Oil and Gas Investor

APRIL 2022

Can the Permian Basin Save the World?

Pioneer Natural Resources CEO Scott Sheffield

By the Numbers:

Top 100 Private Operators

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COLUMNS

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Oil and Gas Investor

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ABOUT THE COVER: Scott Sheffield, CEO of prolific Permian Basin producer Pioneer Natural Resources Co., has been extolling the need for careful growth in the industry. At CERAWeek by S&P Global, Sheffield reiterated the company's stance on growth by saying, "We're not going to chase growth like we all did over the last 10 years. We're going to limit our growth to 5% long term. That keeps the cycle in check, it doesn't put pressure on the entire service industry."

Sheffield met up with Hart Energy and photographer Ricardo Merendoni at the conference in downtown Houston for the first cover photo shoot of *Oil and Gas Investor*'s redesign. You can read more about Pioneer and other producers in the Permian Basin in our cover story.

YOU'VE COME TO THE RIGHT PLACE

NO ONE ASKED ME, *BUT . . .*

LEN VERMILLION
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Once upon a time, in the not-so-distant past, the universe was deemed infinite. Meanwhile, our solar system seemed to have nine planets, maybe 10 if Planet X was to be believed. Now? Well, the universe has a boundary and is expanding. There are only eight planets in our solar system these days but several thousands of confirmed exoplanets. Heck, there are even rogue planets roaming around. How's that for scary space threats?

What changed? Technology, that's what.

Technology changes our perceptions, knowledge and habits. One place where the acceleration of technology disruption is extraordinary is our business—media. We at Hart Energy have long embraced the opportunities of digital media while simultaneously maintaining this vibrant legacy magazine, *Oil and Gas Investor*. For 40 years, this magazine has been a leading source for unique and thorough oil and gas industry business information. Don't worry, that's not changing.

What is changing is the further integration of this magazine with Hart Energy's digital products, including HartEnergy.com, our e-newsletters and our unmatched video programming and conferences. That's why I am excited to announce the redesign of *Oil and Gas Investor* and HartEnergy.com. Together, they will work hand-in-hand to bring you all of the energy sector news, information, data and solutions you'll need to continue growing your businesses, producing oil and gas efficiently and safely, integrating with energy transition technology and practices and more.

While the delivery and presentation may have a new look, we will still bring you connections to the top executives in the industry and introduce you to new executives as the next generation of leaders climbs the ladder.

About those people: You may have noticed Scott Sheffield, CEO of Pioneer Natural Resources, on the cover of this issue. Sheffield, a shale pioneer (pun intended) and energy leader, gets the call as the first executive to front our new look. We're thankful to him that he embraced this opportunity. We'll have others, many of whom you'll recognize instantly. Some you may not but will be instantly intrigued.

One of the more notable changes you'll see in the pages that follow are the consistent QR codes that will lead you to more information and video on HartEnergy.com. And don't forget, this redesign isn't only on these pages. Check out the new and improved HartEnergy.com, which also debuts this month.

While we'll bring you plenty of in-depth features and data here in *Oil and Gas Investor*, we'll give you even more data and plenty of daily news and information on HartEnergy.com. In addition, look for upcoming reinventions of our popular e-newsletters, including new offerings coming soon on energy transition, capital markets and carbon management.

I hope you enjoy this new look and newly focused *Oil and Gas Investor*. While modernizing a legendary brand is always tricky, we think you'll find this magazine as special as ever for the next 40 years and beyond. OGI

Let us know what you think of the new and improved *Oil and Gas Investor* and **HartEnergy.com** by emailing us at **editorial@hartenergy.com**.

JUST LET US DO OUR JOB

ENERGY POLICY

JACK BELCHER
CORNERSTONE GOVERNMENT AFFAIRS
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Watch the Energy Policy Watch series with Cornerstone's Jack Belcher.

Scan me

One of the more frustrating things I have experienced in my work over the years is watching politicians and talking heads, most of whom normally ignore the oil and gas business or energy policy, suddenly become experts when energy becomes big news. I have seen it happen over and over for 30-plus years. Statements such as "We can't drill our way out of high prices" and "We are running out of oil" always seem to turn out wrong.

Once again, we suddenly find ourselves in a global crisis, in part due to the Russian invasion of Ukraine, and political "experts" are on television repeating their talking points. One of the more frustrating mantras is this notion that the industry is squandering unused leases and that they must "use it or lose it." Such a position reflects a fundamental misunderstanding of the oil and gas business.

In simple terms, obtaining a lease is not like buying a six pack of beer, when every can guarantees 12 fluid ounces. When a company purchases a lease, one does not know whether the leased area will include any oil and gas to produce. Of course, we find that out by exploring and drilling, and we do not drill every lease all at once. Instead, businesses purchase leases in an area and explore. If a productive play is discovered, then leases are developed where hydrocarbons exist. On the other hand, if oil or gas is not found, adjacent leases are unlikely to be developed. Hence there are always leases that are not being utilized. It's a basic tenet of oil and gas exploration.

Poet Alexander Pope wrote "A little learning is dangerous thing," and that is clearly true today for policymakers. To say that the industry is not extracting the oil and gas it is capable of producing because there are leases that are not being developed is either the result of ignorance or insincerity. In either case, it's insulting and unproductive.

A personal favorite anecdote that I referenced during my days on Capitol Hill is Perdido, the deepest offshore spar platform in the world. Shell began to purchase the leases in the Gulf of Mexico that are part of the Perdido development in 1996, when the technology for developing the leases did not even exist. Over the years, however, Shell in fact developed the technology and produced first oil in 2010. Peak production at Perdido has been huge—100,000 bbl of oil and 200 MMcf of natural gas per day, utilizing a network of 27 miles of underwater pipelines on the seafloor in 8,000 ft of water. This feat could not have been accomplished had Shell not been able to hold its leases and prove out the play.

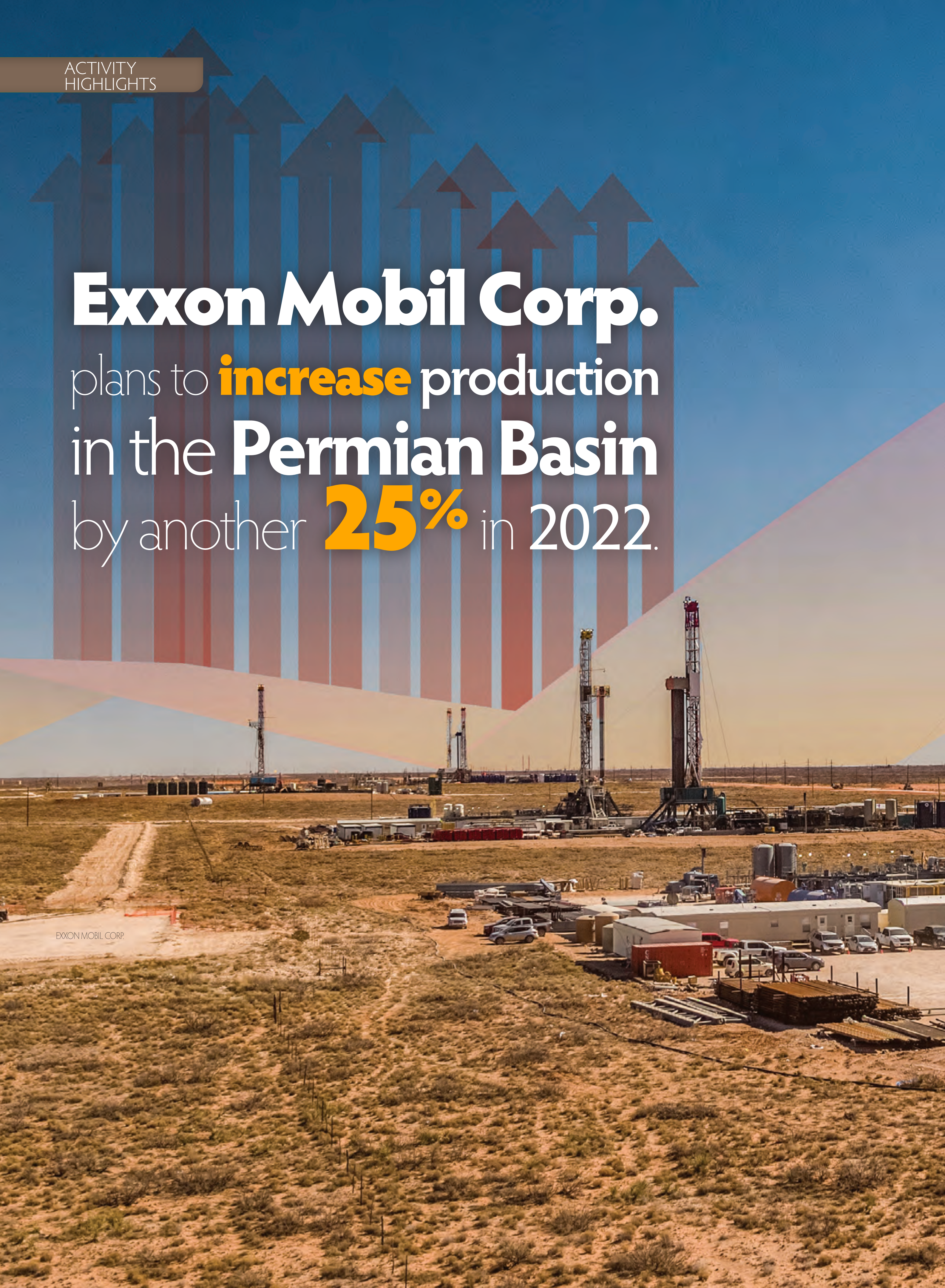
Now, in the face of a global energy and geopolitical crisis, politicians on television are in essence telling the industry it does not know how to do its business. They are also claiming we cannot increase our domestic production in the U.S. to offset what has been lost from Russia. While it might take some time to ramp up, nothing could be further from the truth. Consider that prior to the pandemic, the U.S. was producing over 13 MMbbl/d, up from just 5 MMbbl/d in 2008.

Virtually nobody, and certainly not the government, predicted the shale revolution. No one predicted the U.S. would become the world's largest producer of oil and natural gas, but it happened. Why? It happened because the industry applied the right technology and know-how to solve a complex problem and because it happened on private lands where the federal government could not stand in the way.

Let's look at what U.S. natural gas can do for the world, and especially Europe who, in part due to the war and the halt of the Nord Stream 2 Pipeline, is suffering from record energy prices that are devastating its economy. In 2022, the U.S. became the world's largest LNG exporter, with several new projects in various stages of being planned and built. To understand just how significant and impactful U.S. LNG is to the world, consider this: Just two facilities, Golden Pass LNG (when completed) and Cheniere's Sabine Pass, will have the capacity to export a combined total of 6.15 Bcf/d. Compare that to the recently halted Nord Stream 2 Pipeline, which would have brought a maximum of 5.32 Bcf/d to Europe.

U.S. oil and gas producers and exporters are well-positioned to bring much-needed energy supplies to the global market. We just need a government that understands and believes in our ability to deliver them and allows us the opportunity to do so. OGI

Exxon Mobil Corp. plans to increase production in the Permian Basin by another 25% in 2022.



EXXON MOBIL CORP.

Production in 2021 totaled about 460,000 bbl/d.

PERMITS

The U.S. well permit count in the full month of January sunk to its lowest level since the nadir of the COVID-19 pandemic in May 2020. The count of 1,012 permits was 25% down from the total of a year earlier.

The slump in permits aligns with a report from the Energy Information Administration that net imports of crude are expected to increase in 2022, continuing a trend. In 2021, net imports exceeded exports, reversing the role of the U.S. as a net exporter that was established in 2020. That year was marked by a sharp decrease in oil demand as a result of the pandemic.

Texas dominated the list of permits issued in the period ending in mid-February with 733. The Permian Basin is home to the leading counties in the state for the permits. Three counties—Webb, Atascosa and Live Oak—are located in the Eagle Ford Shale.

Pioneer Natural Resources Co. and XTO Energy Inc. dominated permitting in Martin County, Texas, in the Permian. Endeavor Energy Resources LP led companies acquiring permits in the No. 2 county, Midland.

The only non-Texan among the top 10 was McKenzie County, N.D., in the Bakken Shale, where Ovintiv Production Inc. secured 16 permits and Oasis Petroleum North America LLC secured eight. The counties of Stephens, Kingfisher and Blaine led permitting in Oklahoma, where Citation Oil & Gas Corp., Ovintiv and Devon Energy Corp. were the major players.

Permitted Wells By Operator

Operator	Well Count
EOG Resources Inc.	36
Exxon Mobil Corp.	28
OXY	28
Laramie	23
Endeavor Energy Resources	23
Pioneer Natural Resources Co.	22
Marathon Oil Corp.	22
Ovintiv	20
ConocoPhillips Co.	15

Permitted Wells By State

State	Well Count
Texas	733
Oklahoma	120
Colorado	85
Louisiana	65
Wyoming	47
North Dakota	42

Permitted Wells By County

County	Well Count
Martin, Texas	60
Midland, Texas	50
Howard, Texas	49
Loving, Texas	46
Upton, Texas	40
Reeves, Texas	36
Webb, Texas	27
McKenzie, N.D.	24
Atascosa, Texas	22
Live Oak, Texas	22
Stephens, Okla.	19
Campbell, Wyo.	16
De Soto, La.	16
Johnson, Wyo.	16
Kingfisher, Okla.	16
Bossier, La.	15
Converse, Wyo.	13
Cado, La.	12
Weld, Colo.	12

Data from Rextag ENERGY DATALINK

FOCUS ON: DELAWARE BASIN

If the Delaware Basin were its own country, it would rank No. 11 among the world's oil producers, between OPEC members Kuwait and Nigeria. At about 13,000 square miles, it is almost double the size of Kuwait, although the emirate's population of about 4.4 million is more than 19 times that of the Delaware.

More superlatives? The leading crude production county in the basin is Lea County, N.M., which itself would rank No. 24 in the world with 2020 production of 216 MMbbl of crude. Reeves County, Texas, would rank No. 35, even though the Texas Railroad Commission lists it as outproduced by five Texas counties in the Midland Basin.

The Delaware's astonishing bounty of hydrocarbons derives from:

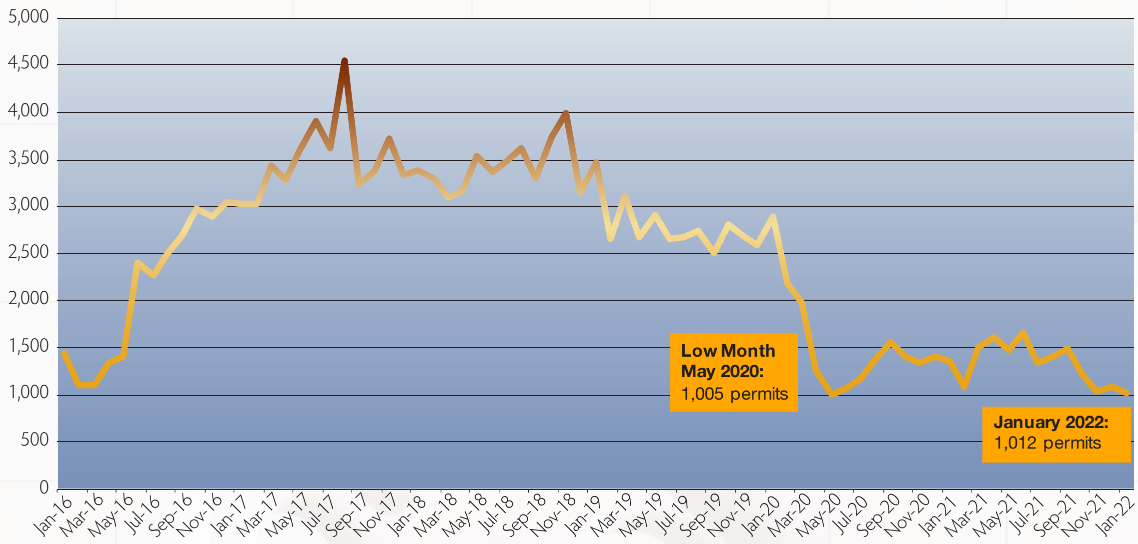
- Wolfcamp, which is shared with the Midland, its sister sub-basin in the Permian, and is the most prolific tight oil and gas formation in the Permian; and
- Avalon and Bone Spring formations.

The U.S. Geological Survey (USGS) estimated in 2018 that Wolfcamp resources in the Delaware Basin totaled more than 29 billion barrels (Bbbl) of oil, 220 Tcf of natural gas and 14 Bbbl of NGL.

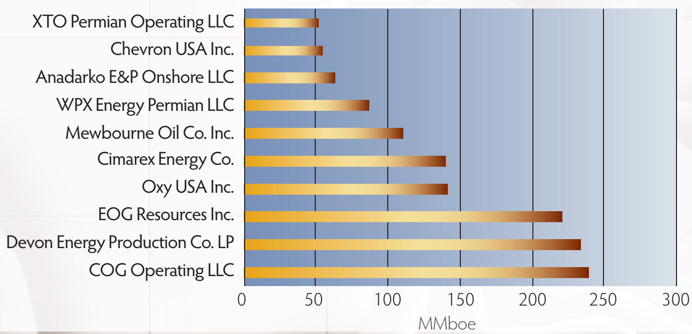
The Bone Spring had been a rich source for conventional production long before its development as an unconventional play. It is of the Leonardian age (275 million years old) and has been estimated by the USGS to contain 14 Bbbl of oil, 32 Tcf of natural gas and 2.3 Bbbl of NGL. The estimate for the Avalon is 2.7 Bbbl of oil, 27.5 Tcf of natural gas and 2.8 Bbbl of NGL.

Well Permit Trend (Monthly since 2016)

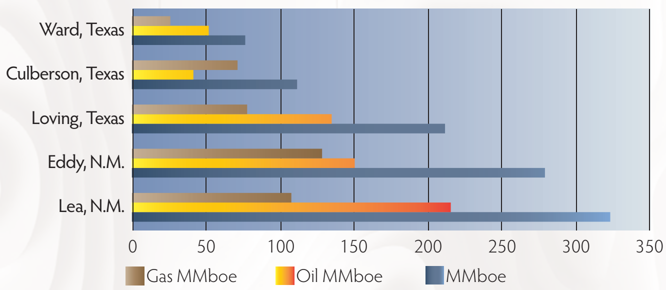
The number of permits issued in January returned to the level of May 2020, the lowest point of the COVID-19 pandemic.



Delaware Basin Top Operators



Delaware Basin Top Producing Counties (2020)



THE BIG DEAL: WHITING, OASIS TO COMBINE IN $6 BILLION 'MERGER OF EQUALS'

Consolidation came to the Bakken in March as **Whiting Petroleum Corp.** and **Oasis Petroleum Inc.** agreed to combine in a $6 billion "mergers of equals" transaction, the two companies said in a joint news release on March 7.

The deal, nearly a million acres and an estimated $1.2 billion in 2022 free cash flow, continued the trend of other mergers as a means of ascendancy through attrition: By name, neither company will exist after the deal is done, as the surviving entity will be renamed.

The deal was long contemplated as a natural alliance of fierce competitors in that more mature and less fragmented Williston Basin.

By the numbers, the company is a model citizen in the E&P world of fiscal responsibility, production, acreage and debt that Oasis and Whiting put at 0.2x net debt/to estimated first-half 2022 annualized EBITDAX at close.

Under the terms of the agreement, Whiting shareholders will receive 0.5774 shares of Oasis common stock and $6.25 in cash for each share of Whiting common stock owned. The combined company, to be led by Oasis CEO Danny Brown, will operate under a new name and is expected to trade on the NASDAQ under a new ticker to be announced prior to closing.

"The combination will bring together two excellent operators with complementary and high-quality assets to create a leader in the Williston Basin, poised for significant and resilient cash flow generation," Brown commented in the joint release.

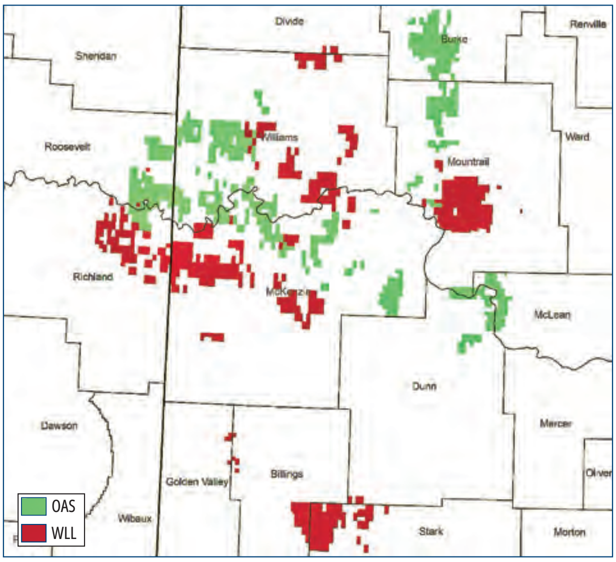
Combined, the company will have a premier Williston Basin position with top tier assets across approximately 972,000 net acres, production of 167,800 boe/d, significant scale and enhanced free cash flow generation to return capital to shareholders, according to the release.

Both Denver-based Whiting and Houston-based Oasis filed for Chapter 11 bankruptcy in 2020 following a historic crash in oil prices. Reuters on March 6 had reported about their impending merger, citing a source familiar with the matter.

"Over the last year, both companies have executed a series of deliberate strategic transactions, reducing costs and establishing a leading framework for ESG and return of capital," Brown added. "The combination of the two companies, together with the ongoing momentum from these strategic actions, will accelerate our efforts and ideally position the combined company to generate strong free cash flow, execute a focused strategy and enhance the return of capital."

Upon closing, Brown will serve as president and CEO and a member of the board of the combined company, which will be headquartered in Houston but will retain

Whiting, Oasis Combined Assets



Source: Whiting Petroleum Corp., Oasis Petroleum Inc.

The Numbers

Leasehold: 972,000 net acres
Production: 167.8 Mboe/d
Equity value: $6 billion
Borrowing base: $900 million
Reinvestment rate: less than 40%
Inventory depth: 10 years of development at current pace
Deal synergies: $65 million per year in administrative and operation cost savings

Top Five Williston Operators By Production (boe/d)

Continental Resources Inc.	191,000
Whiting-Oasis	168,000
Hess Corp.	159,000
Marathon Oil Corp.	124,000
ConocoPhillips Co.	95,000
Enerplus Corp.	69,000

Top Five Williston Operators By Acreage (Net)

Whiting-Oasis	972,000
Continental Resources Inc.	772,000
Exxon Mobil Corp.	480,000
Hess Corp.	460,000
Marathon Oil Corp.	255,000

the Denver office for the foreseeable future. Whiting's president and CEO, Lynn Peterson, will serve as executive chair of the board of directors.

"We are bringing together two like-minded companies and cultures through a merger-of-equals transaction," Peterson commented in the joint release. "Both organizations have outstanding talent and operational practices that we are excited to integrate to create an even stronger combined company.

"This is also an exciting and very positive development for the communities in which we operate and the great states of North Dakota and Montana," he continued. "We look forward to unlocking the enormous potential of our assets and organizations for the benefit of our stakeholders."

The transaction, which is expected to close in the second half of 2022, has been unanimously approved by the boards of directors of both companies. The closing of the transaction is subject to customary closing conditions, including, among others, approval by Whiting and Oasis shareholders.

Kimmeridge Energy Management Co. LLC, a significant owner of Oasis with a 4.9% stake in the company, is "highly supportive" of the announced transaction, according to Mark Viviano, managing partner and lead portfolio manager of the firm's public investment team.

