning in 2018. According to Riley Permian’s second-quarter financial report, the company’s 2018 vintage wells were producing at about 50% of their peak month production after 30 months, three times the rate of other Permian Basin shale wells, which after 30 months were producing at less than 20% of their peak month production.

“That’s through primary production,” Philip Riley said. “The reservoirs have excellent natural permeability and porosity. It allows large volumes of fluids to move through the rock to the borehole. They allow for a lighter frac, which is both lower in cost and easier on the environment.”

The company estimates its drilling and completion costs are roughly half the cost of a typical Permian shale well.

Riley Permian management is forecasting the company can grow production by about 20% year-over-year and spend about 65% of its EBITDAX allocation on reinvestment for production growth, Philip Riley said.

“We’re really just trying to reinvest two-thirds of our EBITDA and yet still grow meaningfully compared to others,” he said. “I recognize other large caps face pushback from investors for tempered growth or no growth. We’re small enough where we can still benefit from increased scale. We’re not pushing the needle on the global macro supply picture.”

For the remainder of its EBITDAX allocation, Riley Permian will put about 20% of its capital allocation toward paying its dividend, and up to 15% to interest and debt reduction and working capital.

### **EOR program**

Following the merger with Tengasco, Riley Permian commenced operations on a new EOR program in Yoakum County. The company is forecasting ultimate recovery of up to three times primary recovery methods.

“We find ourselves in a very interesting geography and geology,” Philip Riley said. “We’re in a region of the country with the most concentrated area of CO<sub>2</sub> pipeline infrastructure directly adjacent to our asset. We’re directly adjacent to several of the largest EOR projects in America.”

The company has collected extensive cores, logs and 3-D seismic data over Champions Field, which is located between the Brahaney

“We knew that they wanted to be public, and they were ready to be public.”

—Alex Montano,  
ROTH Capital Partners

and Wasson fields in Yoakum County, to evaluate resource potential. According to Riley Permian, its assets there feature similar reservoir rock characteristics to Wasson Field, where several of the largest and most successful EOR projects in North America have been established.

In addition, Riley Permian is benefitting from substantial existing infrastructure in the region, including a CO<sub>2</sub> pipeline hub at Denver City and Kinder Morgan’s Cortez CO<sub>2</sub> pipeline running directly through the company’s property. The company is aiming to ultimately utilize anthropogenic sources for CO<sub>2</sub>, or ACO<sub>2</sub>, which helps Riley Permian achieve both its production goals and its CO<sub>2</sub>-reduction efforts.

Beginning in May 2018, the company kicked off an EOR pilot project on a 980-acre project area that will utilize vertical injection wells in combination with horizontal producers. Three horizontal wells have been drilled and are producing—one in May 2018 and the second in May 2019—with combined cumulative production of 869,000 bbl as of May 2021. Two new horizontal wells were drilled in April and May and will be completed later this summer. Water injection is scheduled to begin during 2022 and a combination of water and CO<sub>2</sub> injection is estimated to begin after the reservoir is sufficiently repressurized.

Kevin Riley said the company’s full-scale EOR project will commence this fall. In late June, Riley Permian announced a \$50 million follow-on offering of 1.6 million shares priced at \$30 per share, which generated \$47 million of net proceeds.

“A large portion of that raised was earmarked for our EOR project,” he said. “We’re already moving quickly on the execution, beginning soon with drilling 12 injection wells, as well as starting the process to get CO<sub>2</sub> supply. The other half of it is for additional working capital for other opportunities.”

Philip Riley explained that the project is being applied to undeveloped fields with the intent to accelerate the life cycle of the field.

“On the economics, we’ve run various different scenarios, and we acknowledge that it can be capital-intensive,” he said. “We’re trying to find the right balance of measured pace and combining it with our primary production. We’re not switching the entire company to this. We’re starting off with a pilot, and I can imagine doing a mix of the two. From the beginning we’ve always envisioned [EOR] as the next phase in the evolution of this asset.” □



**“One of the original objectives was to form a company that could find and develop reserves for less than \$10 a barrel,” said Philip Riley, executive vice president of strategy, Riley Permian.**

# US E&P ACQUISITIONS & DIVESTITURES

Deals closed from Jan. 1-June 30, 2021. All deals, updated in real time, are now available at [HartEnergy.com/ad-transactions](http://HartEnergy.com/ad-transactions).

Deal No.	Estimated Value (\$MM)	Buyer/Surviving Entity	Seller/Acquired or Merged Entity	Month Deal Closed	Comments
1	13,300	ConocoPhillips Co.	Concho Resources Inc.	1	Acquired Permian pure-play Concho Resources in an all-stock deal that swaps 1.46 shares of ConocoPhillips for each Concho share; includes a roughly 800,000 gross (550,000 net) acre position in both the Delaware and Midland sub-basins.
2	7,600	Pioneer Natural Resources Co.	Parsley Energy Inc.	1	Acquired Permian pure-play Parsley Energy in an all-stock deal with a fixed exchange ratio of 0.1252 shares of Pioneer common stock for each share of Parsley stock owned and the assumption of \$3.1B of debt; includes 248,000 net leasehold acres in the Midland and Delaware sub-basins.
3	6,400	Pioneer Natural Resources Co.	DoublePoint Energy LLC; Double Eagle Energy Holdings LLC; FourPoint Energy LLC	5	Acquired the leasehold interests and related assets of DoublePoint Energy covering roughly 97,000 net acres in the Midland Basin in a cash and stock transaction that includes the assumption of \$900MM of debt and liabilities.
4	5,750	Devon Energy Corp.	WPX Energy Inc.; EnCap Investments LP	1	Acquired in an all-stock combination transaction creating a multibasin company with positions across the Permian/Delaware Basin, Eagle Ford, Anadarko Basin/STACK, Powder River Basin and Williston Basin/Bakken Shale, including 400,000 net acres in the Delaware Basin accounting for nearly 60% of its total oil production; includes assumption of \$3.2 billion net debt.
5	900	Grayson Mill Energy LLC; EnCap Investments LP	Equinor ASA	4	Acquired Equinor's interests in the Bakken field; includes operated and nonoperated acreage, totaling 242,000 net acres, and associated midstream assets in North Dakota and Montana with production of 48,000 boe/ (net of royalty interests) for 4Q 2020.
6	880	Validus Energy	Ovintiv Inc.	5	Bought Ovintiv's Eagle Ford Shale asset in S TX; FY 2021 volumes projected to average roughly 21,000 boe/d, including 14,000 bbl/d of crude and condensate.
7	862	Diamondback Energy Inc.	Guidon Energy; The Blackstone Group Inc.	2	Purchased Guidon Operating, a Midland Basin operator backed by Blackstone, in exchange for about 10.4 million FANG stock and \$375MM cash; includes 32,500 net acres in the Northern Midland Basin with 3Q 2020 average production of 17,900 boe/d.
8	481	Percussion Petroleum LLC; Undisclosed	Oasis Petroleum Inc.	6	Bought, in three separate transactions, Oasis' Permian position consists of approximately 24,000 net acres in the core of the Delaware Basin in W TX producing about 7,200 boe/d; Percussion Petroleum was buyer of primary transaction valued at \$375MM that includes contingent payments tied to future oil prices.
9	465	Enerplus Corp.	Bruin E&P Partners LLC; ArLight Capital Partners LLC	3	Acquired all of the shares of Bruin E&P HoldCo, which holds 151,000 net acres in the Williston Basin, all located within ND, with current production of about 24,000 boe/d, 84.1 MMboe of proved plus probable reserves and an inventory of 149 gross (111 net) drilling locations.
10	420	Surge Energy US Holdings Co.	Grenadier Energy Partners LLC; EnCap Investments LP; Kayne Anderson Capital Advisors LP	3	Bought Midland Basin leasehold interest and producing wells in Howard County, TX, in the Permian covering approximately 18,010 net acres, an operated inventory of approximately 120 future drilling locations and average production of about 9,000 boe/d (75% oil).
11	312	Enerplus Corp.	Hess Corp.	4	Acquired 78,700 net acres in Dunn County, ND, in the Bakken consisting of largely undeveloped, 100% HBP acreage, about 6,000 boe/d (76% oil, 10% NGL & 14% natural gas) of production and total 230 net undrilled inventory; includes 62.7 MMboe of proved plus probable reserves.
12	250	Northern Oil and Gas Inc.	Reliance Industries Ltd.	4	Acquired a 27% blended WI and 64,000 net acres in the Marcellus Shale of the Appalachian Basin in SW PA; assets were producing approximately 120 MMcfe/d of natural gas at the effective date of July 1, 2020 net to Northern.

Deals shown are those closed during first-half 2021, involving U.S.-based assets or companies only, and having values of approx. \$20MM or more. Deals are ranked in descending estimated dollar value, when available, and then alphabetically when no value was made public or when the deal was significant but valued at less than \$20MM. Deals shown as pending may have since closed. The next E&P A&D list, covering July 1-Dec. 31, 2021, will appear in the March 2022 issue. Details on all dealmaking, updated in real time, are available at [HartEnergy.com/ad-transactions](http://HartEnergy.com/ad-transactions).

Deal No.	Estimated Value (\$MM)	Buyer/Surviving Entity	Seller/Acquired or Merged Entity	Month Deal Closed	Comments
13	215	Continental Resources Inc.	Samson Resources II LLC	3	Bought Powder River Basin assets in WY consisting of about 130,000 net acres and 9,000 boe/d (80% oil) of current net production.
14	215	W&T Offshore Inc.	Munich Re Reserve Risk Financing Inc.	5	Transferred 100% of its Mobile Bay area assets and related gas treatment facilities located offshore Alabama in the eastern U.S. Gulf of Mexico to special purpose vehicles wholly owned by W&T in exchange for a first-lien non-recourse term loan.
15	185.9	Earthstone Energy Inc.	Independence Resources Management LLC; Warburg Pincus LLC	1	Bought the Midland Basin operator with 43,400 net acres in two contiguous blocks and average production of 8,780 boe/d (66% oil); includes 4,900 core net acres in Midland and Ector counties, TX, and 70 undeveloped horizontal locations targeting the Middle Spraberry, Lower Spraberry and Wolfcamp A zones.
16	135	Diversified Energy Co. Plc	Indigo Minerals LLC	5	Acquired certain Cotton Valley upstream assets primarily in LA consisting of 780 net operated wells and related facilities; includes production of about 16,000 boe/d or 95 MMcfe/d within the Cotton Valley and Haynesville producing area of NW LA and E TX.
17	58	Contango Oil & Gas Co.	Undisclosed	2	Bought assets in the Big Horn, Permian and Powder River Basins via a bank owned liquidation of assets.
18	58	Freehold Royalties Ltd.	Undisclosed	1	Purchased a U.S. multibasin royalty package comprising 400,000 gross acres of mineral title and ORRI across 12 basins in eight states predominantly weighted toward areas of the Permian Basin and Eagle Ford Shale; production of 1,150 boe/d (62% liquids) is forecast for 2021.
19	48	Earthstone Energy Inc.	Undisclosed; Titanium Exploration Partners LLC; EnCap Investments LP	6	Acquired working interests in Eagle Ford assets the company operates located in southern Gonzales County, TX, from four separate sellers including two affiliates of Titanium, an EnCap-backed company.
20	47	Gondola Resources LLC	SandRidge Energy Inc.	2	Bought SandRidge's North Park Basin asset comprised of 93,000 net acres targeting multiple Niobrara benches in Jackson County, CO.
21	40	Undisclosed	Callon Petroleum Co.	5	Purchased in multiple purchase and sale agreements natural gas-producing properties in the western Delaware Basin of the Permian, plus a small undeveloped acreage position; current production is approximately 3,400 boe/d (25% oil).
22	38	Penn Virginia Corp.	Rocky Creek Resources LLC; Juniper Capital Advisors LP	1	Acquired Juniper portfolio company, Rocky Creek Resources, with about 4,100 net acres in the Eagle Ford Shale in S TX in Lavaca and DeWitt counties as part of a strategic investment by Juniper valued at about \$188.4MM.
23	20	Denbury Inc.	Devon Energy Corp.	3	Bought a nearly 100% working interest (approximately 83% net revenue interest) in the Big Sand Draw and Beaver Creek oil fields located in Fremont County, WY, with net production of about 2,800 boe/d (85% oil); includes two cash payments of \$4 million each contingent on the price of WTI.
24		89 Energy Holdings LLC; Kayne Anderson Capital Advisors LP	Casillas Petroleum Resource Partners LLC; Acacia Exploration Partners LLC; Native Oil & Gas LLC	5	Acquired in an all-equity consolidation of three Kayne Anderson portfolio teams with assets across Oklahoma in the Anadarko Basin of the Midcontinent region including in the STACK shale play.
25		Colgate Energy Partners III LLC	Luxe Energy LLC	6	Bought a majority of the assets owned by Luxe Energy in an all-stock transaction; includes roughly 22,000 net acres in the Permian Basin in Reeves and Ward counties, TX, with net daily production of about 17,000 boe/d.
26		Contango Oil & Gas Co.	Mid-Con Energy Partners LP	1	Bought Tulsa, OK-based Mid-Con Energy in an all-stock merger; includes conventional assets in OK and WY.
27		Dorchester Minerals LP	Undisclosed	6	Bought ORRI in the Bakken Trend totaling approximately 6,400 net royalty acres under 63,000 gross acres located in Dunn, McKenzie, McLean and Mountrail counties, ND, in exchange for 725,000 common LP units.
28		EnVen Energy Ventures LLC	BHP Group Plc	5	Purchased BHP's 35% ownership interest and acquired operatorship of Neptune Field in the U.S. GoM; boosts EnVen's interest in Neptune to 65%.
29		Inpex Corp.	Exxon Mobil Corp.	2	Acquired a portion (2.3546%) of the participating interest (23.29512%) in Lucius and Hadrian North fields, both located offshore LA in Keathley Canyon Block of the U.S. GoM.

Deal No.	Estimated Value (\$MM)	Buyer/Surviving Entity	Seller/Acquired or Merged Entity	Month Deal Closed	Comments
30		IOG Capital LP	Sequel Energy Group LLC	3	Purchased certain producing OH Utica properties consisting of nonop working interests in 77 producing horizontal wells operated by Southwestern Energy and Ascent Resources with net production of approximately 75 MMcfe/d (85% gas).
31		LOLA Energy LLC; LOLA Energy III LLC	Undisclosed	3	Acquired 100% of equity membership interests of an E&P company with operations in Butler County, PA, rebranded as LOLA Energy PetroCo LLC; roughly 22,000 net mineral acres of oil and gas leases in the NGL-rich window of the Marcellus and Burkett shales within the Appalachian Basin.
32		Peregrine Energy Partners	Undisclosed	6	Acquired oil and gas royalties across CO, PA, TX and WV through seven separate transactions in 1H 2021.
33		Riley Exploration Permian Inc.; Tensasco Inc.	Riley Exploration - Permian LLC	2	Acquired through an all-stock merger with PE-backed Riley Exploration - Permian; includes acreage position in the Northwest Shelf in the Permian Basin of 44,880 net acres and average daily production of 7,073 net boe/d (81% oil, 10% natural gas, 9% NGL).
34		Stateline Operating LLC; Vortus Investment Advisors LLC	Flat Creek Resources LLC	4	Formed JV named Stateline Operating to initially focus on the development oil-rich assets in the Delaware Basin in Eddy County, NM.
35		U.S. Energy Development Corp.	Undisclosed	2	Acquired interests in the Shetland and WarWink oil development projects in the Delaware Basin of the Permian in Eddy County, NM, and Winkler County, TX.
36		Vencer Energy LLC; Vitol Group	Hunt Oil Co.	6	Acquired Hunt Oil's Midland Basin position comprising 44,000 acres across five counties in W TX and current daily production of approximately 40,000 boe/d.

#### PENDING DEALS (AS OF JULY 1, 2021)

37	7,400	Cabot Oil & Gas Corp.	Cimarex Energy Co.		To acquire Denver-based Cimarex in an all-stock combination to add approximately 560,000 net acres in the Permian and Anadarko basins to Cabot's approximately 173,000 net acres in the Marcellus Shale.
38	2,925	EQT Corp.	Alta Resources Development LLC		To acquire all of the membership interests in Alta's upstream and midstream subsidiaries in the core of the NE Marcellus Shale of the Appalachian Basin; includes 300,000 net acres (98% HBP) in PA and net production of 1 Bcfe/d (100% dry gas).
39	2,700	Southwestern Energy Co.	Indigo Natural Resources LLC		To acquire privately held Indigo Natural Resources, adding a 149,000 net-acre position in the Haynesville Shale in LA with 1.1 Bcf/d of net production and proved reserves as of year-end 2020 of 3.1 Tcf.
40	745	Oasis Petroleum Inc.	Diamondback Energy Inc.		To acquire Diamondback's Williston Basin asset in the Bakken Shale comprising approximately 95,000 net acres with estimated net production of 25,000 boe/d for full-year 2021.
41	715	Laredo Petroleum Inc.	Sabalo Energy LLC; EnCap Investments LP; Undisclosed		Purchased the assets of Sabalo Energy and a nonoperating partner including roughly 21,000 contiguous net acres directly offsetting Laredo's existing Howard County, TX, leasehold in the Midland Basin of the Permian; current production is about 14,500 boe/d (83% oil, three stream) and PDP reserves are approximately 30 MMboe (73% oil, three stream). <i>This deal closed in July.</i>
42	508	Colgate Energy Partners III LLC	Occidental Petroleum Corp.		To acquire roughly 25,000 net acres in the Permian in Reeves and Ward counties, TX, within the southern Delaware Basin with current production of approximately 10,000 boe/d from about 360 active wells. <i>This deal closed in July.</i>
43	405	Undisclosed; Sixth Street Partners LLC	Laredo Petroleum Inc.		Bought operated PDP reserves in gas-weighted legacy assets in Reagan and Glasscock counties, TX, in the Permian Basin; comprises 37.5% of Laredo's WI in the assets, wellbore WI only, and does not include undeveloped locations. <i>This deal closed in July.</i>
44	180	Diversified Energy Co. Plc	Blackbeard Operating LLC		Purchased 123,000 net acres, 16,000 boe/d and 840 net wells in the Barnett Shale. <i>This deal closed in July.</i>
45	126.5	Earthstone Energy Inc.	Tracker Resource Development LLC; Sequel Energy Group LLC; EnCap Investments LP		Acquired privately held operated assets located in the Midland Basin comprising about 20,300 net acres (100% HBP, 100% operated) in Irion County, TX, 7,800 boe/d (21% oil/59% liquids) current net production from 71 wells (30 horizontal/41 vertical), an inventory of 49 Earthstone-identified horizontal Wolfcamp locations and a \$153MM, PDP PV-10 with reserves of approximately 19.8 MMboe. <i>This deal closed in July.</i>

Deal No.	Estimated Value (\$MM)	Buyer/Surviving Entity	Seller/Acquired or Merged Entity	Month Deal Closed	Comments
46	102.2	Northern Oil and Gas Inc.	Undisclosed		To buy nonoperated interests across approximately 2,900 net acres located in the core of the Delaware Basin in Reeves County, TX, and Lea and Eddy counties, NM.
47	87	Undisclosed	Diamondback Energy Inc.		To buy, in separate transactions, Diamondback noncore Permian assets approximately 7,000 net acres of southern Midland Basin acreage in Upton County, TX, and 1,300 net acres of nonoperated Delaware Basin assets in Lea County, NM.
48		BCE-Mach III LLC; Mach Resources LLC; Bayou City Energy Management LLC	Cimarex Energy Co.		To buy producing properties within the Midcontinent region in western and southern OK and the TX Panhandle; includes two gas gathering and processing assets located in southern OK.
49		Bonanza Creek Energy Inc.	Extraction Oil & Gas Inc.		To combine in an all-stock merger, forming Civitas Resources, with approximately 425,000 net acres in CO's Denver-Julesburg (D-J) Basin, a production base of 117,000 boe/d and aggregate enterprise value of \$2.6B.
50		Civitas Resources Inc.; Bonanza Creek Energy Inc.	Crestone Peak Resources LLC; Canada Pension Plan Investment		To acquire privately held Crestone Peak in an all-stock transaction; pro forma company will operate across more than half a million net acres in the D-J Basin with estimated production base of approximately 160,000 boe/d and year-end 2020 proved reserves of more than 530 MMboe.
51		Independence Energy LLC; KKR & Co. Inc.	Contango Oil & Gas Co.		To acquire Fort Worth, TX-based Contango in an all-stock combination to create platform targeting acquisitions of low-decline, producing upstream oil and natural gas assets with an enterprise value of about \$5.7B.

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OIL AND GAS INVESTOR 40TH ANNIVERSARY

# OBSERVATIONS FROM INDUSTRY THOUGHT LEADERS

**W**hen Oil and Gas Investor launched 40 years ago during the summer of 1981, it was the first industry publication to focus on the financial aspect of exploring for hydrocarbons versus the technical side. Ronald Reagan had just taken office as president and immediately deregulated crude oil prices, and prices spiked that year due to the Iran-Iraq War. But the free-market pricing launched a boom in production domestically, and investors wanted a piece of that action.

To celebrate those four decades of conversations we've had with myriad industry executives, we reached out to a number of them for their thoughts on the industry's past, present and future. We asked them to answer one or more of four questions: 1) Where were you 40 years ago or what was your first job in the oil and gas industry if less than 40 years? 2) What was the most impactful event in the industry

during your career or past 40 years? 3) What do you hope will happen in the oil and gas industry in the next 10 years? And, 4) If you could change the oil and gas industry in one way or invent something to improve it, what would it be?

Their responses follow. May we learn from our past and proactively shape our future.

## TRACY KROHN CEO & PRESIDENT, W&T OFFSHORE



**First job:** My first job in the oil and gas industry was actually 48 years ago when I was hired as a roustabout to work offshore in the Gulf of Mexico. That was like a boot camp for anyone getting into the energy business. That experience made me realize how that job was far bigger than me and that I needed to go to school to be an engineer, which I did at LSU and got my petroleum engineering degree in 1978.

**Most impactful event:** While there have been a number impactful events and technologies developed during that time span, I believe OPEC consistently has had the biggest impact on our industry.

**Hope will happen:** I hope that the public will realize that our industry is not killing the planet. In fact, our industry has had a major positive impact on increasing our world's population and extending and improving all our lives through products developed using hydrocarbons.

**What change like to see:** I think we must stop intentionally flaring natural gas and need to use it wisely and efficiently to replace thermal coal. While renewables will play a role in providing energy in the future, they are not sufficiently reliable at this point, and we will need hydrocarbons for many years to come.



**W&T Offshore CEO Tracy Krohn's first job in oil and gas was as an offshore roustabout, which inspired him to become a petroleum engineer.**

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## ALAN SMITH

PRESIDENT AND CEO, ROCKCLIFF ENERGY LLC



**First job:** Production engineer in Longview, Texas, for ARCO. My goal at that point was to learn the business from the ground floor upward, which led to operational roles (drilling and production), reservoir, planning and business development. That all took about 10 years to get “grounded.”

**Most impactful event:** Shale—and 3-D seismic before that. Both were game changers for our business.

**Hope will happen:** That the leaders and employees in our business would be proud of the prosperity that we have contributed to the world—more clean water, more food, great lifestyles of travel, clothing and adventure, and healthcare contributions. We have to stop apologizing for what we do and be proud that we do our work carefully, safely with the most minimal environmental footprints possible and make a real positive difference in the world.

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## DAN PICKERING

FOUNDER, CHIEF INVESTMENT OFFICER,  
PICKERING ENERGY PARTNERS



**First job:** My first job in the oil patch was a summer stint in 1985 as a Phillips 66 roustabout in Oklahoma. Newly minted engineering graduates were working in the field because office jobs were impossible to find. The work was hard, the weather was hot, the people were genuine and I was a mediocre

hand. I was useful only for scraping welds and mowing lawns around lease buildings, earning the nickname “Dangerous Dan The Missouri Mowing Man.”

**Most impactful event:** The shale boom turned the U.S. and global energy industry upside down. A business that had seen declining production for 30-plus years suddenly became a growth industry. U.S. rig activity exploded. Capital flooded into the oil patch. Billionaires were created. And the U.S. once again became the most important player in the global oil market. An amazing decade that came crashing down with equally spectacular fireworks. Macondo and Exxon Valdez incidents are close seconds in this category.

**Hope will happen:** I am hopeful the oil and gas industry will emerge from the malaise of investor disdain and cloud of climate change/decarbonization and be recognized as an industry that is delivering crucial commodities which make the world a better place. This will

require better, lower-carbon operating practices and adherence to a business model that delivers above average cash returns to investors. This will be neither quick nor easy, but it is possible!

**What you would invent:** Nature has invented no better way of storing energy than via hydrocarbons. So the most valuable invention in the history of the world would be a magic wand, gizmo or adapter that would strip “bad stuff” from oil and gas at the wellhead or even downhole. Never let it get above ground. Never let it be combusted. Never let it into the atmosphere. Just zap it beforehand and deliver that amazing energy density on a guilt-free basis.

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## BILL MARKO

MANAGING DIRECTOR, JEFFERIES



**First job:** My first job in the business in 1980 was a Gulf of Mexico facilities engineer for Mobil Oil. It was in the later innings of the mid '70s to early '80s shelf development boom in the Gulf of Mexico, a decade before the initial deepwater Gulf of Mexico. I, naively, actually thought I would work

for Mobil for 50 years and retire at 70 years old!

**Most impactful event:** For me it was the creation of the “food chain” in upstream oil and gas properties. Following the 1986 oil price crash, the major oil companies decided to sell properties that were not generating profits and therefore credited the A&D market, which led to the private capital market and many other aspects of today’s well-oiled food chain.

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## PATRICK NOYES

CEO, GRENADIER ENERGY III



**First job:** I’m 45 years in this industry. My first job was at Exxon in 1976. I’m a mechanical engineer by training but a petroleum engineer by experience and due to the excellent training they do at Exxon. Then I was with Mitchell Energy & Development for 20-some years and was vice president of drilling. So, I

was blessed to see the persistence of Mr. [George] Mitchell. It took us 17 years to evolve and prove the Barnett Shale.

**Most impactful event:** That’s very easy—the whole shale revolution has for sure changed our industry in a significantly positive way. I remember years ago reading a book predicting peak oil, and I believed it then. This made sense to me at the time. It’s unbelievable what technology has done.

**What change like to see:** I believe world-wide energy demand will continue to grow, and we can't meet all that with just renewables. Fossil fuels are going to be around; they are not going anywhere. What I'd highly desire is to see if our industry could find a way to produce a cleaner barrel of oil and a cleaner Mcf of gas. That is happening, but not as fast as I would like. We made significant strides at Grenadier II, and we got our flaring down to close to 1% of production and headed lower. We just need to do better from the standpoint of emissions.

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## RICK MUNCRIEF

PRESIDENT & CEO, DEVON ENERGY



**First job:** At 17 years of age, my parents signed a minor's release, and I worked as an employee on a casing and tubing inspection crew. After turning 18, I was able to get a job as a roughneck for Coffland Bros. Drilling Co. (now part of Nabors Drilling).

**Most impactful event:**

Being involved with horizontal drilling in its infancy and seeing how spectacularly it has evolved.

**Hope will happen:** That the general public will accept how crucial our industry is on several levels and realize what a gift the energy renaissance has been for our country and the world.

**What change like to see:** I would like to see us continue to advance real-time emissions monitoring so, as an industry, we can realize our short-term, medium-term and longer-term emission reduction targets.

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## MATT GALLAGHER

PRESIDENT, GREENLAKE ENERGY VENTURES



**First job:** I was born in 1982, so not quite conceived at the 40 year mark! I broke out in the late '90s painting tanks and working on a single rod pulling unit in the Illinois Basin. While my friends had A/C jobs at Best Buy, I was seeing if I could fry an egg on the tops of production tanks.

**Viewpoint then:** I saw an industry that was built off camaraderie and hard work in the fields, where many practical inventions were still being made more than 100 years into the industry and a potential to travel the world and work on massive projects.

**Most impactful event:** I believe the financial crisis of 2008 caused people to go horizontal in the Permian—and that changed shale as we know it.

**Hope will happen:** I believe the industry will get leaner, more efficient and cleaner.

**What change like to see:** I'd fight for us all to spend a meaningful amount on grassroots education of the impactfulness of our industry.

**Invention:** It would be a product to capture all tailpipe emissions of ICUs. A membrane or suitcase of sorts that can be properly disposed of in a solid state.