"We have advocated for industry consolidation, as there are too many undersized and irrelevant companies drilling shale wells," Viviano commented in an emailed statement. "This merger of equals amongst offsetting operators will help the combined company gain operational scale, with synergies accruing to both sets of shareholders.

"Following bankruptcy, the new Oasis management team and board has executed a shareholder-friendly strategy, consistent with Kimmeridge's vision for the company. They should be applauded for taking swift action," he added.

Upon completion of the transaction, Whiting shareholders will own approximately 53%, and Oasis shareholders will own roughly 47% of the combined company on a fully diluted basis. In connection with the closing of the transaction, Oasis shareholders will receive a special dividend of $15 per share.

Citi is financial adviser, and **Kirkland & Ellis LLP** is serving as legal adviser to Whiting for the transaction. **Tudor, Pickering, Holt & Co.** and **RBC Capital Markets LLC** are serving as financial advisers, and **Vinson & Elkins LLP** is legal adviser to Oasis.

—Emily Patsy and Darren Barbee

EXCLUSIVE: GREYLOCK STEPS OUT OF APPALACHIA WITH LARGE UINTA, GREEN RIVER DEALS

Greylock Energy said March 8 that the company acquired roughly 290,000 gross acres and other assets in the Uinta and Green River basins of Utah and Wyoming from an undisclosed seller.

In an exclusive interview, Greylock CEO Kyle Mork told Hart Energy the expansion, which includes about 1,400 producing wells, will boost the company's oil production from about 1,000 bbl per month in its conventional Appalachia assets to 1,000 bbl/d.

"It's almost a thirtyfold increase, and then the wells also produce a significant amount of NGL, call it 1,500 bbl/d or so of NGL," Mork said, adding he could not disclose the price of the deal.

The company's purchase wasn't tied to a rise in commodity prices that has taken on windfall proportions as the Russian Federation's invasion of Ukraine, now nearly two weeks old, has sent oil soaring.

Greylock signed a purchase and sale agreement before Christmas and, Mork said, the company sees itself largely as a gas player and had also evaluated largely gas assets.

While the seller has decided to remain undisclosed, "I will say for the seller, I think this was largely a noncore asset. And for us, it's very much a core asset," he said.

"One of the things we like a lot is we are getting some exposure to liquids," he said. "And we like geographically where it sits. In recent years, we're taking a pretty big discount to Henry Hub [prices], and these assets are really kind of the opposite. They generally are trading flat or even at a premium to Henry Hub because a lot of this gas ultimately gets exposure to the West Coast and even to California."

In addition to the new assets, Greylock will also retain about 60 employees from the seller, Mork said.

While financial details weren't disclosed, he said that the deal was negotiated on a PDP value basis and did not ascribe any value to upside potential.

Mork anticipated that it will continue to transact in more PDP-heavy deals.

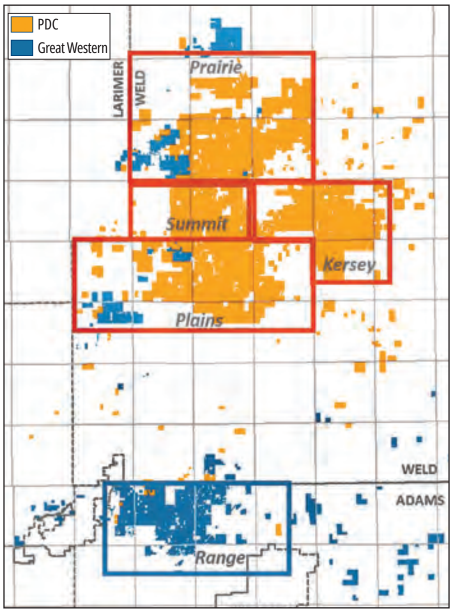
—Darren Barbee

PDC ENERGY ADDS INVENTORY WITH $1.3 BILLION CORE WATTENBERG ACQUISITION

PDC Energy Inc. agreed on Feb. 28 to acquire **Great Western Petroleum LLC** in a transaction valued at roughly $1.3 billion, which includes net debt of approximately $500 million, that analysts say will add much-needed inventory in Wattenberg Field in Colorado's Denver-Julesburg (D-J) Basin.

"Coupled with our existing high-quality inventory, this core Wattenberg acquisition adds meaningful scale to PDC while also demonstrating our commitment to—and confidence in—the future of safe and responsible energy development in the state of Colorado," president and CEO Bart Brookman commented in a company release.

PDC Energy's Aquired Assets



Source: PDC Energy Inc.

The acquisition of Great Western, which analysts from **Tudor, Pickering, Holt & Co.** said removes M&A overhang and allows for an increase to shareholder returns, boosts PDC Energy's D-J Basin position to roughly 230,000 net acres. PDC also holds some 25,000 net acres in the Delaware Basin in the Permian.

The purchase price implies roughly $24,000 per boe/d flowing metric assuming no undeveloped acreage value, the analysts also noted.

PDC Energy will fund the transaction by issuing roughly 4 million shares of common stock to Great Western shareholders valued at $227.6 million and about $543 million of cash.

PDC does not expect its pro forma leverage ratio to exceed 1.0x upon closing anticipated in the second quarter.

PDC Energy plans to run three rigs and one and a half crews in the second half of 2022 on the combined D-J asset with pro-forma capex of about $900 million and $1 billion. Pro-forma production for the second half of the year is expected to be roughly 250,000 to 260,000 boe/d and 82,000 to 87,000 bbl/d of oil.

PJT Partners is exclusive financial adviser to PDC, and **Davis, Graham and Stubbs LLP** is PDC's legal counsel. **Citi** is exclusive financial adviser to Great Western, and **Latham & Watkins LLP** is Great Western's legal counsel.

—Emily Patsy

Read more here:

CRESCENT ENERGY TO ACQUIRE EP ENERGY UTAH ASSETS FOR $815 MILLION CODE

Crescent Energy Co. agreed on Feb. 16 to acquire Uinta Basin assets in Utah previously owned by **EP Energy** for $815 million, according to a release from the Houston-based company.

Read more here:

"We are acquiring these assets at a compelling valuation," Crescent CEO David Rockecharlie commented in a company release.

According to the release, Crescent Energy will acquire the Uinta Basin assets in an all-cash transaction from **Verdun Oil Co. II LLC**, an **EnCap Investments LP**-backed firm created in 2015.

The Uinta assets include more than 145,000 contiguous net acres (>85% HBP) and over 400 producing vertical and horizontal wells, primarily located in Duchesne and Uintah counties, Utah. The assets are operated with an average working interest of about 83% and average royalty rates less than roughly 20%.

The transaction is expected to expand Crescent Energy's production from the Rockies and Eagle Ford to about 65% of its total production base plus increases the percent operated to roughly 70% based on 2022 expected production, according to the company release.

"They are a great addition to our existing Rockies footprint and align perfectly with our cash flow-based strategy," Rockecharlie continued in his statement.

Post-closing of the transaction, Crescent plans to operate two rigs in the Uinta Basin for the remainder of the year. The capital associated with this program is expected to be between $225 million and $275 million, and Crescent's revised 2022 capital budget is expected to be $600 million to $700 million.

Crescent Energy plans to fund the all-cash transaction, expected to close in first-half 2022, through the company's revolving credit facility and cash on hand. Closing of the transaction is subject to customary closing conditions, including certain regulatory approvals, the release said.

Crescent's lenders authorized an increase of the company's elected commitment amount under the existing revolving credit facility to $1.3 billion from $700 million, contingent upon the closing of the transaction. The company's current liquidity pro forma for the elected commitment amount increase is $1.1 billion.

—Emily Patsy

REMEMBERING

LESLIE HAINES

It was my great pleasure to personally and professionally interact with Leslie Haines for well over three decades.

Not only was she always impeccably prepared and informed, but she consistently looked for creative insights and revealing changes in industry trends. In a career full of notable credits, Leslie was one of the very earliest to embrace the shale revolution and its implications for U.S. strategic energy positioning and security. Her ability to develop authentic portrayals of energy sector realities was truly exemplary.

All of us at Petrie Partners express our heartfelt condolences at Leslie's passing. She will be missed.

Tom Petrie
Chairman, Petrie Partners

WHO'S WHO IN E&P A&D: CHRISTOPHER SIMON

Scan to see our entire Who's Who in E&P A&D database.

The recent swirl of deals in and around the Haynesville Shale hasn't exactly been a surprise to **Rockcliff Energy**. But the company isn't in a hurry. It's taken a workman-like approach to its 156,000 net Haynesville acres in East Texas and has worked to expand the core of the Haynesville well into East Texas.

The Houston-based company also generates a "significant amount of EBITDA" and free cash flow while upping its average daily production to a net 1.1 Bcfe of natural gas.

The company's A&D and M&A plans remain somewhat coy as it alternatively plays the role of evaluator and target. But like many of its peers, Haynesville operators are considering their options, including simply continuing to generate money for their investors.

Christopher Simon, vice president of business development for Rockcliff, said the company is keeping its options open but is focused on developing its assets.

"We're certainly keeping tabs on what's going on in the markets," he said.

What's going on in those markets has been second only to the Permian Basin in deal activity, with two of the largest deals—November's deal by Southwestern Energy to buy GEP Haynesville and Paloma Partners VI's agreement to buy Goodrich Petroleum—combining for more than $2 billion in transactional value.

Those kinds of numbers have vaulted the Haynesville into a must-look hunting ground for natural gas buyers.

Built on two significant acquisitions in 2017, including a $525 million deal to buy Samson Resources' East Texas and North Louisiana assets, the company is now being patient, Simon said.

Like all deal makers, Simon and Rockcliff are willing to make a deal on the right terms. And those terms may be headed their way. The company has become among the top five natural gas producers in Texas with the same proximity to the Gulf Coast and LNG and petrochemical complexes as other players in the area.

"There are a lot of advantages for companies to secure more inventory in that region," he said. "And because many of the companies are becoming healthier, it puts them in a position to be acquisitive with these acquisitions being financially and operationally accretive to their company."

But Rockcliff remains ever patient.

"We're getting to a size that [Rockcliff's position] has become of interest to various parties," Simon said, adding that the company is not in a process but that the company's 15x production growth hasn't gone unnoticed.

While Rockcliff isn't in the market, "people have noticed the growth we've had and the size of our position, not only our PDP base, but our inventory in East Texas," he said.

—Darren Barbee

Transaction Highlights

MIDLAND BASIN

Brigham Minerals Inc. recently agreed to a cash-and-stock mineral acquisition in the Midland Basin largely operated by **Pioneer Natural Resources Co.** and **Endeavor Energy Resources**.

The transaction, estimated by **Tudor, Pickering, Holt & Co.** (TPH) analysts to be valued around $32.5 million, checks all the boxes Brigham Minerals requires for "large deals," including both near-term cash flow per share and net asset value accretion, according to CEO Robert M. (Rob) Roosa.

"We remain extremely focused on capturing and creating value through consolidation and are pleased that our disciplined underwriting has been rewarded with acquisitions of over $120 million in the past three months," Roosa commented in a company release on Feb. 10.

In its latest acquisition, Brigham Minerals will pick up roughly 1,800 net royalty acres in the Midland Basin and production of 225,000 to 275,000 boe/d of production estimated for 2022.

Commenting on the transaction, TPH analysts said they liked the deal "at first blush" as it overall highlights the continued focus in the Permian Basin.

"Big picture, upstream companies prioritizing return of capital has made for competition for yield investors given E&P total return yields averaging ~10% in FY'22 in many cases, but minerals companies like Brigham remain competitive as viable investments down the market cap spectrum (~$1.3 billion currently) with advantages being insulation from service cost inflation, production and cash flow growth with exposure to private E&P operators and unhedged exposure to upside in commodity prices," the analysts wrote in a Feb. 11 research note.

MIDSTREAM

Enterprise Products Partners LP completed the acquisition of **Navitas Midstream Partners LLC**, a natural gas gathering, treating and processing service provider in the core of the Midland Basin backed by **Warburg Pincus LLC**, according to a Feb. 17 release.

The previously announced $3.25 billion acquisition gives Enterprise a foothold for natural gas gathering, treating and processing in the core of the Midland Basin of the Permian, where the Houston-based midstream company already has a presence in the Delaware Basin.

"The Navitas management team has developed a premier system in the heart of the Midland Basin. ... This acquisition will give us an entry point into the basin," Enterprise co-CEO A. J. "Jim" Teague commented in a release announcing the deal in January.

Navitas Midstream's assets, which

Enterprise said complements its presence in the Delaware Basin, include approximately 1,750 miles of pipelines and over 1 Bcf/d of cryogenic natural gas processing capacity. The system is anchored by long-term contracts and acreage dedications with a diverse group of over 40 independent and publicly owned producers.

The transaction is the largest acquisition of a private gas gathering and processing business, according to Warburg managing director John Rowan in the January release. Enterprise had said it planned to fund the acquisition using cash on hand and borrowings under the partnership's existing commercial paper and bank credit facilities.

Jefferies LLC was financial adviser to Navitas in connection with the transaction, and **Kirkland & Ellis** served as the company's legal adviser.

DELAWARE BASIN

APA Corp. disclosed an $805 million sale of mineral rights in the Delaware Basin alongside plans for additional pruning to its Permian portfolio.

Based in Houston, the independent E&P holds a gross acreage position of 4.9 million acres in the Permian Basin primarily located in the Midland Basin, the Central Basin Platform/Northwest Shelf and the Delaware Basin. Last quarter, APA set a $500 million target of noncore U.S. asset sales that the company expected to mainly come out of its Permian Basin portfolio.

APA easily hit the $500 million noncore sales target with the recent agreement to sell a sizable chunk of mineral rights in the Delaware Basin, which the company disclosed in its fourth-quarter earnings announcement on Feb. 21.

"We said we'd sell a minimum of $500 million. Clearly, we've met that through the sale," John J. Christmann IV, APA's CEO and president, said on a call with analysts the next day, according to a transcript by **Seeking Alpha**.

Despite his views of meeting and exceeding that goal, Christmann added on the call that "there's still opportunity out there for some potential additional pruning if we choose to do so.

"You should anticipate continued noncore Permian asset sales," he said.

The Delaware Basin mineral rights sales package was expected to close by the end of February, according to Christmann.

EQUATORIAL GUINEA

Chevron Corp. is looking to sell its stakes in three oil and gas fields in Equatorial Guinea, hoping a recent rally in energy prices will help attract buyers, three industry sources recently told Reuters.

The U.S. company acquired the assets in the west African country as part of the $13 billion acquisition of **Noble Energy** in 2020.

Chevron has hired investment bank **Jefferies** to run the sale process, which could raise as much as $1 billion, the sources said. Chevron and Jefferies declined to comment.

Chevron holds a 38% interest in the Aseng oil field and the Yolanda natural gas field in Equatorial Guinea's Block 1, as well as a 45% interest in the Alen gas and condensate field in Block O. It operates the three fields.

The company expanded its presence in Equatorial Guinea in December when it signed a production-sharing agreement for an offshore block in the Douala Basin.

The Equatorial Guinea assets added 441 Bcf of natural gas to Chevron's reserves in 2020, according to its annual report.

UTAH

Shale producer **Ovintiv Inc.** is looking to hire an investment bank to consider options for its acreage in the Uinta Basin of Utah, as it looks to cash in on a boom in energy prices to cut debt, three sources familiar with the matter told Reuters on Feb. 22.

A full or partial sale would be among the options for Ovintiv, one of the top producers in the Uinta Basin, the sources said, adding that a sale of the assets could fetch around $1 billion.

No final decision has been made about the assets, and Ovintiv could still decide to retain them, the sources cautioned. They requested anonymity as the discussions are confidential.

An Ovintiv spokesperson said the company does not comment on potential or rumored A&D activity.

A sale, if it happens, would be the second from a major player in the oil-rich basin after privately owned **EP Energy** sold its position to **KKR**-backed **Crescent Energy** earlier in February for $815 million.

Ovintiv's assets spanned around 207,000 net acres in central Utah and had production of around 13,000 boe/d as of its 2020 annual report.

AUSTRALIA

ConocoPhillips Co. completed the purchase of an additional 10% shareholding interest in **Australia Pacific LNG** (APLNG) from **Origin Energy** for $1.645 billion, according to a Feb. 17 release from the Houston-based independent oil and gas firm.

APLNG, a joint venture between Origin, ConocoPhillips and **Sinopec**, is the largest producer of natural gas in eastern Australia and a major exporter of LNG to Asia. ConocoPhillips' Australian subsidiary now owns a 47.5% interest in APLNG, with Origin Energy and Sinopec owning 27.5% and 25% interests, respectively. The transaction resulted from the exercise of ConocoPhillips' preemption right and is funded from cash on the company's balance sheet.

Based on the new 47.5% ownership interest and a full-year average Brent price of $78/bbl, ConocoPhillips would expect approximately $1.8 billion of distributions from APLNG in 2022, with roughly $500 million expected in the first quarter.

RENEWABLES

Sweden's **Lundin Energy** plans to use funds from divesting its petroleum business for M&A to become an industry leader in renewable energy, its incoming CEO said on March 7.

Norway's **Aker BP** last year struck a deal to buy Lundin's oil and gas business in a $14 billion cash and stock transaction, leaving the Stockholm-listed company with only renewable assets. The deal is expected to close in June. Lundin said it aimed to grow the renewable business into "an industry-leading energy company," with scale and sufficient cash flow to provide a steady increase of shareholder returns.

"I think that we will start growing inorganically first, and we will start with the M&A … We are already active in the M&A space," Daniel Fitzgerald, Lundin's current COO and incoming CEO told Reuters.

Lundin has retained **SEB** investment bankers as advisers to support its growth ambition, he added.

NORTH SEA

■ **Shell** is preparing to launch the sale of its stakes in two clusters of gas fields in the southern British North Sea, part of an ongoing retreat of long-time producers from the aging basin, industry sources told Reuters.

Shell is planning to offer its 50% stake in a cluster of fields in the Clipper hub, as well as the Leman Alpha complex, the three sources said, adding that the assets could fetch up to $1 billion in total.

A Shell spokesperson declined to comment on its plans for the fields, which both supply natural gas via a pipeline to the onshore Bacton gas processing plant in eastern England.

Shell has in recent years sold a number of stakes in aging fields in the North Sea, including a $3.8 billion package of assets to **Harbour Energy** in 2017.

Shell owns a 50% stake in the Clipper and Leman Alpha fields, which were part of a large joint venture with **Exxon Mobil Corp.** dating back to the 1960s. Exxon Mobil sold its British North Sea assets last year to private equity-backed **Neo**.

The Clipper hub is located approximately 41 miles from the Norfolk coast and can transport up to 400 MMscf/d of gas, Shell says.

The Leman Alpha complex includes five platforms located around 43 miles off the coast.

■ **Waldorf Production** is nearing a deal to acquire oil and gas assets in the British and Dutch North Sea from **ONE-Dyas** for more than $1 billion, industry sources said on Feb. 11.

Under the terms of the emerging deal, private equity backed Waldorf Production has also agreed to buy assets in Norway and Gabon from ONE-Dyas should the privately owned company fail to find other buyers, the sources said.

Many oil and gas fields in the British North Sea have moved into the hands of smaller players in recent year, often backed by private equity, as larger producers such as **Shell** and **BP** seek to offload aging assets and increase investment in renewables.

Waldorf Production, led by CEO Erik Brodahl, currently owns stakes in seven producing fields in the North Sea and is looking to expand further through acquisitions, its website says.

ONE-Dyas declined to comment, and Waldorf did not respond to requests for comment.

CANADA

■ Canadian oil and gas producer **Crescent Point Energy Corp.** is looking to sell some of its assets in Alberta and Saskatchewan that could fetch around CA$500 million (US$394 million), according to an industry source and marketing documents seen by Reuters on Feb. 7.

Crescent is offering the assets for sale in three separate packages, according to the marketing documents. Combined, the assets are estimated to have output around 10,554 boe/d in the fourth quarter, the documents showed.

The company has retained **National Bank Financial Markets** as its adviser on the planned sale, according to the marketing documents.

Crescent Point and National Bank did not immediately respond to emailed requests for comment.

■ **Energy Transfer LP** agreed on March 1 to sell its Western Canadian gas processing business to a joint venture (JV) between **Pembina Pipeline Corp.** and **KKR**, marking the Dallas-based company's exit from Canada.

According to a release, the companies signed a definitive agreement for Energy Transfer to sell its 51% interest in Energy Transfer Canada to the JV, which includes participation by Pembina Pipeline and global infrastructure funds managed by KKR, at a valuation of approximately CA$1.6 billion (US$1.3 billion), including debt and preferred equity. The remaining stake is already owned by KKR's funds.

The sale is expected to result in cash proceeds to Energy Transfer of approximately CA$340 million (US$270 million), subject to certain purchase price adjustments, and close by third-quarter 2022.

Separately, Pembina and KKR on March 1 agreed to form a JV, merging their Western Canadian gas processing assets in deals worth CA$11.4 billion (US$8.99 billion), which included the Energy Transfer Canada transaction.

RENEWABLES

■ **Chevron Corp.** is buying biodiesel maker **Renewable Energy Group Inc.** for $3.15 billion, in its biggest bet so far on alternative fuels.

The second-largest U.S. oil and gas producer said on Feb. 28 it would pay $61.5 in cash for each share of Renewable Energy, a premium of over 40% to the company's close on Feb. 25. Renewable Energy shares rose more than 37% in premarket trading.

Chevron has set a target to cut operational emissions to net-zero by 2050 and in September pledged to invest $10 billion to reduce its carbon emissions through 2028, with about $3 billion earmarked for renewable fuels.

Goldman Sachs & Co. was Chevron's financial adviser, while **Guggenheim Securities** advised Renewable Energy on the deal.

SHOULD SPACs TAKE A PAGE FROM THE MLP PLAYBOOK?

Find out what the Delaware Court's recent MultiPlan ruling means for SPAC sponsors and directors going forward.

ARTICLE BY

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SPAC (special-purpose acquisition companies) investors, advisors and (most keenly) directors are asking questions following the Delaware Court's denial in January of the defendants' request for dismissal in the MultiPlan Corp. shareholder litigation. SPAC sponsors and directors may be prudent to take a page from the MLP playbook.

In MultiPlan, the court found that, despite the SPAC's shareholder vote and redemption feature, there was an inherent conflict between the SPAC founders (and directors) because the founders' shares being worthless in the absence of a de-SPAC transaction created a potential incentive for the recommendation of a transaction worth less than the redemption price. The court held that in this case, the directors' fiduciary obligations should be evaluated under the "entire fairness" standard rather than the less stringent "business judgment."

Entire fairness

Legal responsibilities of board members have evolved over the years from the application of decisions by courts into a doctrine commonly referred to as the "business judgment rule." The basic premise is that executives and directors are not liable for decisions that are made in good faith. However, in 1983 in *Weinberger v. UOP Inc.*, the Delaware Court introduced the concept of "entire fairness", which encompasses both "fair price" (economic and financial considerations) and "fair dealing" (how a transaction is structured, where and how it is initiated, how it is disclosed and negotiated with directors, and what and how approvals were received).

SPAC protections via shareholder votes

The MultiPlan decision was an eye-opener for SPAC sponsors and directors because the conventional wisdom was that, even in conflict transactions, an informed shareholder vote would cleanse conflicts and could defeat most lawsuits (*DE 2015 Corwin v. KKR*). As a result of this conventional wisdom, most de-SPAC transactions rely on a proxy statement and shareholder vote combined with the inferred structural protection of common shareholders' redemption rights.

Uncertainties abound

It should be noted that the Delaware Court in MultiPlan was explicit to state that the decision to reject the dismissal request was based on a mosaic of information, most notably:

1. The inherent conflict created by the founders' shares versus the common shares;
2. The MultiPlan directors were not independent; and
3. The disclosure regarding the plans of a key MultiPlan customer was not adequate.

SPAC directors and sponsors are left with continued uncertainty as to when and if "entire fairness" will be applied and, if so, what steps can be taken to protect against lawsuits.

MLP conflict transactions

From a conflict standpoint, MLPs and SPACs have certain similarities. Both are formed and managed by a sponsor. MLPs typically enter a series of "drop-down" transactions with the sponsor where conflicts could arise. Unlike SPACs, MLPs are technically partnerships, and their fiduciary responsibilities are defined in their partnership agreements. Partnership agreements address this risk by incorporating a well-proven standard from the corporate world. Almost universally, MLP agreements call for approval of conflict transactions via "special approval" whereby a special committee of independent directors vote on a transaction—typically informed by a robust process, including outside advisors and a fairness opinion.

Recommendation

While the Delaware Court left some ambiguity as to how transactions will be evaluated in the future, we believe that a SPAC sponsor and directors would benefit from the added scrutiny on de-SPAC transactions that would come from the additional approval of an independent special committee and independently provided fairness opinion.

James Hanson is a managing director with Opportune Partners LLC, an independent, conflict-free investment banking and financial advisory affiliate of Opportune LLP, a leading global energy business advisory firm.

MOVEMENT

Jessica Uhl, who has served as CFO for the past five years at Shell Plc, will step down. **Sinead Gorman** has been appointed her successor. Uhl, a U.S. citizen and "a key architect" of Shell's recent strategic changes, is leaving the group due to family reasons and because a long-term relocation to the U.K. is not possible, Shell said according to a Reuters report. In January, Shell ditched "Royal Dutch" from its name after moving its headquarters to Britain from the Netherlands.

Gorman, a British national who is currently the executive vice-president, finance, in Shell's global upstream business, will assume the CFO role on April 1 and will be based in London.

She started her career as a civil engineer before embarking on a finance career when she joined Shell in 1999. Since then, she has held several increasingly senior finance roles in all Shell's major businesses in Europe, North America and globally.

Diamondback Energy Inc. appointed **Kaes Van't Hof** as president as part of a series of leadership appointments and promotions announced by the Midland, Texas-based independent E&P.

In addition to Van't Hof, who will also remain in his current roles as CFO of Diamondback and president of the general partners of Viper Energy Partners LP and Rattler Midstream LP, Diamondback appointed **Daniel Wesson** as COO, as well as the addition of four vice presidents, to its executive team.

The new additions include **Chris Curry** as vice president of land, **Johnny Dossey** as vice president of marketing, **Hunter Landers** as vice president of completions and **Nathan Luoma** as vice president of production.

Marathon Oil Corp. promoted **Rob L. White** to replace **Gary Wilson** as vice president, controller and chief accounting officer, effective March 1. Wilson, whose retirement was previously announced last September, had joined Marathon Oil Corp. in October 2014 from Noble Energy.

Ranger Oil Corp. promoted **Julia Gwaltney** to the role of senior vice president and COO. Gwaltney joined Ranger Oil in January 2021 as senior vice president of development. Prior to joining Ranger, she was the COO for Gary Permian LLC from November 2015 to January 2020, where she led the company's entry into the Delaware Basin and the development of the property.

EARNINGS

Highlights of notable 4Q shale earnings.
Scan QR codes for full reports.

$CHK: Chesapeake Energy Corp. said its adjusted profit rose nearly 15% in the fourth quarter from the third and raised its 2022 earnings forecast amid surging oil prices.

$CLR: "We plan to allocate approximately $1.8 billion to drilling and completion activities with the majority of the increase over last year due to added capital to the recently acquired Powder River and Permian assets," Continental Resources Inc. CFO John Hart said.

$CVX: Chevron Corp. reported a fourth quarter profit on Jan. 28, which missed estimates by analysts on weaker-than-expected oil and gas production that outweighed gains from recovering prices.

$DVN: In the fourth quarter, Devon Energy Corp.'s free cash flow was $1.1 billion. The company generated a record $2.9 billion of free cash flow for the full-year 2021.

$EOG: U.S. shale producer EOG Resources Inc. reported net income of $1.99 billion, or $3.39 per share, in the three months ended Dec. 31, up from $337.47 million, or 58 cents per share, a year earlier.

$FANG: Diamondback Energy Inc. said it would increase its annual dividend by 20% to $2.40 per share, mirroring rivals' moves to increase shareholder returns as oil profits soar.

$OXY: "With net debt expected to be below $25 billion by the end of the first quarter, Occidental Petroleum Corp. is "ready to begin returning more capital to shareholders," said CFO Robert Peterson.

$PXD: Pioneer Natural Resources Co. announced a base-plus-variable dividend of $3.78 per share, which reflects a more than 25% jump to the base component.

$XOM: Exxon Mobil Corp. reported a fourth-quarter profit of $8.87 billion, its largest in seven years, as the top U.S. oil producer benefited from strong energy prices.

NEW FINANCINGS

EQUITY

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
Antero Resources Corp.	NYSE: AR	Denver	$1,000	Authorized by Antero's board of directors a share repurchase program that allows the company to repurchase up to $1 billion of outstanding common stock. This represents approximately 16% of Antero's market cap based on the current share price. The open market share repurchase program is expected to commence during first-quarter 2022 and may be repurchased from time to time in open market transactions, through privately negotiated transactions or by other means in accordance with federal securities laws.
Range Resources Corp.	NYSE: RRC	Fort Worth, Texas	$500	Authorized by Range's board of directors an expansion of the company's share repurchase program with $500 million available effective immediately. This repurchase program, which is equivalent to approximately 10% of Range's market cap, is expected to be funded with free cash flow generation. As deemed appropriate by Range management, the company may repurchase shares in the open market from time to time, or in privately negotiated transactions, in compliance with SEC rules and federal securities laws.
ChampionX Corp.	NASDAQ: CHX	The Woodland, Texas	$250	Announced that its board of directors has approved a new $250 million share repurchase program for 2022 under which shares of the company's common stock may be repurchased periodically, including in the open market or privately negotiated transactions. Share repurchases are expected to be funded from cash generated from operations.
Summit Carbon Solutions	N/A	Ames, IA	$250	Announced a strategic investment from **Continental Resources Inc.**, committed over the next two years, to create the largest carbon capture and sequestration project of its kind in the world to be located in the Williston Basin in North Dakota. **Vinson & Elkins LLP** advised Continental Resource.
8 Rivers Capital LLC	N/A	Durham, N.C.	$100	Secured an investment from SK Group, along with the formation of an 8 Rivers-SK joint venture to focus on decarbonization of Korean and key Asian markets, establishing 8 Rivers as the premier net-zero solutions company globally for industrial decarbonization. Proceeds will be used to expand 8 Rivers' world-class innovation and execution team and accelerate the deployment of its clean technologies at the pace and scale that customers and governments are now demanding globally.
Slant Energy II LLC	N/A	Lafayette, LA	$90	Secured a commitment from Pearl Energy Investments to pursue acquisition and development opportunities focused primarily in the Permian Basin, North Texas and East Texas. **Kirkland & Ellis LLP** was legal adviser to Slant II, and **Sidley Austin LLP** was legal adviser to Pearl in connection with the formation of Slant II.
H2U Technologies Inc.	N/A	Chatsworth, CA	$11	Closed an oversubscribed series A funding round with leading venture capital and energy firms, led by **Jericho Energy Ventures**, **Freeflow Ventures**, **VoLo Earth Ventures** and **Hess Corp.** Proceeds will be used for the advancement of H2U's innovative electrolyzer designs and to commission the build of its proprietary catalyst discovery engine used to start or speed up the electrolysis of water into hydrogen and oxygen.
Kinetik Holdings Inc.	NASDAQ: KNTK	Houston	N/A	Commenced an underwritten secondary offering of 2.5 million shares of its Class A common stock by **Apache Midstream LLC**, a subsidiary of **Apache Corp.** Underwriters are expected to be granted a 30-day option to purchase up to an additional 375,000 shares of Class A common stock. Kinetik is not selling any shares of Class A common stock in the offering and will not receive the proceeds from any sale of shares by the selling stockholder. **BofA Securities**, **J.P. Morgan** and **Morgan Stanley** are joint lead book-running managers.
WATT Fuel Cell Corp.	N/A	Mount Pleasant, PA	N/A	Closed a financing round led by **EQT Corp.** to continue the company's development and commercialization of its solid oxide fuel cell technology. As part of the agreement, Toby Z. Rice, EQT's president and CEO, will join WATT's board of directors. Other participants in the round included **Senvest Management LLC**, **Park West Asset Management LLC** and **Emerald Development Managers LP**. Financial terms were not disclosed. **Williams Trading LLC** was an adviser.

TAILWATER CAPITAL LLC

Approaching Energy with a Solutions Focus

The innovative investors at Tailwater Capital know energy is an exciting place to be. Energy is a field that is essential and constant, while also dynamic and ever evolving. By enabling other sectors like education, health care, communication, and technology (to name a few), energy is the foundational underpinning of modern human life.

Today, many investors take a narrow definition to the energy and growth infrastructure opportunity set. Tailwater's differentiated "full immersion" approach, however, pioneers ***solutions*** that address critical gaps throughout all energy economies with an "all-of-the-above" mindset. The firm's strategy has always been to invest creatively and move nimbly, with the presence and experience to recognize the "white space" and focus on returns for its investors and portfolio partners.

Through this solutions-based approach, Tailwater's wide – yet deeply informed – lens has identified investment opportunities throughout the traditional, transitional, and low carbon energy economies for years. Since inception, the firm has executed over 100 transactions representing $22 billion in total transaction value.

In 2014, the firm invested in Petro Waste Environmental, leveraging its upstream and recycling expertise to build oilfield waste handling locations in the core of the Permian and Eagle Ford. In 2021, Tailwater announced the acquisition of NorTex Midstream, a strategically located natural gas platform facilitating additional renewable power to the grid while reducing intermittency. Recently, the firm committed to Frontier Carbon Solutions, pursuing greenfield carbon capture, utilization, and sequestration opportunities.

Jason Downie
Co-Founder and Managing Partner, Tailwater Capital LLC

Tailwater believes attractive investment targets exist in the sector of **Energy Supply**, where North America's evolution from non-renewable to renewable sources continues to provide a diverse opportunity set. Tailwater invests in responsibly sourced hydrocarbons that bridge necessary reliability, as well as alternative power and fuels that reduce carbon emissions.

Edward Herring
Co-Founder and Managing Partner, Tailwater Capital LLC

Additionally, the firm focuses on **Delivery & Logistics Infrastructure**, driving advanced efficiency in energy and growth infrastructure as well as mitigation of environmental impact. Tailwater's team leverages deep historical knowledge to invest in critical infrastructure that supports energy efficiency, reliability, and emissions reductions.

Lastly, Tailwater invests behind **Recycling & Byproduct Management**. By investing creatively in sustainable solutions that convert waste into reusable end products as well as environmentally conscious byproduct management, Tailwater is providing a needed solution to bridge to a lower-carbon world.

Utilizing extensive knowledge of the energy and growth infrastructure sectors, Tailwater's investment professionals continue to seek and re-define attractive investment areas. Backed by technical resources focused on ESG / operational responsibility, structural enhancement, basin knowledge throughout North America, customer relationships, and governance, Tailwater is focused on creating truly sustainable value.

This unique, solutions-focused perspective allows investors to tap into the best of energy- and growth infrastructure-related opportunities – in any form of energy economy and at any stage of energy transition. ■

TAILWATER CAPITAL

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DEBT

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
ConocoPhillips Co.	NYSE: COP	Houston	$3,000	Commenced a private offer to exchange four series of notes issued by ConocoPhillips (COP), ConocoPhillips Co. (CPCo) and **Burlington Resources LLC** for a combination of cash and a new series of CPCo's senior notes due 2062 in an amount not exceeding $2 billion plus a separate private offer to exchange five series of notes issued by CPCo, Burlington and Burlington Resources Oil & Gas Co. LP for a combination of cash and a new series of CPCo's senior notes due 2042 in an amount not exceeding $1 billion. **Global Bondholder Services Corp.** is exchange agent and information agent.
Occidental Petroleum Corp.	NYSE: OXY	Houston	$2,500	Commenced cash tender offers to purchase its outstanding notes in two separate pools limited to an aggregate amount of (a) $1.5 billion for all of the Pool 1 notes and (b) $1 billion for all of the Pool 2 notes. **BofA Securities Inc.**, **HSBC Securities (USA) Inc.**, **SMBC Nikko Securities America Inc.**, **SG Americas Securities LLC** and **TD Securities (USA) LLC** are the lead dealer managers. **Global Bondholder Services Corp.** is tender agent and information agent.
ConocoPhillips Co.	NYSE: COP	Houston	$1,800	Commenced a cash tender offer for the company and its wholly-owned subsidiary, **Concho Resources Inc.**, to purchase outstanding notes having an aggregate purchase price of up to $1.8 billion. **Citigroup Global Markets Inc.**, **J.P. Morgan Securities LLC**, **Mizuho Securities USA LLC** and **TD Securities (USA) LLC** are dealer managers. **Global Bondholder Services Corp.** is tender agent and information agent.
TC Energy Corp.	TSX, NYSE: TRP	Calgary, Alberta	$800	Announced that **TransCanada Trust**, a wholly-owned financing trust subsidiary of **TransCanada PipeLines Ltd.** (TCPL), closed an offering of 5.6% subordinated trust notes, series 2022-A due March 7, 2082, guaranteed on a subordinated basis by TCPL and offered through a syndicate of underwriters co-led by **Deutsche Bank Securities Inc.** and **MUFG Securities Americas Inc.** Proceeds will be used to redeem its issued and outstanding cumulative redeemable minimum rate reset first preferred shares, series 15 pursuant to their terms, and pending such redemption, to reduce short-term indebtedness as well as for general corporate purposes.
Diamondback Energy Inc.	NASDAQ: FANG	Midland, Texas	$750	Priced an offering of 4.25% senior notes that will mature on March 15, 2052. The price to the public for the notes is 99.714% of the principal amount. Proceeds will be used to fund the redemption of all of Diamondback's outstanding 4.75% senior notes due 2025 at the applicable redemption price, which includes a make-whole premium and accrued and unpaid interest on the 2025 notes. Remaining proceeds will be used with cash on hand to the redemption of all of Diamondback's outstanding 2.875% senior notes at the applicable redemption price, which includes a make-whole premium and accrued and unpaid interest on the 2024 notes. The closing of the notes offering is not contingent on the redemptions. **Morgan Stanley & Co. LLC**, **RBC Capital Markets LLC** and **TD Securities (USA) LLC** are joint book-running managers.
Boardwalk Pipeline Partners LP	NYSE: BWP	Houston	$500	Announced that its wholly-owned subsidiary, **Boardwalk Pipelines LP**, priced a public offering of 3.6% senior notes due 2032. A portion of the proceeds will be used to retire all of the outstanding $300 million aggregate principal amount of the 4% notes due 2022 of **Gulf South Pipeline Co. LLC** on or about March 21, at par. The remainder will be used for general partnership purposes, which may include, among other things, growth capex, repayment of future maturities of long-term debt and additions to working capital. Pending such use, Boardwalk intends to hold the proceeds in cash and cash equivalents. **Barclays**, **J.P. Morgan**, **MUFG**, **Truist Securities**, **Citigroup**, **Regions Securities LLC**, **TD Securities**, **U.S. Bancorp** and **Wells Fargo Securities** are joint book-running managers. **BofA Securities** and **Goldman Sachs & Co. LLC** are co-managers.
Tamarack Valley Energy Ltd.	TSX: TVE	Calgary, Alberta	CA$200	Closed the previously announced private placement offering of 7.25% senior unsecured sustainability-linked notes due May 10, 2027. Proceeds will be to fund a portion of the purchase price for Tamarack's previously announced acquisition of **Crestwynd Exploration Ltd.** and repay amounts outstanding under the company's sustainability-linked credit facility. The notes were offered through a syndicate of underwriters led by **National Bank Financial Markets** and **RBC Capital Markets**, which acted as joint book-runners and sustainability-linked bond structuring advisers, **CIBC Capital Markets**, which acted as co-lead manager, and **ATB Capital Markets**, **Desjardins Capital Markets**, **BMO Capital Markets**, **Peters & Co.**, **Raymond James Ltd.** and **Stifel FirstEnergy**, which acted as co-managers. **S&P Global Markets** provided a second party opinion of the SLB Framework.

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A FEW WORDS ABOUT PRODUCTION AND PRICES

Permex Petroleum's Mehran Ehsan discusses why low-cost production and $65 to $75 WTI prices are vital to the industry's future.

Mehran Ehsan is CEO of junior Permian Basin producer Permex Petroleum. As head of a company that operates on federal and state lands in West Texas and New Mexico, Ehsan brings a unique perspective to the direction of oil and gas in the age of energy transition. He recently talked with Hart Energy's editorial director, Len Vermillion, to offer up his thoughts on the federal land bans, high oil prices, what the industry can do to mitigate flaring and more.

Read the full interview with Mehran Ehsan on HartEnergy.com.

Len Vermillion: *Tell me about your company and about the business model on low-cost producing oil and gas, and why those are important for the industry and the future.*

Mehran Ehsan: Permex Petroleum is a uniquely positioned junior oil and gas company.

We have assets and operations across the Permian Basin of West Texas and the Delaware sub-basin of Southeast New Mexico.

The company does own and operate and is dually licensed in both states to operate on federal state and private land. Now, when I say we're a uniquely positioned company, honestly it stems from three fundamental core pillars. One is the timing [with which] we acquired our assets, the geography and geology of the assets and the structure of the company. All three of them are extremely sound, and that is why we believe we're uniquely positioned.

Now as far as low-cost production, given an environment where oil prices crashed—WTI prices historically did not go negative but recently did during the pandemic—it's very important for companies to operate with a low-margin operating cost, not only on a corporate level, but also from a field perspective. That's why we engage in areas and in methods that carry a low production cost. For instance, our cost to produce a barrel of oil is around $29.

And that is something we believe is a necessity to survive because our industry goes through these cycles every eight years.

LV: *You operate on federal and state lands. Is there any concern with that going forward?*

ME: We are. You got to look at it from the larger perspective; 28% of the United States is considered federal land for instance. When you look at states like Alaska, 60% is federal. Nevada—80% is federal. But does it impact us? Well, our Texas properties are not on federal land. That is where we do our fracking.

That is where we produce the majority of our oil. The properties we own in New Mexico do fall under federal [law]. Does it impact us? No, because we're not fracking. We're doing more conventional oil and gas production there versus shale production. Shale requires a lot of fracking, which the bands currently exist on.

Overall, as an individual, I think banning this is good and bad. It was a method to decrease carbon emissions in general. If you look at the economic costs, it's around $670 billion economic cost to the U.S. on this ban, which could be going toward anything from education to infrastructure conservation. So, there's a lot of issues around this federal ban that we don't agree with.

LV: *With the industry in transition, what would you say that it's doing well and what not so much?*

ME: Transition is good. Energy transition should happen. We all want a more environmentally friendly oil and gas industry. On the operational side, there's a lot we can do. Let me give you an example: 15% of global energy-related greenhouse [gases] come from the process of extraction of oil and gas within our sector. What we can do is eliminate routine flaring or venting CO_2. This is something every company has to do. If anyone drives through Midland and goes to New Mexico, we see many companies flaring natural gas and various other H_2S forms. These can be alleviated. There's no reason for us to transition to renewables as much as we can actually make oil and gas cleaner.

LV: *What about the current situation? We have sky-high prices or prices going up. We have a war in Ukraine as we speak today. How do you think all these things are going to affect the price direction in the industry going forward?*

ME: Looking at where we stand, and when I make a citation I'm discussing WTI prices, which is relevant to the United States market, not Brent.

If this war continues and it escalates, we can add an approximately 15% to 25% premium to where prices are today, bringing oil prices around $110 to $112 per barrel. That's not good for anyone.

On the flip side of it, if it deescalates, we think the prices will drop to around $75, which is quite healthy for the oil and gas sector.

Overall, I don't think [the] high oil price is something anyone in our industry should want. Over the long run, it creates inflation. It spikes across the board all businesses, all sectors will pass all the costs to consumers and that will just hurt the economies around.

Voices

"U.S. LNG is one of the world's largest weapons to combat climate change. Unleashing it would enable the United States to replace up to one-third of international coal in the next 20 years. But equally important, as the recent invasion of Ukraine by Russia highlights, it would allow us to provide energy security to our allies while weakening the energy dominance of our adversaries."

—EQT Corp. CEO Toby Rice announcing the company's U.S. LNG advocacy plan.

Scan for more details of the plan.

"We heard Ukrainian President Zelensky's call for help in his address to the American people and are stepping up."

—Rick Muncrief, president and CEO of Devon Energy Corp., announcing that Devon is pledging humanitarian aid to Ukraine. Pioneer Natural Resources Co. and Civitas Resources also made pledges.

"More proof that nobody wants Putin's blood-soaked oil and gas. If Ottawa and Washington get serious about pipelines, Alberta can play a major role in displacing dictator energy from global markets."

—Alberta Premier Jason Kenny tweeting in response to the news that Halliburton is suspending future business with Russia. Fellow oilfield service giants Sclumberger and Baker Hughes also made similar announcements.

HARTENERGY.COM

"It's senseless to risk our energy security and reliability by depending on immoral actors like Iran and Venezuela to produce for us. Instead, the federal government must encourage—not inhibit—responsible oil and gas production to keep America and our allies safe and secure."

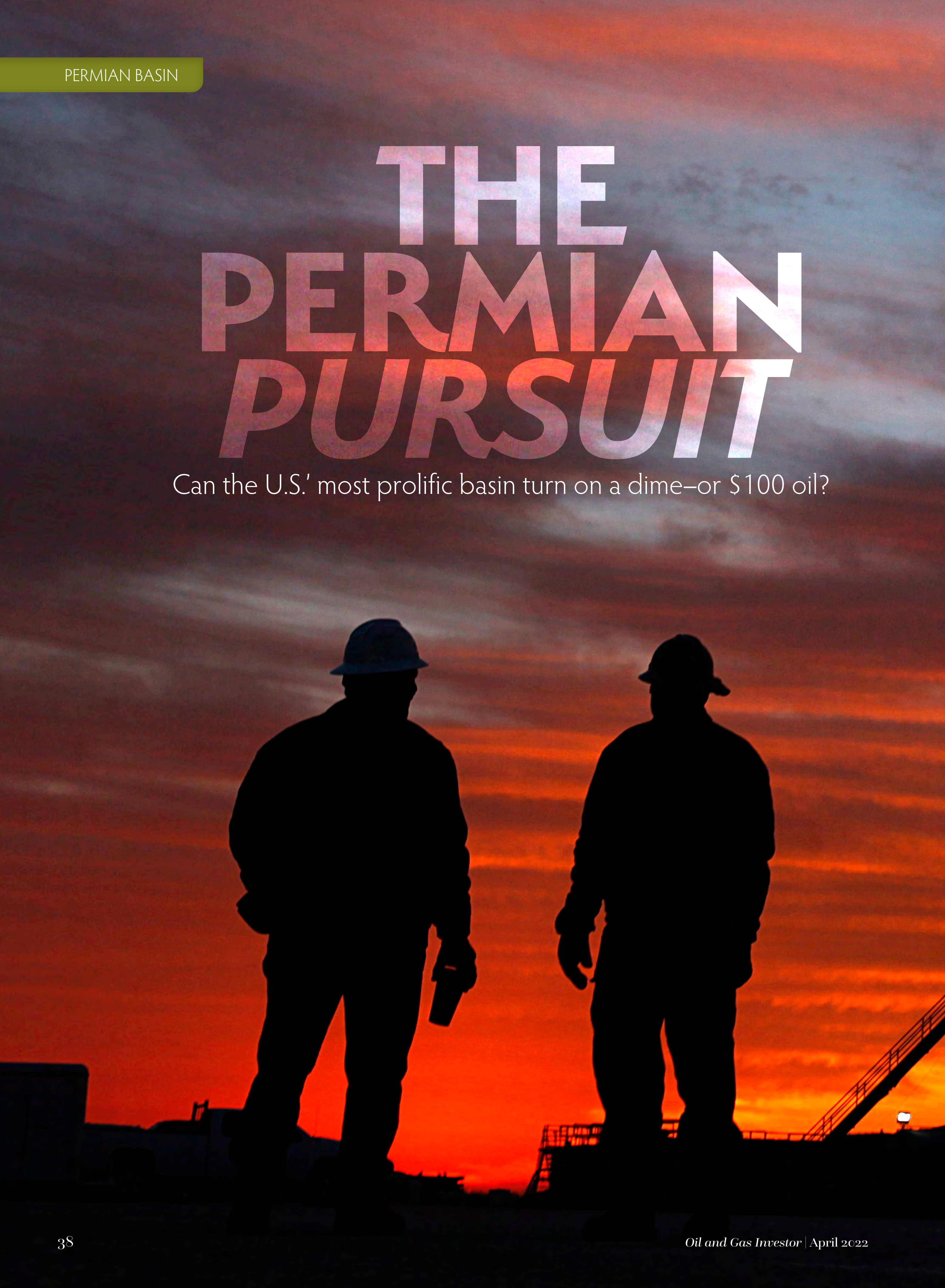
—Sen. Joe Manchin (D-WV) and chairman of the Senate Energy and Natural Resources Committee, appearing on "Morning Joe" on MSNBC on March 16.