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## STEVE PRUETT

PRESIDENT & CEO, ELEVATION RESOURCES



**First job:** Forty years ago I was working as an off-shore roustabout for Sun Oil in the Gulf of Mexico. My oilfield work actually started in a welding shop in Odessa at age 16 followed by working as a compressor mechanic and truck driver at 17 serving the Permian Basin. What I learned from working in

the field is that I needed to earn an engineering degree to accomplish my life goals.

**Most impactful event:** Volatility of oil and gas prices has driven exits by major oil companies from U.S. basins, layoffs, office closures, followed by reentry into the unconventional plays at times. I started my professional career with ARCO where I worked as a petroleum engineer for five years—some of the best years of my adult life as the leadership was wonderful, and I loved being an engineer. I left to get an MBA because I was impatient and overly ambitious. I worked for Amoco post-MBA, who had great assets in the U.S. Both companies sadly sold out to BP after I departed for the private equity world. The majors' lack of consistent commitment to domestic upstream investment is hard to understand.

**Hope will happen:** I hope our domestic upstream industry becomes more environmentally responsible for the impact of our actions and for what our predecessors left behind that needs remediation. I don't mean that our industry is responsible for Scope 3 emissions (what consumers of petroleum emit), but we can reduce emissions, oil and saltwater spills and seismic impact from produced water disposal.

I hope the public comes to appreciate the importance of petroleum in their economic well-being and quality of life. The green energy transition will burden consumers with higher energy costs that will cascade through every purchase from transportation to food and materials, all of which have significant energy inputs. (I don't see Americans reducing their use of air conditioning or heating, curtailing their travel or reducing their online purchases.)

The green energy vision is going to require trillions of dollars of investment, innovation and patience on the part of the public (e.g., blackouts). Producing batteries needed for EVs will require a massive amount of materials including lithium, cobalt and copper. If I were young, I'd get into the mining of rare earth metals used in batteries. The green

energy promoters don't understand how much earth has to be moved (and destroyed) to produce the batteries and where the mining takes place today (e.g., Africa and China), and heavy equipment used in mining consumes massive amounts of diesel.

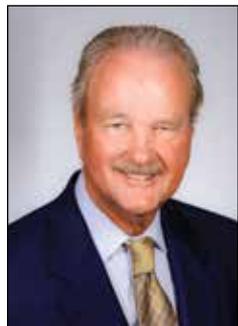
Further, we'll need trillions of investment in renewable power generation (and backup power) and the related transmission and distribution of electricity and charging stations that don't exist today.

**What change like to see:** Reduce emissions, reduce flaring and improve emissions monitoring, all of which our company is working on now in our operations. Improved environmental compliance and reporting is needed, which inevitably is going to be required. There are a lot of platitudes in public company sustainability reports, but I am not seeing much happen on the ground yet in scale other than wind and solar farms in the Permian Basin.

Reducing emissions is cheap compared to carbon capture and sequestration. Carbon capture is going to be a lot more expensive and less impactful due to the huge energy requirements to pressurize the CO<sub>2</sub> to inject it and store it underground. There is not enough subsurface storage capacity that is not already pressurized by existing waterflood or CO<sub>2</sub> enhanced oil recovery operations. Enabling Earth to absorb more carbon is much more cost effective than taking CO<sub>2</sub> out of the atmosphere. According to the Salk Institute, Earth emits 840 Gt/year of CO<sub>2</sub>, absorbs 860 Gt/year, while mankind emits 35 Gt/year, thus creating a 15 Gt/year excess. I have more confidence in investments to enable Earth to absorb 1.7% more CO<sub>2</sub> than getting our growing population to reduce emissions by 15 Gt/year or 43%. Salk and other research institutions are working on smarter ways to farm and engineer plants to make this happen.

## GEORGE YATES

CEO, HEYCO ENERGY GROUP



**40 years ago:** Forty years ago, I was working with my team at HEYCO to prove the Bone Springs Sand in the Delaware Basin could be commercial. We worked with some brilliant scientists with Sandia Labs (who later helped George Mitchell in the Barnett) to better understand the reservoir and drilled the first horizontal well in the 2nd Sand with their help. The horizontal was all of 300 ft and dashed our hope of finding vertical fractures. We developed the sand as a vertical play before multistage hydraulic fracturing. It has, of course, grown into one of the best horizontal plays in the best basin in the country.

**Most impactful event:** The most impactful event during my career was the development of technology to mine source rocks—the unconventional revolution. Through innovation, inde-

pendents truly changed the world. A companion event was the globalization of natural gas (LNG), which is continuing to open up markets that would otherwise never be reached.

**Hope will happen:** My hope for the next decade is that the industry and the product we provide will be accepted as an irreplaceable source of prosperity. Reasonably priced and dependable power will continue to help lift untold millions out of poverty. And the industry will continue to innovate and outcompete.

**What change like to see:** I have always been proud of the independent oil and gas industry, and I'm sure that pride will endure. If I could change the industry it would be to encourage more CEOs to speak out about the virtues of oil and gas and never apologize as if hydrocarbons were a necessary evil, as some do, rather than a gift that has lifted man (and especially women) from backbreaking toil into the bountiful opportunities in the modern age. And made our planet greener and cleaner in the process.

## REGINA MAYOR

GLOBAL HEAD OF ENERGY, KPMG



**First job:** I arrived in Houston almost 30 years ago, and my first oil and gas consulting client was Enron. I remember being in the lobby of the main building and looking at a magazine cover broadcasting "Peak Oil," fearing that the world would run out of oil! It's astounding to me that we now forecast "Peak Demand."

My second client was a refiner in Kentucky. After spending lots of time in my Nomex coveralls and steel-toed boots driving my rental car from control room to control room, I fell in love. I have been immersed in the industry and a strong advocate ever since!

**Most impactful event:** So many events showed me the vulnerability, but ultimate resilience, of the oil and gas industry. I watched as Enron failed—buying stock at \$12 per share because, surely, it can't get any lower than that! And then watching my friends at Arthur Andersen who were also affected. Then the tragic loss of life and devastation of the Deepwater Horizon and how the industry rallied together to shut down the well. The various boom and bust commodity price cycles, including this last one during the pandemic.

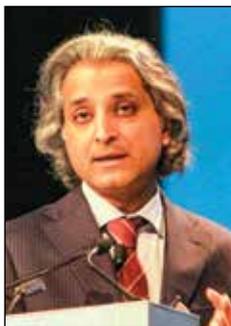
The industry is incredible—innovative, adaptive, collaborative, resilient. We have experienced highs and lows but, together, the industry makes the world a better place and improves the human condition.

**Hope will happen:** I hope the industry leans into the energy transition and shows the world how we can decarbonize the planet while

still providing reliable, affordable and clean energy. We are leading from the front. I am truly excited to be a part of history as the industry embraces change and solves the many technical challenges to drive an economic transition to lower carbon sources of fuel. I can't wait!

## SUBASH CHANDRA

MANAGING DIRECTOR, SENIOR RESEARCH ANALYST, NORTHLAND CAPITAL MARKETS



**First job:** First job in the industry was as an E&P analyst at AG Edwards in 1995. The GoM was hot then with the advent of 3-D seismic. Small-cap E&Ps were about to take off as the majors abandoned the Lower 48. Some things have changed, some are the same. I remember a company quoting an investor to always observe the No. 1 rule in E&P:

Never take on too much debt.

**Most impactful event:** Shale development was the most significant event, which upturned long-held views about U.S. energy dependence. We were inching toward shale with other unconventional resources such as coal-bed methane and basin-sourced gas. The appeal to the in-

vestor was immediately obvious. The language got a lot easier to understand and reward in the stock market. We didn't need terms like "three-way closure," "lowest known gas," "upthrown" or "downthrown" to describe the upside.

The second most significant is now when the world is moving rapidly toward carbon mitigation and decarbonization. The risk is to see this as a political development instead of a structural one. The oil and gas markets are not going away for a long time. To have the U.S. dominate the global supply of "responsibly sourced" hydrocarbons is something to look forward to.

**Hope will happen:** I hope the oil and gas industry plays a defining role in clean energy, whether it is through carbon capture, hydrogen, methane detection, carbon offsets or certification of oil and gas volumes to achieve the highest environmental standards globally. It is good to see industry leaders grasp the gravity of the situation, positioning the industry as a partner rather than an obstacle to the response to climate change.

**What change like to see:** I would fill the pore space with minerals critical to the green tech revolution so the U.S. can be as independent in nickel or cobalt as it is in oil and gas. Since that is as likely as getting my hair back, I would wish industry stays on the current path resolutely. Focus on cash returns to shareholders, reinvest a fraction of cash flows, reduce

# HAROLD HAMM'S PERSPECTIVE

Reflecting on more than 50 years in the oil and gas industry, Harold Hamm, chairman and founder, Continental Resources Inc., points to the use of horizontal drilling as a key point in the evolution of the industry.

But he also laments that way in which energy has become a lightning rod, both for politicians and environmentalists, despite the persistent realities of the need for fossil fuels that fuel the economy.

"We're in a weird time," Hamm said of climate change concerns, noting that pessimism has colored the thinking of too many people who automatically reject fossil fuels.

"Some people are really concerned, and perhaps overly concerned ... [instead of] approaching climate change in an intelligent manner. They approach it emotionally. They use words like 'never' and 'ever' to overcome what's going on, and that's not true."

Fossil fuel companies have also been robbed of their due as climate rescuers.

The decommissioning of coal burning power plants for natural gas remains a conveniently ignored fact among climate activists.

"We've changed and turned around America and cleaned our air up, and clean burning natural gas helped us do that."

The broader politicization of oil and gas, particularly by government regulators but now also by political figures, has put fossil fuel companies on top of mind. President Joe Biden's administration seems intent on eliminating the industry, he said.

"Of course that's the thing—it's all political. They, us, all as Texas

Republicans," Hamm said. "It's not quite what we are. We're here in Oklahoma City."

"I head up a group of domestic energy producers, and there's a lot of Democrats—well, they have been Democrats. I'm not sure they still are."

Hamm hopes that political leaders will find a different path and a more reasonable approach for supplying energy to the world.

Hamm's view of the future for fossil fuels is shaded by the years of naysayers who have written off oil and gas—particularly after the oil crisis of the 1970s.

Predictions of oil global production peaking at 98 million barrels of oil per day, once thought of as a certainty, have also been proven wrong, Hamm said.

He sees both peak demand and peak supply as fluid, with oil perhaps a dominant source of energy for a decade or more depending on what the market dictates.

But Hamm's view is broader and bolder.

"I think we'll see oil and natural gas used not only for decades but for the next hundred years as a primary source of energy in the world."



debt to virtually nothing, limit growth to single-digits and adopt net-zero standards. It is obviously working, but we see some evidence of second-guessing at the edges.

## PARKER REESE

PRESIDENT & CEO, AMEREDEV II LLC



**Hope will happen:** I would like to see the oil and gas industry expand its reputation for delivering high-tech solutions to critical real world problems at a global scale. This industry meets the energy needs of billions of people on a daily basis. Not just with digital ones and zeros but with billions of tons of

materials, millions of employees, precision engineered equipment and a lot of human creativity. Whatever the future looks like, if it is a happy future, it will mean that the energy industry succeeded in delivering on our mission.

## GREG ARMSTRONG

CO-FOUNDER, RETIRED CHAIRMAN & CEO, PLAINS ALL AMERICAN



**40 years ago:** In mid-1981, I was an auditor with Pricewaterhouse. I had just assisted Plains Resources with its initial public offering and was being recruited to join Plains as controller. At the time, Plains was very small with production of around 100 boe/d and just a handful of employees but had aspirations

of building a large exploration and production company.

My specific career plans were fluid, but directionally I thought I would be with Plains about 10 years learning all aspects of the business and then start my own company. As it turned out, I was unexpectedly promoted to CEO in 1992 at age 34 and essentially spent the rest of my career with Plains—co-founding the entity that became Plains All American Pipeline in the mid-1990s and then leading the separation of PAA from Plains Resources in 2001.

**Most impactful event:** Recognition that the general deregulation of U.S. oil and gas prices and related elements that began in the 1980s would significantly impact many aspects of production, transportation, storage and marketing activities. These developments represented both a challenge and a great opportunity.

**Hope will happen:** In a nutshell—thoughtful entity consolidation and asset rationalization and continued practice of financial discipline; while simultaneously embracing the reality that our industry must be leading environmental stewards. I have great conviction that oil and gas

will be an essential source of energy for many years to come, but industry participants need to be both financially sound and environmentally focused.

**What change like to see:** Better educate the public on the critical role the petroleum industry has played and will continue to play in their everyday quality of life. Petroleum products are essential elements of the vehicles they drive (whether electric or conventional), the clothes they wear, the tools, utensils, phones and computers they use and much, much more. A widespread appreciation of those aspects would make working together to better the world easier, cheaper and environmentally less impactful.

## LORENZO SIMONELLI

CHAIRMAN & CEO, BAKER HUGHES



**First job and viewpoint of future career:**

I started my career in corporate finance in the 1990s, and I spent many years working at GE across different sectors. Eventually, in 2013, I took on the role of running GE Oil & Gas as its CEO, which was subsequently merged with Baker Hughes which I

have been leading as chairman, president and CEO since 2017.

When I first started out in my career, I always wanted to challenge myself, and working in an industry like ours has given me plenty of opportunities to do just that. There have been some difficult times for the industry over the years—not least economic downturns, swings in the oil price and the COVID-19 pandemic. These challenges have taught me about how to adapt in business, how to confront tough situations head on and how to persevere despite disruption.

**Most impactful event:** Undoubtedly, the most impactful event in my career must be the energy transition. The oil and gas industry and the global energy sector must pursue a path to net-zero carbon emissions by mid-century. The energy transition is leading to seismic changes in the industry and rightfully so. At the same time, we also need to meet the world's energy demand, especially in regions where the dominant fuel source is coal or there is not yet infrastructure for reliable access.

Electricity access opens the potential for huge societal change, and we can and should enable this progress. This dual challenge of meeting the world's energy demand while achieving the goals of the Paris Agreement is an opportunity for the industry to step up and pioneer new technologies to deliver safer, cleaner and more efficient energy to the planet. For those reasons, I believe the energy transition is the most significant event I've seen in my career.

**Hope will happen:** We must see more innovation through collaboration. Collaboration

helps us bring out the best in each other and spurs development faster. At Baker Hughes, we believe that to meet the world's energy demand, we need continued advancements in technology. As an energy technology company, we want to use technology to solve for emissions reductions and decarbonization, rather than focusing on a particular fuel source.

Collaboration with customers and partners to advance technology can help to reduce the carbon footprint of oil and gas, while we can also collaborate to embrace new frontiers for energy like hydrogen, CCUS, geothermal and energy storage.

**What change like to see:** One of the exciting aspects about working in the industry is the way we continuously innovate for the future. There's not just one technology or solution that will advance the industry—there are countless opportunities. Certainly, the use of advanced analytics and AI will make the immense amount of data we have access to more useful and help enable energy to become more efficient, more productive and more environmentally focused.

I believe the promise of digital transformation will allow us to operate more sustainably and efficiently by enhancing our ability to anticipate, track, address and report our progress on our shared journey to net-zero carbon emissions. Our industry must move in that direction, making digital transformation a required part of the journey to net-zero, and we must implement change faster.

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## DOUG KRENEK

PRESIDENT & CEO, SABINE OIL & GAS



**40 years ago:** I was still in high school trying to figure out my career path. I was going to pursue a mechanical engineering degree and try to get a job with an automaker as a design engineer. Subsequently, there was drilling in the area we lived, and my dad who was a farmer/rancher took me to some of the locations. It looked like an exciting business and had top pay so I changed my mind to pursue a petroleum engineering degree, and that's why I am doing what I do today.

**Most impactful event:** I think the advent of horizontal drilling along with the application of massive fracs to make the shale plays work has impacted the industry the most over my career.

**Hope will happen:** My hope is that the industry's technologies will continue to improve to allow it to survive as a major part of the energy equation and that the technologies we have developed can be deployed in other energy applications such as geothermal, underground carbon storage and offshore wind.

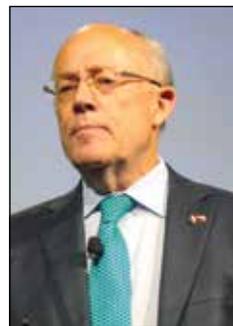
**What change like to see:** I think any technology that could mitigate the pollution

aspect of our business would be a big breakthrough for our industry. Our industry is out of favor because of the pollution associated with it. The pollution is primarily related to CO<sub>2</sub> and methane emissions so that would be the primary target of the technology.

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## MARK MILLS

SENIOR FELLOW, MANHATTAN INSTITUTE;  
STRATEGIC PARTNER, MONTROSE LANE



**40 years ago:** Very close to 40 years ago, as part of my job for the then trade association for the commercial nuclear industry, I spent the week of the accident at Three Mile Island. That was my introduction to the Great American Energy Debate (having just, legally, immigrated from Canada)

coming as it did on the heels of the second oil crisis that was triggered by the 1979 Iran-Revolution-driven, itself following that earlier, infamous 1973 Arab oil embargo.

I did not imagine back then that we'd be arguing about the same issues today, with many of the same people, and arguing about many of the same (goofy) claims about the future of energy in general and oil in particular. Go figure.

**Most impactful event:** It would be easy to say, and sadly it's probably appropriate to say, that it would be the global COVID-19 shutdowns. A few things in the 80 years since World War II have been so globally consequential in terms of highlighting the role of energy and oil and supply chains. The Great Lockdowns served as a kind of X-ray into both the physical realities of the world and the proclivities of so many politicians.

**Hope will happen:** That the industry's leaders, at least a plurality of them, will decide that it's finally time to engage in a full-throated defense of the enterprises that supply the world with hydrocarbons.

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## CHARIF SOUKI

CO-FOUNDER, EXECUTIVE CHAIRMAN,  
TELLURIAN



**40 years ago:** In 1981, I was living in Paris, eating good food and working as an independent investment banker. I started financing small energy companies in 1994 and founded Cheniere in 1996.

**Most impactful event:** As you might imagine, the shale revolution was the most impactful event for our industry. For me, it had very dramatic consequences. I had invested several years and millions of dollars building a U.S. based

LNG import facility. I was literally on-site at Sabine Pass celebrating its completion with government dignitaries when I got word that an industry report had come out noting that we could now economically access the vast natural gas reserves in the U.S. I watched as our share price crumbled and thought to myself—what now?

Fortunately, we were able to pivot, and we received the first regulatory permits to export LNG from the Lower 48. When I left Cheniere, we had an enterprise value of \$30 billion, with over 30 mtpa of liquefaction under construction and 9 mtpa more permitted, so it all worked out.

**What change like to see:** Energy was always pivotal for our country. In the last few years, it has become pivotal for the world as well, because of our vast reserves of oil and particularly natural gas. I would like to see our industry embrace that global role. It is difficult with all the emphasis on decarbonization, but it is essential.

## TONY WEBER

MANAGING PARTNER, NATURAL GAS PARTNERS



**First job:** My career in the energy business began in 1984—not the full 40 years that *Oil and Gas Investor* magazine is celebrating today but pretty close. My first job was as an energy loan officer for the old Mercantile Bank in Dallas. In the beginning, the job wasn't so much about making new loans as it was to collect the bad ones ... it wasn't easy. But what a great training ground for a young lender. In my 15-year banking career, I don't recall making a bad loan, and I loved my job.

Thanks are in part to those early workout experiences and the terrific oilmen that I was blessed to work with along the way. Men like Curtis Mewbourne, Clayton Williams, Joe Foster, Ted Collins, Aubrey McClendon and Tim Headington to name just a few.

**Most impactful event:** For me, the most impactful change to our industry was the explosion of capital available to the energy industry throughout the 1990s and 2000s was so exciting. Not only the big private equity funds like NGP, but also the institutional investors, pension funds, foundations and endowments were all investing in the dramatic growth of the industry throughout America. The markets weren't always open but when they were, it was great.

**Hope will happen:** I'd like to see our industry continue to make strides on the advancement of women within our industry. Through the work that our firm has done partnering with Tudor, Pickering, Holt & Co., I have had the chance to meet hundreds of impressive female leaders. The numbers are improving, senior positions are increasingly being filled and the

boardroom is beginning to look different, but we still have a long way to go.

**What change like to see:** It's clear that the current move toward reducing global carbon emissions and clean, renewable energy sources has dramatic government and shareholder tailwinds. However, I would like to see these new players acknowledge the importance of the traditional fossil fuel industry. Global demand for oil and gas isn't going away any time soon, so both sides must work together for the common good.

## EMILY MCCLAIN

SENIOR ANALYST, RYSTAD ENERGY



**First job:** I began my career as a geophysicist for Shell in 2014 in Pittsburgh. Being hired just before the energy market saw a global financial slowdown with the surge of U.S. shale production that ultimately led to the oil price collapse of 2014 to 2016, I vividly remember the difficulty in navigating my future in those first few years as I watched and experienced the negative impact of the downturn. I was aware of the volatile/cyclical nature of the industry and was hopeful that we would see improvement, but the U.S. shale boom was both exciting and uncertain at the same time. I think having experienced such a significant downturn so early in my career really helped to strengthen my ability to adapt and handle change, in a tough-love kind of way.

**Most impactful event:** This past year's COVID-19 pandemic was one of the most difficult experiences both personally and professionally. In terms of my career, I was one of the many that was out of a job when the oil price war, in combination with the pandemic, led to widespread unemployment in the industry. However, I had already pivoted my career to analysis in the years prior, so I'd have to say I was in a better position to rebound from last year's layoffs.

That earlier career shift was the direct result of the 2014 to 2016 downturn which, in my opinion, was truly the most impactful event. Being in Pittsburgh and unable to relocate to Houston when Shell's office transferred, I had to get creative with my resume and reevaluate my skill set to navigate a job market with little-to-no energy geoscience openings in the area. It was a difficult challenge to overcome, but in doing so, I feel I was able to strengthen my career outlook.

**Hope will happen:** As the North American gas market expert at Rystad Energy, I am most hopeful for the future of natural gas in the U.S. and abroad. We are anticipating an increase in gas demand in the next decade as unconventional shale gas resources are still needed both

# Ken Hersh

CO-FOUNDER, NGP ENERGY  
CAPITAL MANAGEMENT;  
PRESIDENT AND CEO, GEORGE W.  
BUSH PRESIDENTIAL CENTER



## How has the industry changed since you began?

Given that we started the firm back in 1988, it is safe to say that the industry has matured, to say the least. We were the first private equity firm in the industry and the first to structure transactions as simply providing equity backing for emerging leaders in the business. I guess the biggest change is that nobody is now saying that our investment style is crazy and that it will never work. I am proud that we pioneered an investment methodology that has become the primary way that capital is allocated to the independent oil and gas industry today. I take great pride in our innovative approach now becoming the standard.

## What changes would set the industry up for even greater success during the next 20 years?

The industry needs to understand that its primary role is to provide an essential product to consumers all over the world. As such, innovation needs to continue to reduce costs, improve recoveries and to reduce our environmental footprint in the field. Turn off the noisy distractions and focus. If you are private, act private. If you are public, act private! Do not rely on the perpetual availability of third-party capital, and avoid listening to the siren songs of fickle public market investors who do not care about the long-term health of your enterprise. The goal should be to be boring.

## What are the threats to the industry's future success?

The risks to the industry are now located above ground. External factors relating to politics and regulation as well as lack of strong leadership at the industry and company levels could hinder the stability of the industry. Capital providers will try to lead the industry astray in the drive for a hasty energy transition away from fossil fuels. That day may come far in the future, but there needs to be cost-effective, reliable and plentiful substitutes in place before any smooth transition can occur. In the meantime, the industry must continue to focus on providing reliable supply at a reasonable cost while always enhancing its environmental record. Corporate leaders must continue to articulate the truth about the industry—that it powers the global economy and that reliable, cost-effective and geopolitically desirable substitutes are decades away.

## Anything else you'd like to add?

This industry is a living testimonial for how capitalism can improve the quality of life. If anyone is looking for an example of what can happen when you combine American entrepreneurial ingenuity and innovative spirit with open capital markets, protection of private property and relatively stable rule of law, look no further than the U.S. independent oil and gas industry. That industry brought the world the unconventional shale revolution which has been an incredible driver of domestic economic growth while at the same time has liberated our foreign policy and literally changed the power dynamics of the world. Millions of jobs were created both directly and indirectly while reliable and cost-effective energy supplies served the country.

This revolution was not brought to you by the Chevrans or Exxons of the world, but rather the thousand independent oil and gas operators in this country—most of which are not household names. These companies tried new things, innovated and then scaled techniques that have been exported all over the world and to the larger companies who have found their ways back to the Lower 48.

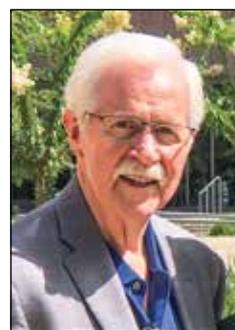
I am proud of the industry and humbled to have played a part in teaching the investment world that it is a good bet to back independent entrepreneurs operating under the radar in this industry.

in the U.S. market and across global markets. North America also has the advantage of having a flexible LNG market so it will be critical to meet demand from other regions. Additionally, the U.S. has many promising projects in the pipeline setting it up to be a leader in natural gas LNG exports in the coming decade, critical to meeting demand needs of the future.

**What change like to see:** The first thought that came to mind, and continued to return to me while considering this question, is a simple answer: educating others. If there was an improved understanding of the critical role fossil fuels play in our society, we could overcome so much of the existing opposition toward our industry, in turn increasing participation in and encouraging positive discussions around ways to continuously improve our technologies and best practices in the energy space. We have seen significant improvements in outreach and resources to educate communities outside of the energy industry, and I hope this will continue to grow with time.

## BRUCE VINCENT

FORMER PRESIDENT, SWIFT ENERGY



**40 years ago:** Following my service in the Navy and the oil embargo of 1973, I became an energy banker in an industry dominated by technical expertise but in need of strengthened financial acumen. The future looked particularly bright at that time and was throughout the 1970s and early 1980s up until the banking bust exacerbated by Penn Square.

**Most impactful event:** While the industry has had many ups and downs over the past 40 years, the one that impacted me the most was the downturn starting in 1986 with the collapse of oil prices brought on by Saudi Arabia changing their production and pricing strategy and flooding the market with crude oil. This was followed by the collapse of natural gas prices in 1987 and the stock market collapse of Black Monday on Oct. 19, 1987, when the markets fell by more than 20%. With extraordinarily low oil and natural gas prices combined with financial markets in disarray, the industry was starved of capital for many years to come.

**Hope will happen:** The oil and gas industry plays a fundamentally important role today in our domestic and world economies as well as providing energy and raw materials for people to live productive and meaningful lives with significantly improved living standards. Over the long run, this will continue to be true despite all the rhetoric regarding the elimination of fossil fuels. While the industry will continue to need to compete for capital and innovate technologically, I believe it can and should continue to play an important role in America and the world for decades to come.

**What change like to see:** The most important thing the industry can do is something that it is already doing but at a pace that needs to be accelerated and bought into by everyone. That's the recognition that it's not just about oil and gas but really about returns. We're a capital intensive industry and we compete for capital across all boundaries, and we must do that by providing competitive returns compared to other alternatives. While reserves and production are important, it is our ability to find and produce them using the best available technology showing a return that is competitive enough to attract the necessary capital.

## DIANA HOFF

SENIOR VICE PRESIDENT, OPERATIONS, ANTERO RESOURCES CORP.



**First job:** My first role in the industry was an internship with ARCO Alaska in 1986 prior to my senior year at Marietta College. The price of oil dropped to \$9, and I was concerned that I wouldn't have a first job, much less a career. I was fortunate to have a job offer from Chevron in New Orleans when I graduated in 1987, and I have been gainfully employed ever since.

**Most impactful event:** I believe the oil bust of the 1980s was the most impactful event of the past 40 years because it forced U.S. on-shore operators to look at different rocks (coals, tight sandstones and shales) and to develop the technology of multistage hydraulic fracturing coupled with horizontal drilling that underpinned the unconventional boom, upended international energy markets and transformed the U.S. economy.

## BILL VON GONTEN JR.

PRESIDENT, W.D. VON GONTEN & CO.



**First job:** I still remember my first job in 1988. Oil was \$17/bbl, and I was so excited to graduate and apply my new skills to research and development. It was clear during interviews that the only jobs were for operating cementing units, and they meant "operating" the unit. As I have learned, our industry takes care of each other, and Pete Huddleston hired Dr. Von Gonten's son, and I started as a petroleum engineer. I owe my success to both my father and Pete Huddleston for training me not only in theory but how to use your instincts. My first job in this industry was exactly what I had imagined.

**Most impactful event:** I think the most impactful event was in 2012. I was in Jakarta

working on a consulting assignment and received a message that the CEO of YPF wanted to talk to me. Because of the time difference, the call was set at 1 a.m. for me. The call was with Miguel Galluccio, and I still remember his question: "How fast can you get to Argentina?"

I immediately flew back to Houston, changed the clothes in my suitcase and headed to Argentina. That contact turned into a long-term relationship, which still remains today with his new company. Miguel has always treated me like we are part of his company. That is a special experience.

**Hope will happen:** My focus and drive for our industry in the next 10 years is to better understand physically how to optimize the production from unconventional reservoirs. I believe this will require many disciplines from engineering to chemistry to answer the question, "What should an unconventional reservoir produce?"

As an engineer, I am not satisfied that single-digit oil recoveries and low gas recoveries are the best we can obtain. Think of it another way: Should we be satisfied leaving 90% of the oil in place as nonrecoverable? My belief is our training and skills have enabled us to make a significant enhancement in recoveries. It starts with understanding how molecules actually move through these reservoirs and better understanding the hydraulic fracturing system that we create.

**What you would invent:** I think too much like a reservoir engineer, and I am sure there should be a more significant invention for our industry. My answer is some sort of real-time 3-D imaging system that monitors the movement of hydrocarbons in our reservoirs. That way we would know exactly what area and thickness each well drains. Imagine the efficiency in developing a field.

## JAMES K. WICKLUND

MANAGING DIRECTOR, ENERGY BANKING, STEPHENS INC.



**40 years ago:** I was negotiating then managing concession operations in Libya and Algeria.

**Most impactful event:** The most impactful moment was being asked what concession blocks we wanted in Libya for a \$185 million operating program and having little clue as to which to choose.

I was working for Sun Oil and had been there a few months when someone brought in a foot locker full of very old seismic sections and well logs. My boss told me to take a look at the information in the locker as we will need it soon, in the course of all my other duties.

I spent time perusing these old records. And then a few weeks before Christmas my boss'

boss called me and four other geoscientists and told us to pack up and come with him to Tripoli for a meeting with the national oil company (NOCs). So we went to Libya. We all moved into one apartment that the government had given us, since all the hotels were full. The gas stove leaked so my boss, who was a petroleum engineer, used a candle to stop the leak on the stove so he could heat up a kettle for tea. Of course, wax is soluble in natural gas and after a few moments the wax had melted and the stove blew. Not an auspicious beginning.

We had to move to a different apartment before meeting the next day. The next day we all marched into the national oil company's offices and met with the head of the company. In the middle of the room was an easel with a sheet over it. After a brief introduction he pulled the sheet off the easel and there was a map of the country with six blocks the government was giving us to explore. The deal was, if you didn't sign an exploration agreement, Sun would no longer be allowed to buy crude from Libya, one of its primary markets.

So my boss turned to me and said, "Are these the six blocks that we want?" I looked around at the other people at the table and said, "Why me?" He said, "You've had the footlocker full of the information. These other people are just here for show."

I panicked and looked at the map again. Two of the blocks were on the Cyreniaca Platform, a volcanic outcrop on the eastern side of the country. I said, "Well, we don't want those two blocks." The president of the NOC then asked where we would rather have them and I pointed to the middle of the Sirte Basin and said, "Somewhere in there."

So we signed an almost \$200 million work commitment based on the selection of those six exploration blocks, packed up and went home. I became a bit jaded at that point believing that gray-haired PhDs were the people who did such things, not a brand new junior geophysicist who is still figuring out what he did for a living.

**Hope will happen:** What I hope happens in the oilfield business over the next few years is also what I think happens. Crude oil as a transportation fuel continues to get phased out as more EVs hit the road and the mileage of combustion engines improves. Battery technology will improve but diesel will continue to see more industrial use than gasoline so not all liquid transportation fuel leaves the mix.

The petrochemical and fertilizer industries will gain importance as more critical to the "digital industrialization" than many might realize. And regardless of fuel sources, using fossil fuels as lubricants will see increased demand even if whale oil is more "renewable."

Natural gas will prove to be the most critical base load fuel and not just a bridge fuel to some idyllic future. And while we have been stunningly good at reducing the emissions per Mcf produced over the past 10 years, political battles will still rage but the abundance and versatility of natural gas will keep it well in the mix for some time.

The industry will readily accept and implement the most leading edge technologies on how to run businesses, from block chain supply chains to paperless invoicing. Roughnecks will be a designation of long ago just like the loss of ring fingers. Artificial intelligence will continually improve our processes and profitability. Technical skills will remain very important but embrace many more disciplines than the engineers and geoscientists of the past.

The industry doesn't go away but becomes more focused on "energy" rather than any one specific course, and the skill sets of people in the industry will broaden. And our benefits to modern life will become increasingly better understood.

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## DOUG BROOKS

### CHAIRMAN, OASIS PETROLEUM



**40 years ago:** My career began in my hometown of Casper, Wyo., with Marathon Oil in 1982 as a scout for the Rocky Mountain division. A couple of years later I was transferred into the land department. This early scouting work provided a very valuable broad view of the business from analyzing information about competitors' drilling, seismic and leasing efforts and analyzing specialty production and completion techniques.

That broad foundation proved invaluable to me throughout my career from understanding the fundamental basics to becoming aware of macro, business and technical trends. Little did I know that my business interests would quickly evolve from project-centric work into entrepreneurial business executive leadership by starting two resources oil and gas companies and then to focusing on transforming five previously troubled enterprises back to viability, sustainability and profitability.

My early viewpoint was extremely narrowly focused and perhaps simplistic. While OPEC was exerting its leverage early in my career, its influence often seemed to abate, but it always reestablished its influence, oftentimes placing the domestic producer in serious jeopardy. My early viewpoint was, "as goes OPEC, so goes the industry."

**Most impactful event:** Technical advancements were enabled by nearly limitless access to capital. Of course, technical advancements in horizontal drilling and complex completions are undoubtedly the most impactful "event(s)" of my career. Equally as impressive, the genius of large-scale joint ventures—mostly financed by foreign enterprises and public and private equity—provided nearly limitless financial resources to underwrite this massive science project.

This vast capital source financed the genius of the human spirit and creative minds. The result was commercialization of untapped source shales as reservoirs. Together, these

technical and financial advancements reshaped the world's balance of power, politics and provided multi-generations of future sustainable energy for our best social and commercial use.

**Hope will happen:** I am hopeful that industry will more clearly and proactively define and defend its benefits to our world. I am hopeful that the industry will continue to advance its history of technological advancements to further soften its impact on the environment. The oil and gas industry provides critical inputs to food growth and development of medicines; provides human comfort, quality of life and safety, plus provides rewarding careers, high paying jobs and pays taxes and fees to support important infrastructure like schools, hospitals, etc.

Our industry is often blamed for many social and environmental problems. We should proactively work to be viewed as part of the solution rather than the culprit.

## GEOFF ROBERTS

PRESIDENT, ROBERTS ENERGY ADVISORS



**40 years ago:** Forty years ago I was at my first job in the industry, which was my first job out of college, working as a production engineer at Amoco Production Co. out of their Corpus Christi office. My viewpoint of the future on any given day was that happy hours started in just a few hours, so if I could

just get the rod string design right on this new beam pump then I might get there before the rest of the office showed up. I literally never looked further ahead than the weekend.

**Most impactful event:** Clearly the crash of 1986, as it likely was for anyone in the industry then. Imagine the 2008 to 2009 housing crisis hitting at the same time as a worldwide pandemic, and then it lasts for 10 years. It changed my life and that of everyone in the industry forever. I remember telling anyone that would listen: "Any person or company that makes it through this is going to be set for life." It wasn't quite that easy, but it was still accurate.

**Hope will happen:** Recognition, respect, responsibility and stability. It would be beautiful if the world could recognize that oil and gas has to play a role in our energy future, at least for the next 20 to 30 years and probably much longer. Treat us fairly, give us a chance to continue the incredible improvements we've made in ESG. Accept us as a vital piece of the low-carbon future, whether as a bridge fuel or in a natural gas-focused economy.

**What you would invent:** I would invent a federal government that recognized that a comprehensive natural gas program could solve many of the country's financial and environmental problems. With local, regional and national support from legislators and regulators, an aggressive program to convert cars, trucks,

buildings and factories to natural gas would dramatically reduce overall GHG emissions, ground and water pollution, and overall fuel costs. It would guarantee America's continued energy independence and allow us to save the planet, live full lives and still continue to work on alternative energy sources.

PS: The only true long-term energy solution is nuclear, but that's probably not relevant to this article.

## TOM PETRIE

FOUNDER, PETRIE PARTNERS



**First job:** After getting out of the Army, I was hired as an oil analyst for a management firm in Boston that ran funds for the endowments of MIT, Dartmouth and the Colonial Mutual Funds. I wasn't a petroleum engineer, but I had had some engineering classes in my undergrad years. Then I

went to New York for seven years with First Boston as an oil analyst.

Later I moved to Denver and co-founded Petrie Parkman, and we worked on many of the large mergers of the period and advised on consolidation within the industry.

Change you'd most like to see in the industry? I really think our country's greatest strength in oil and gas is also its greatest weakness. That is, it's too easy to overshoot on the enthusiasm when oil prices are high and to pull back when prices are low. So, what I'd like to make sure about is that we understand how to be more disciplined in capital allocation across the cycles going forward.

**Most significant event:** The advent of the shale revolution, which dramatically changed the energy picture of the U.S. and, indeed, the world. This has enabled the U.S. to exhibit a very different posture with regard to geopolitical events.

## SCOTT REES

CHAIRMAN & CEO, NETHERLAND, SEWELL & ASSOCIATES



**Most impactful event:** Pinpointing one event would be tough. I am constantly amazed at the technological advances that allow us to drill deeper than ever imagined, or find ways to get more out of previously depleted resources, or make exciting new discoveries in remote areas of the world. Horizontal drilling and hydraulic fracturing are

great examples. Both have been around for most of my career, but the combination of those two technologies 20 years ago has completely changed the U.S. energy industry and reshaped the global landscape.

Also, I'm showing my age, but can't help noting the invention of "spreadsheets," which

had a huge impact on all businesses. I certainly remember my first introduction to VisiCalc on the new and only Apple III computer at Exxon's Kingwood office; it was a game changer.

**Hope will happen:** My hope would be that there's more balance in discussions around renewable energy versus oil and gas. Transitioning to cleaner energy, and truly understanding what that is, is a complex, global challenge that I believe our industry can play an integral role in. This industry is nothing if not adaptive, as we're already starting to see with major steps from leaders in our industry. I would hope that the general public would gain a better understanding and appreciation of the contributions that oil and gas makes to their way of life, rather than regarding the industry as a villain.

## Ann Fox

PRESIDENT & CEO,  
NINE ENERGY SERVICES

### What drew you to the oil and gas industry, after your service in the Marines?

Since I grew up in Massachusetts my only experience with oil was that we had to change it in our cars every so often. When I got out of the Marine Corps my parents had retired to the countryside north of Houston. They left what was a small dairy town in New England for beef cattle. I wanted to be close to them.

A man named LE Simmons created a position for me at his firm, SCF Partners. He is a patriot and believed that we should find places for combat veterans upon their return home. I am forever grateful for that start in the industry.

### How has the industry changed since you began?

The largest change in the industry has been the transition at our customer base. Our customers used to be valued primarily on production growth and that has all turned on its head now. Growth in production is no longer the primary focus for the U.S. E&P. When I first began, operators were rewarded for growing their production, versus today, they are focused on generating free cash flow, improving their balance sheets and returning cash to shareholders.

The other large change has been the tremendous improvement in efficiencies throughout the years through new D&C technology, which has fundamentally shifted down the cost to complete a lateral foot in NAM land allowing our U.S. customers to better compete with the International market.

### What changes would set the industry up for even greater success during the next 20 years?

Technology innovation is going to be imperative moving forward. U.S. E&Ps and oilfield services companies must continue to innovate and become more efficient, driving down the cost to produce.

Additionally, the industry must focus on our environmental footprint. We have to lead these efforts so that we can drive clean and profitable growth instead of having those potential methods dictated to us. We can get better and must do so. It is critical that the fossil fuels industry gets cleaner and cheaper at the same time in order to help thwart climate change, ensure Americans have the ability for continued socioeconomic progression through strong U.S. economic growth and, of course, be ever conscious of protecting our energy independence to better guarantee our liberty and freedom against global powers that do not share our views.

### What are threats to the industry's future success?

While energy has always been a cyclical business, we have been facing unprecedented uncertainty and volatility that is always a threat to the industry. In addition, the U.S. needs to have a very honest and comprehensive conversation about how best to power the nation in the near, medium and long term. If the dialogue remains distinct and separate between two groups; fossil fuels and alternative sources of energy, then America will suffer. We must create cooperation and collaboration to solve very complex issues that frankly have no easy answers.



## MARK TESHIOAN

MANAGING PARTNER, KAYNE ANDERSON  
CAPITAL ADVISORS



**First job:** I started my career in the late '90s in the oil and gas group at Credit Suisse First Boston (now Credit Suisse) in New York City. At the time, the tech bubble was approaching its apex and energy was considered very out of favor. Oil was trading around \$20/bbl, and natural gas was trading around \$2/MMBtu.

Little did I know that the tech bubble was about to burst and energy was going to materially outperform the S&P 500 over the next 10-plus years. As Mark Twain once said, "History never repeats itself, but it does often rhyme." That statement feels very appropriate today as conditions in 2021 feel very similar to 1999.

**Most impactful event:** While it's hard to argue that the shale revolution has had the biggest impact on the industry over my career, I think that the energy transition movement will have a much greater (and uncertain) impact on the industry going forward.

**Hope will happen:** I'm strongly convinced the next 10 years will be an enormously profitable period for the oil and gas industry—especially E&P companies. Despite the impact of both COVID-19 and renewables on energy demand, the world will continue to use enormous amounts of fossil fuels for the foreseeable future. Given the capital scarcity in the sector, I suspect we will see durably higher oil and natural gas prices for the balance of this decade. Assuming operators remain disciplined with their capital budgets, E&P companies should generate very attractive returns for shareholders.

**What change like to see:** More alignment between executive pay and returns to shareholders. I think the CEO of every publicly traded company (energy or otherwise) should be required to invest a very material portion of their net worth into the stock of their com-

pany. Proper alignment between management and shareholders would ensure that executives are behaving like owners and not managers.

## AL CARNRITE

**PRESIDENT AND CEO, THE CARNRITE GROUP**



**Viewpoint of future career:** I joined the industry just over 40 years ago and felt our industry was critical to improving the lives of everyone by providing the most affordable energy to the world. I personally felt there was no limit to the career I could have.

**Most impactful event:**

If you would have told me 40 years ago we would unlock deep water and shales, I would have shaken my head. Our ability to drill deeper, horizontally and frac shales amazes me even today.

**Hope will happen:** We continue to provide the opportunity for a better quality of life by providing the cheapest energy to the planet, and we need to quit apologizing for our industry. Look beyond the John Kerrys where moths come out of his mouth when he speaks. Provide the cleanest, cheapest energy that meets the various local needs.

**What change like to see:** For an industry driven by technology breakthroughs, we are still so slow to adapt. Embrace the energy transition and lead.

## HELIMA CROFT

**MANAGING DIRECTOR AND GLOBAL HEAD OF COMMODITY STRATEGY, RBC CAPITAL MARKETS**



**First job:** Forty years ago I was still an undergraduate in college. My first job that was related to the energy industry was at the Central Intelligence Agency in 2001. At the time, the Bush/Cheney administration was very focused on diversifying the sources of U.S. energy imports as well as preventing world-

wide threats to oil supply.

My main country of coverage was Nigeria, which experienced a series of supply disruptions in the run up to the Iraq war in 2003 as armed militants in the Niger Delta sabotaged oil facilities and kidnapped oil workers in an effort to secure payments from the government and international oil companies. I would later write a Financial Times op-ed about unrest in Nigeria's oil sector while I was a fellow at the Council on Foreign Relations.

**Most impactful event:** It is hard to pick the most impactful, but if I had to highlight a couple, I would include the tumultuous events

of the Arab spring which pushed prices above \$120 as Libyan production plummeted and multiple regimes fell, as well as the Sept. 14, 2019, cruise missile and drone strike on Saudi Arabia's Abqaiq facility, which temporarily took offline half of the country's oil output. I extensively covered both events for my bank as well as CNBC.

A personal career highlight for me was getting to conduct HRH Prince Abdulaziz bin Salman's first public interview as Saudi Arabia's oil minister in September 2019 at the World Energy Congress in Abu Dhabi. I have known Prince Abdulaziz for nearly 15 years, and he has been a very important mentor.

**Hope will happen:** I hope the industry is at the forefront of the effort to tackle climate change and ensure a just and equitable energy transition. My greatest hope is that the industry is able to attract the next generation of talented, diverse thought leaders.

## JOHN JACOBI

**PRESIDENT & CEO, JAVELIN ENERGY PARTNERS**



**40 years ago:** Forty years ago I was working for Woolf & Magee Inc. I was responsible for the drilling contracts for our rigs. Best Job I ever had! I learned so much.

**Most impactful event:** The technology creations that unlocked the unlimited resources this great country has.

**Hope will happen:** We should all be better stewards of our investors/partners' money, not just the next 10 years but always. You will always have a job in this fantastic business if you do that! As you have heard me state many times, "Your goal should be having more money at the end of the month than you do at the beginning of the month!"

**What you would invent:** Better filter systems for our emissions.

## RYAN KEYS

**PRESIDENT AND CO-FOUNDER, TRIPLE CROWN RESOURCES**



**First job:** It was 2005. The future was offshore and international, and that was exciting. The prospects for career growth were scattered across the world. I was an engineer at Schlumberger at the time, so this all seemed like a foregone conclusion. Then the great repatriation of E&P capital to North American unconventional happened.

# Susan Cunningham

INDUSTRY CONSULTANT, FORMER EVP, NOBLE ENERGY CORP.

## How has the industry changed since you began?

I started in this industry straight out of university in the early 1980s, during a short window when there was a lot of hiring. This was completely fortuitous. In the 40 years I have been in the industry, I have seen two large cycles where prices changed by about 50% (inflation adjusted) over 10 to 15 year time periods. Of course, that included one-year volatility within these cycles with greater price changes, the greatest being \$120/bbl in 2008 to 2009.

During my career there have been about six one-year swings of \$40 to \$50/bbl, so I have seen and participated in layoffs and rapid hiring, industry consolidation and newcos. During this time, the highs and the lows have trended higher, illustrating the increase in global population and overall demand. Almost every time prices swing wildly up, a global recession inevitably sets in, resulting in a rapid decline.

A large part of my career has been focused on exploration. Finding and developing new energy supplies for the globe, improving lives and contributing to the five- to six-year rise in life expectancy over this time period. It has been a very rewarding experience.

Of course, the conversation about energy and the oil and gas industry has changed over this time frame, as concerns over man's impact on the environment has evolved into concerns on CO<sub>2</sub> emissions and the impact of fossil fuels. As we all know, this concern by society has impacted access to capital and shareholders for the industry and the beginning of real competition for energy from other sources. Government regulations and tax incentives are designed to increase the rate of change.

## What changes would set the industry up for even greater success in the next 20 years?

The oil and gas industry is shifting from a pure commodity-based business to a combined commodity and energy product differentiation business. That is a very significant shift. This also means that the skills needed by employers in this space are shifting significantly. We are no longer an oil and gas industry. We are part of an energy industry. How leaders respond to these changes will determine their company's long-term success.

Technology changes and the impact of social media have fundamentally changed how we do our business. Companies that do not take it seriously will lose out. Leaders that really listen to society, communities, shareholders and employees have a better chance at greater success in the next 20 years.

Clearly, consolidation needs to continue to take place. Reducing emissions and overall impact to the environment needs to be taken seriously and become a priority. Leaders that do more listening than talking, are transparent, open to change and inspire their employees and shareholders, will change their business plans and culture to attract and retain great people while evolving into the energy company that is appropriate for them.

There are and will be three buckets: those that plan to shift away from oil and gas over time; those that are pure oil and gas companies; and those that plan to be a combination. Playing the long game will be more important than ever. Really adding value to shareholders, earning their trust will be crucial.

In the past we really did not need to explain ourselves or listen very hard to what our communities were saying. We were needed and important as there were no alternatives. We will still impact economies, global politics and people's lives. However, that impact is starting to shrink.

We are no longer the only game in town. We need to grow in our understanding of what it takes to thrive in a competitive

energy industry—not just a competitive oil and gas commodity business. Once we really understand that we need to provide a product that is valued by society and communities, that employees and colleagues are proud of producing, and that shareholders want to invest in, we will thrive!



## What are the threats to the industry's future success?

I think that the biggest threat to our future success is us. This is an opportunity to change, to transform. And we must transform to thrive. I look at it this way: Our thinking impacts actions we take to get specific results. If we are not getting the results we want, we must change our thinking. Otherwise, our actions will not change enough to get the outcomes we want.

We can only change our thinking by truly listening to others and challenging "what we know to be true." If we talk but don't really believe what we say, others will know we are insincere. We will not be trusted. We will not be successful for long. Of course, this also means that we need to continue to adapt and change what we each do. As our thinking evolves, our skills also need to continuously evolve. This is not easy, and it takes time.

It is really hard to change our thinking. I know I have gone through the journey of pride in what I do, to denial that a change is needed, to anger that some others did not appreciate what we do. But I do not like being in a place of anger. There is nothing good in that. Anger only tears down possibilities. Denial only puts off needed change. Neither are satisfying. I am now excited again about what is possible.

"Finding and developing new energy supplies for the globe, improving lives and contributing to the five- to six-year rise in life expectancy over this time period. It has been a very rewarding experience."

The opportunity is to be part of and witness to significant change. Of course there are huge challenges. Change does not happen easily or overnight. There is a lot of "pollyanna thinking" out there as we all know. Let's be a positive part of creating the conversation. Proactive and not defensive. The hardest part for me, as someone who knows how this industry works and how hardworking, fantastic and inspiring the people are who work within it, is to have room to be proud of it as well as listening to those who oppose it. To see all it can be.

Find and develop affordable and profitable energy that continues to improve lives. That has truly minimal impact on the environment. That people want to pay for, because it also has very low emissions. Consider combining all types of energy available in the areas where you work to achieve this. What are people willing to pay for in a competitive energy industry? I don't think most of us know the answers yet. It is evolving. However, I am confident that the oil and gas companies within the energy industry are on their way to figuring this out.

Great for the U.S. economy, bad for my dreams of a lifetime of expat gigs in far-flung corners of the world.

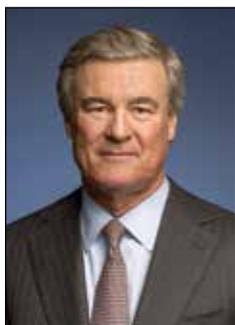
**Most impactful event:** It's happening right now: the energy transition and it will affect everyone on the planet. The cacophony of angry debate from all sides is creating an existential crisis and a lot of confusion. Are we oil and gas companies or energy companies? Will there be a price on carbon in the U.S.? Where will demand for hydrocarbons be over the next few decades? We are seeing narratives being rewritten, markets evolving rapidly and volatility at an all-time high.

**Hope will happen:** The irony of this energy transition is that it's largely being driven by the private sector, at least in the U.S. The firms that demonstrate a willingness to evolve are being rewarded with access to capital and cheaper capital, and their valuations are better. We are beginning to see premiums for responsibly sourced hydrocarbons, and I hope that evolves to the point where the world sees American hydrocarbons as the cleanest, most sustainable on the planet. As long as firms are rewarded, then the evolution will come. It's the carrot versus stick approach, but it will only be successful if we choose to view this as an opportunity and not a risk.

**What change like to see:** The world still needs hydrocarbons, so the firms that evolve will be wildly successful. Our reputation has taken a big hit in the last decade. A lot of the current narrative and criticism is egregious bullshit, but a lot of it is true and well-deserved. The industry can fight the prevailing narrative with zero routine flaring, driving down methane emissions to a negligible volume, aligning every stakeholder in every project we undertake, being open-minded about other forms of energy and delivering consistent cash-on-cash returns. We can be better. Collectively, we must be better.

## TREVOR REES-JONES

FOUNDER & CEO, CHIEF OIL & GAS



**40 years ago:** Forty years ago I was a lawyer and measurable. I was doing oil and gas bankruptcy work representing creditors and found myself fascinated by the oil and gas business and drilling wells, not so much thinking about the drafting of documents. So, in January 1984, I left a new partnership at the law

firm and launched out on my own as a small independent putting drilling deals together. That was a whole lot of fun for me, though success eluded me for a great many years.

**Most impactful event:** I would have to believe the most impactful event in the industry over the past 40 years was the development of the shale revolution, which revolutionized a 150-year-old smokestack type industry. I was

fortunate to be involved very early following George Mitchell's footsteps in the Barnett Shale. We (Chief Oil & Gas) actually drilled our first Barnett Shale well in 1997.

**Hope will happen:** My hope for the next 10 years would be that those who use our product stop bitching so much about the bad effects and thank us for taking the huge risks we do to bring them the oil and gas that they use. But there's no chance of that happening, only a huge lack of gratitude. If they're that worried about it, they should just stop using the product. That's a simple solution, but they won't do that either.

**Chief Oil & Gas CEO Trevor Rees-Jones and his son, David Rees-Jones, in front of a drilling rig in the Marcellus Shale.**



## BILLY QUINN

MANAGING PARTNER,  
PEARL ENERGY INVESTMENTS



**Viewpoint of future career:** I started investing in oil and gas almost 30 years ago. It's been a fun but wild ride. I always thought fundamentals should drive the business, and it appears that it is finally happening.

**Most impactful event:** There are so many. From the 1998 oil price crash to 9/11 to the 2008 financial crisis ... It seems like there is a big, impactful dislocation every few years. Nowadays, it's the ESG/energy transition movement. But I would have to say the collapse of Enron and the subsequent

fallout and the huge advancements in drilling and completion technologies are the two “events” that have had the most impact over the long term.

**Hope will happen:** Lasting financial discipline and commodity price stability are long overdue.

**What change like to see:** Affordable and widespread carbon capture and storage. If we had it, the world would embrace oil and gas as the cheapest forms of energy.

**TIM MURRAY**  
MANAGING PARTNER,  
BAYOU CITY CAPITAL ADVISORS



**40 years ago:** I was a senior reservoir engineer for ARCO in charge of re-developing an offshore oilfield in Eugene Island Block 175. With oil prices recovered to the mid-\$30/bbl range from the 1970s lows, we thought we were in for good times for many years to come. I had decided, however, that the ride would be difficult and volatile, so I sought to diversify my career in the financial side of the business with my first step of pursuing an MBA.

**Most impactful event:** There were many

impactful events in the industry during my career, but two I believe were game changers. The first was the evolution of the commodity hedge markets to provide longer-dated crude oil and natural gas hedges. The option to “insure” against volatility was a game changer and helped many lenders and companies survive in down cycles.