"That accusation is a complete red herring. It's really a distraction from the fact that this administration has paused leasing on federal lands, something that we're concerned about and something that we think needs to continue right away."

—American Exploration & Production Council (AXPC) CEO Anne Bradbury to FOX Business in response to inaccurate allegations by the White House that the oil and gas industry is sitting on leases to drive up oil prices during the Russia invasion of Ukraine.

THE PERMIAN *PURSUIT*

Can the U.S.' most prolific basin turn on a dime–or $100 oil?



ARTICLE BY

DEON DAUGHERTY

Despite a lingering sentiment of shareholder uncertainty and the steady momentum behind alternative energy to curb fossil fuels, Permian Basin oil and gas operators are poised this year for massive profits, abundant free cash flow and, perhaps, some degree of public grace.

> **"We can't escape the fact that, for the oil and gas industry in general, a large component of our share price is attributed to commodity price."**
>
> **—Joey Hall**, *executive vice president of operations, Pioneer Natural Resources Co.*

Global demand for oil has rebounded to 95% of pre-COVID levels, according to a year-end 2021 Deloitte report. The burst is boosting both commodity prices and corporate optimism. Russian aggression and the potential for supply ramifications create a volatile unknown. Still, February prices on global benchmark Brent oil popped, breaching $100/bbl and commanding rates at 10-year highs.

The exuberance is bringing some producers' share prices along for the ride, too. On Feb. 22, shares in Pioneer Natural Resources Co. traded at $240.97 each, a record high in the company's 25-year history. Devon Energy Corp. shares' worth grew 177% and closed out 2021 as the best performing stock on the S&P 500 Index.

To be sure, the price component cannot be overstated. Geopolitical tensions and the commodity supply-demand differentials have largely fueled the increases. But Permian producers, and others across North America, have increasingly embraced the shareholder demands for capital discipline and environmental responsibility.

"We can't escape the fact that, for the oil and gas industry in general, a large component of our share price is attributed to commodity price," said Joey Hall, executive vice president of operations at Pioneer. "It's simple mathematics."

Soaring commodity prices increase corporate revenue and free cash flow. The difference today compared to the early years of the shale revolution is how executives allocate all that cash.

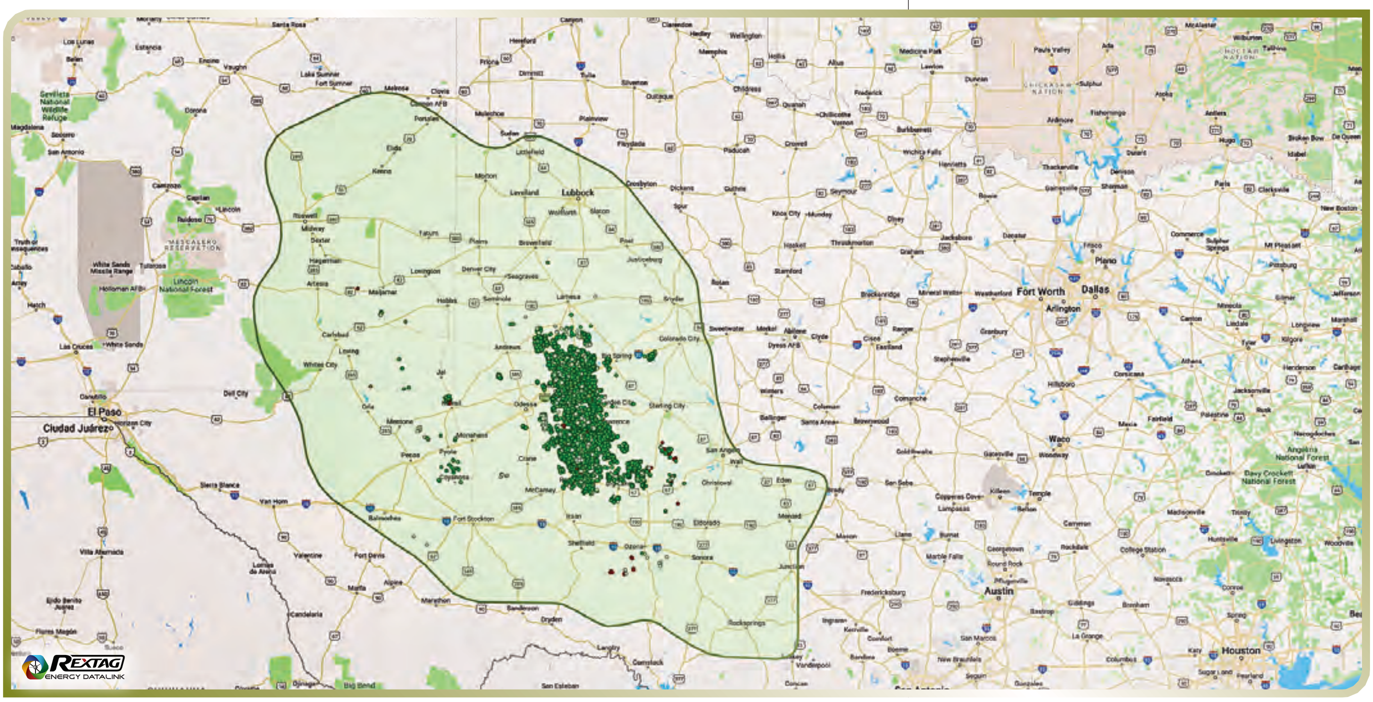
"We would have taken those profits and reinvested them in growth," Hall said. "We've made a commitment that, to the extent that we have free cash flow, we're going to return a large portion of that directly to our shareholders in short order."

Current oil prices in the $90s put Pioneer on target to generate more than $7 billion in free cash flow this year. And a consequence of adding a variable component to its dividend last year means the firm will return almost 80% of that cash to its shareholders.

Investors understand and endure the inherent risk of swinging commodity prices. But now they're learning that when commodity prices sway to the high side, they will see some return, too.

The net effect?

Pioneer Natural Resources' Permian Wells



"They are gaining confidence this is a workable model," Hall said.

Capital compulsion

The upstream sector itself is surging with oil and gas stocks outperforming the broader market in North America by double digits. Within the S&P 500, the energy sector in 2020 was serving up negative returns. But by the end of 2021, the performance reversed course, and energy topped the S&P's 11 sectors with a total return above 50%. This about-face continues to gain traction, and E&P executives say investor sentiment toward the space is gradually improving.

Several factors contribute to the sector's invigoration. Executives are aligning with shareholders, whether it's via incentives like Pioneer's variable dividend and ConocoPhillips Co.'s prodigious share buybacks, or simply reining in capital spending. On average, E&Ps are limiting their budgets to growth around 5% and production increases of less than 10%.

Moreover, even the most strident firms have accepted climate change science and are committing to reducing their emissions, said Subash Chandra, an energy analyst with The Benchmark Company LLC.

Impressive cash flow is enabling many producers to develop the technology necessary to enact pledges to lower emissions. ConocoPhillips is allocating $200 million of its capital program to reduce Scope 1 and 2 emissions.

"Even the most strident firms have accepted climate change science and are committing to reducing their emissions."

—Subash Chandra, *energy analyst, The Benchmark Company LLC*

"This level of focus on and performance toward fully realizing our mandate[s] has ConocoPhillips very well-positioned to not just survive through the energy transition but to thrive."

—Ryan Lance, *CEO, ConocoPhillips Co.*

"This level of focus on and performance toward fully realizing our mandate[s] has ConocoPhillips very well-positioned to not just survive through the energy transition but to thrive," said CEO Ryan Lance.

While just a few years ago investor angst was at a fever pitch, insiders today may breathe a sigh of relief as upstream companies lay out their upgraded business models.

"I think we're headed in the right direction," Chandra said. "The sector is doing all the right things."

Workforce woes, inflated inputs

But while there is abundance on Permian balance sheets, it is not reflected by the number of workers in the field. The 2020 downturn took some 100,000 jobs from the North American oil patch, and barely half of them have returned, according to Deloitte research. Both large public firms and small private companies are feeling the pinch of a tight workforce.

"The competition for workers is getting much more challenging. It's not restrictive for us and it's not impacting us operationally, but if you don't put focus on it, it can certainly impact you," Hall said.

The climate change conversation and a global move away from fossil fuels has impacted the sector's ability to attract young talent, insiders said.

"The younger generation may not find our industry as appealing as it once did," Hall said.

Additionally, the cyclical nature of the industry is well-known, and its troughs deepened during the early months of the COVID pandemic.

"When you look at the combination of life challenges people faced during COVID and people losing their jobs, it just takes some time for people to regain confidence," Hall said. "I don't think that any of those factors are unique to the oil and gas industry. I think they are factors for all industries. It's a time of transition for the workforce, and we're all trying to navigate our way through it."

Corporate Stats, Y/E 2021

	Market Cap ($B)	Enterprise Value ($B)	Profit Margin	Return on Assets	Return on Equity
Pioneer Natural Resources Co.	$55.16	$58.94	11.85%	9.40%	12.31%
Diamondback Energy Inc.	$19.15	$25.64	33.87%	9.57%	19.75%
Exxon Mobil Corp.	$259.38	$311.22	8.26%	4.98%	13.89%
ConocoPhillips Co.	$94	$101.74	17.34%	10.44%	21.47%
Chevron Corp.	$226.21	$257.53	10.04%	4.14%	11.51%

Source: Company presentations

> **"Many workers have abandoned the sector."**
>
> —**Stephen Trauber**, *vice chairman and global co-head of natural resources and clean energy transition, Citi.*

Many workers have abandoned the sector, said Stephen Trauber, vice chairman and global co-head of natural resources and clean energy transition at Citi.

"It's not fashionable in the oil and gas sector anymore," he said.

"We are short on talent. And the oil and gas sector, including service companies and midstream companies, is going to have to pay more for talent."

But it will take more than money to win over emerging talent, said Chandra. The industry has scar tissue to treat, left over from its earlier battles on ESG with shareholders and activists.

"We don't have a great social license right now," he said. "There is an entire generation of younger people who don't believe fossil fuels play any role in their future right now."

Young professionals want to do work that

PIONEER, CONOCOPHILLIPS, CHESAPEAKE EXECS EYE SINGLE-DIGIT GROWTH IN US SHALE

Although major shale operators have the capacity to expand growth largely and rapidly over the next few years, most are limiting themselves to single-digit growth, according to panelists at the CERAWeek by S&P Global conference on March 9.

"We're not going to chase growth like we all did over the last 10 years. We're going to limit our growth to 5% long term," said Scott Sheffield, CEO of Pioneer Natural Resources Co. "That keeps the cycle in check, it doesn't put pressure on the entire service industry. Cost escalates indefinitely, and then we create too much supply, then we have a downturn."

To survive the most recent market downturn during the pandemic, Sheffield said Pioneer made two "very accretive" acquisitions in the Midland Basin, first with the acquisition of Parsley Energy, then the acquisition of DoublePoint Energy. Both multibillion-dollar transactions closed in 2021.

"Size and scale was important," Sheffield said of the two acquisitions. "Everything we focused on was continuous acreage. So now we're up to about a million acres in the Midland Basin and the most dominant operator in the Midland Basin itself."

Fellow panelists, ConocoPhillips Co. and Chesapeake Energy Corp., also made sizable strategic acquisitions during the pandemic. For example, ConocoPhillips quickly bolstered its position in the Permian Basin, first with the acquisition of Concho Resources in 2020 followed by the $9.5 billion cash purchase of Shell's Permian business less than a year later.

Meanwhile, Chesapeake flipped the script on its story with acquisitions in the Haynesville (Vine Energy) and Marcellus (Chief Oil & Gas), which both helped to refocus its portfolio on shale gas after years spent trying to diversify into oil. Chesapeake closed the Chief transaction on March 9.

Speaking together on the CERAWeek panel, Sheffield and Tim Leach, executive vice president of Lower 48 for ConocoPhillips, credited a "strong balance sheet" for granting their two companies the ability to make the acquisitions during the downturn.

"I would say that the transaction between Conoco and Concho together last year was all about building a new, different and better company," added Leach, who previously served as CEO of Concho Resources.

"And then the Shell acquisition came along, and we had the balance sheet where we could write a $10 billion check," he continued. "The Shell assets are some of the best rock in the world, so we were very happy to be able to pick that up."

While energy demand is at a high, the scarcity of oil demand in 2020 led operators to be cautious about drilling plans for the future. Now, with supply and demand relatively evenly matched, shale producers remain uninterested in scaling growth up further than necessary and creating an oversupply of product, according to Nick Dell'Osso, president and CEO of Chesapeake Energy.

"What we saw throughout 2021 is prices were rising, is that we know our industry is still relatively closely matched on the supply-demand, and so we don't really see that there's call for significant incremental supply," Dell'Osso said. "You do see volatility in price around the way it's traded due to short-term differences—short pigeonholes, for example. But overall, the level of gas that we produce today quite well meets supply."

"[Oil and gas supply and demand] will continue to go and arrange as commodities do," he added, "but we have yet to see a real structural change."

The panelists all agreed that though each company is taking steps to operate more sustainably, they don't see oil and gas leaving the market in the near-term future. Instead, they said shareholders and investors are flocking back to the sector, ready to be part of the next chapter of oil and gas.

"There's an increasing interest in coming back into our industry as the industry becomes profitable again, and very profitable at that," Dell'Osso said. "We're also attracting income-oriented investors that we would never attract before. So there's a real shift in who the investors in the industry are, and there's some excitement around it."

—Madison Ratcliff

offers solutions—not perform in roles that contribute to global problems, Chandra said. The momentum that is driving energy to take a role in addressing climate change is only growing, he said.

What's the way to win over the brightest minds among millennials and Generation Z?

Chandra points out the challenge isn't simply to win a popularity contest. Rather, the battle needs to bring down a generational framework.

"I think the very first thing you do is you go above and beyond the call of decarbonizing as much as possible. Try to create the purest product, which is going to cost money, and it's going to require technology that is still evolving. And that's what most of the industry is doing now," he said.

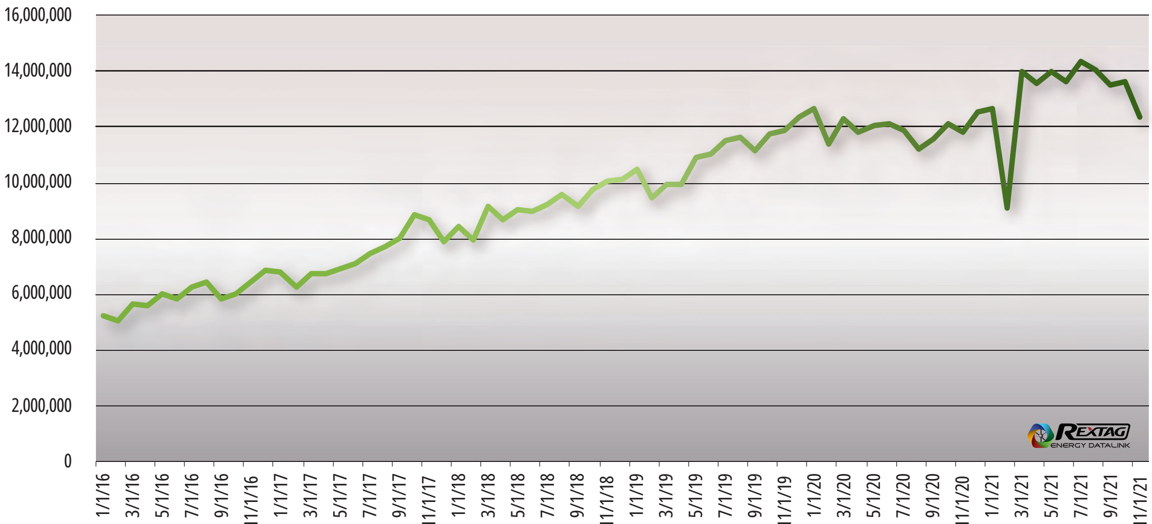
As recently as five years ago, global warming was a hot topic of debate in producers' boardrooms. Executives argued the science wasn't settled or the hole in the ozone layer appeared in the earliest part of the industrial revolution. But that's no longer part of the dialogue, Chandra said.

"There's no one sitting at the table with a guy who's trying to debate global warming. The trends are unstoppable," he said. "The climate change movement has become a very influential one, and now it's a standard and something that has filtered through every single level of financial society."

Competition for corporate talent as well as recruiting those workers in the field where laboring under the Texas sun gets intense will be one input that heightens oil and gas costs, but operators are facing inflation across the supply chain, analysts and bankers said. The lack of workers translates to services and other inputs.

Pioneer Natural Resources Permian Oil Production

bbl/month, January 2016-November 2021



"There's no one sitting at the table with a guy who's trying to debate global warming. The trends are unstoppable."

—**Subash Chandra,**
The Benchmark Company LLC

And inflation can creep up on even the most efficient Permian producers. Companies like Pioneer, Diamondback Energy Inc. and ConocoPhillips are largely focused on executing this year with the assets acquired via large-scale acquisitions, which they plan to put to work paying down debt and returning cash to shareholders.

But Permian executives said they must be vigilant to watch for costs that may quickly escalate. Late winter service costs were inflated as much as 15% to 20%. That makes operational execution and efficient integration of acquired assets critical, several insiders said.

"We're going to see a lot of inflation, probably more than people are anticipating," said Dane Gregoris, managing director at Enverus.

"There is also going to be a bit more discussion about infrastructure in the downstream, where projects need to get laid so that enough [product] can get up to market and grow the base. Infrastructure and inflation are the two big issues that we haven't talked about during the last two years, but they are coming to the forefront this year."

Inflation rates already in the double digits for some companies, especially those that haven't locked in service contracts, will cause drilling costs to steadily climb well above 20%, Gregoris said.

Incremental activity can get pricey, Gregoris said.

"It depends on the operator and the situation, but we're seeing some pretty high numbers," he said.

Larger operators won't struggle as much as smaller firms, he said. About half of Pioneer's work this year is already contracted, CEO Scott Sheffield told investors during a fourth-quarter earnings call.

Permian consolidation worth billions of dollars in recent years can insulate some companies, and 2022 could be the moment when recent basin dealmaking pays off.

Consolidation taking shape

Consolidation has taken out many of the basin's independent E&P companies in the largest public companies' search for the scale necessary to put operations into manufacturing mode and generate free cash flow for shareholders.

Dealmaking slowed to a halt during the first half of 2020, but it had regained some momentum in the Permian by year-end. ConocoPhillips closed out the first year of the pandemic with its $9.7 billion acquisition of pure-play Concho Resources Inc.

Pioneer Natural Resources shored up its position as the largest Midland pure play in 2021 with its April acquisition of DoublePoint Energy LLC, which grew the firm's Permian net acreage past 1 million. Six months later, Pioneer rounded out its Midland position with the purchase of neighboring Parsley Energy Inc.

Diamondback Energy firmed up its Midland foothold in March, swallowing rivals Guidon Operating and QEP Resources Inc. Valued at a combined $3 billion, the deals added some 81,000 contiguous net acres to Diamondback's footprint.

Still, upstream deals flowed in 2020 and 2021 at a rate about half that of prior years when the total neared 400 transactions. Deal value in 2021 amounted to $66 billion, compared to the $72 billion average between 2015 and 2019, according to Enverus.

But dealmaking in the Permian isn't necessarily played out. While the Midland sub-basin is mostly in the hands of larger firms with the efficiency and knowledge to develop it, the Delaware sub-basin may set the scene for the next round of Permian deals. Combined with the Haynesville Shale in East Texas, deals in the Delaware side of the Permian accounted for 80% of the fourth quarter's total deal value.

Indeed, the forward trend of the large Permian deals going forward could follow Pioneer's move in December. The company moved closer to its goal of becoming a Midland-strong Permian pure play in December when Continental Resources Inc. entered the basin and bought Pioneer's Delaware assets for $3.25 billion in cash.

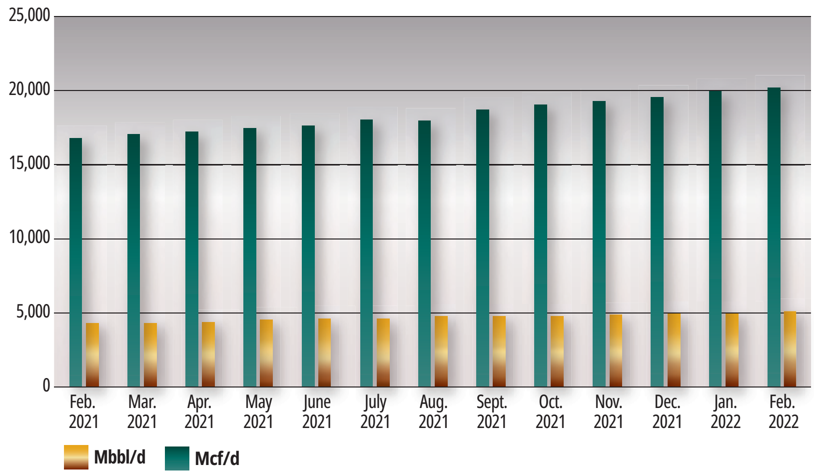
Insiders say future deals will consist more of bolt-on acreage additions and coring up divestments than full-scale corporate buyouts. But large-scale deals may still be in play in the Delaware's Tier 2 acreage.

ConocoPhillips' $9.5 billion cash acquisition of Shell Plc's Permian position—225,000 net acres in the Delaware sub-basin and production close to 175,000 boe/d—enhanced the firm's footprint.

"It's trying to rearrange the jigsaw puzzles so that they have to work more efficiently," said Chandra. OGI

Permian Basin Oil, Gas Production - Monthly

The Permian Basin produces the most oil of any shale play in the U.S. and is second only to Appalachia in natural gas production. The basin set a record for oil production in the U.S. in December and has exceeded the total in each subsequent month.



Source: U.S. Energy Information Administration

C-SUITE CHAT

HEIR TO THE KINGDOM BUILDERS

Canyon Creek Energy president and CEO Luke Essman recounts his company's rebirth as the market crumbled underneath one of Oklahoma's last build-and-flip acquirers.