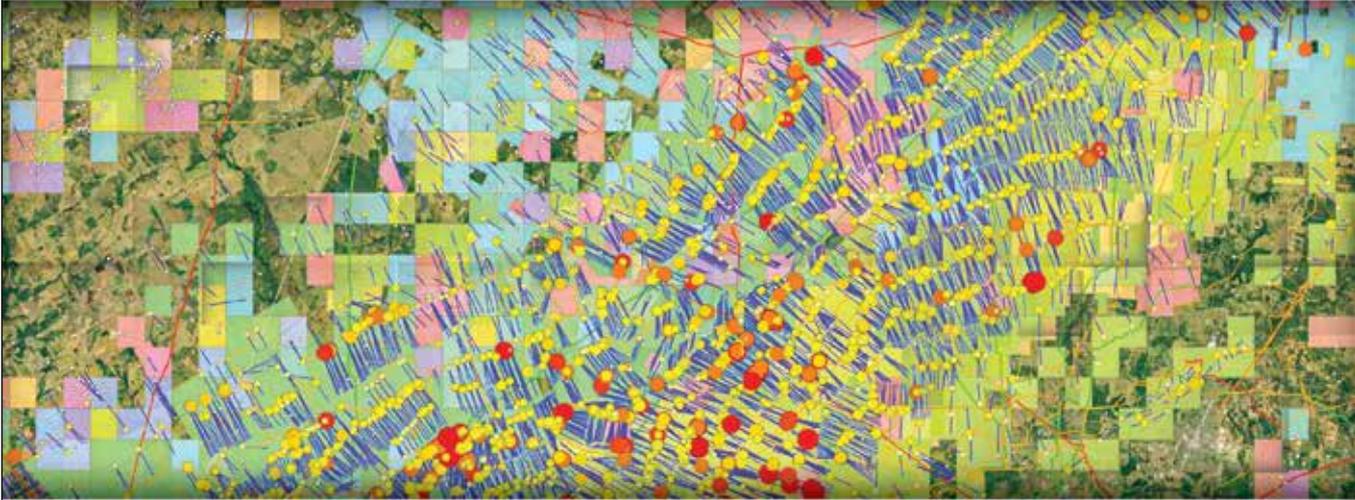
The impactful second event was the industry pursuit of unconventional resource development. While a boon for the industry was self-evident, the progression in unconventional valuation was to become the dark side of this development. Investors and capital providers extrapolated robust valuations based on acreage held and type curve projections. Cash flow and return on investment were secondary to drillable locations. Petroleum engineers and geoscientists were supplanted by young spreadsheet jockeys in high-rise offices who had never seen an oilfield. Operators and capital providers alike were burned by these lofty valuations, and we’re still recovering from the fallout of this valuation bubble today.

**Hope will happen:** Over the next ten years my hope is that the industry focuses on a rebuttal of the climate change hoax that has been pushed by politicians and the mainstream media. The industry sat silent while this nonsense was slowly and purposefully woven into our everyday lives. The fundamental claim that the generation of CO<sub>2</sub>, a colorless, odorless gas necessary for life on our planet made fossil fuels “dirty” should have been nipped in the bud. □



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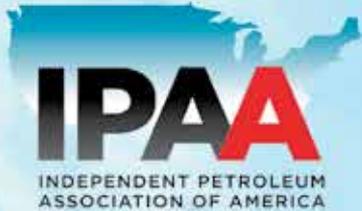
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# Independents Fuel America – We Let Policymakers Know

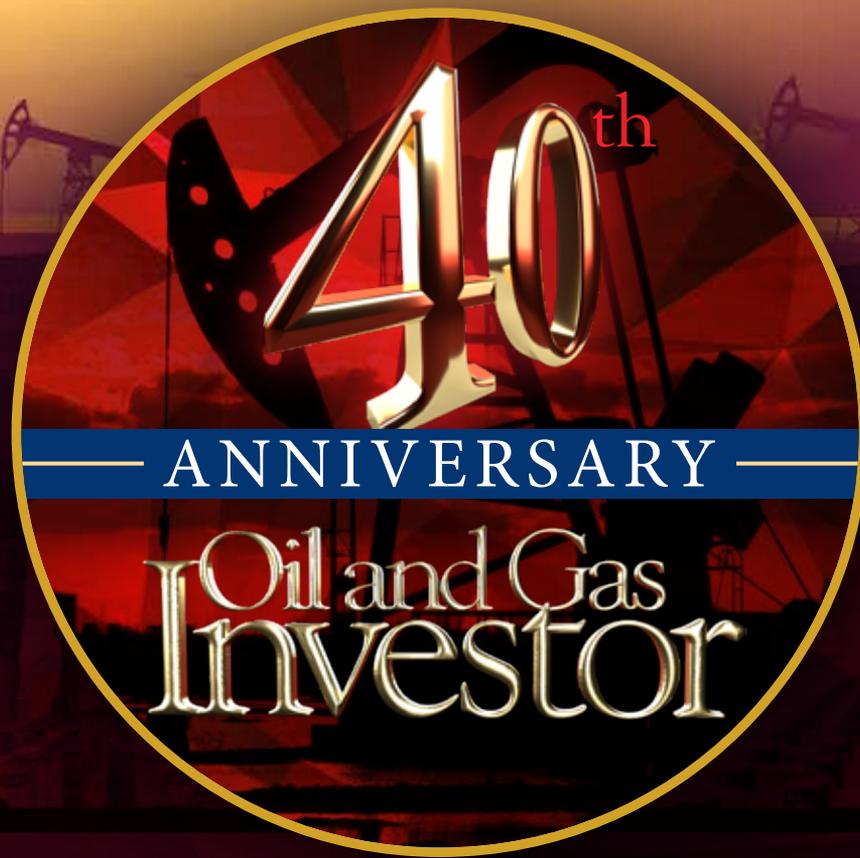


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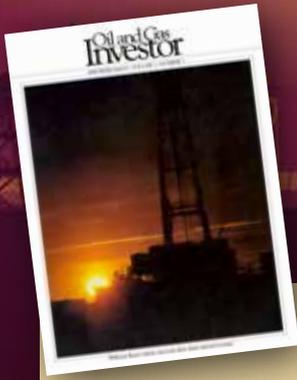


# Events That Mattered

1981-2021

*Oil and Gas Investor* has chronicled, analyzed and anticipated the events that have shaped the industry over the past four decades. Here are a few of the most significant.

# Timeline of Events



## 1981

- Iran releases 52 American hostages who had been held captive for 444 days.
- President Reagan deregulates the prices of crude oil, refined petroleum products and natural gas with the signing of Executive Order #12287. Production soared, a glut followed and prices collapsed.
- George Mitchell drills the #1 C.W. Slay in Wise County, Texas, the first Barnett Shale well.
- Muhammad Ali retires from boxing with a career of 55 wins and five defeats.
- Apache forms first MLP in U.S.
- Denver OTC market booms.
- Public oil and gas fund sales hit a record \$2.9 billion.
- DuPont buys Conoco for \$8 billion.
- In December, Baker Hughes records 4,530 active rigs in the U.S., setting the current record for highest active rig count.

## 1982

- Exxon pulls the plug on its massive Colony Shale oil project near Parachute Creek, Colo.
- The *Ocean Ranger* semisubmersible sinks offshore eastern Canada during a major storm. None of the 84 workers survived.
- Penn Square Bank fails; ditto for Abilene National Bank.
- Public-partnership sales slide to \$2.3 billion.
- Six Denver OTC firms halted.
- Marathon shareholders approve \$6.6 billion merger with U.S. Steel.
- Domestic oil reserves fall to 30-year low. Rig count drops 22%.
- Bill proposed to allow pension funds to invest in oil and gas partnerships.

## 1983

- Time magazine declares the personal computer as its 1982 "Man of the Year."
- The First National Bank of Midland, with an estimated worth of \$1.2 billion, is declared bankrupt.
- Mobile phones are introduced to the public market.
- Crude oil futures begin trading on Nymex for the first time.
- First Reserve is formed to invest private equity in energy.
- T. Boone Pickens targets Gulf Oil in one of his most famous "corporate raise." The showdown saw Pickens assemble a sizeable stake in Gulf and agitate the board until Chevron acquired the company.
- Amex introduces first oil and gas stock index options.
- First areawide OCS lease sale in the Gulf of Mexico; 656 tracts receive bids.
- Supreme Court upholds Windfall Profit Tax.
- Davis Oil makes splash in Amos Draw Field in Powder River Basin.
- Domestic rig count falls to 1,807 in mid-April.



## 1984



- Standard Oil of California merges with Gulf Oil for \$13.2 billion to form Chevron.
- The Texaco versus Pennzoil legal battle for Getty Oil begins.
- Sony and Phillips produce the first commercial CD players.
- Yates Field, operated by Marathon Oil Co., produces its 1 billionth barrel of oil.
- Royal Dutch buys remainder of Shell Oil it didn't already own for \$5.2 billion.
- Mobil buys Superior Oil for \$5.7 billion.
- W.R. Grace, R.J. Reynolds and Georgia-Pacific dump oil and gas subsidiaries.
- Some 160,000 limited partnership investors file suit against fundraiser Petro-Lewis.
- U.S. gas reserves fall to lowest level since 1976, but the gas-supply "bubble" persists.
- Reg D private oil and gas funds raise \$1.6 billion—as much as public funds.

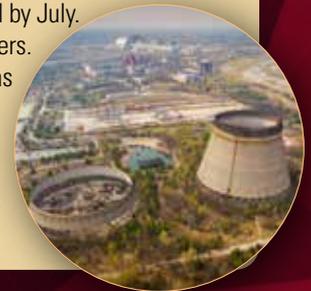
## 1985

- MLP offerings grow 50%, and account for \$1.5 billion, or 60% of all oil and gas partnership sales.
- Prices for "new" natural gas are decontrolled.
- A controversial T. Boone Pickens makes the cover of Time.
- Denver oilman predicts crude oil will hit \$90/bbl by 1995.
- International Petroleum Exchange launches Brent crude futures contract in London.



## 1986

- The Challenger space shuttle disintegrates after launch.
- A Soviet nuclear reactor at Chernobyl explodes and catches fire.
- The trade of crude oil options is approved on Nymex.
- IBM introduces the first laptop computer.
- OPEC floods market with oil; prices crash to \$9/bbl by July.
- Tax Reform Act of 1986 ends partnership tax shelters.
- Enerplus Resources Corp., Canada's first oil and gas royalty trust, begins trading on Toronto Stock Exchange.
- Crude oil options approved for trading on Nymex.
- China beckons foreign oil companies with onshore opportunities.



## 1987

- Meridian Oil produces oil from a horizontal wildcat in the Upper Bakken in Billings Co., N.D.
- Texaco seeks bankruptcy protection after fight with Pennzoil (which was awarded a \$10.3 billion judgment) over Getty Oil merger.
- Take-or-pay liabilities by gas pipelines mount to more than \$6 billion.
- Oil imports hit seven-year high; domestic crude production drops to 8.2 MMbbl/d.
- FERC Order 500 creates open access for gas pipelines.
- Congress ends federal onshore lease lottery system.
- Dow drops 508 points in October; oil analysts see buying opportunity.
- U.S. rig count ends year above 1,000; oil prices, around \$20.



## 1988

- On Black Monday, the New York stock market plunges 508 points and loses 22.6% of its value.
- EnCap Investments and Natural Gas Partners are formed.
- The Bullwinkle structure is set in the GoM.
- The *Piper Alpha* platform sinks in the U.K. North Sea, killing 167 workers.
- Mobil Corp. drills the first horizontal well targeting the Lower Spraberry.
- Dwindling gas deliverability and expiring leases prompt stepped-up Gulf of Mexico drilling.
- A restructured Texaco emerges from Chapter 11 and enters a downstream joint venture with Saudi Aramco.
- Tenneco announces it will break up; Sun Co. spins off E&P operations as Oryx.
- Horizontal drilling increases in the oil patch.
- OPEC squabbles keep oil prices below \$18.
- Argentina opens to foreign oil companies to reverse production declines.
- Former Tenneco Oil chairman Joe Foster forms Newfield Exploration.

# Oil and Gas Investor

## 1989

- The *Exxon Valdez* tanker runs aground in Prince William Sound, Alaska, resulting in a massive oil spill.
- The television series "Seinfeld" makes its debut.
- Aubrey McClendon and Tom L. Ward co-found Chesapeake Energy Corp. in Oklahoma City. It would become one of the largest producers and most active drillers in the U.S.
- For the first time in decades, the U.S. imports more than half its petroleum needs.
- The Berlin Wall is dismantled.
- The Austin Chalk play in Texas heats up, prompted by horizontal drilling technology.
- Jack Randall and Ken Dewey form Randall & Dewey Inc., the first oil and gas asset transaction-advisory business to combine sophisticated transaction knowledge with hands-on oil and gas expertise.
- The Natural Gas Decontrol Act decontrols wellhead prices.
- Section 29 tax credits boost drilling for coalbed methane.



## 1990

- The first natural gas futures start trading on Nymex, with delivery at Henry Hub.
- Nelson Mandela is released from prison in South Africa after 28 years.
- The Santa Rita No. 1, the well that launched the Permian Basin oil rush, is taken out of service and plugged after 67 years of service.
- Iran invades Kuwait and seizes control; oil prices soar.
- For the first time, footage drilled for gas in the U.S. exceeds footage drilled for oil.
- 3-D seismic technology begins to take off.
- The USSR breaks up and a flurry of E&P deals with foreign oil companies begins.



## 1991

- The U.S. launches Operation Desert Storm to liberate Kuwait. Iraqi forces lay waste to Kuwait oil fields.
- Nirvana releases its iconic album, "Nevermind."
- American Petroleum Institute says environmental costs will hike industry overhead some \$15 billion to \$23 billion by end of decade.
- Mikhail Gorbachev resigns as president of the Soviet Union.
- BP and Triton Energy announce the 1.5-billion-barrel Cusiana oil find in Colombia.
- The internet is made available for unrestricted commercial use.
- Enron closes its first volumetric production payment financing.

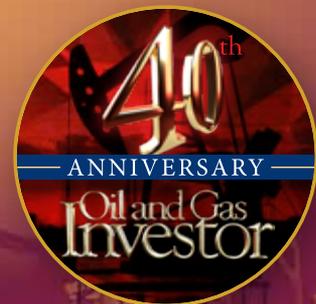


## 1992

- U.S. President George Bush and Russian President Boris Yeltsin jointly declare an end to the Cold War.
- Enron announces its intention to become the first natural gas major.
- 1991-1992 winter gas prices plunge 40% on the spot market.
- The U.S. rig count hits a record low of 596 in June and averages just 721 for the year.
- California producers lobby to export their heavy oil to Asian markets.
- Russian oil and gas deals stumble amid tough terms and conflicting authorities.



# Timeline of Events



## 1993



- U.S. President Bill Clinton signs the North American Free Trade Agreement.
- E&P IPO fever hits Wall Street; 20 new oil and gas companies get listed. Same fever rampant in Canada, as new junior oils parade to market.
- Argentina's YPF debuts on the NYSE; other Latin American oils expected to privatize.
- Oil service stocks up 74% in market value versus the prior year.
- Gas prices rebound to new highs.
- First-ever North Sea turnkey well drilled by Global Marine.
- Phillips and Anadarko announce Mahogany subsalt find in Gulf of Mexico.



## 1994

- The Auger TLP, the first floating production facility, is installed in the GoM.
- Canadian oil industry capital spending rises 66%; number of gas wells drilled triples.
- Strategic alliances between service companies and operators proliferate.
- Rig count in U.S. rising, driven by gas demand and use of 3-D seismic.
- Kern County, Calif., operators struggle with single-digit prices for heavy oil.



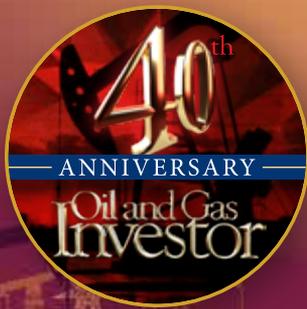
## 1995

- The Murrah Federal Building is bombed in Oklahoma City.
- Derivatives scare, scandals arise, but operators encouraged to use risk-management products.
- Shell, Amoco announce joint venture to operate their Permian Basin properties.
- Gas-marketing consolidation begins as major producers and marketers join forces.
- Chase Manhattan, Chemical Bank combine in \$10 billion merger; new Chase becomes leading arranger of energy loans worldwide.
- Kansas City Board of Trade launches gas futures trading.
- North Sea oil-service market continues to gain strength as U.S. market weakens.



## 1996

- The Neptune Field spar-based production facility is installed in 1,930 ft of water in the GoM.
- Offshore West Africa heats up as U.S. independents move into what was once a majors-only province.
- Profits of E&P companies triple. Record reserve-replacement rates posted. Stocks soar.
- World's largest gas company, Russia's Gazprom, goes public.
- Venezuela holds first oil and gas exploration leasing round.
- Canada bristles with M&A, heavy oil and royalty trust fever.
- Offshore day rates hit 14-year high.
- Hibernia project opens eastern Canada's offshore province.



# Timeline of Events

## 1997

- Qatar opens world's first major LNG export terminal.
- Parker & Parsley and Mesa Inc. merge to form Pioneer Natural Resources.
- Venezuela coaxes foreign investment and Brazil opens its deep water.
- Louisiana part of Austin Chalk play heats up.
- U.S. onshore drilling industry begins recovery; offshore day rates rise 42% as activity in Gulf of Mexico hits all-time high. Oil service IPOs are a hit.
- Burlington Resources buys LL&E for \$3 billion, creating the first super independent.
- E&P spending highest since 1981; independents outspend Big Oil.
- Jonah Field biggest play in Rockies.
- The multinational Kyoto Accord portends more global natural gas use.
- The Dow tumbles sharply, caught by the Asian stock market flu. Upstream stocks eventually tumble too.



## 1998

- Oil prices start a free fall to below \$11/bbl and E&P stocks plummet.
- Kayne Anderson raises its first standalone energy fund.
- Exxon buys Mobil for \$81 billion, forming Exxon Mobil Corp. and forming the largest non-state-owned oil and gas company in the world.
- The Kyoto Protocol is instituted.



- The search engine Google is created.
- Lime Rock Partners and Quantum Energy Partners are formed.
- BP, Amoco combine in \$48 billion merger. Kerr-McGee buys Oryx in \$4 billion deal.
- Halliburton buys Dresser for \$8.5 billion. Baker Hughes acquires Western Atlas for \$6.5 billion.
- Canada's Deep Foothills gas play booms.
- Coalbed methane plays in U.S. flourish.
- Occidental pays \$3.6 billion for Elk Hills Naval Petroleum Reserve.

## 1999

- BP buys ARCO for \$26.8 billion.
- Mitchell Energy announces that it has made vertical Barnett Shale completions economic by using light sand fracture treatments.
- Boris Yeltsin resigns as president of Russia and is replaced by Vladimir Putin.
- BP discovers the 1 Bbbl Thunder Horse Field in the GoM.
- Convergence of electric utilities and natural gas pipelines creates new energy conglomerates.
- Lower 48 oil output at 50-year low.
- Crude prices fall to \$10/bbl. U.S. rig count reaches new low of 488.
- Northwest Territories become hot spot in Canada.
- U.K. North Sea oil production breaks record, reaching 2.62 MMbbl/d.
- Canadian export pipeline expansion continues.
- OPEC moves to further cut output. Oil price recovery begins; year-end prices climb to \$24.



# Oil and Gas Investor

## 2000

- California experiences the first of two years of rolling blackouts.
- The U.S. hands over control of the Panama Canal to Panama.
- Chevron buys Texaco for \$36 billion, creating the 2nd largest U.S. oil and gas company.
- Exxon Mobil begins first full year of operations after year-end \$81 billion merger.
- Oil prices rise to \$37; gas prices to \$5-plus.
- Industry focuses on stock buybacks, paying down debt.
- BP Amoco acquires Arco for \$28 billion. Burlington buys POCO for \$3.7 billion. Chevron and Texaco agree to merge.
- Drilling heats up in Northwest Territories and offshore eastern Canada.
- PetroChina shares debut on NYSE, raising \$3.1 billion.
- Mid-caps' earnings up 358% due to higher commodity prices.
- E&P IPOs come to market in fall.
- Kansas City Board of Trade discontinues gas futures trading.



## 2001

- Early stages of U.S. energy supply crisis forecast by Matt Simmons of Simmons & Co. International.
- Chevron acquires Texaco for \$40 billion, forming ChevronTexaco.
- Enron stock price collapses, causing a debt-related catastrophic chain of events that forces the company into bankruptcy and dissolves. Other energy marketers, e.g. Dynegy, El Paso, Williams and Aquila, take a dive too.
- Devon Energy Corp. buys Mitchell Energy & Development for \$3.5 billion, gaining entry to the Barnett Shale gas play in northeast Texas.
- The World Trade Center and Pentagon are attacked by foreign terrorists using commercial airliners. A fourth hijacked jet is forced down by passengers in a field in Pennsylvania.
- The U.S. invades Afghanistan and ousts the Taliban.
- Year-end Nymex 12-month strip for WTI is \$20.47, tumbling from a pre-September 11 price of some \$30; natural gas, \$2.81.
- Energy MLPs post a 41.8% total shareholder return during the year; major oils, 0.1%; U.S. small-caps, -29.4%.



## 2002

- Conoco and Phillips merge in a \$35 billion deal.
- The euro becomes the currency of 12 European nations.
- Congress passes Sarbanes-Oxley Act of 2002 to tighten corporate governance and accounting.
- ChevronTexaco plans an LNG facility on the Gulf Coast.
- National strike in Venezuela briefly shuts down Venezuelan oil production.
- Shell Oil Co. acquires Pennzoil's Quaker State Co. for \$1.8 billion.



# Oil and Gas Investor

## 2003

- The U.S.-led Operation Iraqi Freedom begins. Saddam Hussein is captured by U.S. forces.
- Royalty relief is offered to deep-shelf Gulf of Mexico drilling.
- Mikhail Khodorkovsky, chief executive of Russia's Yukos Oil Co., is arrested for fraud and tax evasion.
- Department of Energy forecasts U.S. natural gas use will increase 54% by 2025.
- Midsize Canadian producers post a year-end total shareholder return of 29.4%; large-cap U.S. producers, 5.9%; small-caps, -10.1%.
- Total footage drilled in the U.S. grows to 177,074 but short of 1985 total of 313,045.
- U.S. oil imports grow to some 10 MMbbl/d.
- Oil falls below \$25/bbl.
- The U.S. opens its new Department of Homeland Security.
  - Federal Reserve Chairman Alan Greenspan warns of natural gas shortages.

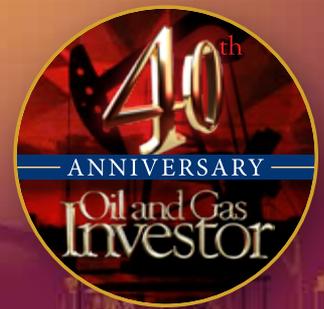


## 2004

- Na Kika begins producing from 7,600 ft of water in the GoM.
- U.S. oil imports at a record 11.3 MMbbl/d.
- Southwestern Energy announces the discovery of the Arkoma Basin's Fayetteville Shale play.
- Facebook is founded by Mark Zuckerberg and friends.
- Encana Corp. agrees to buy Midland E&P Tom Brown Inc. for \$2.7 billion.
- Range Resources fracture stimulates the Marcellus Shale in its #1 Renz well in Pennsylvania.
- Concho Equity Holdings is formed by Timothy A. Leach and partners, which would go public three years later as Concho Resources Inc.
- U.S. oil imports reach a record 11.3 MMbbl/d.
- Royal Dutch/Shell makes a significant downward revision to its proved reserves.
- Rosneft acquires the largest unit of Yukos Oil Co., which has been forced into bankruptcy for not paying taxes.
- Oil production in the U.K. North Sea declines 10%.
- Hurricane Ivan destroys eastern Gulf of Mexico infrastructure, particularly pipelines.
- Bombings at Madrid's rail stations kill more than 200. Two months later, a new Spanish prime minister withdraws Spanish troops from Iraq.
- Venezuelan citizens attempt, but fail, to recall President Hugo Chavez.
- A global nuclear black market is exposed upon the death of A.Q. Khan, father of Pakistan's nuclear bomb.
- A tsunami kills tens of thousands along the Asian and African coasts.
- OPEC reduces its quota. The 12-month oil price strip finishes the year at \$42.66; natural gas, \$6.33.



# Timeline of Events

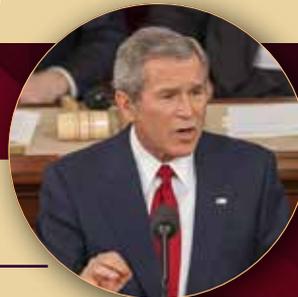


## 2005



- Hurricanes Katrina and Rita smash into the U.S. Gulf Coast, knocking out significant offshore production for months. Oil prices spike to more than \$70/bbl; natural gas, more than \$15.
- Chevron and CNOOC vie for Unocal; Chevron wins in \$16.4 billion deal.
- Gulf Gateway Energy Bridge Deepwater Port opens, the first LNG receiving/regasification facility to be built in the U.S. in 20 years.
- President Bush signs the Energy Policy Act of 2005.
- Occidental Petroleum Corp. resumes E&P operations in Libya

- after being banned since 1986.
- ConocoPhillips bids \$35 billion for independent Burlington Resources and its strong U.S. natural gas position.
- In Texas City, Texas, an explosion at BP's refinery kills 15 and injures 170 others.
- Natural gas hits record high of \$15.65/MMBtu.
- Acquisition priced for proved reserves in the U.S. average some \$11.50/boe; in the Gulf of Mexico, \$22.
- London hit by Islamic terrorist bombings. Tony Blair becomes first Labour Party prime minister to win three successive terms.



## 2006

- Anadarko pays \$21 billion for Kerr McGee and Western Gas Resources.
- LNG imports to the U.S. reach their highest level at 3.1 Bcf/d.
- Oil on Nymex grows past \$75/bbl; natural gas prices abate to under \$7. Supply of oil and gas from the Gulf of Mexico continues to be a concern.
- NYSE Group Inc. starts public trading as NXY.
- Linn Energy goes public as an LLC. Other producers to follow.
- Chevron discovers Jack, the largest deepwater find yet in the Gulf of Mexico Lower Tertiary Trend.
- The International Energy Agency increases its forecast for 2006 world oil demand growth 8%, or 130,000 bbl, to total 1.79 MMBbl/d more than 2005 demand.
- Venezuela changes fiscal terms. Bolivia nationalizes its gas industry. Ecuador cancels Occidental's Block 15 contract.
- GlobalSantaFe's SCORE of offshore day rates reaches 106.1 in January, the highest SCORE since May 1982.
- Petrobras announces mega-field Tupi offshore Brazil.
- The U.S. onshore rig count is more than 1,600.



## 2007

- Chesapeake Energy begins buying acreage across what will become the Haynesville Shale play in Louisiana.
- Apple debuts the iPhone, the first "smart" phone that connects to the Internet and runs applications on a pocket-size device.
- For the first time ever, all 20 of the highest-producing blocks in the Gulf of Mexico are in deep water.
- Six publicly traded upstream MLPs launch, with as many as 20 planned; they outperform C corp equities, yet analysts warn of debt.
- Shale mania is in full swing. Horizontal drilling has increased by 50% since 2002.
- The biggest pipeline buildout ever is underway to move gas out of the Bossier, Barnett, Fayetteville and Woodford shales. The Barnett alone now produces 2 Bcf/d.

# Timeline of Events

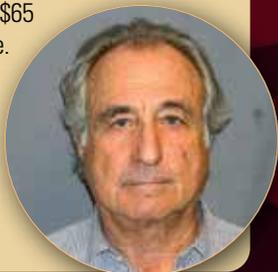
## 2009

- Crude plunges to \$34/bbl.
- Suncor Energy agrees to buy Petro-Canada for \$14.8 billion.
- China becomes world's second-largest oil importer.
- Natural gas falls back to \$3/Mcf.
- EOG Resources' Jake well in northern Colorado produces 50,000 bbl/d in first 90 days, opening up the Niobrara horizontal shale play in the Denver-Julesburg Basin.
- President Obama and Chinese President Hu unveil U.S.-China Shale Gas Initiative.
- U.S. oil production starts increasing for the first time in decades, mainly from the Bakken and Eagle Ford shales.
- GoM production reaches a high of 1.5 MMbbl/d.



## 2008

- T. Boone Pickens launches his grassroots campaign for U.S. energy independence, the "Pickens Plan." He also publishes his book of late-in-life reflections, "The First Billion Is The Hardest."
- Oil soars to a record \$147/bbl on the Nymex; natural gas peaks at \$13 per Mcf.
- Lehman Brothers implodes and the financial crisis spreads globally, creating the Great Recession.
- Chesapeake Energy Corp. unveils the newest shale, the Haynesville, in northwestern Louisiana, triggering a leasing frenzy.
- Hurricanes Gustave and Ike hit the Louisiana and Texas Gulf coasts two weeks apart, causing more than 1.1 MMbbl/d crude and 5.5 Bcf of gas to be shut in.
- Bernard Madoff is arrested as head of a \$65 billion Ponzi scheme.
- Petrohawk Energy announces the discovery of the Eagle Ford Shale play in South Texas.