The heady days of drill-and-flip A&D are gone, finally capsized by the rogue waves of commodity crashes. But now that the demand drought has ended, some E&Ps managed to find a way to keep from being pulled to the bottom.

Tulsa, Okla.'s Canyon Creek Energy is one of them. Led by president and CEO R. Luke Essman, the company was founded in March 2017 with the idea of quickly building up a demonstrable production base and then selling. Canyon Creek, backed by Fort Worth, Texas-based Vortus Investment Advisors LLC, now finds itself on an island of 35,000 acres in the nearly forgotten Arkoma Basin, churning out production and cash flow to its investors and considering its options.

ARTICLE BY

DARREN BARBEE

dbarbee@hartenergy.com

Darren Barbee: *You were in kind of the last class of the drill-and-flip companies. How did you adjust as the world crashed around us?*

Luke Essman: Survival is an appropriate and sometimes overused term, right? To that point, we would not be where we are without good partners and good partners in our capital stack. The benefits of being a public company is there's plurality and most times lack of control. In a private company, you end up having pretty material decision makers that are part of your investment, whether that's banks, equity holders [or] somewhere in between.

I think we saw a lot of forced consolidation because they were maybe mismatched with management's expectations for either duration or expectations for what their investment thesis was and be able to run that out. And for us, we have benefited from having really good investment partners on the debt side and the equity side of our company.

DB: *When you formed the company, what was the business model you pitched versus what you had to morph into as circumstances changed?*

LE: It's the narrative of our company. We've lived it. We were started like any private equity-backed company in the sense that it was a build-and-flip model. There was no perpetuality to our business. That wasn't the idea. And that's just by virtue of our investors having term limitations on how long their investment period can be. It's in the nature of the business.

But the idea was to go to a basin that we saw was overlooked and try to increase production, increase the investment thesis of it and then try to sell that to somebody else that could take the company through development or take the asset through development.

We saw the collapse in the industry. We saw the collapse in the acquisition side of the industry where there was no more need to be able to own PUDs or development opportunities. It was about cash flow. Public companies got marked to cash flow, sometimes marked below we'd expected to cash flow. And so, the amount of capital available for acquisitions went to zero.

And so, we were faced with the decision of saying, "Look, our thesis needs to change if we want to stay in business. How do we build and support this company from a capital standpoint, from a technical standpoint, repeatable operations, development, mentality, cost monitoring? These things maybe don't live with a build-and-flip idea because it's a short duration. Do we want to invest in that infrastructure, capital infrastructure, personnel infrastructure, to be able to have a thesis for continued development?"

And that's where I go to the conversation and say we had good partners willing to pivot and willing to think that we do have a good platform. We have a good asset. The market changed on us, and we want to be able to hold through it. And so, we went out and hired development personnel. We increased our capitalization, both on the debt and the equity side, to be able to give us some longer duration on our investment and have been really a development company for two years now.

DB: ***Did you have the team you needed to do that?***

LE: We had the backbone we needed to do that. We had really qualified technical personnel. In a small company, a lot of those people end up wearing multiple hats. There's a lot of crossover between geology [and] engineering, [and the] land department is doing all kinds of functions, anywhere from permitting all the way up to the leasing to actually the strategy side of it.

What we needed to bring in and supplant our team with was the mentality of, "Hey, I've run five or six rigs; I've drilled 40 wells a year." These kinds of things instead of us just being very lumpy in development, where we may drill a pad and watch flow back. And we may manipulate what we do in the next one based on historical results.

We need to bring in that continued development mentality. So, we hired three people that were pretty instrumental to our company. Again, we're a company of 15, so three is pretty impactful to that and still asking them to wear multiple hats in a small company but bringing another set of experiences and ability to our team to be able to kind of supplant the backbone that we have.

DB: ***In the public space, there's obviously been this push for free cash flow generation. Are you now at that point where you are fully oriented toward that, and are you able at this point to be able to say, "Oh yeah, we're able to throw off free cash; we can do that," or is that on the horizon?***

LE: No, we're there, and we're proud to say it now. We think of free cash flow a little differently than public companies, in the sense that when I discuss free cash flow, I mean that we have no more needs for debt. We have no more needs for equity investment. We're able to develop out of cash flow coming off our existing production and off our existing investment decisions. And so, we're recycling. At this point, it's going to be a majority of our free cash flow because of where commodity prices are that makes sense to be able to pull resource out of the ground.

But we're no longer in the capital markets. We're no longer increasing our equity investment or increasing our debt. In fact, we're forecasting de-leveraging through pay downs and building our balance sheet back to help the company.

That was one of those pivot points for us, where we had just gotten to the precipice of getting to free cash flow, and we were able to tip that last year. So that was a little bit of the bet with the investors and with our debt, is that we're really close. This year, and probably for the foreseeable future, we're developing out of just our existing production base.

DB: ***I'm sure you're having to pay your investors. How are you balancing that with continued drilling and other expenses?***

LE: It's a fluid conversation. Our investors have investors. And so, as I mentioned, I can't underscore more just the relationship we have with them. I think they're in the market; there've been lots of conversations we've heard about between investors and management companies. We don't experience those. We're having very fluid conversations about what we're doing with incremental cash flow. How does that help them, help their business? How do we continue to build our business alongside that? But again, with $4.50 gas and $100 oil, it's a pretty short conversation to say, "It makes sense to reinvest in resource."

That may change as commodity prices move. We may shift that weight as we go forward, but right now, we're all pretty locked and aligned on developing resource.

> **"We're able to develop out of cash flow coming off our existing production and off our existing investment decisions."**

DB: ***Canyon Creek at one point had 70,000 acres, and now you're at about half of that. What necessitated that divestment?***

LE: It goes back to your original question about business models changing. The strategy of the company was to get big and get big fast and to show availability of investment opportunities. So a lot of our acreage position, if we talk about it from that metric, was going to be on term leasehold—leasehold that wasn't held by production as we're expanding out of the Arkoma Basin.

So commodity prices didn't allow us to continue developing into that acreage position we had. We had a lot of term leasehold expire. And so that's going to be the principal driver from that drop in acreage position. If we'd have been in today's market, or if we would have been in a continuation market where we were, we would've continued drilling on that leasehold, converting that term leasehold into held acreage and would've maintained that position.

The fortunate thing for us is while we haven't drilled, neither have our competitors both in the basin and then across Oklahoma, across the U.S. And so that opportunity for us to expand back still remains. We still have that opportunity to continue to grow.

But we've also changed our directive for our company to be more developed. If we put a dollar down a hole, we want to get $2 back. And we want to be very purposeful about that. We don't want to put money into fixed costs. We don't want to put money into option value that may come right now because if we needed to expand our position for additional inventory, there may be an acquisition that needs to be made, but we've kind of already done all that.

"We're candidly today oscillating between are we buyers or sellers where prices are. The market's moving that quickly right now."

with leasehold. We want to make sure we churn profitability from each incremental dollar we spend.

And so I'm less worried about acreage size. I'm more worried about what I am going to do in the next 12 months. What am I going to do the next 24 months? And making sure we can capitalize that, scale that out for profitability generation. Because that terminal value of an asset sale, which was our original investment thesis, we're not making that anymore.

We're looking for every incremental dollar we put in the ground, we bring two up, by example. Not looking for some buyer at the end. And it's actually a very healthy business model. So if prices contract, we're not waiting on a terminal value that can collapse our company. We're looking at just incremental growth with that, and we're actually running an oil and gas company.

DB: ***Let's turn to A&D. Do you see yourself as potentially an attractive target, or that you could go back in and acquire additional acreage? Do you think that that would be something that your capital providers would be interested in?***

LE: We're candidly today oscillating between are we buyers or sellers where prices are. The market's moving that quickly right now.

And we're seeing the capital markets open up a little bit. Maybe "open" is the wrong word, but we're seeing guys walk into the door about ready to flip the open/close sign. Like there's momentum that way. And so we're in a commodity business. I'm telling you about my assets today. I may have more or less assets tomorrow in a different basin than we were. We're commodity producers, right? And so we can't fall in love with our rock. Just try to make the most of it as we can.

But I think probably back to your question about where are we on the A&D market? It makes no sense for me to go acquire production at, let's call it, a PV-10 basis. So 10% discounted future production at $4.50 gas, which takes your opinion on where gas is. I don't know. I mean it feels really good right now versus I can take those same dollars and put them into a well and generate a 200% rate of return.

There's no math that tells me that those two things equal each other. So I'm also conflicted on that. I like size. Everybody likes size. There's stability with size. Generally with acquisitions comes more debt. I don't like debt because I've felt debt, and debt's painful.

And so right now, we've got enough inventory and enough development opportunity that I can drill at very robust returns for our company. So it's that, coupled with where are prices at? I don't know. We're price takers every day. We don't actually make the market. And so it feels good right now. And so we're pretty nosed down on developing

DB: ***Are you active in the ground game such as swaps?***

LE: We're very active with our partners. I mean, Calyx, we're in multiple areas with them. We work very well with them. Other operators are Merit Energy [and] Foundation Energy—these companies are our neighbors. And once you kind of go to war together, and at bad prices, you realize that there's more in life than fighting about every nickel and dime everywhere and how to be collaborative. We like to think of ourselves as good partners, whether we're on the nonoperated side or the operated side or how we strategically develop a certain area. We try to be good partners in all that.

And so a very collaborative mentality across that basin. It's a band of brothers of sorts coming out of there.

DB: ***And bolt-ons?***

LE: Probably the comment on all that is we have an internal threshold of what we think we can risk just to spend money within our company. And we're like any other company; we're making a determination that where should we spend our incremental dollar? We're no longer kingdom building, and I think it's important.

We were kingdom builders before because we're going to try to flux on the public market or on the auction market, sales market and try to look big. Now we're about putting a dollar in the ground, getting two out. How do we do that? And where's the best place to do that?

DB: ***How do you see the market evolving as prices improve and potential buyers begin to look at upside versus PDP? Or do you see a larger consolidator eventually acquiring in the Arkoma?***

LE: Yeah. It's a nuanced question. It's hard to hit it with one point. What my talking points on that would be, it depends who's the buyer. So I think there's going to be a lack of interest from a public market standpoint on the Arkoma Basin. Prove me wrong. I can be wrong with that, but again, who are they serving? What is their ultimate game? They want to be able to sell stock.

And so are they going to sell stock with an Arkoma platform? Maybe if they can get it big enough and they can show there's really a reason to stand up an investment team or technical team and an investment into this basin. We're fairly fragmented. There's been a lot of consolidation through NextEra [Energy], through Foundation, through Merit. Putting that position together would probably be difficult right now without getting a few parties in the room.

So that kind of, in my mind, removes a public company acquisition opportunity within this area, especially with the contraction in the Anadarko as well. There's a lot of opportunity across Oklahoma if you're willing to take a bite of Oklahoma. And that's a separate conversation about how short-sighted that is that people aren't investing in the state.

But then we come back to who is the buyer of a smaller private ... So, not public, comes back to a private buyer. We've seen Merit, and the Foundation, NextEra, Trinity, who's a subsidiary of NextEra, the power generation company, buy and they've historically bought off PDP values at low prices.

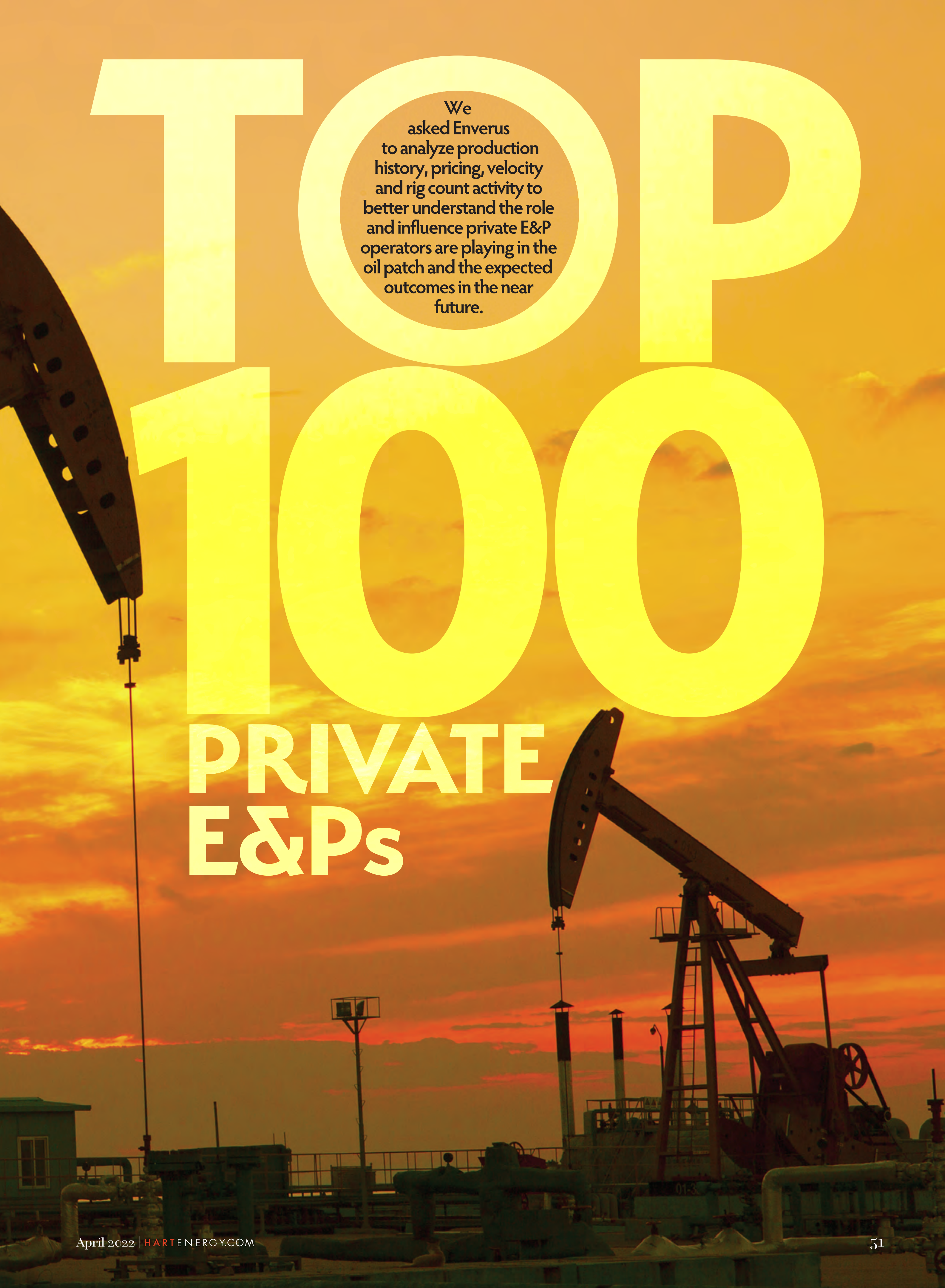
They think they're going to be big winners on just timing when they bought and the value they bought at. Most of those PDP heavy buyers that leaned in really don't have development arms associated with them. They're not going to be heavy growth vehicles with them. So I don't see them, as the market starts expanding and we start seeing values expand, being really active in the acquisition side because they're going to have to put more into this upside bucket however you attach that value to it.

DB: ***You were a company that initially was looking to prove up and drill and eventually sell. What's an exit look like for you now?***
LE: I like cash. That's a simple answer to a good question, but look, there's always a number. I'm not a good manager for my stakeholders if we're not always considering that. That sounds canned, but it's absolutely true. If we're not always considering the best way to maximize shareholder value, we're not doing a good job as managers. That said, we would also not be good managers if, when we entered this down period, we didn't stabilize the company to not have to require an exit. To not have to rely on an exit. That's also not a good manager, is that we don't create that optionality. And so we focused really hard on making sure we had time and the capitalization to be able to [say], "Hey, we like the price. We'll take it." We're price takers every day.

But if we don't, we've got a continuation plan of what we're doing. So yes, absolutely. Whoever reads this, if they want to come buy us, give me a phone call. That's absolutely true.

But we're also not in that bucket that we've got to sell now, or we're going to be forced to sell because of some of these other outside influences that are typical of a private equity-backed company. OG

Read the full interview with Luke Essman on HartEnergy.com.



TOP 100 PRIVATE E&Ps

We asked Enverus to analyze production history, pricing, velocity and rig count activity to better understand the role and influence private E&P operators are playing in the oil patch and the expected outcomes in the near future.

TOP 100
PRIVATE E&Ps

RANK	COMPANY	Daily Production (boe/d)	Daily Oil Production (bbl/d)	Daily Gas Production (Mcf/d)	Gas %	POP'd Wells in 2021	Well Count	Rig Count 2-18-22	Primary Region
1	HILCORP	1,983,772	286,784	10,181,929	86%	19	19,642	4	ALASKA
2	ASCENT	364,736	16,247	2,090,933	96%	54	649	0	EASTERN US
3	AETHON ENERGY	272,960	1,318	1,629,850	100%	44	2,346	12	GULF COAST
4	ROCKCLIFF ENERGY	206,999	359	1,239,839	100%	53	1,005	4	GULF COAST
5	MEWBOURNE OIL CO.	206,263	120,740	513,137	41%	131	2,479	19	PERMIAN
6	ENDEAVOR ENERGY RESOURCES	194,782	133,209	369,435	32%	152	3,820	13	PERMIAN
7	ENCINO ENERGY	150,806	15,227	813,476	90%	39	964	1	EASTERN US
8	PUREWEST ENERGY LLC	132,395	5,130	763,591	96%	0	3,448	1	ROCKIES
9	FLYWHEEL ENERGY	130,291	-	781,748	100%	0	3,675	0	MIDCONTINENT
10	MERIT ENERGY	127,511	21,073	638,629	83%	7	9,830	1	MIDCONTINENT
11	LEWIS ENERGY LLC	122,396	1,868	723,166	98%	49	2,116	3	GULF COAST
12	CROWNQUEST OPERATING	119,918	79,864	240,322	33%	139	1,267	6	PERMIAN
13	BKV CORP.	117,821	415	704,432	100%	6	4,152	0	MIDCONTINENT
14	TUG HILL OPERATING LLC	114,413	6,788	645,755	94%	32	176	4	EASTERN US
15	TRINITY OPERATING	110,472	12,803	586,014	88%	53	1,256	6	MIDCONTINENT
16	FDL ENERGY	105,219	40,404	388,893	62%	4	4,745	0	PERMIAN
17	MESQUITE	99,069	40,444	351,747	59%	8	2,288	0	GULF COAST
18	TEP ENERGY	97,370	1,462	575,449	98%	64	4,755	1	ROCKIES
19	AERA ENERGY LLC	97,009	91,079	35,579	6%	248	10,660	0	WESTERN US
20	PENNENERGY	92,975	1,020	551,731	99%	27	378	0	EASTERN US
21	SABINE O&G	84,047	1,491	495,332	98%	27	854	3	GULF COAST
22	SLAWSON	78,643	64,301	86,054	18%	64	526	1	ROCKIES
23	JONAH ENERGY	78,386	4,117	445,615	95%	9	2,414	1	ROCKIES
24	CITIZEN ENERGY III LLC	73,875	14,663	355,270	80%	39	433	4	MIDCONTINENT

RANK	COMPANY	Daily Production (boe/d)	Daily Oil Production (bbl/d)	Daily Gas Production (Mcf/d)	Gas %	POP'd Wells in 2021	Well Count	Rig Count 2-18-22	Primary Region
25	SCOUT ENERGY MANAGEMENT	71,755	11,104	363,910	85%	23	15,414	2	MIDCONTINENT
26	PETRO-HUNT	69,718	51,451	109,601	26%	28	721	1	ROCKIES
27	COLGATE OPERATING	69,556	34,026	213,180	51%	19	431	5	PERMIAN
28	LLOG	69,168	56,469	76,193	18%	0	19	1	GOM OFFSHORE
29	SIMCOE	65,845	-	395,071	100%	69	3,087	0	ROCKIES
30	BTA OIL PRODUCERS	64,890	39,961	149,574	38%	51	384	4	PERMIAN
31	BCE-MACH III	64,746	15,855	293,348	76%	7	2,586	0	MIDCONTINENT
32	SURGE OPERATING	62,427	44,688	106,433	28%	42	804	3	PERMIAN
33	EP ENERGY	61,533	39,861	130,031	35%	36	1,267	3	GULF COAST
34	GREAT WESTERN O&G	58,546	28,151	182,370	52%	41	467	2	ROCKIES
35	TG NATURAL RESOURCES LLC	57,378	1,133	337,468	98%	0	2,180	0	GULF COAST
36	TAP ROCK OPERATING	55,293	30,947	146,080	44%	63	178	8	PERMIAN
37	HG ENERGY LLC	55,173	462	328,266	99%	16	106	3	EASTERN US
38	BLACKBEARD OPERATING	52,911	12,067	245,066	77%	77	2,643	4	MIDCONTINENT
39	FIELDWOOD ENERGY	52,254	38,862	80,355	26%	1	418	0	GOM OFFSHORE
40	BIRCH OPERATIONS	52,139	38,299	83,040	27%	72	357	2	PERMIAN
41	GRAYSON MILL OPERATING LLC	50,611	33,406	103,233	34%	12	741	1	ROCKIES
42	CROWHEART ENERGY LLC	48,807	4,494	265,874	91%	5	3,018	0	ROCKIES
43	CAMINO NATURAL RESOURCES	47,454	10,336	222,705	78%	14	361	3	MIDCONTINENT
44	GBK CORP.	47,153	28,532	111,724	39%	31	608	1	PERMIAN
45	UNBRIDLED RESOURCES LLC	46,717	9,422	223,779	80%	4	1,877	0	MIDCONTINENT
46	CAERUS OIL & GAS	46,109	777	271,992	98%	27	5,095	1	ROCKIES
47	VENCER ENERGY LLC	44,203	21,795	134,451	51%	4	409	2	PERMIAN
48	NORTHEAST NATURAL	43,766	-	262,596	100%	12	108	1	EASTERN US
49	WALTER	38,963	22,138	100,953	43%	0	46	2	GOM OFFSHORE
50	PRESIDIO PETROLEUM	36,975	6,785	181,137	82%	0	2,312	0	MIDCONTINENT
51	ARENA OFFSHORE	36,604	23,673	77,585	35%	10	244	6	GOM OFFSHORE
52	ENVEN	36,008	29,634	38,242	18%	3	65	3	GOM OFFSHORE
53	BEACON	35,959	28,809	42,898	20%	1	12	0	GOM OFFSHORE
54	URBAN O&G GROUP	35,855	18,776	102,472	48%	1	3,444	0	GULF COAST