## 2010

- The Dodd-Frank financial reforms are signed into law.
- Exxon Mobil buys XTO Energy for \$30 billion to enter on-shore U.S. resource plays.
- The Deepwater Horizon explodes, catches fire and sinks at BP's Macondo well in the GoM, killing 11 men and marking the largest marine oil spill in oil and gas history.
- Chevron buys Atlas Energy for \$4.3 billion to enter the Marcellus Shale play.
- World oil demand hits record 80 MMbbl/d.
- WTI averages \$75/bbl; gas averages \$4.43/MMBtu.
- Continental Resources deploys the first "walking" rig in the Bakken play, the ECO-Pad, based on a patent it filed in the 1980s. The technology allowed multiple wells to be drilled on a single wellsite without having to rig down.
- The world's tallest building, the 2,716-ft Burj Khalifa, opens in Dubai.
- Royal Dutch Shell enters the Marcellus Shale in a \$4.7 billion deal with East Resources.
- Congress and the EPA study fracturing in shales, threatening to derail the production surge.
- China's CNOOC takes a \$2.2 billion, one-third interest in Chesapeake Energy Corp.'s Eagle Ford Shale play, marking the first time Chinese interests were allowed by Congress to own U.S. assets since barred from buying Unocal.
- U.S. DOE authorizes Cheniere Energy to build first LNG export facility.



## 2011

- Russia joins the World Trade Organization.
- S&P downgrades U.S. sovereign debt from AAA to AA+.
- WTI peaks at \$114/bbl in April. E&Ps raise \$6 billion of equity in the first quarter alone and \$15 billion of debt by June.
- President Obama authorizes the release of 30 MMbbl over 30 days from the Strategic Petroleum Reserve to offset the loss of 1.5 MMbbl/d production when Libya broke into civil war.
- Australian conglomerate BHP Billiton agrees to buy Petrohawk Energy for \$15 billion, a 65% premium.
- ConocoPhillips plans to spin off its downstream assets into Phillips 66, thereby becoming the largest independent E&P in the U.S.
- The U.S. Geological Survey raises its gas reserve estimates for Cook Inlet, Alaska, to 19 Tcf, more than eight times the previous estimate, based on the addition of unconventional resources.
- For the first time in decades, OPEC members fail to agree on production quotas; oil averages \$102/bbl in the second quarter.
- KKR purchases Samson Resources for \$7.2 billion as large buyout firms target shale players.
- Chesapeake Energy unveils Utica Shale; USGS says it may hold 38 Tcf, a number later revised more than tenfold.



## 2013

- Mexico's Congress votes to open up the country's oil and gas sector to private investment for the first time in 75 years.
- The Boston Marathon is bombed, killing three people and injuring 264 others.
- Pioneer Natural Resources Co. announces the first successful horizontal Wolfcamp A on the west side of the Midland Basin at 1,712 boe/d.
- Asian NOCs buy more stakes in U.S. shales, with Sinochem purchasing a 40% interest in Pioneer Natural Resource's Wolfcamp position for \$1.7 billion, Sinopec acquiring 50% of Chesapeake Energy's Mississippi Lime acreage for \$1 billion and Tokyo Gas buying 25% of Quicksilver Resources' Barnett Shale portfolio for \$485 million.
- TexasPetro Index of drilling indicators passes 2008 peak.
- Freeport-McMoRan acquires Plains Exploration & Production for \$16.3 billion.
- Linn Energy merges with Berry Petroleum for \$4.9 billion.
- A Saudi prince warns that U.S. shale output is "an inevitable threat."

## 2012

- Gas supply glut pushes prices to \$1.82/MMBtu, the lowest level since 2002 and leading to massive reserves write-downs.
- NASA's Curiosity rover lands on Mars.
- More E&Ps announce the switch to horizontal drilling for oil.
- Kinder Morgan merges with El Paso Corp. for \$38 billion and becomes the largest U.S. midstream operator.
- Diamondback Energy Inc. completed its IPO of 12.5 million shares at \$17.50 each, receiving net proceeds of approximately \$204.6 million.
- The "zipper fracking" technique, whereby operators drill two wells side by side and then frac them simultaneously, is developed by professors at Texas Tech University, boosting efficiencies and lowering costs.
- Matador Resources receives approximately \$127.6 million at the completion of its IPO.
- Chesapeake Energy Corp. announces multiple agreements to sell the vast majority of its Permian properties for approximately \$6.9 billion in a historic exit from the region.
- Foreign buyers flock to North American shales. CNOOC buys Calgary's Nexen for \$15 billion. Sumitomo inks \$1.4 billion joint venture with Devon Energy. Marubeni agrees to \$1.3 billion Eagle Ford joint venture with Hunt Oil.



# Oil and Gas Investor

## 2014

- TransCanada begins oil deliveries through the southern leg of the Keystone XL Pipeline.
- RSP Permian completes IPO, receiving approximately \$400 million.
- Devon Energy acquires GeoSouthern Resources in the Eagle Ford Shale for \$6 billion.
- Parsley Energy Inc.'s shares rise by 21.5% after its \$925 million IPO.
- Encana Corp. bolsters its Permian assets in a big splash by acquiring Athlon Energy Inc. for \$7.1 billion.
- WTI returns to \$107/bbl.
- North Dakota output passes 1 MMbbl/d for first time; Texas oil output passes 3 MMbbl/d for first time since late 1970s.
- U.S. rig count reaches 1,930 in November.
- Halliburton and Baker Hughes propose \$35 billion merger, largest ever between service companies—but deal collapses under government scrutiny.
- OPEC's "Thanksgiving Surprise" to not cut production tanks world oil prices. WTI ends the year at \$53/bbl.
- Whiting Petroleum expands its Bakken Shale position in a \$6 billion deal for Kodiak Oil & Gas.
- New York State bans hydraulic fracturing, blocking Marcellus Shale mineral holders from reaping the financial bounty from the land grab taking place across the Pennsylvania border.



## 2015

- U.S. natural gas production reaches record high of 79 Bcf/d; shale gas accounts for more than half.
- In April, for the first time ever, gas-fired power generation surpasses coal-fired power.
- Exxon Mobil announces the Liza discovery in the Stabroek Block offshore Guyana.
- Noble Energy buys Rosetta Resources for \$3.9 billion.
- NASA's New Horizons spacecraft takes first close-up photos of Pluto.
- WPX Energy merges with RKI Exploration & Production for \$2.75 billion.
- Oilfield service companies Schlumberger Ltd. and Cameron International merge in \$14.8 billion deal.
- Congress ends ban on U.S. oil exports.



## 2016

- In January, ConocoPhillips and NuStar Energy ship the first U.S. crude abroad since 1975, sourced from the Eagle Ford play.
- Oil sinks to \$27/bbl in February. U.S. rigs drop to 480.
- Cheniere Energy exports the first U.S. LNG with a shipment from its Sabine Pass terminal in Louisiana.
- Shell pays \$70 billion for BG Group, a leader in global LNG transportation.
- Aubrey McClendon, "America's Most Reckless Billionaire" per Forbes, dies in an early morning car crash a day after he was indicted for violating antitrust laws.
- The 1,172-mile Dakota Access Pipeline, a lifeline for Bakken producers and

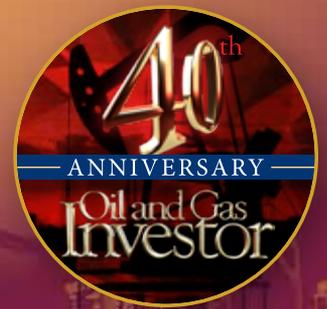


following protests, sabotage and court battles, goes into service.

- EOG Resources purchases Yates Petroleum Corp. for \$2.5 billion.
- The U.S. active rig count falls to 404, the lowest ever recorded by Baker Hughes since it started gathering data in 1940.
- Eclipse Resources sets record for extended-reach wells in shales, drilling an 18,500-ft lateral in Ohio's Utica play.
- Range Resources is first to export ethane from the Marcellus to Europe in purpose-built ships.
- Gulf of Mexico crude production set an annual average production record, topping 1.6 MMbbl/d, following eight new projects coming online.



# Timeline of Events



## 2017

- Newly elected President Donald Trump moves quickly to kill many Obama administration environmental regulations that might impede the oil and gas industry and withdraws the U.S. from the Paris Climate Accord.
- Exxon Mobil buys Bass family-owned company BOPCO for \$6.6 billion targeting the New Mexico Delaware Basin.
- Clayton Williams Jr. sells his family enterprise to Noble Energy for \$3.2 billion.
- The Permian Basin Wasson Field tops 2 Bbbl cumulative production from the San Andres Formation.
- The U.S. becomes a net exporter of natural gas.
- Gulf of Mexico producer Talos Energy buys Stone Energy post-bankruptcy to become a publicly traded company.
- Eight major hedge funds cut stakes in 10 of the biggest Permian producers, citing concerns a drilling frenzy would lead to a new oil price crash and beginning an era of investors calling for free cash flow from producers before growth.
- Hilcorp Energy pays \$3 billion for ConocoPhillips San Juan Basin gas assets.
- Devon Energy announces a 5,100 boe/d Meramec well in the STACK play in Blaine Co., Okla.
- EQT Corp. acquires Rice Energy, started by three brothers on a kitchen table, for \$8.2 billion.
- Torrential rains from Hurricane Harvey pummel the Texas and Louisiana Gulf Coast, shutting in production onshore and offshore and curtailing refinery output for days.
- U.S. rig count rebounds to 933.
- Noble Energy Inc. acquired longtime Midland independent Clayton Williams Energy Inc. for \$3.2 billion. The purchase included 2,400 gross drilling locations in the southern Delaware Basin.
- Exxon Mobil produces first oil from its Hebron platform in the Jeanne d'Arc Basin offshore Canada.
- EnCap Investments raises \$7 billion in its Fund XI for energy investments.
- U.S. crude exports top 2 MMbbl/d, an all-time high.



NETFLIX



## 2018

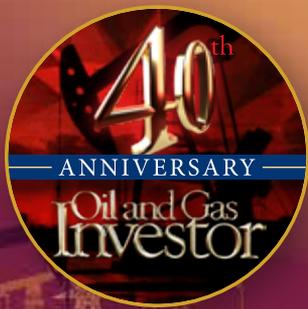
- Dominion Energy commissions its 5.25 mpta Cove Point LNG facility in Maryland, the second U.S. LNG export terminal to be sourced from shale gas.
- Matador Resources Co. purchases a slight 8,400 net acres in Lea and Eddy counties, New Mexico, for a record-high price of \$95,001 per acre at a BLM auction.
- The U.S. exported more crude oil and finished products than it imported for the first time on record, with net exports of 211,000 bbl/d for the week through Nov. 30.
- BHP Billiton exits U.S. shales in a \$10.5 billion sale to BP America.
- Venezuela production falls to 1.2 MMbbl/d, a 30-year low.
- Concho Resources buys RSP Permian for \$9.5 billion; Diamondback Energy takes out Energen Corp. for \$9.2 billion.
- Offshore contract driller Transocean acquires Ocean Rig UDW for \$2.7 billion, and Ensco Plc buys rival Rowen Cos. in an all-stock transaction worth \$2.4 billion.
- WTI tumbles 40% October to December, from \$76 to \$45, spurred by U.S.-Sino trade frictions and growing U.S. oil supply.



## 2019

- Natural gas prices at Waha Hub fell below zero in a first of several negative forays over the next two years due to Permian Basin takeaway constraints.
- Anadarko Petroleum Corp. shareholders approve the \$55 billion merger with Occidental Petroleum Corp. The merger was the fourth largest in the history of North American upstream.
- Rattler Midstream LP completed the year's largest, at the time, midstream IPO, selling 38 million shares to the tune of \$665 million in proceeds.
- Activist investors led by former Rice Energy executive Toby Rice take over control of EQT Corp. following a proxy fight.
- The U.S. exported more crude and finished products than Saudi Arabia, shipping nearly 9 MMbbl/d to markets across the globe in June.
- The energy sector drops to 4.3% of the S&P 500, down from 25% in the 1980s, and ranked last in performance overall despite rising oil prices.





# Timeline of Events

## 2020

- U.S. crude production reaches 13 MMbbl/d, making it the world's largest producer over Russia and Saudi Arabia.
- The outbreak of the COVID-19 pandemic forces countries worldwide to issue stay-at-home mandates, causing global oil demand to plummet by approx. 20%.
- After beginning the year above \$60, storage topping fears cause WTI futures to momentarily drop to negative \$37/bbl, the first time ever to fall below zero. Natural gas dips below \$2 per Mcf.
- Protests and riots erupt across the U.S. following the knee-on-the-neck killing of George Floyd by a Minneapolis police officer.



- Hilcorp Energy becomes Alaska's second-largest oil producer with \$5.6 billion acquisition from BP Plc.
- U.S. rig count falls to 250 by midyear.
- Thailand-backed Kalnin Ventures buys Devon Energy's Barnett Shale position, including the original George Mitchell discovery wells.
- Renewable energy sources overtake coal as the No. 2 electricity generation source in the U.S. at 21%.
- Chevron acquires Noble Energy for \$13 billion.
- U.S. crude exports reach a record high, averaging more than 3.5 MMbbl/d.



## 2021

- President Joe Biden rejoins the Paris Climate Accord and kills the Keystone XL Pipeline permit.
- A flurry of E&P consolidation blows through the sector: ConocoPhillips buys Concho Resources for \$13.3 billion, Devon Energy acquires WPX Energy for \$5.7 billion; Pioneer Natural Resources purchases Parsley Energy and Double Point Energy for \$14 billion; and Diamondback Energy rolls up QEP Resources and Guidon Energy for \$3 billion.
- Amazon billionaire Jeff Bezos and three guests take a 10-minute ride into space on his Blue Origin New Shepard ship.
- Haynesville Shale pure-play Vine Energy Corp. goes public, marking the first E&P IPO in three years. A few months lat-



er Chesapeake Energy announced it would buy Vine for \$2.2 billion.

- Cimarex Energy and Cabot

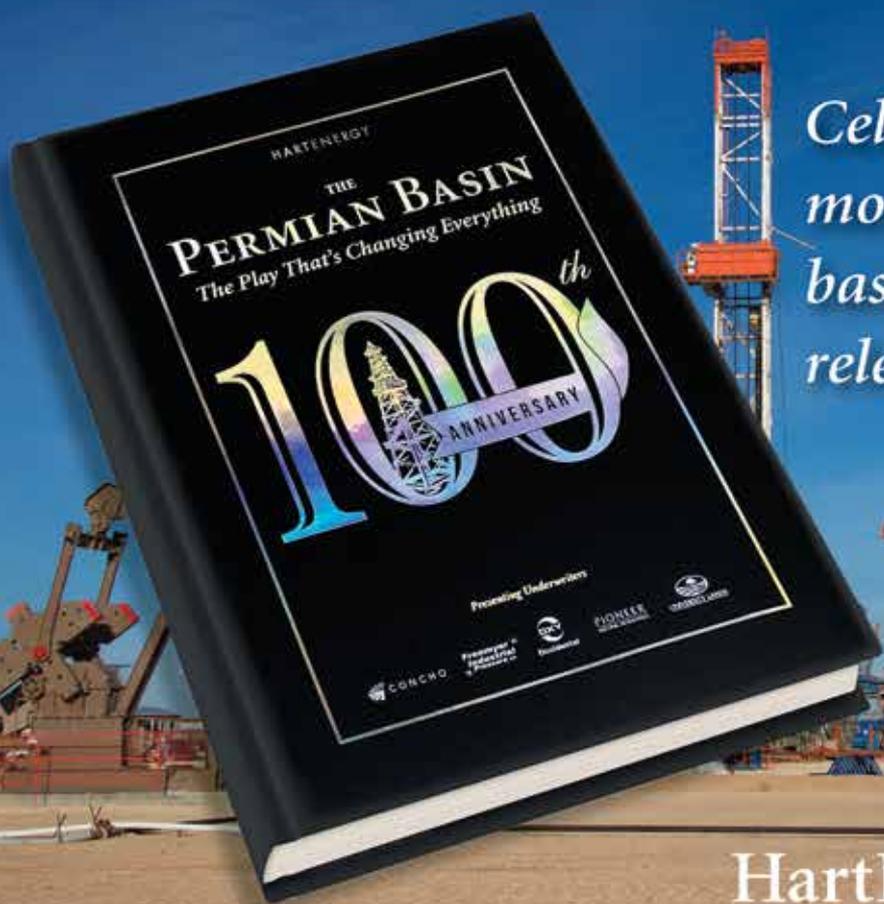
Oil & Gas announce they will merge for a combined \$17 billion enterprise value.

- WTI crude hovers around \$70; Henry Hub natural gas finds \$4 again.





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# APPLYING A CLEARER LENS

While the oil and gas industry and the environmental community don't see eye-to-eye, the first step toward seeing the energy transition would be for all to agree that the climate advocacy battle has been largely won.

**Editor's note:** *This is the second in a four-part series Oil and Gas Investor is featuring with Kenan-Flagler Energy Center at the University of North Carolina (UNC) at Chapel Hill. Part three will appear in the October issue.*

ARTICLE BY  
STEPHEN ARBOGAST

**T**rip and Kelly had been classmates at UNC Kenan-Flagler Business School where they both took the energy concentration. Thereafter, Trip went to work for a Texas oil and gas midstream company while Kelly took a job in sustainability and electric power in North Carolina. Three years passed and they met at a school reunion. It didn't take long for sharp differences over the energy transition to surface:

**Kelly:** "I'm surprised you're still working in a sunset industry. You always gave me the impression of wanting to work for a firm where you could spend a whole career."

**Trip:** "You clearly haven't been looking at the global energy outlooks. Both the U.S. Energy Information Administration and the International Energy Agency [IEA] have global oil and natural gas demand growing for decades."

**Kelly:** "Don't be so confident about those outlooks. Have you seen the number of places outlawing internal combustion engines? How about all the companies pledging to reach net-zero emissions within the next few decades? And the IEA is now saying we can't afford new oil and gas investments if we're serious about addressing climate. Moreover, just look at what's been happening at Exxon Mobil Corp.—I mean seriously, do you think it will stop with just engine No.1?"

**Trip:** "Beware of politicians and CEOs making fashionable pledges they won't be around to have to deliver."

**Kelly:** "That's the trouble with you oil industry people—you don't really take the climate issue seriously. You talk about it but never spend any real money to address the needed transition. The messaging is all PR

to defend your core business—just rabid greenwashing!”

**Trip:** “You should talk. Climate activists speak constantly about the timing urgency around climate but then turn around and block lots of things that would actually help, such as natural gas pipelines and nuclear plants. Your biggest piece of propaganda is that the world can decarbonize with wind, solar and batteries. Nothing gives the lie to your urgency claims like pretending China, India and the developing world can decarbonize that way. They can’t. And the longer you cling to that fiction, the more ‘precious’ time you waste before you finally get around to facing the tough issues and necessary tradeoffs.”

**Kelly:** “At least wind, solar, EVs and storage are making a zero carbon impact. If it was up to you in the oil industry, we’d still be debating whether climate is an issue while keeping gas guzzlers on the road.”

**Trip:** “Enjoy your Goldilocks renewables moment. I’ll enjoy seeing your resume circulate when the hidden problems, all the issues buried in today’s climate narrative, really surface.”

This discussion, fictitious though it is, takes a stab at surfacing what many actually think on both sides of the energy transition debate. It also illustrates the ongoing “dialogue of the deaf.” How true are these strongly felt views? Let’s unpack them and see if there is any sort of pathway to common ground.

One way to seek out that common ground is to explore the assumptions hidden inside each side’s narrative. Once these surface, the actual areas of disagreement can be discussed. There is also a need to acknowledge the self-interests and political strategies in play. These cause both sides to focus unstintingly on their own story lines. We’ll examine the hidden assumptions and associated stratagems below as regards to three large questions: 1) What is climate science saying that’s really settled? 2) How committed is the oil industry to participating in the energy transition? and 3) To what extent is the environmental community’s version of the energy transition unrealistic and/or internally contradictory?

### **How settled is the climate science?**

There is a strong conviction within the environmental community, and increasingly the U.S. public at large, that the oil industry is filled with climate deniers. This, they assume, is overwhelmingly the product of an unwillingness to admit an inconvenient truth that threatens their business.

The reality is more nuanced and not just because an industry as large as oil and gas will encompass some diversity of views. The oil and gas industry has a strong scientific and technical basis. There is broad understanding of the greenhouse gas (GHG) effect and acceptance that the earth is presently undergoing a warming trend. Moreover, more than one company board has

brought in climate scientists from places such as MIT. They’ve looked at the range of possible scenarios, including some very scary ones if the more extreme projections play out. This journey now underpins the acknowledgements of climate risk found on energy company websites, in proxy material and in communications put out by groups such as the API.

On the other hand, many in the industry continues to assume that the certainty touted by climate scientists is exaggerated. This view is based on not just self-interest, but on experience within their own industry. Many of their skeptical assumptions about climate science stem from their own attempts to model oil and gas projects. They’ve found that, to some degree, their own project models are almost always wrong.

Decades of experience have convinced them that modeling complex systems during long periods of time is hugely imprecise. Many assumptions must be made to compensate for areas where reliable historical data is thin. Then, variables don’t behave as expected, constants don’t stay constant and unanticipated factors radically realign what’s possible going forward. Here the industry’s technical knowledge also advises that the climate system is hugely complex, subject to many variables and is not well understood in key dimensions. Oil and gas executives also recall previous draconian forecasts, such as the 1970s Club of Rome study predicting the world would run out of natural resources by 2000 or the repeated forecasts of “peak oil” production—all of them hopelessly incorrect.

This perspective then directs the industry toward assuming that any forecast, climate outcomes included, is best treated as a probability exercise. Where do most of the outcomes tend to cluster, how big are the risk tails in the distribution? Policies, they believe, should be based on this kind of assessment. Actions and capital should then be allocated toward the better bets.

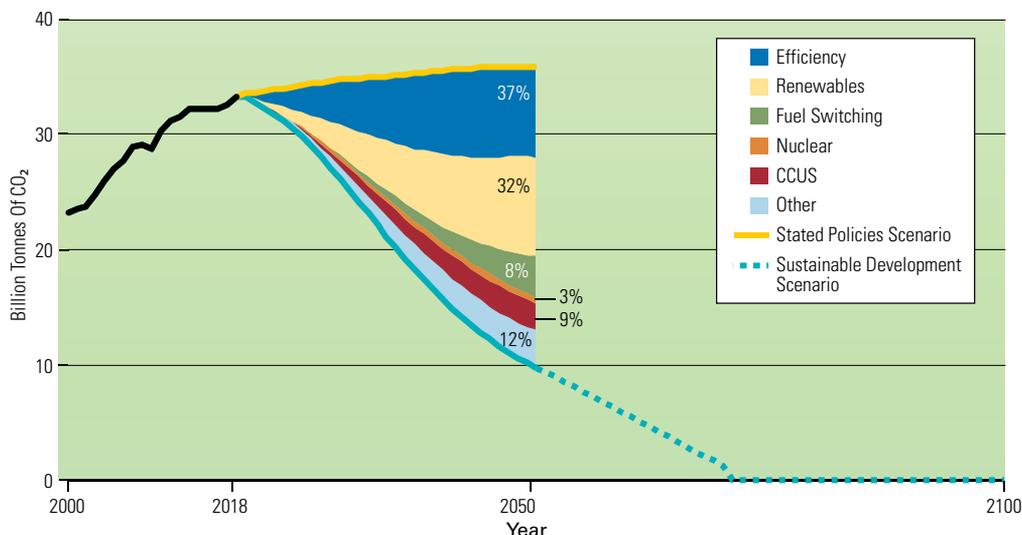
From this perspective, many conclude that tearing down the installed infrastructure providing some 80%-plus of the global economy’s energy and replacing it in a matter of decades seems not just a bad bet but an exercise in irrationality. It not only can’t be done, it shouldn’t be done based on what we know and don’t know.

The environmental community’s view assumes that climate science has solidified over the past three decades to the point where it is a reliable guide for action. Whereas climate science in the 1990s acknowledged multiple challenges in modelling, measurement and available data, there are now three decades of refinement ground into the research. This refinement has not substantially altered the outlook—continuous warming for the planet correlated with continued GHG emissions and a risk of various systems passing tipping points with dramatic harmful effects.

Chart No. 1, which plots the relationship between CO<sub>2</sub> concentrations and global temperature, 1880 to 2017, illustrates this view. The worst scenarios are truly dreadful. Here there is concern that if the earth’s ecosystem pass-

“Over time, the industry actually has spent meaningful dollars on diversifications away from oil and gas. Many of these were broadly aligned with the energy transition.”

## Global Emissions For The IEA's Stated Policies Scenario And Sustainable Development Scenario



Source: Based on data from International Energy Agency, World Energy Outlook 2019.

es certain tipping points, there is no way back. Much of the scientific community that has studied the research supports this assessment as “state of the art.”

Moreover, timing matters. If the 2 C targets serve as the best starting point for a climate strategy discussion, the environmental community assumes there is little chance of achieving those goals without dramatic changes. Said differently, if the global economy wants to make sure the most damaging scenarios don’t come to pass, there is no time to waste. Serious decarbonization must begin now.

This view is connected to a third but barely acknowledged assumption. The environmental community knows that fossil fuels are entrenched as the basis for modern life. Economics, inertia, collateral issues—the list of factors likely to derail efforts to decarbonize is long. Some of the environmental community’s exaggeration and unwillingness to brook dissent stems from a view that the impetus for decarbonization could easily drain away if doubts are allowed to take hold. It believes that oil and gas industry opposition is one factor promoting such doubts.

In surveying this landscape, it becomes clearer that the environmental community sees the industry as both unconverted and untrustworthy on climate risk, while the industry sees the environmental community as uninterested in any discussion of the complexities. There are elements of validity in both views.

### Oil and gas’ commitment

There are plenty of reasons for assuming that the industry is ambivalent about investing in the energy transition. There is the obvious reason that the transition threatens their core business. In most energy transition scenarios oil and gas becomes a consolidating industry heading toward a smaller footprint in some markets. More evidence of ambivalence is found within industry capital budgets. The environmental community has correctly noted that the industry spends only a small per-

centage of its capital funds on anything that can be called energy transition—be it research, pilot projects, at-scale projects or acquisitions. From 2010 to 2014, majors such as Exxon Mobil Corp., Chevron Corp. and Royal Dutch Shell Plc each spent an excess of \$30 billion annually on oil and gas projects. Almost none of their spending could be characterized as energy transition focused.

This disconnect between what the industry spends on funding the transition and its messaging on things such as carbon taxes has convinced many that the industry is just playing defense to sustain its business.

However, other assumptions are at play in the industry’s tepid commitment to energy transition spending, and it would be valuable for environmental activists to pay heed to these beliefs. The first is that “green investments” are not that economically attractive. This assumption is partly based on prior experience. Over time, the industry actually has spent meaningful dollars on diversifications away from oil and gas. Many of these were broadly aligned with the energy transition. After OPEC nationalized its Middle East reserves, Exxon Mobil launched Exxon Enterprises to diversify. It includes a solar company, a nuclear company and Reliance Electric. None of it paid off, and all of it was divested at a loss by 1986. BP too has spent considerable money “going green” since 1998. None of it has resulted in a material new business or a return above BP’s cost of capital. Both Total SA and Shell have initiated small green investments, but their major strategy shift has been from oil toward natural gas. Bottom line: No oil company has successfully diversified into a material green business with returns in line with its historic performance. On the contrary, the industry’s green investments have on average destroyed capital.

There are basic reasons why this is so. Commercializing new technologies typically produces large initial losses. This means fossil fuel firms investing in the energy transition have a choice: 1) they can be a “follower” into established energy transition technologies where they have no competitive advantage and realize commodity-type returns at best; or 2) they can attempt to develop proprietary technology that promises higher returns but involves both high risk and likely startup losses. To date, most industry players, remembering their earlier ventures, have been ambivalent about both paths.

There is another assumption that causes industry ambivalence, and it involves issues on which the environmental community could be helpful. The assumption is that the green pathways open to it will require massive amounts

of government support, which cannot be relied upon long term. The industry sees almost all energy transition investment paths as “out of the money” versus current technology/production.

Wind/solar returns come in single digits. Storage is barely economic in selected locations. Biodiesel from soybean oil is 50%-plus more expensive than normal diesel. Hydrogen, green or blue, cannot come close to competing with natural gas. Carbon capture is a pure cost sinkhole unless it can be quickly routed into EOR. That may work in Texas but is of little help for ethanol plants in Iowa or power plants in New England.

These facts render all energy transition pathways dependent on subsidies, tax credits and mandates that reward their low carbon attributes. For example, the National Petroleum Council recently completed a massive study of carbon capture. It concluded that carbon taxes, or the equivalent in the \$90-plus per ton neighborhood, would be needed for carbon capture, utilization and sequestration (CCUS) to become economic. Such realities run directly into two other principles embedded in the oil industry’s DNA: 1) public policy is inherently volatile, subject to political winds and changes in administration; and 2) therefore, don’t invest in long-term businesses dependent upon government support for their returns.

If it could acknowledge these assumptions, the environmental community could make a major contribution enabling the industry to progress its energy transition technologies. Close inspection will show that energy transition research is one place where the industry has been spending meaningful capital. The environmental community could help energy transition research turn into commercial deployments by supporting a stronger political base for the support which these technologies will need. For this to happen, the environmental community will have to reconsider certain unrealistic assumptions and internal contradictions of its own.

### Environmental community’s vision

The environmental community has been justly credited with putting the need for the energy transition on the global agenda and for propelling it forward through unstinting advocacy. It has been less successful in advancing a credible approach to the energy transition. Its approach, burdened with unrealistic assumptions and contradictions, is becoming an obstacle to progress.

The core problem here is a tension between the timing urgency, which the environmental community promotes, and its assumptions about feasible solutions. Said differently, the environmental community generally believes deep decarbonization must be accomplished during the next 10 to 15 years. It then assumes this can be achieved solely by installing wind/solar and batteries for electricity and

rolling out electric vehicles (EVs) for mobility.

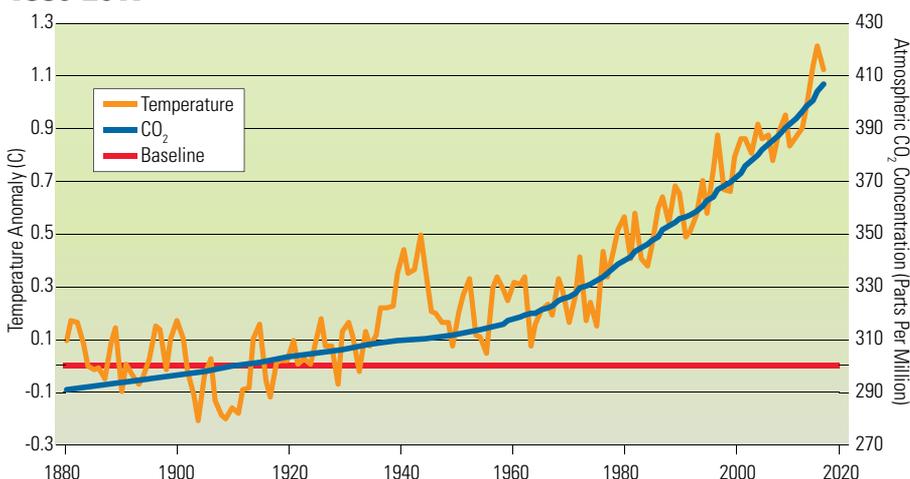
These assumptions may prove woefully inadequate for the avowed goal of deep decarbonization. The list of issues inherent in this environmental community solution set is staggering. Vast sectors, such as aviation, heavy industry and trucking are left largely untouched. There are inherent problems of grid stability, which current battery storage technologies cannot presently solve. It assumes that recent declining renewable cost trends will continue even as a vast scale-up puts rising pressure on input costs for land, connections and raw materials such as lithium and copper. It further assumes that voters will be indefinitely content to pay for massive public sector support for less convenient and more costly forms of energy.

The environmental community’s solution set is really a U.S./Europe solution set, with China as an interesting energy transition laboratory.

The developing world’s energy transition dilemmas suggest deep contradictions in the environmental community’s underlying assumptions. No country on earth is doing more to promote adoption of renewables plus EVs than China. Some 50% of EVs are now sold in that market. Yet, China continues constructing three new coal plants per month to drive its economy. The spectacle of EVs running on “dirty electricity” is now fully on display in Chinese cities. If China, the most advanced and state-led developing nation, cannot even begin decarbonizing via renewables and EVs, what expectation can one have for the rest of the developing world? And, if the developing world keeps increasing its emissions output for another one to two decades, what should one make of the environmental community’s urgent appeals for the U.S. to decarbonize radically during that same period? If climate is a global problem, what is accomplished if one part of the world decarbonizes while another keeps increasing emissions?

How has the environmental community ended up in a position where there appears to be this large disconnect between the climate goals it espouses and the means it endorses? There

**The Relationship Between CO<sub>2</sub> Concentration And Global Temperature, 1880-2017**



Note: Global temperature anomalies averaged and adjusted to early industrial baseline (1881-1910). Source: Climate Central, “Rising Global Temperatures and CO<sub>2</sub>,” Nov. 20, 2018.

“The industry will have to grow further into its role as part of the solution to meeting ‘the dual challenge’ of growing energy supplies while sharply reducing carbon emissions.”

are several factors at play here, including a donor base attuned principally to stopping activities it considers damaging. However, one of the biggest factors is the environmental community’s assumption that the big challenge remains one of advocacy. More specifically, it involves convincing officials, regulators and the public that climate risk is both threatening and urgent. The environmental community then assumes that, once a sufficient consensus is created, solutions will follow.

The lack of realism in this approach is underscored by a source that the environmental community often cites. Chart No. 2 shows the contributions that the IEA sees as necessary to put the global economy on a sustainable pathway to net-zero carbon emissions. Some 20% of those contributions must come from fuel switching, nuclear and CCUS. Another 37% must come from continued efficiency gains. Renewables provide less than a third of the necessary contributions despite an enormous expansion from today’s base. Finally, there is 12% that is simply unidentified. This is not an outlook that suggests that needed solutions are already on hand or can be assumed to arrive on time. Instead it suggests that the emerging challenge will be one of creating pathways for contributions from sources other than renewables.

Having spotlighted the many ways in which the industry and the environmental community assume different things about the issues and then talk past each other, is there any basis for their moving forward more collaboratively? Can greater awareness of how both sides think and some reconsideration of their own assumptions pave the way toward more constructive engagement?

### **Moving past out-moded assumptions**

The first step toward seeing the energy transition through a clearer lens would be for all to agree that the climate advocacy battle has been largely won. There remains legitimate areas for discussion, e.g. the understanding of cloud formation, disagreements among different models, the understanding of feedbacks and natural variability, etc. Still, the consensus around limiting future CO<sub>2</sub> emissions is now broad and deep.

As proof, consider that The National Petroleum Council, in its 2019 report to the Secretary of Energy on Carbon Capture, developed its whole framework with reference to the Intergovernmental Panel on Climate Change’s recent assessment reports and 2 C scenarios. Even nations such as China and India, who continue to prefer development as a national goal, acknowledge that the climate issue is real and deserving of attention. The global discussion now has moved onto what to do, how fast and at what cost.

Its advocacy success means that the environmental community should be undertaking its own “transition.” The focus needs to shift now from what should be stopped. To what are we prepared to enable? All transition energy options involve tradeoffs. Assembling enough of them is going to require choices—or more accurately, choosing enough options so that col-

lectively they can make meaningful progress toward the decarbonization goal line.

This environmental community transition has only just begun. Attitudes toward nuclear power are a good test of willingness to weigh tradeoffs. On one side here, the Union of Concerned Scientists has evaluated the impairment to climate progress of allowing existing nuclear plants to retire and has advocated for safety and economic measures that will allow their continued operations. At the other end of the spectrum, the Sierra Club remains “unequivocally opposed to nuclear energy.”

A greater transition burden will fall on the oil and gas industry. It will have to get past underlying wishes that the climate issue would “just go away.” Pointing out the vital role of energy in daily life and in economic development, as valid as these perspectives are, must now be recognized as insufficient to address public concerns. The industry will have to grow further into its role as part of the solution to meeting “the dual challenge” of growing energy supplies while sharply reducing carbon emissions.

There are several dimensions of this necessary growth, but one deserves particular attention. The industry will have to move beyond its historic assumption not to invest in businesses that require public subsidies/support. As noted, all energy transition pathways are not “in the money” versus current carbon-emitting alternatives. This fact and the hazards inherent in commercializing new technologies make decarbonization businesses unattractive on their own. As a result, the industry will struggle to be part of the solution so long as it sees energy transition businesses that depend on state support as too risky to pursue.

Here is where a new form of engagement between the oil and gas industry and its environmental community critics could take place. An environmental community actively considering the climate/environmental tradeoffs and an industry searching for the most economic pathways toward decarbonization could have fruitful conversations about what to enable. Ironically, one interesting location where this engagement could take place could be the newly constituted Exxon Mobil board of directors. There, the new engine No. 1 directors could come to a deeper understanding of the commercial hurdles facing low carbon pathways and then help Exxon Mobil secure the fiscal support and stability needed to build out its new low carbon ventures business unit.

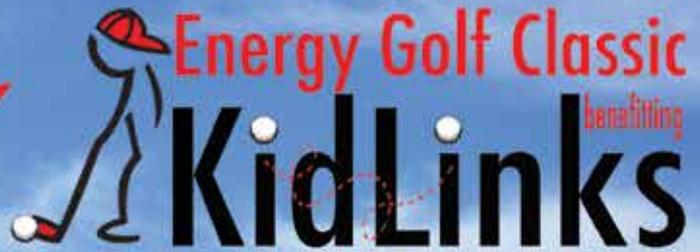
Environmental community/industry engagement could build an enduring consensus of public support for the best low carbon pathways. A stronger such consensus would then enable the industry to bring its considerable resources of technology, capital and operating know-hows to advance decarbonization on the backs of commercially attractive low carbon businesses. □

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*Stephen Arbogast is the professor of the practice of finance and director of the Kenan-Flagler Energy Center at the University of North Carolina (UNC) at Chapel Hill.*

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# FLOWING THROUGH BANKRUPTCY



BY ADAM L. HIRSCH  
AND  
CHRISTOPHER  
RICHARDSON

ILLUSTRATION BY  
ROBERT D. AVILA

With careful structuring and drafting of agreements, midstream companies can increase their chances in surviving bankruptcy.

An E&P's power to reject its midstream agreements in bankruptcy creates great leverage for the company to negotiate better terms with its midstream provider when faced with distress. Whether the E&P actually has this power in bankruptcy has been a hot topic during the past five years. Courts around the country have reached inconsistent conclusions. In some cases, courts have excused E&Ps from out-of-market agreements and granted them leverage to renegotiate with their midstream providers. In other cases, courts have denied an E&P this leverage and forced it to honor the terms of its agreement.

The different outcomes of these cases have raised questions about how midstream companies and their E&P providers can structure their agreements to enhance the predictability of how such agreements will be treated if the E&P goes through bankruptcy. Unfortunately, no silver bullet exists, but parties do have a few tools that they can use to make the treatment of their midstream agreements in bankruptcy more predictable.

### The power to reject

When a company becomes a debtor in bankruptcy, it has a choice about what to do with its contracts and leases. If a contract is exec-

utory—both parties still owe material obligations to one another—the debtor can elect to assume the contract (reaffirming it) or reject it (disavowing itself of the agreement). If the debtor assumes the contract, it must cure all defaults under the contract by payment or otherwise and provide adequate assurance that it will continue to perform under the contract going forward. If the debtor rejects the contract, the rejection is treated as a breach as of the petition date. The other party to the contract will have an unsecured claim in the bankruptcy case for damages that arise from the breach, and the debtor can generally disavow itself of future obligations under the agreement.

The Bankruptcy Code gives the debtor this powerful tool so that it can use the bankruptcy process to shed itself of burdensome contracts and get a fresh start on the other side. The decision of whether to assume or reject a contract is in the debtor's business judgment, and courts frequently honor the debtor's judgment in this regard.

The power to reject burdensome agreements is not without limits. For example, real property interests are typically not subject to rejection in bankruptcy. Midstream



"At a minimum, the midstream agreement should include express, clear and unambiguous language that the E&P's dedication and commitment is an interest that runs with the land."

companies frequently finance the construction of the gathering system with the expectation of recovering that cost through a future dedication of production from the benefitted land, with the expected result being that the E&P's dedications to the midstream company are real estate transactions tied to the land, rather than pure contractual covenants that a debtor can reject.

This arrangement, which is really part financing and part operational, attempts to take the midstream agreement out of the executory contract realm and place it into the real property realm. The issue for the courts turns on whether the E&P's dedication to the midstream company is a "covenant that runs with the land" (i.e., an interest in real property) that precludes the E&P from rejecting the agreement in bankruptcy. These arrangements have been heavily litigated in the past few years, with different courts applying the real property laws of the states where the properties are located, yielding different results after a fact-intensive inquiry.

The requirements for a covenant to run with the land vary from state to state, but in most cases, four elements must be satisfied:

- The covenant must be enforceable;
- The parties must have intended that the covenant run with the land;
- The covenant must "touch and concern" the land; and
- Privity of estate must exist.

Most cases in bankruptcy have turned on the second, third and fourth requirements. Based on these cases, a number of lessons have been taught in structuring and drafting midstream agreements so that they have a better chance to survive scrutiny.

### **The intent**

The parties must intend that the covenants run with the land. At a minimum, the midstream agreement should include express, clear and unambiguous language that the E&P's dedication and commitment is an interest that runs with the land. But clear and unambiguous language of intent, while necessary, is not sufficient.

In one case, a court held that the intent requirement was not satisfied even though the agreement contained express language that the covenants run with the land. The agreement also provided that the exclusive remedy for a breach of the agreement to deliver or purchase the specified quantity of gas would be money damages.

The court held that if the parties truly intended for the dedication covenants to run with the land, they would have excluded a liquidated damages remedy and would more likely have tied the remedies to the dedication itself, focusing on specific performance or injunctive relief.

Another factor in the court's decision was that the agreement also provided that it would constitute a forward contract (to gain addi-

tional benefits under the Bankruptcy Code). The court held that designating the agreement as a forward contract belied the expressed intent that it be a real property interest that runs with the land. A general provision that the contract is binding on successors and assigns has also been held, on its own, an insufficient expression of intent that the covenants run with the land.

The midstream agreement must include at a minimum express language that the E&P's dedication and commitment is a real property interest that runs with the land. But the agreement should also be more holistically consistent with an agreement that conveys a real property interest and require that the dedication be recorded in the real property records. Provisions that treat the mineral interests as a commodity or limit a party's right if the other party breaches the agreement to pursue money damages could risk undermining the agreement's expressed intent.

### **Touch and concern the land**

Whether or not courts find that the mineral interest dedication touches and concerns the land often turns on whether the court views the mineral interest as one pertaining to the minerals in the ground or the severed and produced oil and gas.

Courts have rejected the notion that the mineral dedications touch and concern the land when the dedications do not affect the physical use of the real property itself or are not closely related to it. For example, one court found that the dedication was for severed minerals because it was for all oil and gas *produced* instead of an assignment of specific interests in the oil and gas leases themselves.

Courts have also viewed minimum volume commitments and liquidated damages provisions as indicia of personal property interests rather than dedications of real property that run with the land. In some cases, surface easements granted to build gathering systems have helped courts find the touch and concern element satisfied, though other courts have stated that the easement dealt with surface rights only when the property interest in question was really the minerals in the ground. This requirement has proven difficult for midstream companies seeking to prevent the E&P from rejecting their agreements in many cases.

Midstream agreements should be structured as much as possible to tie the dedications to the mineral interests in the ground and the land itself, rather than solely to the produced minerals or the surface estate. The creation of easements to build and maintain gathering systems and language expressing that the dedication applies to interests in the leases themselves and the producer's interest in all oil and gas reserves "in and under the land" have helped some courts get over the hump of finding that the dedication touches and concerns the land. But other courts have not found this language to be convincing.

## Privity of estate

States differ in how they look at the privity requirement, and courts have reached different conclusions based on similar facts. But privity is generally viewed on horizontal and vertical axes. Most litigation in the bankruptcy context has addressed horizontal privity. Horizontal privity can be satisfied when the original contracting parties share simultaneous interests in the same property.

While courts are not uniform in their application of horizontal privity in midstream agreements, courts have found horizontal privity to exist when the producer and the midstream company enter into the covenants at issue in connection with a *simultaneous* conveyance to the midstream company of a real property interest, such as an easement or gas gathering or water disposal system, and the interest is not somehow severed from the underlying mineral estate.

On the other hand, horizontal privity has been found absent when easements and rights-of-way were conveyed long after a dedication was executed or when the easements and rights-of-way granted on the surface estate were distinct from the dedication of the severed mineral estate. Vertical privity generally exists when a successor to the original contracting party is bound by the covenant and can claim its benefits and be subject to its burdens.

The conveyance of an interest in the land should be done contemporaneously with documenting the midstream transaction. Any easements should be granted *simultaneously* with the dedication of mineral interests and with furtherance of the development of such interests. To the extent that the surface estate has not been severed from the underlying mineral estate, the unity of the real property interest may further help satisfy the horizontal privity requirement.

## Additional solutions

Because bankruptcy courts are not uniform in how they approach covenants that run with the land, other tools may exist for E&P and midstream companies to enhance the predictability of how their midstream agreements will be treated in bankruptcy. No solution is perfect, but creative thinking and collaborative negotiation may help enhance predictability. Additional considerations include:

- *Create a lien on the hydrocarbons.* The midstream company may consider seeking a lien on the hydrocarbons as part of the real estate and once severed. The creation of the lien will secure the E&P's obligations under its midstream agreements and may provide the midstream company with additional leverage in a bankruptcy case. This solution, however, will face resistance from reserve-based lending (RBL). To the extent a lien is permitted under an E&P's RBL credit facility, the RBL lender will likely insist that the midstream company's lien is deeply subordinated to the RBL and require a strong subordination

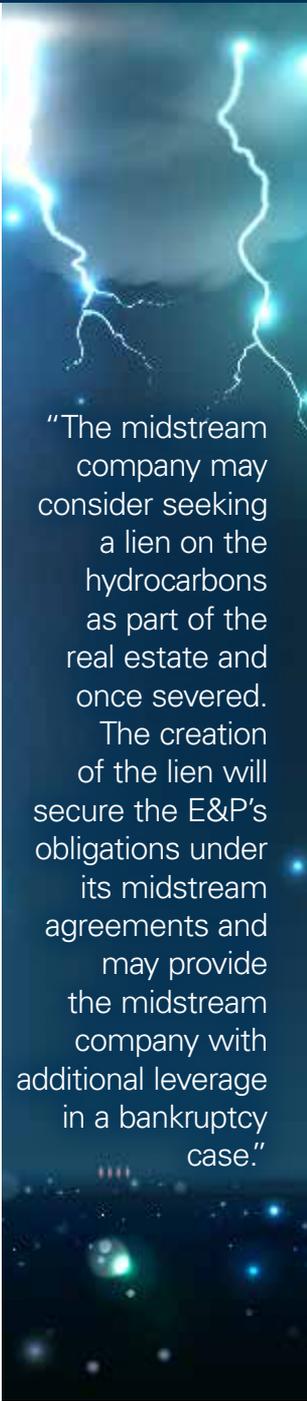
and intercreditor agreement. Moreover, a secured creditor in bankruptcy is only secured to the extent that the collateral has sufficient value to cover the debtor's obligations to it. If the senior loan is underwater, any subordinated lien position will have no value in bankruptcy.

- *Grant a nominal overriding royalty interest.* The E&P may consider granting a nominal overriding royalty interest to the midstream company. This grant may help satisfy the touch and concern and horizontal privity requirements.
- *Require E&P to post letter of credit.* The midstream company may consider requiring the E&P to post a declining letter of credit in its favor. This solution may require clearing similar hurdles with an RBL lender, and posting of cash to backstop the letter of credit will likely tie up cash reserves and availability under the RBL. Obtaining a letter of credit may also prove an expensive endeavor.
- *Tie gathering/transportation fees to price of hydrocarbons gathered/transported with extended term.* Tying fees to commodity prices would disincentivize an E&P from rejecting its midstream agreement as the fees paid to the midstream company would adjust downward in a declining market. This solution, however, may prove non-economic for the midstream company if commodity prices fall below a certain threshold. This risk could be mitigated with a price floor, and the midstream company could benefit from the upside in a high-price environment. The economics of this arrangement would need to be carefully modeled.

## Surviving bankruptcy

Little uniformity has developed in the case law on what parties can do to enhance the predictability of how their midstream agreements will be treated in bankruptcy. Courts presented with similar facts have reached different conclusions. As a result, certainty cannot be guaranteed. But midstream companies can increase the chances that their agreements will survive bankruptcy with careful structuring and drafting to avoid crossing certain guardrails established under existing case law. However, since different jurisdictions approach the analysis differently and absent a lien on the minerals in place, there can be little certainty that a particular agreement will survive a motion to reject. □

*Adam L. Hirsch is a partner in the finance and acquisitions department of Davis Graham & Stubbs LLP and represents clients across the U.S. in all aspects of bankruptcy, business restructuring and related transactions. Christopher Richardson is a partner in the finance and acquisitions department of Davis Graham & Stubbs LLP and focuses on mergers and acquisitions, corporate financing and restructuring work.*



"The midstream company may consider seeking a lien on the hydrocarbons as part of the real estate and once severed. The creation of the lien will secure the E&P's obligations under its midstream agreements and may provide the midstream company with additional leverage in a bankruptcy case."

# The Perfect Pairing

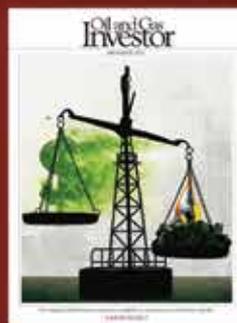
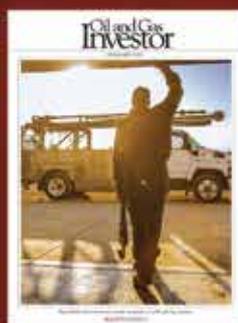
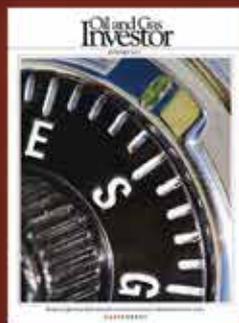
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## Chesapeake Energy To Buy Haynesville's Vine Energy For \$2.2 Billion

**CHESAPEAKE ENERGY CORP.** agreed on Aug. 11 to acquire **Vine Energy Inc.**, which is set to make Oklahoma City-based company the largest producer in the Haynesville Shale.

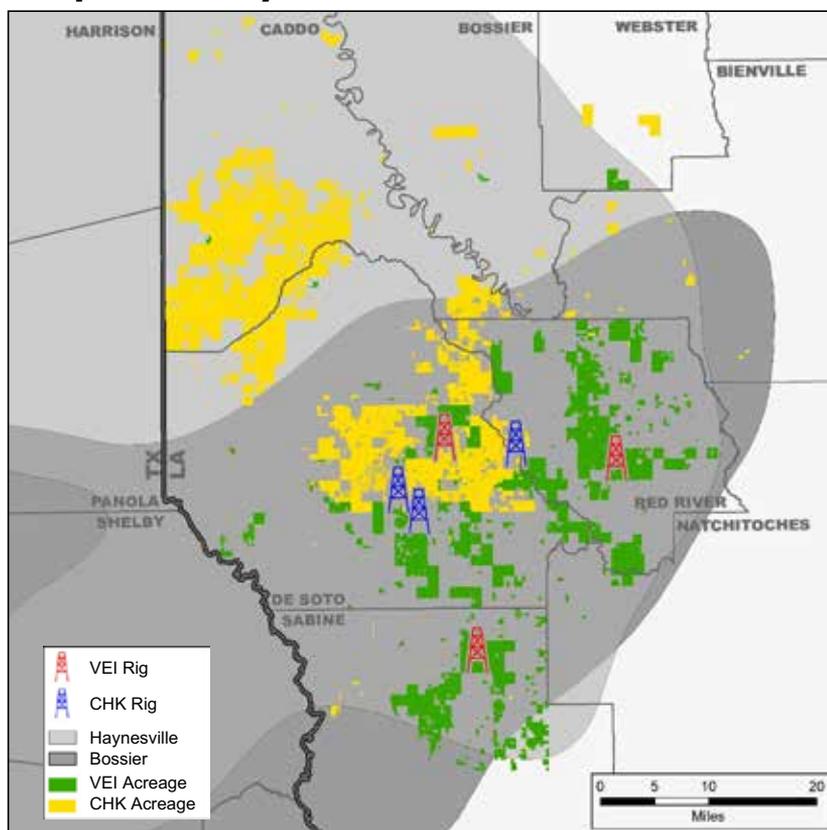
The acquisition is a “zero premium” transaction valued at approximately \$2.2 billion, based on a 30-day average exchange ratio as of close on Aug. 10, equating to \$15 per share. The deal is also expected to help consolidate Chesapeake’s position in Louisiana’s Haynesville Shale, as the company bets on the gas basin’s proximity to the growing LNG export hub along the U.S. Gulf Coast, according to Andrew Dittmar, senior M&A analyst at **Enverus**.

“Given its high focus on gas with nearly 90% of capital spending slated for the Haynesville and Appalachia, it makes sense that the company would look to one of those two basins for an acquisition,” Dittmar said in an emailed statement. “With a mix of public and private acquisition opportunities, strong well results and higher confidence around future pricing for production given its geographic location close to Gulf Coast gas markets and adequate infrastructure, it is easy to see why Chesapeake ultimately chose the Haynesville for expansion.”

Vine Energy shareholders will receive fixed consideration of 0.2486 shares of Chesapeake common stock plus \$1.20 in cash per share of Vine common stock, for total consideration of \$15 per share, comprising of 92% stock and 8% cash with **Blackstone Energy Partners**, which owns 70% of Vine shares outstanding.

“For Vine, the deal ends a brief run as a publicly traded company that started when the Blackstone-funded private E&P went public at \$14 per share in March of this year,” Dittmar said. “That fits the common theme that investors are not interested in growing the ranks of publicly traded E&Ps and want fewer and larger companies in the shale plays. This deal moves the industry one step closer to that goal.”

### Chesapeake/Vine Haynesville/Mid-Bossier Assets



Source: Chesapeake Energy Corp.

Based in Plano, Texas, Vine Energy’s 227,000 net effective acres in the Haynesville Basin located in North Louisiana have exposure to two substantial pay zones: the Haynesville and Mid-Bossier. The company first entered the basin in 2014 through the acquisition by its predecessor of Royal Dutch Shell Plc’s Haynesville position.

Earlier this month, Vine Energy also pledged to become the first natural gas producer in the Haynesville Basin to certify 100% of its assets as “responsibly sourced” through an agreement with Project Canary, joining Chesapeake Energy, which had already announced a similar partnership with the Denver-based firm.

Chesapeake expects the acquisition of Vine to add roughly 370 premium drilling locations with greater than a 50% rate of return at \$2.50 gas. The

company also said the deal will be accretive to operating cash flow per share and free cash flow per share, with \$50 million in savings expected on operating and capital synergies.

Upon closing, Chesapeake shareholders will own approximately 86%, and Vine shareholders will own approximately 14% of the fully diluted shares of the combined company. Additionally, the company’s board had approved an increase on the common dividend of 27% to \$1.75 per share on expected cash flow accretion.

“In our view, strategic rationale of the deal makes sense given acreage footprints, increasing Chesapeake’s Haynesville exposure to 348,000 net acres with pro forma second-quarter net production of 1.58 Bcf/d,” analysts at **Tudor, Pickering, Holt & Co.** (TPH) wrote in a research note.



According to TPH analysts, Chesapeake's standalone guidance may draw some attention on capex of \$900 million to \$1.2 billion versus the TPH estimate of \$840 million and a street value of \$820 million.

"We think the delta lies in rig addition to oil weighted assets," TPH said. "Our current model shows two rigs allocated to oil plays with production of 20.4 MMbbl (low end of the 20 to 22 MMbbl 2022 guidance versus street 19.1 MMbbl), a quick sensitivity by adding a third rig would increase production to 21.7 MMbbl and \$1.05 billion, aligning

with the midpoint of capex."

The acquisition increases Chesapeake's cumulative five-year free cash flow outlook by approximately \$1.5 billion, or 68% of the transaction value, to approximately \$6.0 billion, or 66% of pro forma enterprise value.

"By consolidating the Haynesville, Chesapeake has the scale and operating expertise to quickly become the dominant supplier of responsibly sourced gas to premium markets in the Gulf Coast and abroad," said Mike Wichterich, Chesapeake's board chairman and interim CEO.

On Aug. 10, Chesapeake raised its full-year forecasts for adjusted income and production after beating second-quarter estimates and expects to increase its base dividend by 27% to \$1.75 per share after the deal closes, anticipated in the fourth quarter.

Chesapeake's preliminary plan is to operate 10 to 12 rigs in 2022, with eight to nine rigs focused on its gas portfolio and two to three rigs concentrated on its oil assets. The company will maintain its commitment to a disciplined capital reinvestment strategy, anticipating a 2022 reinvestment rate of 50% to 60%.