RANK	COMPANY	Daily Production (boe/d)	Daily Oil Production (bbl/d)	Daily Gas Production (Mcf/d)	Gas %	POP'd Wells in 2021	Well Count	Rig Count 2-18-22	Primary Region
55	VERDUN OIL CO.	35,573	21,588	83,910	39%	18	250	2	GULF COAST
56	SEQUITUR ENERGY	35,548	12,830	136,305	64%	22	390	2	PERMIAN
57	ENSIGN OPERATING	35,266	12,909	134,142	63%	14	701	1	GULF COAST
58	GOODRICH PETROLEUM CORP.	34,988	559	206,577	98%	7	83	2	GULF COAST
59	UPP OPERATING	34,709	241	206,806	99%	0	6,490	0	MIDCONTINENT
60	FASKEN OIL & RANCH	33,630	20,688	77,657	38%	42	1,221	3	PERMIAN
61	SNYDER BROTHERS	33,119	67	198,314	100%	19	2,292	1	EASTERN US
62	LIME ROCK	32,569	17,427	90,849	46%	11	1,265	1	MIDCONTINENT
63	SPUR ENERGY PARTNERS LLC	32,203	19,361	77,051	40%	38	2,622	1	PERMIAN
64	ESCONDIDO RESOURCES	32,116	161	191,729	99%	5	141	1	GULF COAST
65	CARBON CREEK ENERGY	31,935	0	191,605	100%	0	4,157	0	ROCKIES
66	LEGACY RESERVES INC.	31,930	12,365	117,392	61%	8	1,673	2	PERMIAN
67	COX OFFSHORE	31,179	17,222	83,743	45%	0	535	0	GOM OFFSHORE
68	KRAKEN OPERATING LLC	31,007	22,957	48,302	26%	17	291	1	ROCKIES
69	89 ENERGY III LLC	30,495	4,045	158,696	87%	0	206	0	MIDCONTINENT
70	SUMMIT PETROLEUM	30,302	20,535	58,606	32%	32	587	2	PERMIAN
71	BEDROCK ENERGY PARTNERS	29,055	206	173,096	99%	6	1,172	1	MIDCONTINENT
72	MAVERICK NATURAL RESOURCES	28,444	9,287	114,941	67%	1	1,570	0	GULF COAST
73	ADVANCE ENERGY PARTNERS LLC	28,269	20,963	43,838	26%	13	81	2	PERMIAN
74	JAY-BEE O&G	28,145	427	166,311	98%	4	81	0	EASTERN US
75	HEADINGTON ENERGY PARTNERS	27,713	10,320	104,357	63%	2	124	0	GULF COAST
76	VALIDUS ENERGY	26,665	17,534	54,788	34%	4	529	3	GULF COAST
77	DISCOVERY NAT RES	25,366	10,065	91,805	60%	16	1,067	1	PERMIAN
78	CHAPARRAL ENERGY	24,987	6,396	111,547	74%	5	472	0	MIDCONTINENT
79	ZARVONA ENERGY	24,792	8,278	99,084	67%	3	1,359	1	PERMIAN
80	BAYSWATER E&P	24,720	17,953	40,603	27%	100	293	3	ROCKIES
81	SENTINEL PEAK RESOURCES CALIFORNIA LLC	24,697	23,133	9,383	6%	52	1,903	0	WESTERN US

RANK	COMPANY	Daily Production (boe/d)	Daily Oil Production (bbl/d)	Daily Gas Production (Mcf/d)	Gas %	POP'd Wells in 2021	Well Count	Rig Count 2-18-22	Primary Region
82	TEXAS PETROLEUM INVESTMENT	24,655	14,998	57,945	39%	1	1,763	0	GULF COAST
83	MORNINGSTAR OPERATING LLC	22,800	3,117	118,093	86%	0	1,198	0	ROCKIES
84	LAREDO ENERGY	22,239	40	133,194	100%	14	170	2	GULF COAST
85	CAPITAN ENERGY INC.	21,952	7,600	86,110	65%	1	74	0	PERMIAN
86	PATRIOT RESOURCES LLC	21,627	15,244	38,300	30%	17	173	3	PERMIAN
87	OLYMPUS ENERGY	21,128	-	126,769	100%	8	22	1	EASTERN US
88	PA GEN ENERGY	21,000	0	125,997	100%	2	167	0	EASTERN US
89	WEXPRO CO.	20,892	499	122,358	98%	10	689	0	ROCKIES
90	ZAVANNA LLC	20,575	10,253	61,932	50%	7	144	0	ROCKIES
91	EAGLERIDGE ENERGY	20,494	341	120,916	98%	1	1,211	0	MIDCONTINENT
92	GREYLOCK ENERGY	20,153	0	120,916	100%	4	229	1	EASTERN US
93	CANTIUM	20,115	16,996	18,711	16%	4	319	1	GOM OFFSHORE
94	ARSENAL RESOURCES	20,058	-	120,347	100%	4	65	0	EASTERN US
95	ENDURING RESOURCES	19,967	8,674	67,755	57%	7	896	2	ROCKIES
96	FOUNDATION ENERGY MGT.	19,964	2,579	104,308	87%	2	2,363	0	MIDCONTINENT
97	LARAMIE ENERY	19,843	223	117,720	99%	0	961	0	ROCKIES
98	STEWARD ENERGY II	19,691	13,945	34,475	29%	16	156	1	PERMIAN
99	RRP OPERATING LLC	19,460	5,654	82,836	71%	0	380	0	PERMIAN
100	GEOSOUTHERN ENERGY	19,395	2,788	99,643	86%	7	169	1	GULF COAST

DEBT DIVE

E&Ps are working hard on capital discipline, which has translated largely into shedding billions in debt as they lay the foundation for shareholder returns.

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E&P capital discipline gets painted with a broad brush. Tight controls on spending, returning cash flow to shareholders and share buybacks make up the glossy top coat on a much more complex picture.

Tucked among all that fiscal restraint, however, has been upstream oil and gas companies' rush to burn its debt, or at least get rid of and refinance it as quickly as possible.

Debt, which took down so many E&Ps before and during the pandemic, is now a dirty word in the upstream space. No one wants it. So while E&Ps returned more cash to shareholders in 2021, they paid 1.7x more toward debt reduction than they distributed in cash to shareholders, according to Fitch Ratings.

While moderate capex increases are likely, shareholders and debt will come first, Fitch Ratings said in a March 14 report by analyst Mark Sadeghian.

"Significantly higher energy prices and operating cash flow will likely lead to leverage metrics that are below 2.0x and in some cases less than 1.0x for some issuers in 2022," Sadeghian said. "E&P credit profiles have already improved since 2020 with debt reduction, refinancing activity, disciplined capex and improved FCF [free cash flow] generation. The effect of higher oil prices … will largely depend on capital allocation decisions and how much of the resultant cash companies will use for further capex versus distributions."

That compares with Fitch's 2021 outlook, at a time in which most E&Ps with investment grade credit were able to access public debt markets, but only a handful of upstream companies with B credit ratings were able to access the senior unsecured bond market following the pandemic.

A cursory glance at nearly three dozen E&Ps also shows 2021 turned into a year of massive debt refinancing. Among 32 E&P companies that issued debt last year, a review by Hart Energy found that they refinanced more than $22.2 billion.

Management teams have also set debt thresholds that would have baffled their spendthrift predecessors. Continental Resources Inc., for instance, is on track to meet its leverage target of less than 1.0x debt/EBITDAX in 2022, despite its $3.25 billion purchase of Delaware Basin assets from Pioneer Natural Resources Co.

Devon Energy Corp.'s capital program includes a $1 billion buyback, a variable dividend and a target of retiring $1 billion debt in 2022 and 2023, said David Deckelbaum, an analyst for Cowen.

Hess Corp. plans to pursue a $500 million debt reduction. Even Occidental Petroleum Corp. incurred the wrath of some investors when it purchased Anadarko Petroleum Corp. In May, the Wall Street Journal reported that Occidental was climbing out of its "Anadarko hole."

"We would anticipate a focus on capital return as Oxy [Occidental Petroleum] has previously reiterated a $25 billion debt target before any decisions on capital return would be made, and we forecast the company hitting that level of net debt in 1Q22 and approaching ~1.0x leverage by year end at our current price deck," Deckelbaum said.

Other companies are on track to be debt-free in the not too distant future.

Antero Resources Corp. (AR) is likely to target up to $700 million in debt reduction in addition to share buybacks. "We project AR to generate $1.4 billion of FCF in 2022 and with debt paydown to have just $1.6 billion of total debt.

Debt Forecast:
Net Debt/EBITDAX

Company	2022E Leverage	2023E Leverage
APA Corp.	0.9x	0.6x
Coterra Energy Inc.	-0.6x	-1.2x
Devon Energy Corp.	-0.1x	-0.8x
Ovintiv Inc.	0.6x	0.0x
Hess Corp.	1.1x	0.9x
Occidental Petroleum Corp.	1.1x	0.8x
Diamondback Energy Inc.	0.5x	0.1x
Pioneer Natural Resources Co.	0.4x	-0.9x
Centennial Resource Dev.	0.5x	0.0x
Callon Petroleum Co.	1.8x	1.6x
Matador Resources Co.	0.4x	-0.1x
SM Energy Co.	0.5x	-0.1x
Continental Resources Inc.	0.6x	0.2x
Whiting Petroleum Corp.	-0.7x	-1.3x
PDC Energy Inc.	-0.2x	-0.6x
Antero Resources Corp.	0.3x	-0.3x
EQT Corp.	1.4x	0.5x
Range Resources Corp.	0.8x	0.3x

Source: Cowen

By the end of 2Q23, we project AR to be net debt free," Deckelbaum said.

Fitch Ratings noted that strategic M&A will continue to be popular with companies as cash flows remain flexible and equity prices rise. But companies "generally remain averse to credit-dilutive M&A, preferring lower leverage levels and healthier balance sheets," Sadeghian said.

Goldman Sach's survey also continued to see debt reduction playing a major role in company plans for 2022, according to a March 14 report by analyst Neil Mehta.

Ovintiv Inc. is on track to achieve a $3 billion net debt target at the end of the second quarter based on above-strip prices and will turn additional free cash flow to debt reduction and small bolt-on acquisitions.

"We believe the focus for the company, aside from achieving its net debt target, will be on its ability to offset inflationary pressures through operational efficiencies," Mehta said.

EQT Corp. is targeting a $1.5 billion debt reduction target by the end of 2023 and most recently tendered $206 million of its 3% notes of $568 million, according to Cowen. Goldman Sachs expects the company to improve its leverage from 2.3x in 2021 to 1.1x by 2023.

Companies such as Murphy Oil Corp. are prioritizing net debt, with the company's goal to reduce debt to $1.4 billion and "remain on track to achieve its net debt target by 2H22," Mehta said.

Gassier companies such as Southwestern Energy Co. have also reiterated plans to reduce net debt to EBITDA by 1.0x to 1.5x. OGI

Selected Upstream Oil And Gas Refinancings, 2021

Company	Borrowings ($MM)	Maturity Date	Proceeds Use
Pioneer Natural Resources Co.	2,500	2024/2026/2031	Refinance certain senior notes issued by Parsley Energy LLC and certain of its subsidiaries.
Diamondback Energy Inc.	2,200	2052	Repay 2025 notes and outstanding QEP Resources notes due 2022, 2023 and 2026.
Tullow Oil Plc	1,800	2026	Repay all amounts outstanding and cancel all commitments made to existing RBL facility; redeem in full senior notes due 2022; cancel convertible bonds due 2021.
Cenovus Energy Inc.	1,250	2032	Partially finance the repurchase of some outstanding senior notes.
Southwestern Energy Co.	1,200	2030	Fund previously announced tender offers and repay borrowings under its credit agreement.
Southwestern Energy Co.	1,150	2032	Pay a portion of the outstanding balance of its revolving credit agreement.
Comstock Resources Inc.	1,000	2029	Fund concurrent tender offers for a portion of its 2025 and 2026 notes; repayment of borrowings under its bank credit facility.
TechnipFMC Plc	1,000	2026	Repay and terminate certain existing indebtedness related to the spinoff of Technip Energies.
Comstock Resources Inc.	965	2030	Redeem 2026 notes, including the payment of all premiums, accrued interest and related fees and expenses incurred in connection therewith.
Vine Energy Inc. (acquired by Chesapeake)	950	2029	Redeem all outstanding 8.75% and 9.75% notes due 2023 issued by Vine Energy Holdings LLC.
Indigo Natural Resources LLC	700	2029	Redemption of all of its outstanding 2026 notes.
Callon Petroleum Co.	650	2028	Fully redeem all 2023 notes and partially repay amounts outstanding under its senior secure.
Antero Resources Corp.	600	2030	Fund redemption of 5.625% senior notes due 2023 at par plus accrued interest.
California Resources Corp.	600	2026	Repay in full its second lien term loan and repay all outstanding 2027 senior secured notes.
Murphy Oil Corp.	550	2028	Redeem outstanding 2022 notes.
Northern Oil and Gas Inc.	550	2028	Repay revolving credit facility, repurchase or redeem all of its outstanding 2023 second lien notes, repay in full its outstanding 2020 unsecured promissory note.
Range Resources Corp.	500	2029	Repayment of borrowings under its bank credit facility.
Kosmos Energy Ltd.	450	2028	Repay outstanding indebtedness under its revolving credit facility and commercial debt facilities.
Kosmos Energy Ltd.	400	2027	Refinance $400 million aggregate principal amount of private placement notes the company issued to fund its acquisition of Anadarko WCTP Co.
Ranger Oil Corp./Penn Virginia Corp.	400	2026	Repay and discharge the long-term debt of Lonestar, following completion of its acquisition by Penn Virginia.
Laredo Petroleum Inc.	400	2029	Repaying borrowings outstanding under its senior secured credit facility.
SM Energy Co.	400	2028	Fund a cash tender offer for all of outstanding 6.125% senior notes due 2022 and a portion of outstanding 5% senior notes due 2024.
Battalion Oil Corp.	235	2052	Repay all outstanding loans and obligations under the company's previous senior revolving credit facility.
W&T Offshore Inc.	215	2028	Repay $48 million outstanding balance on its reserve-based lending facility and commodity hedging contracts.
SilverBow Resources Inc.	200	2026	Extends maturity date to December 2026 subject to paying down $50 million on second lien facility.
Northern Oil and Gas Inc.	200	2028	Repay a portion of the outstanding borrowings under its revolving credit facility.
Colgate Operating LLC	200	2029	Fully repay amounts outstanding under its revolving credit facility.
Centennial Resource Development Inc.	170	2028	Redeem at par the $127.1 million 8% second lien senior secured notes due 2025; repay borrowings.
Talos Energy Inc.	100	2026	Repay a portion of the outstanding borrowings under its reserves-based lending facility.

Source: Hart Energy

ENERGY TRANSITION

HOW GREEN HYDROGEN CAN TRANSFORM THE ENERGY SECTOR

With government, industry and public support generally on the rise, investment opportunities will continue to abound in the green hydrogen space.

ARTICLE BY

TODD ALEXANDER

AND

SELENA SKALISKY

The U.S. built the world's largest economy by energizing its industrial sector with oil, gas and coal. Today, these fossil fuels still account for nearly 80% of total U.S. primary energy production.

But with an increasingly urgent climate crisis looming, the U.S. has recently joined the more than 120 other nations pledging to hit net-zero carbon emissions by mid-century, with President Biden signing an executive order on Dec. 8, 2021, calling for a "carbon pollution-free electricity sector by 2035 and net-zero emissions economy-wide by no later than 2050."

Emerging from this decarbonization framework is a renewed interest in low-carbon hydrogen as a potential fuel source to replace oil, gas and coal. Currently, the U.S. produces roughly 10 million tons of hydrogen annually, but the vast majority of it comes from natural gas (referred to as "gray hydrogen").

"Green hydrogen," in contrast, is a zero-carbon option produced by splitting water into its component parts using electrolysis powered by a nuclear or renewable energy source (such as wind, solar or geothermal). Once derived, green hydrogen has the potential to fill gaps left by renewables in the transition toward a clean energy-based economy.

Benefits of green hydrogen

Green hydrogen and its derivative fuels—ammonia, methanol and aviation fuels—have the potential to replace fossil fuels used in the power, industrial and transportation sectors.

Hydrogen is especially beneficial because it can be stored and used in fuel cells, which pack more power in a smaller space than electric batteries. This makes it ideal for the transportation sector. While electric batteries may be sufficient for driving shorter distances or in a passenger car where charging is not an issue, hydrogen (as a lighter and more energy-dense option) could emerge as an option for those in the aviation, trucking and marine industries that have to carry energy supplies over greater distances.

Hydrogen may also be important in decarbonizing certain sectors such as steel manufacturing that requires high temperature industrial processes, which renewable energy may not be able to supply. Hydrogen can be burned in a boiler or converted directly to electricity in a fuel cell. It may also act as a feedstock for conventional chemicals such as ammonia or methanol, and electricity produced from hydrogen can provide grid services (supplementing intermittent power generation created by renewables such as wind and solar). Green hydrogen can also use modified versions of pipelines, power plants

> **"Green hydrogen and its derivative fuels—ammonia, methanol and aviation fuels—have the potential to replace fossil fuels used in the power, industrial and transportation sectors."**

and other machinery formerly used to run on coal, gas and oil. And because of this, a transition from fossil fuels to hydrogen may be less disruptive to existing industries.

Challenges of transitioning to a green hydrogen economy

Shifting the energy sector to green hydrogen comes with enormous challenges, making project implementation difficult in this area.

A major consideration is price. The process of creating green hydrogen typically costs around $6/kg, two to four times more than fossil fuel hydrogen (gray hydrogen), due to the input cost of renewable electricity and the cost of running electrolyzers.

The availability of existing hydrogen and the ability to transport it pose additional challenges. It will be necessary to establish a physical and commercial transportation structure that allows separation between the green hydrogen's production location and end use. Doing so will open up green hydrogen markets significantly, enabling producers to find appropriate offtakers for hydrogen projects.

Reasons for optimism

Despite the difficulties surrounding green hydrogen implementation on a national and global scale, there are many reasons for optimism in this area. The falling costs of solar and wind power could lead to reduced costs for electrolysis. Lenders may also be more comfortable lending to green projects where an existing use for hydrogen exists (as the projects may already have long-term offtakers and high industrial demand).

New areas of research and government regulations could push the energy transition forward. The Biden administration has advanced an $8 billion initiative to establish regional hydrogen hubs that will "advance the fuel's production, processing, delivery, storage and end use." State policies are also appearing, including the California Low Carbon Fuel Standard, which promotes substitutes for conventional gasoline, including hydrogen, to reduce life-cycle carbon intensity of transportation fuels through a system of credits and deficits.

Many private companies are also branching into the hydrogen space, including Southern California Gas, which announced plans to develop a pipeline to connect power purchasers to green hydrogen production facilities in the Los Angeles Basin of Southern California. Another company based in New York, Plug Power, is aiming to create the first viable market for hydrogen fuel cells. Between 2014 and 2020, it experienced a 40% growth rate, with customers such as Walmart and Amazon purchasing fuel cells to replace conventional batteries in vehicles and equipment powered by electricity.

Sam Porter is the founder and CEO of NeuPorter, a company designed to be a transporter of new fuels out of Texas. Sam's view is that "public policy has traditionally aimed at driving down production costs," but the focus of the industry "is now inevitably turning toward delivering clean energy where it's needed, when it's needed and in the right amount."

Porter believes that green fuels are going to be competitive, especially coming from places such as Texas with "high-capacity factor, low-cost wind and solar coupled with a pro-pipeline business environment and favorable storage geology."

With government, industry and public support generally on the rise, investment opportunities will continue to abound in the green hydrogen space. As technology improves and economies of scale work to reduce costs, it seems likely that a combination of renewable energy and green hydrogen technologies will change the energy landscape. Together, the two will move the U.S., and the global energy sector, toward carbon-neutrality by mid-century. OGI

Todd Alexander is a partner at Norton Rose Fulbright and represents developers, investors and lenders to infrastructure and energy-related projects, including solar, wind, hydro, LNG, RNG, biomass and fertilizer. He is the host of Norton Rose Fulbright's project finance-themed podcast, "Currents." Selena Skalisky is a law clerk in the project finance group at Norton Rose Fulbright's New York office. She graduated from Georgetown University Law Center in 2021.

DUG MIDCONTINENT: M&A COMES OUT OF THE SHADOWS

Interest in shelved projects returns, and buyers are showing up with money.

ARTICLE BY

DARREN BARBEE

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The Midcontinent, a basin more or less left for dead in 2019, has quietly racked up some 230 transactions in 2020, with dealmaking in the western Anadarko Basin and Platform-Shelf region of the Mississippi Lime development, "indicating that acquirers' interest is turning back to previously shelved prospects," said Derek Detring, president and founder of Detring Energy Advisors, while addressing the audience in Oklahoma City.

Combined with impressive well results, interest is again returning to a play that was, 18 months ago, mostly an afterthought.

"We're seeing more buyers show up, and we're seeing more buyers show up with money," Detring said. "The money is starting to figure out what is going on here."

Notable Midcontinent Deals Since 2020

Date	Buyer	Seller	Value ($MM)
12/23/21	Derby Exploration	Undisclosed Seller	$31.6
12/9/21	BCE-Mach	Undisclosed	$66.5
10/11/21	Citizen Energy III	Undisclosed	$153
10/7/21	Diversified Gas & Oil; Oaktree Capital Management	Tapstone Energy; Kennedy Lewis Investment Management	$419
11/13/20	Tapstone Energy; Kennedy Lewis Investment Management	Chesapeake Energy	$130.5
10/26/20	Contango Oil & Gas	Mid-Con Energy Partners	$115.1
10/16/20	Continental Resources	Casillas Petroleum	$162.8
9/30/20	Franco-Nevada; Continental Resources	Undisclosed	$24
8/6/20	Presidio Petroleum	Templar Energy	$91
6/26/20	MP III Echo	Echo Investment Partners	$33
6/22/20	Tapstone Energy	Templar Energy	$65
4/9/20	BCE-Mach III	Alta Mesa Resources	$159.5
3/6/20	Continental Resources	Casillas Petroleum	$200

As commodity prices have steadily—and sometimes dramatically—improved the viability of the Midcontinent has resurfaced as a combination play for oil and gas.

And while it has a reputation as a basin for hit-or-miss performance, more than 50 horizontal rigs are currently at work in the Midcontinent, a pace that has already surpassed pre-pandemic activity.

Even the Anadarko Shelf and Cherokee Platform that was shelved for a year and a half is showing signs of renewed activity in the past six months, Detring said.

"We're back, baby," Detring proclaimed.

Perhaps the most notable shift in the Midcontinent is the switch from a basin once dominated by publicly traded companies to private independent E&Ps, Detring said.

In 2017, public companies held 59% of the plays' 17,000 horizontal wells. In 2022, horizontal wellbore ownership across the Midcontinent has reversed, with 69% of all horizontal wells—an estimated 25,000 in 2022—held by private companies.

About half of the top 10 operators by horizontal well count are now private, including operators such as BCE-Mach, Trinity Operating, Mewbourne Oil and Revolution Resources.

However, new investment by private equity sponsors has fallen dramatically since 2019 when 10 investments were made by private equity. In 2020, 2021 and 2022, the total number of investments by KKR, NGP Capital, Kayne Anderson and Pearl Energy is just four. OGI

HEARD AT CERAWEEK BY S&P GLOBAL

"We've had five years of under-investment. We're paying for it now."

—**John Hess**, *CEO of Hess Corp., commenting on the International Energy Agency's projected need for an investment of $450 billion a year for the next decade.*

"You can't just cut out oil and gas and think it's going to be a smooth transition. So, I think the turbulence has just begun."

—**Jack Fusco,** *president and CEO of Cheniere Energy, commenting on the long road ahead for the energy transition.*

"I'm here to extend a hand of partnership ... because we'll only be able to meet these challenges of oil and gas supply and climate change by working together."

—**Energy Secretary Jennifer Granholm** *during a keynote address. The Department of Energy leader also encouraged the industry to increase output where it can in response to the Biden administration's Russian oil ban.*

"Natural gas is the energy of the future. It has all the qualities of being cheap and reliable. Natural gas is the best option and, fortunately for us, we can export it."

—**Toby Rice**, *CEO of EQT Corp., extolling the virtues of natural gas and the imperative of substituting LNG for international coal use.*

Read all of our coverage from CERAWeek by S&P Global on HartEnergy.com.

SCAN

5 MORE THINGS...

What we also learned at DUG Midcontinent this year.

1. The Anadarko Basin is making a comeback, largely driven by technology advancements, longer laterals and optimized completions, according to Devon Energy vice president Aaron Ketter.