"The move today adds Chesapeake to the list of companies taking a 'basin dominance' growth strategy," Wood Mackenzie's Lower 48 team said while commenting on the acquisition. "This deal reminds us somewhat of **Concho** and **RSP Permian**. An all-stock transaction that elevates the benchmark for basin consolidation. After Concho/RSP, other big deals followed as competitors didn't want to be left behind. What will Comstock or even Tellurian do now?"

—Mary Holcomb

## Callon Petroleum Acquires Permian E&P Primexx

**CALLON PETROLEUM CO.** is set to grow its position in the Permian Basin through the acquisition of **Primexx Energy Partners** in a cash and stock transaction valued at approximately \$788 million.

In an Aug. 4 release, Callon announced the agreement to acquire the leasehold interests and related oil, gas and infrastructure assets of Primexx, a private oil and gas operator in the Delaware Basin with a contiguous footprint of 35,000 net acres in Reeves County, Texas. Primexx's net production in the second quarter was about 18,000 boe/d (61% oil).

"The Primexx transaction checks every operational and financial box on the list of compelling attributes of consolidation," commented Joe Gatto, president and CEO of Callon, in the company release.

"The asset base adds substantial current oil production and a top-tier inventory to our Delaware portfolio and fits squarely into our model of scaled, co-development of a multizone resource base."

The acquisition of Primexx will increase Callon's Delaware Basin position to over 110,000 net acres, according to the company release. Callon, based in Houston, also has positions in the Midland

Basin and Eagle Ford Shale.

Callon last added on to its position in 2019 with the acquisition of **Carrizo Oil & Gas Inc.** The all-stock transaction, valued at \$2.7 billion, included the assumption of \$1.96 billion of net debt and preferred stock.

Since the Carrizo acquisition, Callon has worked to accelerate debt reduction, including through the sale last year of overriding royalty interest in substantially all Callon-operated oil and gas leaseholds to a private investment vehicle managed by private equity firm **Kimmeridge Energy**. At the time, Callon also issued \$300 million of principal value second lien secured notes to Kimmeridge.

Concurrently with the Primexx announcement on Aug. 4, Callon said Kimmeridge agreed to convert their remaining portion of the Callon second lien senior notes that were issued in 2020 into common shares after the close of the Primexx transaction. The equitization further advances the company's deleveraging timetable and saves nearly \$20 million per year in interest costs.

"The infusion of over \$550 million of equity from the acquisition and Kimmeridge's exchange further heightens the

overall benefits, immediately reducing leverage metrics and creating a visible path to net debt to adjusted EBITDA of below 2.0x next year," Gatto added in the release.

The acquisition consideration for the Primexx deal includes \$440 million in cash and 9.19 million shares of Callon stock. Callon said in the release that the cash portion of the purchase price can be financed using available capacity under the current credit facility with near-term repayment coming from forecasted free cash flow and proceeds from in-process divestiture initiatives. The company plans to also look "opportunistically" to the debt capital markets to term out all or a portion of the cash payment in lieu of credit facility borrowings.

The transaction is expected to close early fourth-quarter 2021, subject to customary closing conditions and regulatory approvals.

**Citi** is exclusive financial adviser, and **Gibson Dunn & Crutcher LLP** is legal adviser to Callon for the Primexx acquisition. **RBC** is serving as exclusive financial adviser, and **Kirkland & Ellis LLP** is serving as legal adviser to Primexx.

—Emily Patsy

## Viper Energy Strikes \$225 Million Permian Mineral Deal

**VIPER ENERGY PARTNERS LP**, the subsidiary and acquisition machine of **Diamondback Energy Inc.** in the mineral space, has entered into a definitive purchase and sale agreement on Aug. 9 to acquire certain mineral and royalty interests from **Swallowtail Royalties LLC** and **Swallowtail Royalties II LLC** in exchange for 15.25 million units of Viper common stock and \$225 million in cash, subject to customary adjustments.

The cash portion of this transaction is expected to be funded through a combination of cash on hand and borrowings under the company's credit facility.

The deal includes 2,302 net royalty acres primarily in the northern Midland Basin; roughly 65% of acreage is operated by Diamondback. It will increase Viper's Diamondback-operated acreage by over 10% to 14,191 net royalty acres.

The acquisition is expected to be accretive to near-term cash available for distribution per common unit and is anticipated to grow significantly over time as a result of accelerated development by Diamondback.

Diamondback holds 1,450 net royalty acres located entirely in Martin County,



**Travis Stice**

with almost 75% of the acreage located in the Sale and Robertson ranches in southeast Martin County. The acreage has about a 3.6% average net revenue interest that will provide concentrated exposure to contiguous acreage where Diamondback plans to run multiple rigs for the next several years.

Diamondback currently plans to complete over 70 gross wells on the

acreage in 2022 with an additional 325 to 375 gross wells planned for the four years thereafter with over 17 net wells expected to be completed during the next five years.

The company anticipates an average net oil production of approximately 1,000 barrels of oil per day (bbl/d) in 2022 and expects production to exceed 5,000 bbl/d by 2024 based on Diamondback's current development plan.

"This acquisition checks all the boxes in what we look for at Viper. The acreage is Tier 1 and primarily operated by Diamondback. We expect it to be accretive to near-term financial metrics, and there is significant long-term value to be created based on Diamondback's expected multiyear forward development plan. The large, contiguous block of primarily undeveloped acreage in the Sale and Robertson ranches will drive oil production growth for Viper, which in addition to the strong current production levels on the third party operated acreage, will support our current strong free cash flow generation for the next several years," said Travis Stice, CEO of Viper's general partner.

—Mary Holcomb

## California Resources Sells Ventura Basin Operations

**CALIFORNIA RESOURCES Corp.** on Aug. 5 disclosed the sale of its Ventura Basin operations, which could result in total cash proceeds of up to \$102 million.

The independent oil and natural gas company, whose operations focus in the Golden State, revealed the sale as well as a \$53 million acquisition in a release announcing the company's second-quarter results.

"These strategic A&D transactions will simplify our business model, lower our overall operating costs and provide positive net cash proceeds," commented Mac McFarland, president and CEO of California Resources, in the release.

According to the release, California Resources signed agreements during the second quarter to divest operations in the Ventura

Basin for total cash consideration of up to \$102 million, plus additional earnout consideration linked to future commodity prices. The buyer of California Resources' Ventura Basin operations, which produced 3,600 boe/d (about 65% oil) during the first quarter, was not disclosed.

The company expects the transactions, set to close later this year, will simplify its

business model, lower its overall operating costs and decrease its asset retirement obligations, the release said.

Meanwhile, the acquisition announced Aug. 5, made post the second quarter in August, included working interest in the joint-venture wells held by **Macquarie Infrastructure and Real Assets Inc.** (MIRA).

California Resources agreed to pay MIRA \$53 million for the 90% working interest it held in the joint-venture wells located in the company's core areas of the San Joaquin Basin. The acquisition of MIRA's working interest would have added oil production of 1,600 boe/d (roughly 100% oil) for the first half of 2021 with minimal integration costs and underground risk, according to the company release.

—Hart Energy Staff



## Riverstone Energy Exits Gulf Of Mexico Venture

**RIVERSTONE ENERGY LTD.** recently agreed to exit its oil and gas venture in the U.S. Gulf of Mexico as part of a push to instead boost low-carbon energy investments, the firm said.

“We believe that our focus on originating and executing investments that support the portfolio’s focus on decarbonization and low-carbon power generation themes will provide REL shareholders with access to a unique set of opportunities that generate strong financial returns while having a positive impact on climate change,” said Richard Hayden, chairman and non-executive independent director of Riverstone, in a release from the firm on July 22.

In the release, Riverstone said it sold its one-third ownership interest in **ILX Holdings III** to an institutional investment fund managed by **Ridgewood Energy Corp.** for \$172 million in cash.

ILX III is a Houston-based joint venture with Ridgewood, focused on the strategy of acquiring nonoperated working interests in oil-focused

exploration projects in the Gulf of Mexico. ILX III represented the third partnership that Riverstone’s Global Energy & Power Funds established with Ridgewood since 2010.

Following the sale of its interest in the venture to Ridgewood, Riverstone said it will no longer own any interest in ILX III.

“The proceeds from REL’s exit of ILX III provide additional funds to accelerate our investments in decarbonization and low-carbon power generation,” Hayden added in the release. “It also provides improved liquidity to support board approved share repurchases.”

Estimated total net proceeds from the sale of \$172 million include prior realized distributions. This represents approximately 1.0x gross multiple on invested capital, which is a 23% premium to Riverstone’s 0.8x gross multiple on invested capital valuation at year-end 2020.

As of June 30, pro forma for the ILX III sale, Riverstone holds total cash of \$221 million. In addition, as of June 30, Riverstone owns \$86 million of freely marketable securities and \$6 million of

securities subject to a lock-up, according to Hayden.

“The board and investment manager are committed to maximizing value from REL’s oil and gas assets to support returns to shareholders and continued investment in low carbon energy assets,” he said. “With a stronger balance sheet, subject to market conditions, capital needs for the current portfolio and the new investment opportunities, the board will continue the board authorized buy-back program on the open market when shares are trading below intrinsic value and may also consider tender offers and dividends in the future.”

The transaction with Ridgewood is all cash and closed upon signing but is subject to certain post-closing purchase price adjustments.

Riverstone has 11 active investments spanning oil and gas, midstream and energy services in the Continental U.S., Western Canada, Gulf of Mexico, Latin America and credit, according to the release on July 22.

—Emily Patsy

## Exxon Mobil Launches U.S. Shale Gas Sale To Kick-Start Stalled Divestitures

**EXXON MOBIL CORP.** has begun marketing U.S. shale gas properties as it ramps up a long-stalled program that aims to raise billions of dollars to shed unwanted assets and reduce debt taken on last year.

Three years ago, the top U.S. oil producer set a goal of raising \$15 billion from sales by December 2021. More recently, it promised to accelerate lagging sales to whittle a record \$70 billion debt pile.

The company’s **XTO Energy** shale unit is seeking buyers for almost 5,000 natural gas wells in the Fayetteville Shale in Arkansas, spokeswoman Julie King confirmed.

The assets are among gas projects with declining production and market value Exxon Mobil is selling as it focuses on newer ventures in Guyana, offshore Brazil and Texas’s Permian Basin.

Exxon Mobil is marketing the properties itself and aims to receive bids by Sept. 16 and close any sale by year-end.

“We are providing information to third parties that may have an interest in the assets,” King said. No buyers have been identified, she said, declining

to confirm the due date for bids or the company’s anticipated value on the wells.

The company has achieved about a third of its three-year, \$15 billion sales target. This year, it has received sales proceeds of \$557 million through June and has deals pending valued at more than \$2.15 billion.

Exxon Mobil acquired the Fayetteville assets in 2010 for \$650 million during a shale boom that would change the U.S. energy landscape, leading to an oversupply of gas that pushed prices to record lows last year. This led Exxon Mobil to reduce the value of its U.S. oil and gas holdings by \$17.1 billion.

Output in the assets on offer fell by more than half since 2016 to about 160 million cubic feet per day last year, according to Exxon Mobil marketing materials seen by Reuters.

The Arkansas properties cover some 416,000 net acres (1,680 square kilometers) and are some of the North American natural gas resources cut last year from Exxon Mobil’s development plan. The sale includes 844 operated and 4,104 nonoperated wells, King said.

Dallas-based **Merit Energy** is evaluating the properties, one person familiar with the matter said. Merit in 2018 purchased about 258,000 acres in the same area from BHP for \$300 million.

Exxon Mobil, which suffered a historic \$22.4 billion loss in 2020, is selling dozens of properties in Asia, Africa, the U.S. and Europe.

The company is prioritizing debt reduction and its shareholder dividend, officials said last month. After total debt last year doubled to almost \$70 billion since 2018, Exxon Mobil paid off more than \$7 billion this year, to reduce its burden to \$60.6 billion.

This year, it held talks with Britain’s Savannah Energy over properties in Chad and Cameroon and sold stakes in two deepwater oil fields to **Occidental Petroleum Corp.** and others.

The company is seeing new interest in its properties with this year’s rebound in oil and gas prices, said Exxon Mobil senior vice president Jack Williams on July 30.

“That whole divestment discussion that we’ve had in the past continues,” Williams said.

—Reuters

## EnCap Investments Agrees to \$1.5 Billion EP Energy Purchase

**PRIVATE EQUITY FIRM EnCap Investments LP** has agreed to acquire **EP Energy** for \$1.5 billion, people familiar with the matter said on Aug. 11, less than a year after the oil and gas producer emerged from a bankruptcy process that handed control to its creditors.

EnCap plans to split EP, which holds production assets in South Texas and northeastern Utah, into its separate geographies and merge them with existing portfolio companies, according to the sources.

The Utah assets, in the Uinta Basin, will be merged with **XCL Resources**, while the operations in Texas' Eagle Ford will be combined with an EnCap company with acreage in the area, the sources added.

EnCap, EP and XCL did not respond to comment requests. The sources spoke on condition of anonymity as the information is not public.

EP filed for bankruptcy in October 2019, but its attempts to restructure were impacted by the cratering of oil prices in early 2020. Like many U.S. energy producers whose finances were decimated by the collapse, EP gave shares in a newly constituted company in exchange for eliminating \$4.4 billion of debt.

Having emerged from bankruptcy in October 2020, EP said in March it had selected **Credit Suisse Group** and **Jefferies Financial Group** to explore a sale of the company.

Rebounding crude oil prices, which have surged 40% so far this year as improved economic sentiment bolsters energy demand, has sparked M&A activity. This has allowed shareholders in formerly bankrupt companies to exit their investments.

Reuters reported in June that EnCap was among the interested parties, with fellow buyout firm **Quantum Energy Partners** and privately owned **Validus Energy** also seeking to acquire some or all of EP.

EP had 115,000 net acres and produced from over 900 wells in the Eagle Ford Shale at the end of 2020, while its Utah assets spanned 155,000 net acres and had production from over 400 wells.

—Reuters

## BHP Confirms Potential Sale Of Oil Business To Woodside Petroleum

**BHP GROUP** is in talks to sell its global oil and gas business to **Woodside Petroleum Ltd.**, the companies said on Aug. 16.

The sale, which analysts say could fetch anywhere between \$10 billion and \$17 billion, would create a new international "super independent" with a long-term focus on LNG but exposure in the medium term to high-margin, deepwater oil, according to **Wood Mackenzie** research director Andrew Harwood.

"An exit from its petroleum business has been long rumored for BHP," Harwood said in an emailed statement, "and as it faces rising pressure from the energy transition, it would seem that the mining conglomerate has determined now to be the optimum moment to achieve maximum value."

Speculation of the deal was first reported in late July following a report by Bloomberg News that BHP had initiated a strategic review of its petroleum business.

BHP confirmed the strategic review in a release on Aug. 16 adding: "A number of options are being evaluated. One option is a potential merger of the petroleum business with Woodside Petroleum Ltd. and a distribution of Woodside shares to BHP shareholders."

"We confirm that we have been in discussions with Woodside," the company continued. "While discussions between the parties are currently progressing, no agreement has been reached on any such transaction."



Headquartered in Melbourne, BHP is an Anglo-Australian miner that has owned oil and gas assets since the 1960s. The company began its retreat from oil and gas in 2018 with the sale of its U.S. shale assets in two separate agreements. The largest of the transactions was the \$10.5 billion cash purchase by BP Plc of BHP's positions in the Permian Basin, Eagle Ford Shale and Haynesville Shale.

Today, BHP's petroleum business includes conventional oil and gas operations centered in the U.S. Gulf of Mexico, Australia, Trinidad and Tobago and Algeria. The company also has

exploration, development and production activities in Mexico, deepwater Trinidad and Tobago, western Gulf of Mexico, eastern Canada and Barbados.

Wood Mackenzie's Harwood noted that BHP's oil operations in the Gulf of Mexico complements Woodside's deepwater capabilities and adds a new core focus area to Woodside's existing portfolio.

"Strong cash flow from BHP's GoM assets over the next decade will provide steady shareholder returns while supporting planned investment across the wider business in LNG growth and new energy opportunities," he said.

—Emily Patsy

# TRANSACTION HIGHLIGHTS

## EAGLE FORD

■ **SilverBow Resources Inc.** said Aug. 13 it has entered into definitive agreements to acquire oil and gas assets in the Eagle Ford Shale from an undisclosed seller.

Acquisition highlights include:

- All stock transaction for approximately \$33 million, consisting of approximately 1.5 million shares of SilverBow common stock;
- 45,000 total net acres in the Eagle Ford, bolstering SilverBow's gas position in McMullen and Live Oak counties, while adding new oil positions in Atascosa, Lavaca and Fayette counties; and
- April 2021 net production of approximately 1,580 boe/d, 39% liquids. Net oil production of 569 bbl/d.

Sean Woolverton, SilverBow's CEO, said, "We continue to execute on accretive opportunities and bolster our balanced oil and gas portfolio.

"This marks the second acquisition we have announced since the beginning of August. Our first deal increased our high-return Eagle Ford and Austin Chalk locations, as well as incremental working interest in producing wellbores, in our La Mesa position."

## PERMIAN BASIN

■ **U.S. Energy Development Corp.**, an E&P firm which provides direct investments in energy, announced on Aug. 11 it has entered into a joint venture with Midland, Texas-based **Atlantic Energy Partners LLC** to develop and operate three horizontal wells within the Permian Basin in Ward County, Texas. This strengthens U.S. Energy's existing position in Ward County where earlier this year they completed and put online a three-well pad at a developmental cost of approximately \$30 million.

"This joint venture comes at an ideal time as we expand our footprint in the Permian Basin and the market continues to recover from COVID-19 with the drilling of new wells," Jordan Jayson, CEO of U.S. Energy, said in a statement on Aug. 11. "We look forward to working with the Atlantic team on this project in the Rio Hondo area and look forward to returning exceptional value to our investors."

The partnership highlights U.S. Energy's strength as an operator and Atlantic's position as a strong E&P firm known for its technical expertise and ability to assemble Tier-1 prospects. Additionally, both companies are tightly aligned on their commitments to ESG.

## WILLISTON BASIN

■ **Bowline Energy LLC** has purchased private E&P **Nine Point Energy's** Williston Basin assets, the company said on Aug. 11. The purchase was effectuated through a Chapter 11 Section 363 process and was approved by the Bankruptcy Court and closed on Aug. 9, 2021.

The Williston Basin remains one of the premier oil and gas basins in the U.S., and Bowline said it is excited by the prospects of growing its operations in this basin. The purchase of the Nine Point assets gives Bowline a strong production base and steady cash flows. Coupling these attributes with Bowline's sound balance sheet, the company expects to commence a development program, funded out of cash flows, and begin evaluating strategic M&A opportunities in the near future.

In June, Reuters reported that Nine Point Energy was closer to a bankruptcy sale after liens ruling. It was reported that Nine Point Energy Holdings Inc.'s lenders must put up cash or a letter of credit to protect a mid-stream service provider's interests in certain assets before they can move forward with a proposed \$250 million purchase of the bankrupt energy company.

Represented by **Latham & Watkins**, Nine Point had around \$273 million in debt when it sought Chapter 11 protection in March, according to Reuters.

## PARADOX BASIN

■ **Zephyr Energy Plc** recently reached an agreement to increase its land position in the Paradox Basin through the targeted acquisition of an additional 12,260 leased acres, which the company expects to be prospective for mid- to long-term development.

The new acreage is located on Utah School and Institutional Trust Lands Administration (SITLA) lands. The acreage position was nominated for auction by Zephyr and was secured during the most recent SITLA auction, according to a company release on July 28.

"I am thrilled to be able to bolster the scale of our Paradox project at this point in time," said Zephyr CEO Colin Harrington in the release. "Our team is developing a unique understanding and data set across the Paradox Basin, and we're excited about this timely opportunity to expand our operated asset base."

A portion of the new acreage is proximal to the company's existing Paradox acreage position, with additional new acreage located in both the historically productive Cane Creek Field and Salt Wash Field which lie to the south of Zephyr's existing land position.

Following the closing of the acquisition of the new acreage, Zephyr will operate a total of 37,613 gross acres in the Paradox Basin, the majority of which the company holds as operator with a 75% working interest. The company expects to fund the acquisition, terms of which weren't disclosed, through existing cash resources.

## REFINING

■ **Saudi Aramco** is in advanced talks to acquire a roughly 20% stake in **Reliance Industries Ltd.**'s oil refining and chemicals business for about \$20 billion to \$25 billion in Aramco's shares, Bloomberg News reported on Aug. 16.

An agreement could be reached as soon as the coming weeks, according to the report, which cited people with knowledge of the matter. Aramco and Reliance declined to comment.

Reliance announced a sale of a 20% stake in its oil-to-chemicals business to Aramco for \$15 billion in 2019, but the deal stalled after oil prices and demand crashed last year due to the pandemic.

During Aramco's earnings briefing earlier in August, CEO Amin Nasser said the company was still doing due diligence on the deal.

In late June, Reliance's billionaire chairman, Mukesh Ambani, said it hopes to formalize its partnership with Aramco this year, and its chairman, Yasir Al-Rumayyan, will join the Indian conglomerate's board as an independent director.

## SERVICE & SUPPLY

■ Billionaire oilman Dan Wilks increased his stake in **NexTier Oilfield Solutions**, according to a regulatory filing on Thursday, his latest purchase in the hard-hit oilfield service industry.

Oilfield equipment and service companies were among the worst performing sectors of the energy business as the COVID-19 pandemic cut oil demand. Wilks, who made his fortune on the U.S. shale boom through a Texas oil trucking firm with his brother, is betting the sector has bottomed, say analysts.

Wilks and his brother, Farris, last month took a roughly 10% stake in hydraulic fracking firm **U.S. Well Services**. Wilks also snapped up shares in rival shale fracking firm **ProPetro Holding Corp.**, reporting a roughly 7.5% stake in January, and has been engaged in a lengthy court battle to take over Canadian pressure pumper **Calfrac Well Services Ltd.**

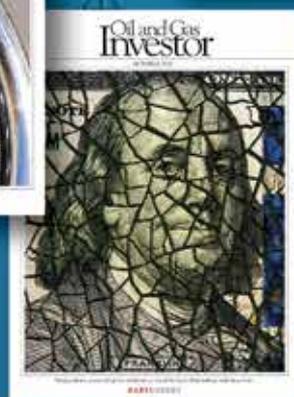
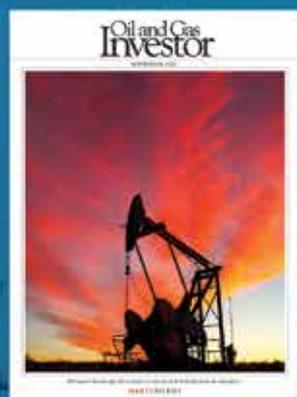
Wilks first took a 5% active stake in NexTier in February and now holds a nearly 8% stake in the company, according to an August U.S. Securities and Exchange Commission filing.

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# PERMITS



In the western portion of the Powder River Basin, EOG Resources Inc. has scheduled a number of drillpads across a multisection prospect in Johnson County, Wyo. Nine pads are planned and will be named after country music performers. The company's laterals will bottom under eight leases: Cash, Loretta, Waylon, Rufous, Sturgill Hank, Dolly and Haggard. Objectives include oil targets in the Sussex, Shannon, Niobrara, Frontier, Mowry and Muddy. Twelve tests (Cash and Loretta) will be in sections 18-47n-78w and 13-47n-79w. Three pads are planned in sections 13-47n-79w, 14-47n-79w and 14-47n-79w (Waylon and Rufus). Two pads in Section 15-47n-79w will have six Sturgill and six Hank tests. Section 16-47n-79w will have six Dolly tests and five Haggard tests.

Also, Cassidy American Resources LLC has filed permits for several three-well horizontal pads north of the Casper Arch in southeastern Johnson County, Wyo.

The Permian Basin had the most new permits of any region—226 permits issued for counties in the Midland Basin and 382 permits issued for the Delaware Basin. The bulk of the new permits for the region were issued to EOG Resources. Outside of the Permian Basin, there were 69 Kern County, Calif., permits delivered to Berry Petroleum Co. and Holmes Western Oil Corp.

### Wells Permitted By Operator

Operator	No. of New Permits
EOG Resources Inc.	84
Pioneer Natural Resources Co.	47
CrownQuest Operating LLC	45
Oxy USA Inc.	44
Endeavor Energy Resources LP	37
XTO Energy Inc.	34
Ascent Energy LLC	28
Diamondback E&P LLC	28
Holmes Western Oil Corp.	27
Chevron USA Inc.	26

### Wells Permitted By State

State	No. of New Permits
Texas	638
New Mexico	269
California	70
Pennsylvania	69
Colorado	68
Louisiana	42
Wyoming	31
Ohio	26
Oklahoma	26
Utah	25

### Wells Permitted By County

County, State	No. of New Permits
Lea, N.M.	184
Eddy, N.M.	85
Midland, Texas	98
Martin, Texas	89
Kern, Calif.	69
Loving, Texas	57
Upton, Texas	39
Reeves, Texas	33
Crane, Texas	17
Wetzel, W.Va.	16

# RIG COUNT

As of mid-July, the U.S. rig count dropped to a total of 536, according to Enverus Rig Analytics. The most notable change in July was in the Permian Basin, where active rigs dropped by six. In the last month, the Gulf Coast has seen a 10-rig increase, and the Anadarko Basin has added nine.

Henry Hub prices have increased nearly 40% since the end of March. The recovery during the past year has fueled increased drilling in the Ark-La-Tex region, primarily driven by the Haynesville Shale.

U.S. crude futures were trading around \$72/bbl in July, near their lowest in almost a month. In July, the contract rose to \$76.98, its highest since November 2014.

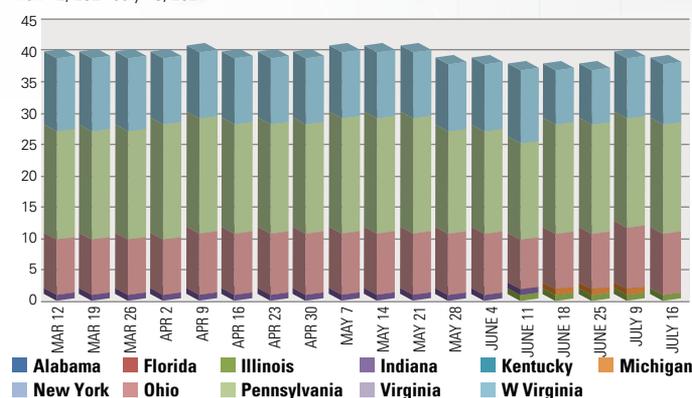
Oil prices were still up about 46% so far this year. However, many analysts do not expect that extra spending to boost output at all. Instead, they think it will only replace natural declines in well production.

Overall, U.S. oil production is expected to ease from 11.3 million barrels per day (MMbbl/d) in 2020 to 11.1 MMbbl/d in 2021 before rising to 11.9 MMbbl/d in 2022, according to government projections. That compares with the all-time annual high of 12.3 MMbbl/d in 2019.



## Eastern U.S. Rig Count

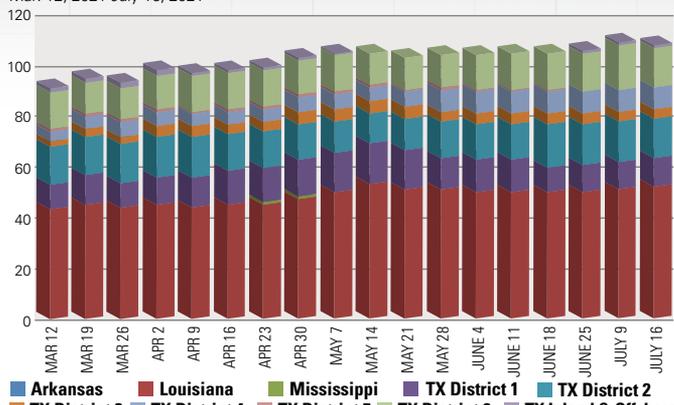
Mar. 12, 2021-July 16, 2021



Source: Baker Hughes Co.