2. Supply constraints and access to credit in the basin were largely unchanged in 2021, but pay was up strongly, according to Chad Wilkerson, Federal Reserve Bank - Kansas City.

3. U.S. dry natural gas production is expected to grow from 92,500 MMcf/d in 2021 to 104,000 MMcf/d in 2025 with shale production making up 65% of that total, said market analyst Bethel King of RBAC Inc.

4. The Marietta Deep is expected to transition to full development over the next few years and with a step change in drilling costs, added Tyler Zieman, CFO of Trailhead Exploration LLC.

5. Smaller banks and new names have filled in the lending void. It's a different landscape, but it has not gone away, according to BOK Financials' Jason Reimbold.

You can view video presentations from the speakers at DUG Midcontinent on HartEnergy.com.

SCAN

Events Calendar

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

Scan me

EVENT	DATE	CITY	VENUE	CONTACT
2022				
EnerCom Dallas	April 6-7	Dallas	Dallas Petroleum Club	enercomdallas.com
Energy Workforce & Technology Council Annual Mtg.	April 6-8	Point Clear, AL	Marriott Grand Hotel	energyworkforce.org
Mineral & Royalty Conference	April 18-19	Houston	Post Oak Hotel	mineralconference.com
Energy ESG Conference	**April 26-27**	**Dallas**	**Omni Dallas**	**EnergyESGConference.com**
Women In Energy	**April 29**	**Houston**	**Marriott Marquis**	**hartenergyconferences.com**
Offshore Technology Conference	May 2-5	Houston	NRG Park	2022.otcnet.org
Energy Transition Capital Conference	**May 10**	**Houston**	**Omni Houston**	**hartenergyconferences.com**
Carbon Management Conference	**May 16**	**Fort Worth, TX**	**Fort Worth Convention Center**	**hartenergyconferences.com**
DUG Permian/Eagle Ford	**May 16-18**	**Fort Worth, TX**	**Fort Worth Convention Center**	**dugpermian.com**
DUG Haynesville	**May 25-26**	**Shreveport, LA**	**Shreveport Convention Center**	**dughaynesville.com**
Mexico Gas Summit	June 1-2	San Antonio	St. Anthony Hotel	mexicogassummit.com
Louisiana Energy Conference	June 2-3	New Orleans, LA	The Ritz-Carlton New Orleans	louisianaenergyconference.com
CIPA Annual Meeting	June 9	Carlsbad, CA	TBD	cipa.org
DUG East	**June 13-15**	**Pittsburgh**	**David L. Lawrence Conv. Ctr.**	**dugeast.com**
Unconventional Resources Technology Conference	June 20-22	Houston	George R. Brown Conv. Ctr.	urtec.org
DUG Bakken and Rockies	**June 28-29**	**Denver**	**Colorado Convention Center**	**hartenergyconferences.com**
IPAA Annual Meeting	July 20-22	Colorado Springs, CO	The Broadmoor	ipaa.org
IAEE Annual Conference	July 31-Aug. 4	Tokyo	National Graduate Institute for Policy Studies	iaee2022.org
EnerCom Denver	Aug. 7-10	Denver	The Westin Denver Downtown	enercomdenver.com
Western Energy Alliance Annual Meeting	Aug. 10-11	Beaver Creek, CO	Park Hyatt Beaver Creek	westernenergyalliance.org
KIOGA Annual Convention	Aug. 14-15	Wichita, KS	Hyatt Regency	kioga.org
North American Gas Forum	Oct. 24-26	Washington, D.C.	Park Hyatt Washington D.C.	energy-dialogues.com/nagf/
Energy Capital Conference	**Oct. 25**	**Dallas**	**Dallas Fairmont Hotel**	**hartenergyconferences.com**
A&D Strategies and Opportunities Conference	**Oct. 26**	**Dallas**	**Fairmont Hotel**	**adstrategiesconference.com**
Executive Oil Conference	**Nov. 15-16**	**Midland, TX**	**Midland County Horseshoe Pavilion**	**executiveoilconference.com**
Monthly				
ADAM-Dallas	First Thursday	Dallas	Dallas Petroleum Club	adamenergyforum.org
ADAM-Fort Worth	Third Thursday, odd mos.	Fort Worth	Fort Worth Petroleum Club	adamenergyfortworth.org
ADAM-Greater East Texas	First Wed., even mos.	Tyler, Texas	Willow Brook Country Club	etxadam.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	hefg.net
Houston Producers' Forum	Third Tuesday	Houston	Houston Petroleum Club	houstonproducersforum.org
IPAA-Tipro Speaker Series	Second Wednesday	Houston	Houston Petroleum Club	ipaa.org

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

MIDSTREAM'S GREEN TAX INCENTIVE

Midstream companies can "green up" by installing the necessary equipment to produce power from waste heat while using the recently enacted federal tax credit to reduce the associated capital costs.

ARTICLE BY

BARBARA S. DE MARIGNY

AND

MICHAEL BRESSON

When midstream companies compress gas at compressor stations along the pipeline route, excess heat is produced at temperatures as high as 900 degrees. This heat is usually allowed merely to dissipate and thus is a wasted source of potentially useful energy.

Instead of being allowed to dissipate, however, the heat can be harnessed to produce electricity through the installation of electricity-producing turbines. Because no incremental combustion of fossil fuels is associated with the production of such electricity, waste heat provides an emission-free source of clean or green power. According to the Department of Energy, there is an opportunity within the U.S. to produce 15 gigawatts of power from heat that otherwise would be wasted.

A federal tax credit recently became available for investment in the equipment to harness such energy, thereby giving midstream companies the opportunity to improve their sustainability or ESG profile by producing green power while offsetting a portion of the associated capex with a tax credit.

On Dec. 27, 2020, Congress enacted the Consolidated Appropriations Act, 2021, Public Law No. 116-260, in which it recognized the green nature of waste energy projects by adding, beginning in 2021, "waste energy recovery property" to the list of property eligible for the energy tax credit set forth in Internal Revenue Code Section 48.

Tax credit for waste energy projects

The amount of the credit is equal to the taxpayer's basis in such property multiplied by:

- 26% for property of which construction begins before 2023; and
- 22% for property of which construction begins in 2023.

As an example, if the power project begins construction in 2022, and the capex on the project totaled $30 million, the credit would be $7.8 million. Under current law, the credit is not available if construction does not begin before 2024 or the project is not placed in service before 2026.

Credit requirements

This new law defines "waste energy recovery property" as "property that generates electricity solely from heat from buildings or equipment if the primary purpose of such buildings or equipment is not the generation of electricity." Since the primary purpose of gas pipelines and gas compression stations is not the generation of electricity, property using heat from midstream equipment to produce power should be a qualifying property.

In addition to covering investment in equipment, such as turbines, that produces power from waste heat, the credit is also described as covering investment in equipment (usually referred to as "turboexpanders") that captures a portion of the wasted energy from the pressure letdown that occurs when gas moves from transmission pipelines into local distribution pipeline networks.

The statute imposes a size limitation, stipulating that qualifying property may not have a production capacity in excess of 50 megawatts. The statute also provides that property shall not be treated as waste energy recovery property for purposes of Section 48 if it is part of a combined heat and power system unless the taxpayer elects not to treat such a system as a combined heat and power system. These limitations should not be problematic for most midstream installations, however.

To qualify for the energy tax credit, the waste energy recovery property must meet the general requirements of the energy tax credit. For example, the waste energy recovery property must have been constructed by the taxpayer or, if acquired by the taxpayer, the original use thereof must commence with the taxpayer. The waste energy recovery property must also be property that is eligible for depreciation—for example, not land. No property used outside the U.S. is eligible for the credit.

Finally, a taxpayer that sells its interest in the property or otherwise ceases to be eligible for the credit within five years of the date the property is placed in service is subject to a clawback, or recapture of a ratable portion (20% for each of five years) of the credit claimed.

Impact of the credit on depreciation

Notably, the cost basis for depreciation of any waste energy recovery property with respect to which the credit is claimed is reduced by 50% of the amount of the claimed credit. Claiming the credit therefore provides a front-end tax benefit at the price of a diminution (to the extent of 50%) in subsequent depreciation deductions over time. Even with reduced depreciation, however, most taxpayers would consider the credit claim to be more advantageous. It provides a current benefit that is in excess of the tax savings from full current depreciation (26% credit vs. depreciation at current corporate rate of 21%) while still allowing partial depreciation over time.

Proposed legislation may further enhance tax credit

At this writing, the fate of the Build Back Better Act and its extensive clean energy tax incentive provisions is uncertain. If enacted, however, the currently proposed provisions would extend the waste energy tax credit by 10 years to cover property the construction of which begins before Jan. 1, 2034. Moreover, the credit rate would increase from 26% to 30%. To claim the tax credit at the 30% rate, taxpayers would be required to satisfy certain prevailing wage and apprenticeship requirements during construction and operation, however.

Importantly, the proposed legislation would offer taxpayers the ability to make a "direct pay" election, pursuant to which the credit amount would be treated as a payment of tax, thereby generating a cash refund to the taxpayer to the extent that the taxpayer has no tax liability. As a result, even taxpayers without a tax liability could use the credits to create cash flow.

Midstream gas companies, especially those companies feeling either management or shareholder pressure to "go green" should consider whether a waste energy recovery project makes sense in light of the value of the tax credit. The potential to use the credit to reduce the cost of initiatives a company feels compelled to undertake, as well as the possibility of an even further enhanced credit if proposed legislation is enacted, makes this an exciting tax incentive to consider.

Barbara S. De Marigny is a partner in the Houston office of Baker Botts and focuses on tax structuring for transactions, with a particular emphasis on federal income tax issues arising in partnership, joint venture and alternative investment structures.

Michael Bresson is a partner in the Houston office of Baker Botts. He concentrates on federal income tax matters, with a particular emphasis on renewable energy transactions, publicly traded partnerships, YieldCos, private equity transactions and M&A.

HARTENERGY.COM

WILLIAMS' CHAD ZAMARIN ON CLEAN ENERGY

Williams plans to leverage its natural gas know-how to execute its clean energy strategy on the path to net zero by 2050.

ARTICLE BY

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Chad Zamarin, senior vice president of corporate strategic development for Williams, spoke with Hart Energy on the company's Feb. 22 Analyst Day just before executives set out to ring the closing bell on the New York Stock Exchange. He shared thoughts, which have been edited for length, about responsibly sourced gas (RSG), hydrogen and Williams' clean energy future.

How do you see the market for responsibly sourced gas evolving in the near term, and what is the potential impact for customers?

Chad Zamarin: We've been very focused on meeting with our customers on the upstream production side and on the downstream delivery end-use side of the value chain to really understand the needs and the opportunities. When we think about responsibly sourced gas, we're very focused on being a bridge and infrastructure connection solution that allows us to connect the very cleanest energy supplies, track the energy and emissions profile of those suppliers as it moves across our network and deliver those supplies to end-use markets.

We're building a platform that I think will help frame what the opportunity looks like. We're focused on building an energy ecosystem. We are implementing sensing technology. We will be investing in and implementing satellite technology. We're already piloting a software platform that will allow us to certify the emissions profile of gas as we receive it, track the emissions profile as gas is moved across our network and deliver a certified, responsibly sourced product to our end-use customer. … That will enable us to work with our customers to focus on where we can find the lowest emissions footprint supplies.

What does the RSG certification process include for the midstream sector?

CZ: You've heard probably a lot of folks working with different certification companies on the upstream side of production, and that's relatively straightforward. They're producing at point locations, and they can measure and monitor the amount of emissions associated with the production activities. Our systems are a bit more complex. When we pick up gas in Wyoming, we may move that gas from multiple different pipeline interconnections and on any given day, that gas may move to different end users.

What we're focused on is measuring at all of the key transportation points across our system the unique emissions footprint. That will include on-the-ground sensing technology, measurement technology, satellite technology. We're going to be implementing operational monitoring systems. All of those capabilities we've put in place will allow us to then have third-party certifiers come in, see the data, know that the data is traced to these direct measurement capabilities.

We'll use blockchain technology to tag the gas as it moves through our system with unique environmental attributes received from upstream parties and that we track throughout our network. Then, we'll deliver that certified gas to our customers on the end-use side. OGI

Read the entire interview at HartEnergy.com

CCS SUBSURFACE INSIGHTS

In this exclusive roundtable, executives from CGG, PGS and TGS share how service companies are helping oil and gas operators minimize their carbon footprints by implementing CCS subsurface technologies.

ARTICLE BY

MADISON RATCLIFF

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Reducing carbon footprints for oil and gas companies is an enormous undertaking, and even bigger than that is achieving net-zero emissions by 2050. They require clearly outlined plans and advanced technology to turn their ambitions into actions. Service companies TGS, PGS and CGG understand that by helping operators achieve their carbon reduction goals, they are also able to benefit from their success alongside them.

They embark on these missions with the goal to "build on proprietary technology and workflows to bring the best subsurface insight and CCUS [carbon capture, utilization and sequestration] monitoring strategies," according to Dr. Carolina Coll, CGG's head of reservoir development, CCS and energy storage.

"We aim to bring together the advantages of different techniques and data types, including satellite imaging, passive seismic, multiphysics, DAS [distributed acoustic sensing], well-based measurements and other data types, to develop fit-for-purpose monitoring strategies for CCUS and H_2 that take into consideration their requirements from a regulatory perspective while aiming to optimize project economics for long-term monitoring," Coll said.

In an exclusive interview with E&P, CGG's Coll, Jan Schoolmeesters, executive vice president of digital energy solutions with TGS, and Berit Osnes, executive vice president of new energy with PGS, discussed how they are helping operators develop and achieve their CCS subsurface targets. OGI

You can read the entire transcript at HartEnergy.com/ep.

Roundtable Highlights:

"What we've done at TGS is recognize that a lot of our clients are embarking on this energy transition, and we feel as a data company that we also have meaningful contributions to give there," said TGS' Jan Schoolmeesters.

"We can support clients throughout the life cycle of CCUS and energy storage, including H_2," said CGG's Dr. Carolina Coll.

"It's much more important that we succeed with helping in the industry to accelerate the [energy transition]," said PGS' Berit Osnes.

Quotable

"Sometimes people will buy a technology, and it's like getting a gym membership—they think they're going to lose weight and get muscles just by having it."

—David Reid, CTO and chief marketing officer with NOV Inc., in the article "DSEA and Drilling: Importance of Data Sharing in Oil and Gas."

Read it here:

FINDING MINERALS, THE EASIER WAY

A startup's SaaS tool breaks up the title chain monotony.

ARTICLE BY

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Ashley Gilmore and David Dewey grew up in the Seattle area and started a cloud company, Cloud Power. However, after their exit from that startup things really started to take off for the budding entrepreneurs.

Gilmore, whose family had been in oil and gas, went to law school and, at his father's urging, decided to check out oil and gas law. "I was at a courthouse during my first year of law school shadowing a landman because they had told me that the fast way into oil and gas law was through title work," Gilmore recalled.

Later, during an internship at a Houston law firm, he ended up doing title reports. "I saw what they were doing, and I was like, 'We can make this even better. We can create a tool.' One day I was given a stack of title reports and told to verify the decimals in these title opinions to these fraction answers that were on the other side. It's just all manual, so the redundancies were crazy. We set out and solved that problem."

The result is a service company called Chainlink Technology. Its main product is a software solution called Tracts, which addresses the title chain monotony and inefficiencies Gilmore discovered at his previous position.

"Basically, what you're trying to do as a landman or as an oil and gas company or a mineral buyer is you're trying to find mineral owners. And so, that involves chaining titles out," Gilmore said.

Tracts is a cloud platform that helps automate, organize and simplify titles. The company boasts "zero math calculations" and the software powers land departments to achieve bigger output with less management. Once an interpretation is entered, the document places itself in the chain and all ownership calculations are updated.

First-round funding

Gilmore and partners started with a friends and family round of funding while Gilmore was still in law school.

"You have to be really careful how you structure your cap table, how fast you sell off equity and really keep that in mind. And when you're a young company, you don't think too much about it, you just want to get rolling," Gilmore said. "So, cash was king, and you take it."

Ashley Gilmore
CEO

David Dewey
CTO

Official Name: Chainlink Technology Inc.

d.b.a: Tracts

Location: Fort Worth and Houston

Founded: February 2017

Total Raised: $2.6 million

Matt Chamberlain
Vice President of Marketing

Rob Anderson
Board Advisor

The initial round was at a pretty steep valuation for the company, but Gilmore said they managed to create enough value that they raised a quarter million at a much better valuation. Then, Houston Ventures, which is run by Chip Davis and Fred Lummis' fund, ended up backing the company in 2017. The first customers started rolling in during 2018.

"We are a Delaware C Corp, just because that's what investors like to invest in," Gilmore said. "They like that structure to be in place, but our business is primarily in Texas."

A key partnership

The company has also formed a partnership with Enverus to create a product called TitleNotes. "Essentially, TitleNotes summarizes all of the points needed to calculate mineral ownership. All the data required to calculate mineral ownership that are captured within a deed, conveyance, any type of document that might affect what is known as the chain of title," Gilmore said.

Users can get TitleNotes while using the Enverus platform. Then, TitleNotes can be pushed into Tracts, Gilmore said.

Since its initial funding, the company has grown year-over-year. "Obviously 2020 was a rough year for everyone, we actually grew quite a bit in 2020," Gimore said. "We thought that in 2021, we would have similar growth, but it did slow down just a little bit. The great thing about being in software as a service is you have all your prior business and so you're just stacking on it year after year." OGI

See it yourself

Gilmore gave Hart Energy a peak at Tracts and TitleNotes during a video interview and demonstration. See the software and hear more about the company at www.hartenergy.com/exclusives/Tracts.

THE FUTURE OF ENERGY

Halliburton Labs and Exxon Mobil Corp. tech leaders discuss technology, ESG and the future of the industry.

ARTICLE BY

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Wood Mackenzie expects energy emissions to peak by 2030 and states that $1 trillion worth of annual investment is needed to build new energy supply capacity. The research and consultancy firm also said peak demand for oil in its base case is set for 2039, and wind and solar's contribution to power generation will be 30% by 2040 in its base case.

In this exclusive roundtable with former Hart Energy "Influential Women in Energy" honorees, these tech leaders share their insights about trends, the energy transition and challenges in the energy industry:

- Zainub Noor, Halliburton Labs (2021 honoree); and
- Sarah Karthigan, Exxon Mobil Corp. (2021 honoree).

Trailblazers

Noor is the director for innovation and scouting with Halliburton Labs, an organization in Halliburton focused on advancing cleaner, affordable energy. She focuses on helping early-stage companies accelerate their journey to scale and commercialization, through industrial scaling capabilities within the Halliburton Labs ecosystem.

She has held multiple positions related to technology development, strategy and business management. Most recently served as global R&D head for reservoir recovery and production operations in Landmark Halliburton, leading technology development to help energy operators worldwide in its digital transformation journey for optimizing asset development and field operations. She also serves on multiple energy industry forums and academic committees.

Karthigan is a reputed leader with a demonstrated history of leading digital transformation initiatives in the energy industry. She has been recognized for her work to accelerate the adoption of data science to enable data-driven decision-making across the integrated oil and gas value chain.

She started her career at Exxon Mobil Corp. more than a decade ago. Since then she has held various roles of increasing responsibility in the areas of strategic planning, project management, scientific computing and data science.

She currently leads the AI Ops practice focused on realizing self-healing wins for IT operations. As part of her current role, Karthigan is also responsible for managing external relationships with multiple technical business partners.

She is a strong advocate for STEM programs and has led multiple science ambassador initiatives. She was awarded the Tribute to Women & Industry award that honors women who have excelled in their fields and made significant contributions to the industry in executive, managerial and professional roles.

Ariana Hurtado: What has been the largest technology accomplishment you've been involved in during your career?

Noor: Leading the digital transformation for oil and gas operations, from products focused on specific objectives to building an integrated platform with open architecture, incorporating data, modeling, artificial intelligence [AI] for better understanding and machine learning to predict behaviors, with broader objective to move towards autonomous field for the future. Halliburton has made huge strides in digital twins, bringing the hardware and software together and leading the way to maximize recovery. This required reorganizing my research and development organization to merge the various skillsets with cohesive teams, and I have been very fortunate to lead the efforts and see the results come through. We are not far from a time where we will have full autonomous field and autonomous rigs.

Karthigan: I'm passionate about applying AI and ML [machine learning] to solve large-scale problems in the energy sector. The opportunities that excite me the most are ones that expose me to new domains and help me learn new things. I'm currently engaged in leading the AI Ops strategy at Exxon Mobil to build self-healing solutions. This

"The most important issue facing the energy industry is helping to meet the dual challenge of fueling global economies while addressing the risks of climate change."

—Sarah Karthigan, Exxon Mobil Corp.

work has opened up the aperture for me to learn about adjacent domains such as automation, monitoring, etc.

Hurtado: What are the most important issues for the energy industry to focus on as it moves forward?

Karthigan: The most important issue facing the energy industry is helping to meet the dual challenge of fueling global economies while addressing the risks of climate change.

Noor: The key important issues or items that the energy industry needs to focus on are:

1. *Talent transformation and bringing cohesiveness to teams:* We are always focused on technology that sometimes we do not pay similar attention to talent transformation. The new generation of workforce are digital natives; they can grasp technology in no time. However, they require the right tools, guidance, training, mentorship and, most importantly, empathetic leadership to harness their potential and skills. The investment in talent transformation will ensure continued innovation and progress. We also need to break the silos to get tremendous amount of innovation. This is the last wall to break. In my opinion, the rise of citizen data scientists will have a major contribution. Therefore, it is important for companies to bring together talent transformation and skill acquisition to the teams. We have done tremendous work at Halliburton to focus on this with all our global organizations, for example, through academic partnerships. In Halliburton, all our projects are tied to talent transformation for sustainability of the business and its future success.

2. *Sustainability:* The industry needs to focus on enabling the supply of sustainable, affordable and safe energy for all. ESG and innovation certainly do go hand in hand and play at every level of the organization—in technologies, people, processes and now data as well. It is key for improvements in all the environmental, social and governance factors. On the environmental side, the innovation objective is to reduce carbon footprint and make the processes more carbon and cost efficient. On the social side, the innovation [objective] is on talent transformation to upskill professionals and reduce repetitive work [as well as] improve health and safety standards for our workforce. And on the governance side, [it is] to minimize costs and improve return on investments. Most of the companies do realize this, as its key for long-term sustainability of any business.
3. *Energy transition:* We need to reduce overall emissions, improve the energy efficiency and advance on clean energy development.

"We need to reduce overall emissions, improve the energy efficiency and advance on clean energy development."

—Zainub Noor, Halliburton Labs

Hurtado: What message would you like to pass along to the industry?

Noor: The last two years have taught us all that we can only move forward together, as an industry and as a community. The last decade was focused on breaking siloes within the company and technologies. If we zoom out and look at macro level, we have silos on companies and industry. We need to break these higher-level industry siloes to become more collaborative and solve challenges together.

A significant portion of world population still doesn't have access to energy, power or electricity. Around 1 billion people in the world do not have access to electricity, and more than 40% of the world population doesn't have access to clean fuels. No one person or company can do it alone to generate value for broader humanity; the world needs to move forward together.

Hurtado: Do you have advice for future "Influential Women in Energy" leaders, decision makers and trailblazers?

Noor: Be proactive, always be ready for the change, and continuously build knowledge and learn to expand your horizons. It is also crucial to have a supportive family; having a supportive partner has been a catalyst in my career. As women, and especially as mothers, we wear multiple hats simultaneously, and therefore, a partner that understands your career goals and stands with to you achieve them helps you thrive and makes the journey much smoother and exciting.