## Gulf Coast Rig Count

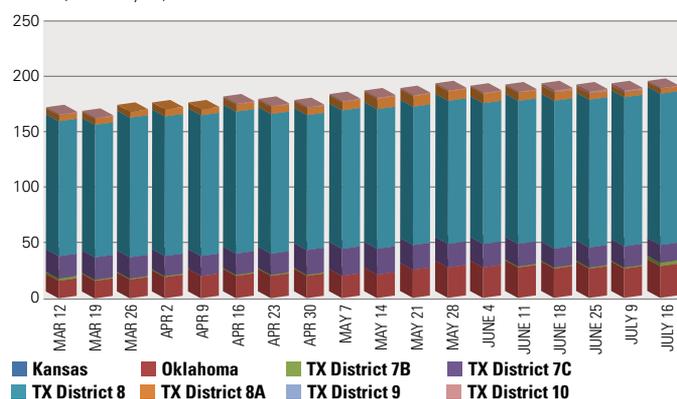
Mar. 12, 2021-July 16, 2021



Source: Baker Hughes Co.

## Midcontinent & Permian Basin Rig Count

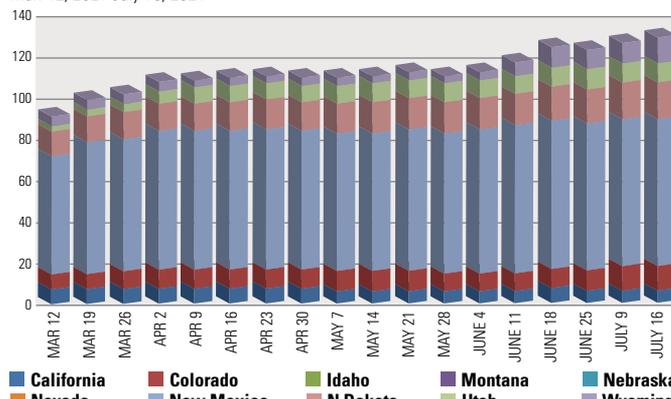
Mar. 12, 2021-July 16, 2021



Source: Baker Hughes Co.

## Western U.S. Rig Count

Mar. 12, 2021-July 16, 2021



Source: Baker Hughes Co.



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# FOCUS ON

## Powder River Basin

The Powder River Basin is a stacked play and has long produced hydrocarbons from multiple Upper Cretaceous sandstone reservoirs as well as from the Lower Cretaceous Mowry Shale. Production was first established in the late 1950s with the discovery of Dead Horse Creek Field followed by several discoveries in the 1970s of stratigraphic traps.

Over 95% of the fields from Upper Cretaceous reservoirs are classified as oil because source rocks never reached temperatures to generate large amounts of gas. Most reservoirs produce associated gas—only source rocks in the deepest part of the basin may have reached temperatures to be in the gas-generation window.

Recent completions include a Converse County-Niobrara well in Wyoming's WC Field. Devon Energy Corp.'s #08-053870-1XNH Steidle Fed initially flowed 1.569 MMcf of gas and 1,434 bbl of oil per day. It was drilled to 19,989 ft, and the true vertical depth is 10,030 ft. A Turner Sand completion in Campbell County by EOG Resources Inc., #558-0820H Broadhead, was tested flowing 1,443 bbl of 43.7 API oil and 968,000 cu ft of gas per day. The venture was drilled to 21,163 ft, and the true vertical depth is 10,630 ft. Production is from a perforated zone between 10,892 ft and 21,145 ft.

### Powder River Basin Top Producing Operators

Operator	MMboe	Oil (MMbbl)	Gas (MMcf)
EOG Resources Inc.	79.195	49.21	179.93
Chesapeake Operating Inc.	78.166	39.13	234.21
Devon Energy Corp.	30.714	25.58	30.78
Peak Powder River Resources	20.827	13.68	42.89
Ballard Petroleum Holdings	17.689	12.94	28.49
Samson Resources	14.856	12.25	15.64
Northwoods Operating	13.044	9.03	24.09
Impact Exploration Co.	7.096	5.37	10.36
Anadarko Petroleum Corp.	5.819	4.21	9.68
Petro-Hunt LLC	5.729	4.07	9.95

\*Niobrara, Frontier, Parkman, Turner, Shannon, Mowry, Muddy, Sussex in Campbell, Converse and Johnson counties, Wyo.  
Data source: Datalink, July 2021

### Powder River Basin Top Producing Wells

Operator	Well	Location	Producing Formation	Total (MMboe)	Comp. Date
Wold Energy	27-2 Powell	Converse, Wyo.	Frontier	2.978	Aug. 1990
Wold Energy	22-2 Powell	Converse, Wyo.	Frontier	2.165	Aug. 1992
WA Moncrief	10 Crawford Draw	Johnson, Wyo.	Frontier	1.432	Sept. 1990
EOG Resources Inc.	21-0820H Arbalest	Campbell, Wyo.	Turner	1.325	July 2014
Wold Energy	15-2 Powell	Converse, Wyo.	Frontier	1.228	July 1992
EOG Resources Inc.	66-0607H Arbalest	Campbell, Wyo.	Turner	1.192	June 2016
Peak Powder River Resources LLC	1-1TH Nine Mile	Campbell, Wyo.	Turner	1.176	June 2015
Denbury Onshore LLC	5195 Hartzog Draw Unit	Campbell, Wyo.	Shannon	1.096	July 1984
Chesapeake Operating Inc.	15-34-69 A TR 22H Lebar	Converse, Wyo.	Turner	1.007	Dec. 2017
Peak Powder River Resources LLC	1-19TH Iberlin	Campbell, Wyo.	Turner	.968	Jan. 2015

\*Niobrara, Frontier, Parkman, Turner, Shannon, Mowry, Muddy, Sussex in Campbell, Converse and Johnson counties, Wyo.  
Data source: Datalink, July 2021

### Powder River Basin Top Producing Counties

County, State	(MMboe)
Converse, Wyo.	172.142
Campbell, Wyo.	130.28
Johnson, Wyo.	7.22
Niobrara, Wyo.	1.81
Weston, Wyo.	0.94
Natrona, Wyo.	0.42
Sheridan, Wyo.	0.02
Crook, Wyo.	0.005

\*Niobrara, Frontier, Parkman, Turner, Shannon, Mowry, Muddy, Sussex in Campbell, Converse and Johnson counties, Wyo.

Data source: Datalink, July 2021

# INTERNATIONAL HIGHLIGHTS

According to Bloomberg, the Russian finance minister warned that Russia needs to brace for falling revenues after a stress test showed the global clean energy push could lead to a greater decline for its fossil fuel exports. The finance minister's comment comes amid a shift in Russian rhetoric about global warming and as the EU prepares to introduce a new carbon tax on its border.

Russian petroleum revenues accounted for 36% of its federal budget revenues in 2016. With lower demand, Russian state revenues significantly declined, and the state's budget deficit has grown.

The Bank of Russia estimates that an EU carbon border tax could cost Russia up to \$9.7 million per a year. The country's energy ministry said domestic oil and gas firms could lose \$4 billion a year from the measures.

Buoyed by rising oil prices, Moscow has pushed back inevitable changes even after 10.1 million acres of forests burned in 2020, permafrost thaw caused a massive diesel fuel storage tank to rupture into the Ambarnaya River and major floods occurred in Siberia in 2019 and 2020.

Russia has obfuscated climate conversations and has dismissed the idea of a wholesale shift to a greener future as "Western conceit."

—Larry Prado

## 1 Morocco

**Predator Oil & Gas**, based in Jersey, U.K., announced results from #1-MOU Guercif Basin in Morocco. According to the company, gas shows were recorded in shallow sand at 605 m, and additional gas shows were reported at 1,159 m in Lower Guebbas and Hoot. Wireline logs were run from 7,241 m to 14,874 m over the intervals with gas shows. The company plans to drill an additional well at #4-MOU later in 2021. Predator (75%) operates the Guercif Basin in joint venture with the **Office National des Hydrocarbures et des Mines** (25%).

## 2 Ghana

A significant oil discovery was announced by Rome-based **Eni** at the Eban exploration prospect in offshore Ghana's CTP Block 4. The #1X-Eban is the second well drilled in the block following the Akoma discovery. Preliminary estimates place the potential of the Eban-Akoma complex between 500 MMboe and 700 MMboe in place. The discovery well was drilled to 4,179 m and hit an 80-m light oil column

in a Cenomanian-age reservoir interval down to a true vertical depth of 3,949 m. The pressure and fluid data and the reservoir properties are consistent with the previous discovery of Akoma and nearby Sankofa Field. Estimated production indicates that the well could produce 5,000 bbl of oil per day. The estimated hydrocarbons in place between Sankofa Field and the Eban-Akoma complex are now more than 1.1 Bboe, and further oil in place could be confirmed with an additional appraisal well.

## 3 Norway

**Var Energi** has confirmed oil and gas at the King and Prince exploration wells. The wells are about 6 km north of Balder Field. Preliminary estimates for the discoveries are 6-135 MMbbl (recoverable). The Prince well was drilled in PL 027, and it encountered a 35-m oil column in Triassic Skagerrak with good to moderate reservoir sandstones. The King well hit a gas column of about 30 m and a light oil column of about 55 m with excellent reservoir properties. An additional King appraisal sidetrack further

confirmed a 4-m gas column and an oil column of about 55 m with excellent reservoir quality. The operator is Stavanger-based **Var Energi** with 90% interest and **Mime Petroleum** with 10% interest. Plans will be made for tie-in to the existing infrastructure in the Balder area.

## 4 Norway

**OMV Norge** announced results from a wildcat in the Norwegian North Sea. The #1/3-13 is in production license PL 970. The objective of the well was to prove petroleum in reservoir rocks in Tor (Late Cretaceous). The venture was drilled to 3,285 m and encountered about 100 m of water-bearing chalk with good to very good porosity but low permeability. The well also encountered a 3-m, petroleum-bearing layer in Ekofisk, an 8-m thick sandstone layer in Forties and 3 m of sandstone in Andrew (Paleocene). The oil/water contact was not proven. More detailed studies will be needed to determine potential connection between the proven resources in the Forties and Andrew formations in #1/3-13 and #1/3-11 (Ipswich) oil

discoveries. The well was not formation-tested, but data acquisition has been carried out. OMV Norge is based in Stavanger.

## 5 Romania

**Serinus Energy** has spud exploration well #1-Sancrai in Romania. The venture is on the southern flank of the Carei Basin in the northern Satu Mare area. It has a planned depth of 1,600 m and will test two prospective hydrocarbon zones. It is the final commitment of the third exploration phase of the Satu Mare Concession. Nearby production is at the company's Moftinu gas field, which is south of #1-Sancrai. Serinus is based in Saint Helier, Jersey Island, U.K.



## 6 Israel

**Energean** has contracted a drillship for its 2022-2023 offshore Israel drilling program, which is expected to de-risk prospective recoverable resources of more than 1 Bboe. Three wells are planned during 2022 with two optional wells. One of the wells will be an appraisal well #04 Karish Main in the Karish North development. The appraisal well will also target further prospective volumes within the Karish Main Block, including the potential oil rim that was identified as part of the #03-KM development drilling. The scope includes re-entry, sidetracking and completing the previously drilled Karish North well. The Karish North development will commercialize 1.2 Tcf of gas plus 31 MMbbl of liquids and is expected to deliver the first gas in 2023. The Athena exploration

well, located in Block 12, is between the Karish and Tanin leases. Athena is estimated to contain unrisks recoverable prospective resource volumes of 700 Bcf of gas plus 4 MMbbl of liquids. The primary target is estimated to contain unrisks recoverable prospective resource volumes of 400 Bcf of gas plus 2 MMbbl of liquids. Success at Athena would be expected to significantly de-risk approximately 2.5 Tcf plus 19 MMbbl of remaining unrisks recoverable prospective resource volumes located within Block 12 and Tanin. London-based Energean is the operator of the Karish Block and field with 100% interest.

## 7 Turkey

**UK Oil & Gas** announced that it will drill appraisal well #3-Basur to assess the commercial viability of the Basur-Resan oil pool discovered in the 1950s and 1960s. The primary objectives are the naturally fractured and limestone rocks—Cretaceous-age Garzan and Mardin, which are productive in the Sadak oil field, about 20 km to the southeast and along the same geological anti-clinal trend. The well is expected

to shut in the well and conduct a long-term pressure build-up test. It will be suspended and placed on inventory for the proposed Phase 1 87TJ/d development of the West Erregulla gas field. Three appraisal wells have been drilled in the field, which is located in EP469. Adelaide-based Strike Energy is the operator with 50% interest in EP469 with partner **Warrego Energy** holding the remaining 50% interest.

## 9 Australia

**Empire Energy** announced flow testing results from #1-Carpentaria in Northern Territory, Australia. The vertical well initially flowed at a peak rate of 500,000 cu ft of gas per day and a stabilized rate of 370,000 cu ft per day after four stages of fracturing in Velkerri A, Intra A/B, B and C shales. According to the Sydney-based company, the EP187 results compared favorably with other tests across the Beetaloo Sub-Basin. The previously completed wells at #1-Tanumbirini (**Santos Ltd.**) flowed 1.2 MMcf of gas per day, and a second venture, #117 Kyalla (**Origin Energy**), produced 400,000-600,000 cu ft of gas per day. Another test by Origin Energy at #1H NW Amungee was fractured in 11 stages and flowed 1.15 MMcf of gas per day. The #1-Carpentaria initial flow rates indicate that the shallower liquids-rich gas window of the eastern side of the Beetaloo Sub-Basin has the potential for commercial hydrocarbon production in future horizontal wells, which may have up to 100 fracture initiation points from 20–30 fracture stimulation stages.

to test the northwestern structural culmination of the Basur-Resan geological structure. The structure is approximately 1.2 km to the north and geologically updip from the 1964 oil discovery at #1-Basur. UK Oil & Gas is based in London.

## 8 Australia

**Strike Energy** completed flow testing at a Western Australia venture, #4 West Erregulla. A series of flow tests were performed at various choke settings to enable characterization of the well's deliverability parameters. Production testing was performed over a 75-m perforated interval in Kingia Sandstone from 4,847-4,962 m. During a 46-hour test, it flowed 35 MMcf of gas on a 76/64-inch choke with a flowing tubing pressure of 1,770 psi. The test confirms high productivity of Kingia Sandstone. Strike Energy plans



## EQUITY

Company	Exchange/ Symbol	Headquarters	Amount (\$MM)	Comments
Kraken Resources II LLC	N/A	Houston	\$400	Received an equity commitment in excess of \$400 million from funds managed by <b>Kayne Anderson Capital Advisors LP</b> , including <b>Kayne Anderson Energy Fund VIII LP</b> and <b>Kayne Private Energy Income Fund II LP</b> along with Kraken II's management team. Proceeds will be used to target large, oil-weighted acquisitions with an initial focus in the Williston Basin.
Grenadier Energy III LLC	N/A	The Woodlands, Texas	\$350	Closed an initial equity commitment from <b>EnCap Investments LP</b> . Proceeds will be used to target acquisitions in the Lower 48 following its strategy acquiring, developing and exploiting oil and gas assets. <b>Akin Gump Strauss Hauer &amp; Feld LLP</b> provided legal counsel to Grenadier and <b>Vinson &amp; Elkins LLP</b> to EnCap.
Kimbell Tiger Acquisition Corp.	NYSE: TGR	Fort Worth, Texas	\$200	Filed a registration statement on Form S-1 with the U.S. Securities and Exchange Commission in connection with a proposed IPO expected to have a base offering size of 20 million units at \$10 each. Under the terms of the proposed public offering, the sponsor of the company, which is controlled by <b>Kimbell Royalty Partners LP</b> , would own 20% of the company's issued and outstanding common stock upon the consummation of the offering. Proceeds will be used by the company to pursue a business combination in any industry; however, the company intends to search for a target in the energy and natural resources industry in North America. <b>UBS Investment Bank</b> is sole bookrunning manager. <b>Tudor, Pickering, Holt &amp; Co.</b> is capital markets adviser.
Spartan Delta Corp.	TSXV: SDE	Calgary, Alberta	CA\$150	Entered an agreement with a syndicate of underwriters led by <b>National Bank Financial Inc.</b> and <b>CIBC World Markets Inc.</b> pursuant to which the underwriters have agreed to purchase for resale to the public, on a bought deal basis, about 29.7 million subscription receipts of Spartan at a price of \$5.05 each. Underwriters also have an option to purchase up to an additional 15% of the subscription receipts issued under the financing at a price of \$5.05 per subscription receipt to cover over allotments exercisable in whole or in part at any time until 30 days after the closing of the financing. Proceeds will be used to fund part of the cash portion of the purchase of privately held light-oil Montney producer <b>Velvet Energy Ltd.</b> <b>National Bank Financial Inc.</b> and <b>CIBC World Markets Inc.</b> are financial advisers. <b>Stikeman Elliott LLP</b> is providing legal counsel.
Tidewater Renewables Ltd.	TSX: LCFS	Calgary, Alberta	CA\$150	Filed an IPO with intentions to raise \$150 million in gross proceeds. Proceeds will be used to pursue energy transition opportunities including the production of low carbon fuels such as renewable diesel, renewable hydrogen, renewable natural gas, as well as carbon capture.
Tellurian Inc.	NASDAQ: TELL	Houston	\$105	Closed public offering of 35 million shares of common stock sold at a price of \$3 each. Offering includes up to roughly 5.3 million-share greenshoe. Proceeds will be used for general corporate purposes, including the potential acquisition of upstream assets. <b>B. Riley Securities Inc.</b> was sole bookrunner.
NextDecade Corp.	NASDAQ: NEXT	Houston	\$5	Agreed to sell Series C convertible preferred stock issued in a private placement to <b>TEP Next Decade LLC</b> , an affiliate of <b>Energy &amp; Power Transition Partners LLC</b> , to support NEXT Carbon Solutions business and the Rio Grande LNG project.

## DEBT

Venture Global LNG Inc.	N/A	Arlington, Va.	\$2,500	Closed an offering by subsidiary <b>Venture Global Calcasieu Pass LLC</b> of senior secured notes due 2029 issued in two series. Proceeds will be used to prepay certain amounts outstanding under its existing senior secured first lien credit facilities, pay breakage and hedge termination costs in connection with such prepayment and pay fees and expenses in connection with the offering. <b>TransCameron Pipeline LLC</b> guaranteed the notes.
Hess Midstream LP	NYSE: HESM	Houston	\$750	Priced a private offering by its subsidiary, <b>Hess Midstream Operations LP</b> , of 4.25% senior unsecured notes due 2030 at par. Proceeds will be used to finance the previously announced repurchase by the issuer of approximately 31 million Class B units from affiliates of <b>Hess Corp.</b> and <b>Global Infrastructure Partners</b> .
Talos Energy Inc.	NYSE: TALO	Houston	\$730	Announced the addition of an affiliate of <b>DNB ASA</b> to its RBL syndicate, adding an additional \$75 million commitment to the credit facility, which will increase to \$730 million following the addition of DNB as the 13th commercial bank in the credit facility.

Company	Exchange/ Symbol	Headquarters	Amount (\$MM)	Comments
Penn Virginia Corp.	NASDAQ: PVAC	Houston	\$400	Priced offering by indirect, wholly owned subsidiary <b>Penn Virginia Escrow LLC</b> of 9.25% senior unsecured notes due 2026, initially sold at 99.018% of par. Proceeds will be used to repay and discharge the long-term debt of <b>Lonestar Resources US Inc.</b> , following completion of its acquisition by Penn Virginia, and to use the remainder, along with cash on hand, to repay Penn Virginia's second lien term loan in full and pay related expenses.
DCP Midstream LP	NYSE: DCP	Denver	\$350	Announced an amendment to its accounts receivable securitization facility with <b>PNC Bank</b> to include ESG-linked key performance indicators that increase or decrease certain fees based on DCP's safety performance relative to peers, and year-over-year change in greenhouse-gas emissions intensity rate, which DCP said is the energy industry's first ESG-linked A/R securitization facility. Additionally, the facility was extended to Aug. 12, 2024.
NuVista Energy Ltd.	TSX: NVA	Calgary, Alberta	CA\$230	Completed private placement of 7.875% senior unsecured notes due 2026. Proceeds will be used to fully redeem its \$220 million aggregate principal amount of 6.5% senior unsecured notes due 2023 at a redemption price of 101.625%, plus accrued and unpaid interest. The notes were offered through a syndicate of underwriters led by <b>CIBC Capital Markets</b> and <b>RBC Capital Markets</b> as joint bookrunners, <b>Scotiabank</b> as co-lead manager, and <b>ATB Capital Markets</b> , <b>BMO Capital Markets</b> and <b>Peters &amp; Co.</b> as co-managers.
Presidio Petroleum LLC	N/A	Fort Worth, Texas	N/A	Closed on the issuance of term asset-backed securities in a private placement transaction with a syndicate of U.S.-based institutional investors. Proceeds will be used to accelerate the company's acquisition-driven growth strategy in the Midcontinent region of the U.S. and recapitalize its balance sheet. <b>Sidley Austin LLP</b> served as legal counsel to Presidio and <b>Morgan Stanley Energy Partners</b> . <b>Guggenheim Securities LLC</b> was sole structuring adviser and placement agent to the companies.

# Hart Energy's New Financings Database

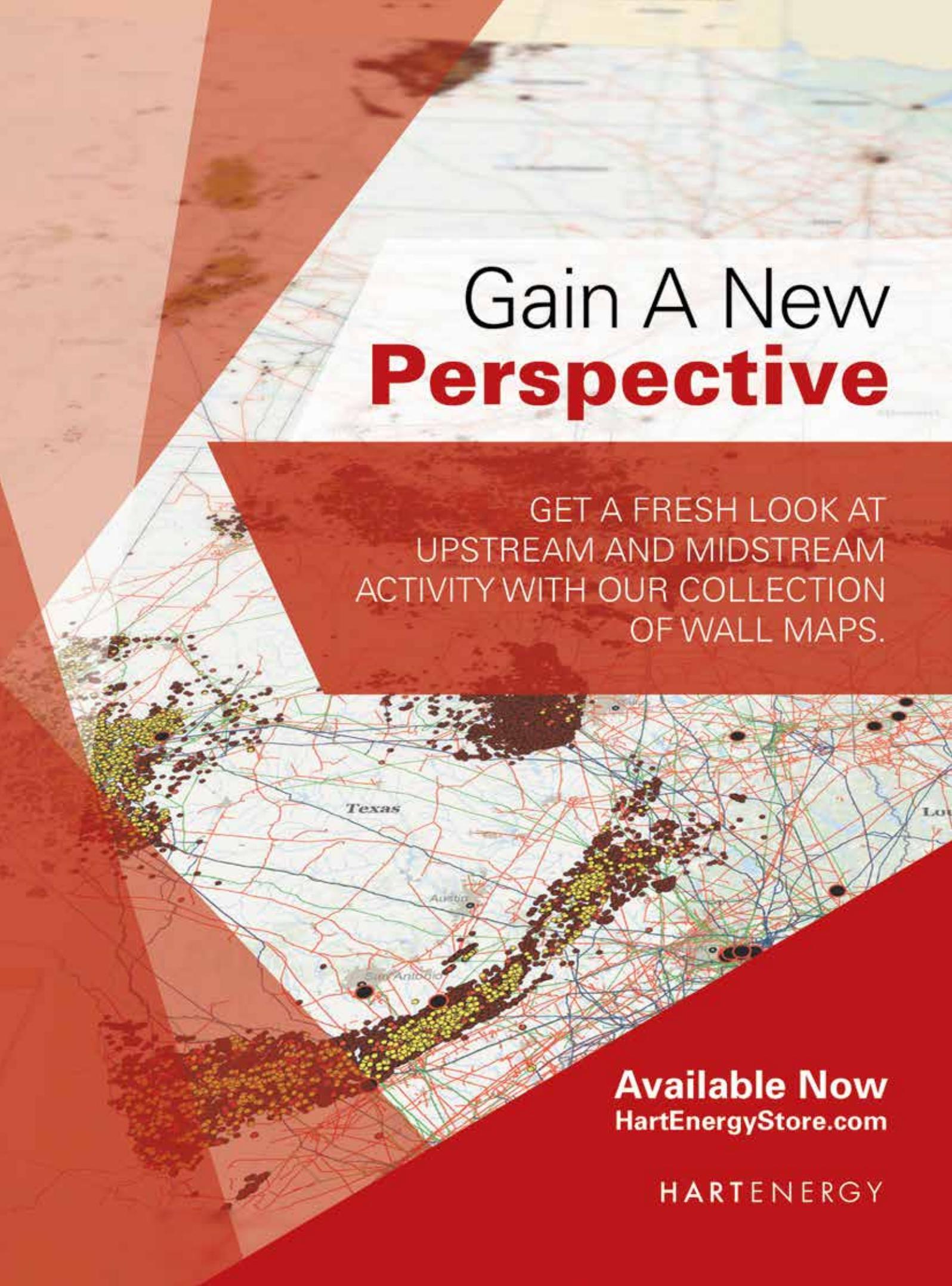
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## WHO IS THE IDEAL INDEPENDENT?



LESLIE HAINES,  
EXECUTIVE EDITOR-  
AT-LARGE

In this issue, 40 years after *Oil and Gas Investor* debuted, we've asked the question: What do the next 40 years look like? What should they look like?

No one can really predict this, especially when one factors in the increasingly common and frenzied anti-fossil fuel sentiments and net-zero pledges of governments, industries and big banks. But we are optimistic. We have to believe amazing technical breakthroughs are no doubt coming in the next 40 years, of which we have no clue at the moment.

Change is inevitable, but it rarely takes on the form we think it will, or fear it will. Surprises can be exciting or dreadful. No one could have dreamed back in 1981 that such a thing as the iPhone would exist, nor become so widely used around the world. It was launched in 2007. Now it seems we hardly recall a time when we didn't have our phone close at hand. In fourth-quarter 2020 alone, Apple sold \$65.6 billion worth of iPhones globally, according to Gartner. There were 200 million iPhones sold in the entire year! Then again, Samsung sold even more, some 235 million. This tricky little device has changed the game, for good and for not so good.

Similarly, no one could have dreamed in 1981 that a shale revolution was possible, brewing in North Texas right under our noses while the rest of the industry drilled hundreds of conventional vertical wells everywhere. Shale also changed the game.

Now we must look forward to guess at what the ideal independent should look like in order to thrive in the decades ahead. Naturally, no independent we talked to was likely, or willing, to say that the future is in peril. Forty years hence, there will still be demand for oil, although the quantity can't yet be known. This could change if some new energy source emerges that is economic, safe and scalable.

A few things are a given, and this is knowledge borne out of some hard-won lessons of the past. Maintaining low debt or no debt is a must. Achieving free cash flow to give back a large portion of that to investors is a must. (How in heck did CEOs drift away from doing that in the first place?) The ideal independent will deliver yields comparable to the best in other U.S. industries.

In the office, relying on digital analytics to make decisions and prevent bad maintenance problems from occurring will be the norm. Remote operations from a central computer will be common. Drilling out of

cash flow will be a no-brainer. The employees will be highly educated, motivated and diverse, with more women and minorities in charge, thus bringing fresh perspectives to boardroom and staff conversations.

Flaring will be done only in exceptional, short-lived instances. Drilling and production equipment will be amazingly advanced, and wastes from drilling and completions of all kinds will be recycled and treated. Water will be protected. Costs will be minimal as technology continues to reduce downtime and errors and to increase productivity in the office and in the field.

The independents (and majors) will have figured out how to make their natural gas, crude oil and NGL "responsibly sourced," and this will be a true, scientific description as monitored by the Securities and Exchange Commission or someone else, not PR "greenwashing."

A new industry sector that is growing fast will be plugging all the old, leaky, abandoned wells throughout the U.S. in a robust campaign that is adequately funded by the industry, state and federal governments. It will employ thousands of environmental engineers who know how to mitigate problems, protect wildlife habitats and reclaim land. Indeed, all ESG matters will be handled appropriately and be so commonplace that they elicit few headlines and few complaints. Standard operating procedure. Just another line item in the budget.

Luckily for consumers, energy will be cheap and plentiful, coming from oil, natural gas, biomass, other renewables and wave power. Companies will have figured out how to harness, store and transport these in a safe manner that is also economic. Don't give it another thought.

Sure, there are bound to be many challenges and new business models will emerge that we may not have envisioned today. A report from the non-profit Energy Systems Integrated Group said recently that if the U.S. were to achieve net-zero emissions by 2050, we'd need to first double, or even triple, the electric transmission grid to handle what will be needed. That's a tall order, and where will the money come from? And what about the landowners who object to power lines, or solar and wind farms, for that matter?

There are no easy answers—yet—but if we can dream it, we can achieve it. Someone somewhere is going to figure all of this out. For that reason, we eagerly look forward to what the next 40 years will bring.



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