Finally, empathy is the most important trait for leadership, to connect people, inspire them, empower them to deliver the best for themselves, their teams and their organization.

And finally, empathetic leadership is the fundamental enabler for the transformation of our industry and success of its future.

Karthigan: My one advice to the amazing women trailblazers of the future would be to 'keep focusing on opening the door wider than you found it.' I heard this message at the 2021 Women's Forum for the Economy & Society summit, and it struck a chord with me. From breaking barriers to building bridges, we women are in this together. OGI

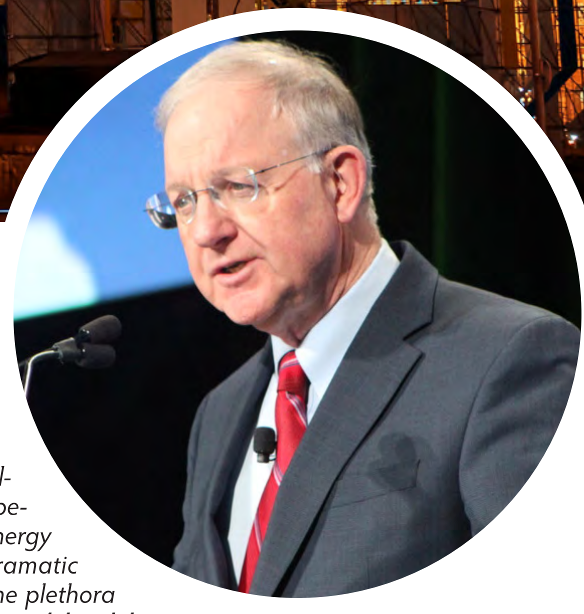
Photo by Shutterstock/Giovanni Cancemi

REGULATORY

WHY THE U.S. NEEDS A NEW ENERGY STRATEGY FOR UKRAINE CRISIS

Top oil and gas analyst, investor, advisor and author, Tom Petrie weighs in on the Russia-Ukraine war and offers up his thoughts on the response by the U.S. to solving the ensuing energy crisis.

ARTICLE BY
BRIAN WALZEL



U.S. Army veteran Tom Petrie and noted energy analyst, investment banker and strategic advisor knows a thing or two about the global business of oil and military operations. A graduate of the U.S. Military Academy at West Point, Petrie has had a 40-year career following oil, so much so he titled his popular book that: "Following Oil: Four Decades of Cycle-Testing Experiences and What They Foretell about U.S. Energy Independence." In that time, he's seen dramatic changes in the oil business and witnessed the plethora of geopolitical disruptions to the flow of oil around the globe.

As a frequent speaker of geopolitical issues affecting the global oil landscape, Petrie has watched with keen interest and sometimes ire at the events unfolding in Ukraine. In particular, he's watched the response of the U.S. and NATO in enacting sanctions against Russia but struggling to figure out a suitable replacement source for Russian oil at home and abroad.

In this interview with Hart Energy's Brian Walzel, Petrie discusses the Biden administration's response to the crisis in Ukraine, the wide-ranging effects of that response on oil markets and energy security, and more.

On Feb 24., Russian President Vladimir Putin launched an invasion against neighboring country Ukraine.

Brian Walzel: ***Can you talk about where the situation stands with the war in Ukraine and perhaps give us some insight into the implications for the U.S.***

Tom Petrie: We've got a situation where I'm quite sure that [Russian] President Putin, when he launched this, believed he was going to have a three- to five-day romp through Ukraine. I think he based that in part on what he thought the capabilities of his own military would be, and he had some surprises there.

Two, I think he believed that the will to oppose this was signaled by the awkwardness and the ugliness of the U.S. failure in Afghanistan last year. I think he thought this is the right time to make this kind of move, and there will be no real opposition to it. What he didn't understand was the Ukrainian state of mind, that they were being invaded and their land was in jeopardy; their future was in jeopardy, and they were willing to fight for it.

This is a big distinguishing difference between the Ukrainian point of view and the Russian soldier point of view, and it's shown up in spades. So, I think the will to fight among the Russian soldiers is shallow. It's an embarrassment. And, when a three- to five-day romp that was envisioned becomes [weeks-long], when they have not achieved their goals, it creates a whole lot of differences, and we're dealing with it.

A couple things are important. The Ukrainian people have a very different view of what they're doing. The Russians have acknowledged something approaching 3,000 casualties in this. The Ukrainians have asserted they believe it's closer to 13,000. And, I believe them. I do believe that the will to fight has been much firmer on the Ukrainian side than on the Russian side.

Very early days, a number of Russian soldiers gave up. When they were captured, you could see that they were hoping that they would become captured and not killed. [Ukrainian President Volodymyr] Zelenskyy, in a very smart move, told them, 'Here's a telephone, call your mother and let your mothers know you're OK, and you're being treated well.' A few days later, he offered those mothers the opportunity to come retrieve their sons and that he would be glad to turn them back over.

Obviously, that's not going to happen. Putin couldn't have that kind of condition happen. It would create social discussion that's way outside the bounds of communications in Russia today. So, what do we have? We now have a war underway where hospitals have been bombed, personal residences have been destroyed and other civilian infrastructure and schools are being destroyed.

This is a very serious problem. I don't believe Putin understands the degree to which the brand of authoritarian Russian leadership has been seriously damaged forever.

BW: ***As the situation evolves, and perhaps even worsens, what are the implications for the U.S. on policy perspective?***

TP: Well, I think the implications are very serious. We're in a position where a number of mistakes have been made already on [the U.S.] part. Our president has unilaterally and pre-preemptively ruled out certain courses of action and got nothing for it. He would've been better if he kept his mouth shut, but when he started ruling out anything that might escalate this war into a war between the U.S. and Russia, Putin knew he had a lot of room to maneuver.

There are smart people in the United States who've said, 'You don't negotiate by taking off unilaterally, certain courses of action that may become necessary.' I think as this in all likelihood is continuing to worsen before our eyes, even in the last 24 hours, it's gotten much worse, the U.S. is going to have to face a change of attitude, and some of the things that the president ruled out need to be ruled back in.

The U.S. Congress is ahead of the president on this. The likes of Lindsey Graham and others, even others like Amy Klobuchar, are calling for action with respect to providing air support, not directly, but certainly the way the polls would do it and the pilots are there to fly those plane,s and she's calling for those kind of things to happen.

I think a real change will have to occur or else ultimately the Russian plan to wear down and wear out Ukraine and demolish it as a country will ultimately succeed and there'll be a great matter, and the Ukrainian people will very likely resist for many, many years to come. Putin will have found out that it's not just the population of Afghanistan that wore down Russia, he'll find out that Ukraine will do that too, but it'll be a great human tragedy under these circumstances.

The key point here is U.S. weakness, which has been serially signaled in this situation can only lead to further escalation. The idea that we're going to actually avoid escalation by ruling out certain steps that we would normally take is a fool's errand.

BW: ***With the U.S. banning Russian oil and imports, what does that mean for U.S. energy independence moving forward?***

TP: We have the capability, the resources to continue to be energy independent. It was unilaterally taken off the table in the style that our president has become accustomed to when he banned further drilling and permitting and fracking on federal lands. He did that immediately after he canceled the [Keystone] XL Pipeline.

Now, you've got propaganda coming out of our own government that those are not the reasons the price of oil went up. And they're half right. It's only the last half of the price increase from $60 to $100-plus a barrel that occurred as a result of Putin's actions. But the president of the United States on the day that he signed the ban on the XL Pipeline, WTI oil was priced at $48 a barrel.

Three weeks later to the day oil was priced at $60 a barrel and has not traded lower since. I give him credit that you can't blame the president of the United States with a whole move in oil prices, just the first major move that occurred from $48 to $60 and set the mindset for oil to be a big part of this administration's inflation problem, which is now running at 10%.

BW: ***How effective are the sanctions the U.S. has placed on Russia, particularly the oil import ban?***

TP: I think the overall sanctions are extensive, but sanctions take time to work. Oil itself, we don't see it until deliveries occur and it's probably a 40-day-plus delivery time. But I do believe that those sanctions are one of the better messages that's been sent to President Putin.

I think a far better message has been sent to the citizens of Russia. This is going to be systemic impoverishment of you as a country, and you as a society, because these are a lot easier to put in place than they're going to be to take away. And the ability to take them away is very, very much twisting in the wind right now.

I'm a believer that the sanctions are going to be an important part of it, but the sanctions are only a first step toward actually resolving the security issues in Ukraine. It really is going to take a change of U.S. attitudes, probably led by Congress on the matter of air support, such that the ability of Russia to decimate the infrastructure of Ukraine and to pound with bombing the Ukrainian citizens into a very, very bad condition.

Unless that happens, the outcome is now becoming clear and this president's role in history is not going to be a good one. I'm speaking of the U.S. president on this. It's clear to me whatever happens to the president of Ukraine, he will be a hero. He will have fought as fine a fight as can be fought, given the degree of support and the degree of limitations on support.

BW: *What is the endgame here for Putin?*

TP: Well, that's a difficult one. I agree with those who've observed there's no identifiable off ramp at this point. He's made himself a pariah, and you don't get to erase that with propaganda. He can rewrite history all he wants to, but the fact of the matter is he's seriously misjudged the ability to do this.

There are several other leaders now on the borders of Russia but also on the borders of Ukraine visiting the Ukraine bravely. And these are countries that we don't even think about most of the time in the West, but they are soulmates to Zelenskyy. The president of Russia is getting another message about the resolve of these other countries.

So, I think it's going to be the way it's playing out. It's hard to be an optimist now; it's hard not to be truly impressed by a person who summed it up in one of the shortest sentences we've heard since Winston Churchill. 'I don't need a ride, I need ammunition.' And they'll put that on his gravestone in effect. And with that, he's signaled Ukrainians that his role as their leader is not going to be subjugated to the will of Putin. Putin may prevail here in the long run, but I think he will rue the day that he started what he started.

BW: *Going back to your previous point about U.S. involvement, what more do you feel that the U.S. can do to alleviate the situation?*

TP: We need a very thorough examination of the foolishness of ruling out what we would do prematurely. That has to happen. That has to probably start with a military saying, 'Mr. President, here's what we can do, and here's how we can counter what you are fearing. You're fearing that this will lead to World War III.' There's two possibilities here already.

One, it could lead to World War III, and you've got to understand that. But if you let that be your guiding principle, you probably don't realize when that is your guiding principle you are making decisions that will lead to World War III. Just as Putin has started this in order to weaken NATO, it's done just the opposite. It has strengthened NATO. Now we need the president of the United States to also step up and make the hard decision that if this is going to lead to World War III, we're ready for it.

And, ruling out anything that would lead to World War III is a big mistake. It's almost as big a mistake as is going on right now on climate change.

> "I think a real change will have to occur or else ultimately the Russian plan to wear down and wear out Ukraine and demolish it as a country will ultimately succeed."

BW: *How does our policies domestically influence what we're looking at in terms of energy independence and energy security?*

TP: Here's the dichotomy we face. In my book, which I wrote seven or eight years ago, I talked about climate change and the issues that are there. I've studied it a lot because I do believe it's a very important priority, but if it's the priority in the United States that trumps all other priorities, including the national security of the U.S. and the U.S. interest in the national security of other free countries on the globe, then we're in for a real problem.

It started with the belief that the existential threat that climate change may pose in 2050 has to trump all other considerations of national security for this country and its allies to get to 2050, then we've got a problem. We've got a big problem, as they said in Houston as the astronauts were coming in and realizing they had a real problem.

The issue here is that John Kerry and President Biden are of a belief that the existential threat is such that we have to compromise on many things, including with our greatest adversaries. I use the word adversaries because that's what I think we're dealing with. I'm not going to refer to them as enemies at this point. None of us should be adversaries when we're talking about global survival.

But global survival decades from now, when I'll be about 104 years old, really has to be judged against getting and navigating from here to surviving those decades between now and then in a way where the planet is also habitable by people who respect one another and use force only in a very advised form. That's a value that this president does have. However, I think the ability to rationalize the no fly zone as off limits when war crimes are being committed, schools are being bombed, hospitals are being bombed.

If we stand by having taken off the table steps that could really make a big difference.

The big difference is that the president of Ukraine has already made a three- to five-day objective into almost a 21-day objective, it'll be there tomorrow, a three-week objective.

In other words, it is a fantastic accomplishment. That's because he was willing to put it all on the line. And we as a country need to be willing to put almost all of it on the line. If we do less than that, we have to really admonish ourselves as failing to come through at the moment that matters.

BW: *Looking at this from a more international perspective, how do you see China's role in this, and how does the Russia-China relationship play out long term as this war continues?*

TP: I was very impressed to hear that the conversations between our national security advisor representative and the Chinese government went for seven hours. It's hard not to imagine considerable discussion occurring. I'm obviously not privy to that, but I have to believe both parties came there to substantively discuss the positions of both nations.

I'm not skeptical that there was a lot of candid interchange that went on. China's role is an important one. When I wrote 'Following Oil,' I did a lot of thinking on the relationship of the U.S. to China. The more I thought about it, the more I came to the conclusion that something big happened after 9/11.

That was a big event, and we dealt with it as well as we could. There were some mistakes made, some judgements that if we could have made them with perfect information might have been made differently, but we had an existential threat to the U.S. to something unimaginable, a building in which I, on numerous occasions on visits to New York, took breakfast and lunches in the top of that building.

But when you think about where we are today from 9/11, when I thought about it, I began to realize that something big happened, and there's a chart that we'll have in the publication of this, that shows it was an emergence of overlapping power triangles in the eastern hemisphere, an alignment between Russia and China, between Russia and Tehran, Iran, in between Tehran and China, that overlapping power triangle was created in about the following eight to 10 years after 9/11 has only reified in the subsequent decade.

It really helps define what's going on today in terms of global leadership. There's the old adage, 'the enemy of my enemy is my friend.' The U.S. is perceived as the enemy. This is the first time I've used that word today. I'm not saying I agree with it. But the U.S. is viewed as the enemy of Russia and the enemy of China. Certainly, Iran has that same view.

So those three parties have overlapping interest in what they can do to challenge U.S. leadership. Hopefully we'll have a degree of humility in our leadership that we recognize that these are all powerful countries with powerful weapons and with a certain degree of organization of their populations that enable them to exert their power beyond their borders. So, this map really speaks to the challenge for U.S. leadership as we go through from now to 2050, about the time when the climate goals are really going to be important to have achieved.

And to do that, I think the big thing we need to not do is let climate goals of 2050 trump national security goals to make sure we get to 2030, 2035, 2040, 2045 and 2050. That's to me, the change of mindset that has to come out of what we've been experiencing here with this move by President Putin, who has seriously damaged the brand of his autocratic leadership.

I was in Russia in 1984 with a dozen other oil people and we traveled all over the country. When we did that, at the end of it, we had a briefing at the oil ministry. At that time, there was a lot of global concern about peak oil. And the Russians in the Soviet Union at that time said, 'Don't worry about it. We're going to take our production from 11.5 million barrels a day in the Soviet Union.' I'm not saying just Russia, but the Soviet and its allied states, 'from 11.5 million barrels a day to 15 million barrels a day.' So peak oil is not here.

I took issue with them on that, not because I thought they were wrong, because I knew they were sincere in their belief that they could do it. But there were reasons why I was quite certain they were not going to be able to do it.

I will say that after that we left the oil ministry and we went to the U.S. embassy for a debriefing. This was an exchange agreement and the Russians did the same thing when they came to the U.S., they also did a debriefing. The difference was our embassy was bugged, and I don't believe their embassy was bugged.

But in any case, what happened was we talked about the nine days we'd spent in Russia and what we'd learned and thought about. And then the desk officer said, 'Let me tell you what I think is going on in this country.' This was in October of 1984. This was five years before the wall came out. And he said, 'Three years ago, a dissonant poet died. And when he died, there was no announcement of his death and no announcement of his funeral.' And he hesitated. And we absorbed that.

He said, '100,000 people showed up at the funeral.' And he let that pregnant pause come in and again, and he said, 'It drove the authorities crazy.' He said, 'And the reason that it did is this fellow was named Vladimir Vysotsky, another Vladimir, but thinking differently than Vladimir Putin.

There's four lines of poetry for which he's most known and loved. At that time, I didn't know his name, but I learned it 10 years later in Vail, Colo., from a Russian who knew him and loved him. He said, 'Let us hope they never discover life on Mars, because if they do, the Soviet Union will be poor forever.'

In communist Russia after 1917 with total top down dominance of autocracy, you don't speak too clearly, you speak in innuendo and the translation of that from Russian to what I just said. And then from my translation to what it meant, the Russians understood, 'Let us hope they never discover life on Mars, because if they do the Soviet Union will be poor forever,' really says no matter how remote the threat Russia must always be defended against from those threats to the total impoverishment of our people in terms of denying them butter versus guns. That's the mindset we're talking about, and Vladimir Vysotsky is going to live in history better than Vladimir Putin. OGI

You can view the entire video interview with Tom Petrie at Hart Energy.com.

Oil and Gas Investor

COMPANIES IN THIS ISSUE

This index refers to the pages of the story or news item in which the company is first mentioned. Advertisers are in boldface.

STACKED PANELS AND STUFF

NISSA DARBONNE
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A petrophysicist walks into a cry-me-a-river panel discussion among people who make a living by crying about climate change. He asks a legitimate question.

That's it. That's the joke.

The question: "Why is climate change oil companies' fault?"

The answer: "Well, I'm no energy expert, but . . .," said Nathaniel Rich, a writer for The New York Times Magazine.

Eventually, Rich concluded that it's because oil companies are given government "incentives." What are these "incentives," one might ask the non-expert?

Well, time was up for audience Q&A. Session ended.

Anyone else who's walked into one of these conversations about climate change in which the panel is stacked with non-experts has encountered the same.

The frustrating thing is that there are legitimate ways to reduce a carbon footprint, but those with the microphone find a good living in simply saying it's all the fault of oil companies.

Thus, the climate would be fine if we didn't have oil and gas? Wrong. The unpopular, but correct, answer is one that individuals won't pay to hear: It's up to the audience members themselves to change the carbon footprint.

How? For starters, stop bringing home so much stuff, as George Carlin described it in "Stuff."

But stuff's made up of stuff. And we all need stuff. But does stuff have to be made up of *so much stuff*?

I found myself a few years ago rinsing out (well, trying to rinse out) a shampoo bottle to put it into the recycling bin. I had accidentally glanced at the recycling rules for the first time in a long while, and it seems things should be rinsed out. Okay, let's do this right, I thought.

It seemed impossible. How much clean water (that required a lot of energy to clean up and put into the faucet) was I wasting? I quit.

A few weeks later, I was talking to Mark Mills with the Manhattan Institute about something else and took the opportunity to add, "Mark, I'm wondering about whether my recycling is really just adding to the carbon footprint."

I told him about the rinsing conundrum. Mills answered that, yes, most recycling as the process exists today is wasteful. "The only thing in the bin that's worth recycling is metal," he said.

Aha! I was correct in my thinking that what I'd really like to see is shampoo in something more like a Go-GURT package. Background: I have "tiny home problems." How to maintain 735 sq ft of *livable* space, complete with office, fitness area, oversized chaise (for the dog, sometimes for humans), second bedroom (inside the couch), art studio (inside the chest that is more seating) and (a trying to be) Michelin-quality kitchen?

The answer: If something extra is brought home, something's got to go.

Something extra is half of the half-empty box of cereal. Can't this be vacuum-packed and sold as a brick? The Tostitos too?

Maybe not. Maybe so. I'm no packaging expert. But it amazes me that an entire supermarket aisle is greeting cards, all of them cozy in air-conditioned comfort.

I wonder if reducing the carbon footprint can start with the consumer who asks that public policy "encourage" manufacturers to make their products smaller. Would there be fewer supermarket aisles if the laundry detergent is in a squeeze bottle?

I wanted to ask this of the panel, but time was up. I complained about it while in the queue to enter the next panel discussion to another attendee. He happened to be a geologist, who noted that geologists know well that Earth's climate has changed numerous times in history—as demonstrated by core samples—even prior to the existence of humans.

We were both glad to find "friendlies" among the crowd. I added that, without this warming cycle, we wouldn't be able to feed 7 billion people. "Yes," he said.

The uninformed think that oil and gas producers *want* waste. That greater oil and gas waste is the only source of demand growth, thus sustained prices.

Rather, thoughtful use of oil and gas among first world countries creates the opportunity for third world countries' populations to participate in the quality of life that the rest of the world enjoys.

And another thing: These climate discussions are tired. For decades now, they're steeped in whining and lacking truth. The truth: hydrocarbons *enable* conservation.

How to get a real climate conversation started: include hydrocarbon experts who will explain this. OGI

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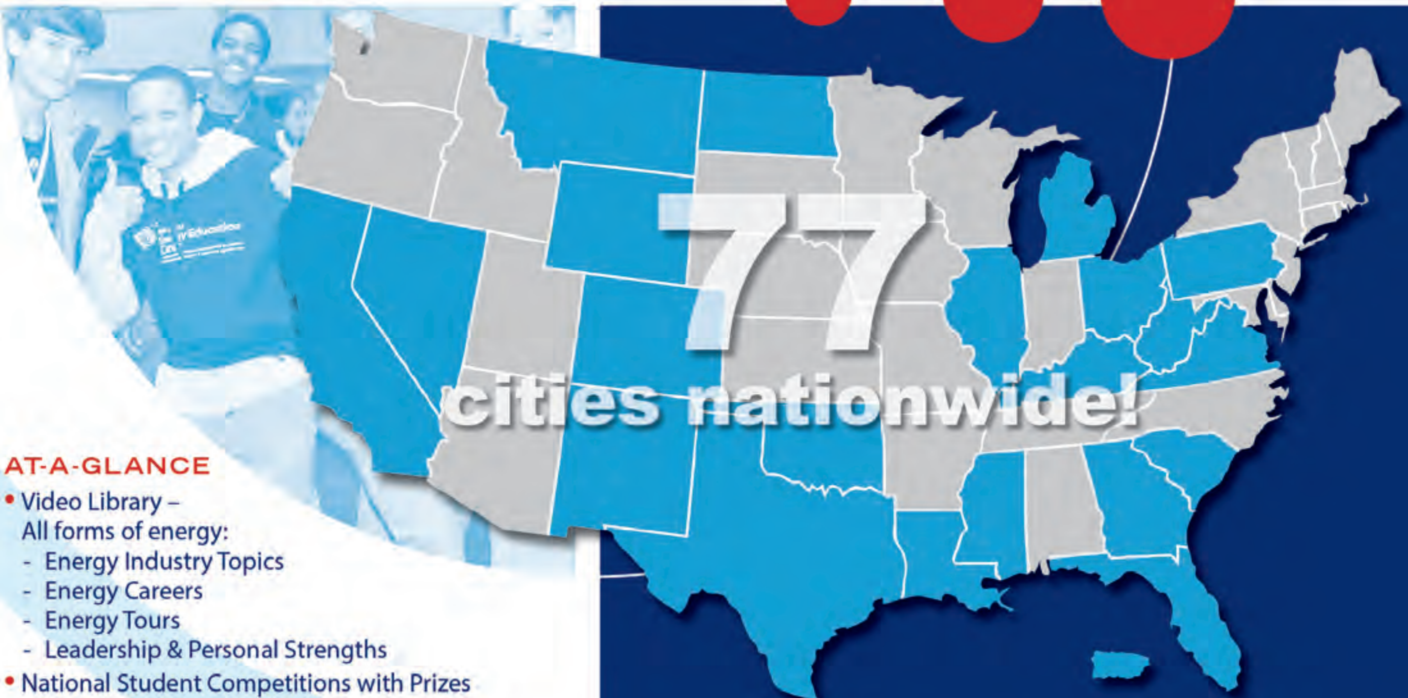

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