Oil and Gas Investor

TOBY RICE
on How to Fuel a Higher Purpose

Q&A:
KPMG's Regina Mayor Talks Carbon-Based Livelihoods

ANATOMY OF A DEAL:
Inside Petro-Hunt's Delaware Basin Deal with Admiral Permian Resources

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JUNE 2022

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Stephens maintains a long history of advising oil & gas companies. In recent years, we have been particularly active advising mineral & royalty businesses across a wide variety of transaction types.

Recent Minerals & Royalties Transactions

UNDISCLOSED	UNDISCLOSED	UNDISCLOSED	UNDISCLOSED	UNDISCLOSED
Haynesville Minerals Platform	Diversified Minerals Aggregator	Midland Basin Operator	Eagle Ford Minerals Platform	NOBLE ROYALTIES, INC.
EQUITY PRIVATE PLACEMENT	STRATEGIC PARTNERSHIP	ASSET ACQUISITION	EQUITY PRIVATE PLACEMENT	EQUITY PRIVATE PLACEMENT
Sole Placement Agent	Sole Placement Agent	Financial Advisor	Sole Placement Agent	Sole Placement Agent

UNDISCLOSED	UNDISCLOSED	UNDISCLOSED	UNDISCLOSED	$350 MILLION
VIKING MINERALS	VIKING MINERALS	Shadow Creek Minerals	NOBLE ROYALTIES, INC.	VIPER Energy Partners
ASSET DIVESTITURE	ASSET DIVESTITURE	ASSET DIVESTITURE	ASSET DIVESTITURE	FOLLOW ON OFFERING
Financial Advisor	Financial Advisor	Financial Advisor	Financial Advisor	Underwriter

$66 MILLION	$104 MILLION	$53 MILLION	UNDISCLOSED	UNDISCLOSED
KIMBELL ROYALTY PARTNERS	KIMBELL ROYALTY PARTNERS	KIMBELL ROYALTY PARTNERS	Multi-Basin Minerals Company	Multi-Basin Minerals Company
FOLLOW ON OFFERING	INITIAL PUBLIC OFFERING	FOLLOW-ON OFFERING	ASSET DIVESTITURE	VALUATION ANALYSIS
Underwriter	Underwriter	Underwriter	Financial Advisor	Financial Advisor

MINERALS & ROYALTIES STATISTICS	PRIVATE FINANCING STATISTICS
~$2.4 Billion	~$11.4 Billion
Aggregate Transaction Volume Since 2017	Aggregate Capital Raised Since 2009
15 Closed Transactions Since 2017	35 Closed Transactions since 2009

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COLUMNS

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ACTIVITY HIGHLIGHTS

A&D WATCH

FINANCE & INVESTMENT

PERSPECTIVES

AROUND THE INDUSTRY

Oil and Gas Investor
by HARTENERGY

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AROUND THE INDUSTRY

MIDSTREAM

TECHNOLOGY

ABOUT THE COVER: EQT Corp. CEO Toby Rice talks about the rapidly changing nature of natural gas production, infrastructure buildout, messaging and decarbonization success in an in-depth interview with Hart Energy's editorial director, Len Vermillion, for this month's cover story. Photo by Michael Ray.

NATURAL GAS TO THE RESCUE

NO ONE ASKED ME, *BUT . . .*

LEN VERMILLION
EDITORIAL DIRECTOR
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This month I'm planning to take the stage and open up the annual DUG East Conference & Exhibition in downtown Pittsburgh. The conference comes at a particularly crucial time for the U.S. natural gas sector, one that has the promise to propel it to new heights and as worldwide provider of energy security. But the path is littered with obstacles and challenges.

When the natgas industry descends on western Pennsylvania this year, it will be in the immediate wake of the state's crucial senate primary and at the beginning of the campaign to the midterm election in November. Those elections, particularly in the Marcellus region, will be partly centered on the increase of shale gas production. With Russia's war on Ukraine driving energy LNG demand from the west into high gear, U.S. producers are figuring out how to increase production to meet that demand while dealing with the rising costs of supplies, roadblocks on infrastructure and political discord. But rest assured, the opportunity for U.S. natgas producers has arrived as long as they can figure out how to increase production while still decreasing carbon emissions.

"The events unfolding in Eastern Europe … highlight the crucial role our industry can play in the energy security of the globe," Chesapeake Energy Corp. CEO Nick Dell'Osso told analysts on a call earlier this year. "Being in a position to do so with as low a carbon footprint as we can is more important than ever."

Chesapeake is all in on natgas having purchased the Chief Oil & Gas in the Marcellus and Vine Energy in the Haynesville.

And, producers are itching to get their product on vessels heading to demand markets overseas. "We're pretty excited about the ability to take some of our molecules and get them on the water," Chesapeake's CFO Mohit Singh, added in the analyst call.

Meanwhile, as you can read in my extensive Q&A with EQT Corp. CEO Toby Rice in this issue, the head of the country's largest natgas producer is on a mission to help people understand why U.S. LNG is poised to meet demand brought upon by war while also being the catalyst for cutting world emissions.

This is a story that isn't going anywhere, and there is so much more to talk about. And, we will.

Hart Energy is launching a new natural gas conference in Houston on Sept. 27. We're calling it America's Natural Gas, and the purpose is to bring together all of the major players in the upstream, midstream and downstream to discuss the benefits of U.S. natural gas to energy security at home and abroad. We'll also discuss how natural gas is, as EQT's Rice likes to say, "the greatest greenhouse gas initiative on the planet."

We're expecting some big names on the stage. From top executives to government representatives, we're planning to really get after the issues surrounding America's natural gas opportunities. We'll be doing so in the throes of the campaign, so it's bound to get interesting.

We're looking forward to it, and we hope to see you there. OGI

HERE TODAY, GONE TOMORROW

ENERGY POLICY

JACK BELCHER
CORNERSTONE GOVERNMENT AFFAIRS
@JackBelcher1
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It is amazing how quickly turbulent times can move a topic from being unpopular to generating widespread interest. With the exception of renewables and decarbonization, energy policy has certainly traditionally been the former. For years, many (including myself) have tried to talk up the role U.S. natural gas could play in reducing greenhouse-gas emissions globally, enhancing our ability to support our allies in Europe and lifting nations out of energy poverty.

Despite best efforts, the talk largely fell on deaf ears. Today, however, politicians can't get enough of energy policy. Over the past month, elected officials who normally are not very supportive of domestic petroleum, or even hostile to it, have suddenly become big fans of U.S. natural gas in the form of LNG exports. It is a fascinating development, considering that just a year ago these same individuals would have rolled their eyes or stared off into space at the mention of LNG.

However, the war in Ukraine has now made embracing U.S. energy policy, and LNG exports in particular, a necessary and patriotic duty. The issue is that exploring, producing and transporting the natural gas needed for LNG exports is still unpopular, and public policies are being implemented that make it harder to export U.S. natural gas, not easier. Specifically, some of the same politicians who see LNG exports to Europe as an imperative still do not support development of oil and gas resources on federal lands, still oppose hydraulic fracturing, still want to stop pipelines from being built and still want to slow down permitting. They remain unwilling or unable to see the relationship between such policies and our ability to export natural gas to our allies.

Despite that dichotomy that remains, the European energy crisis and the war in Ukraine have created a window of opportunity for the domestic U.S. energy industry. Never has support for U.S. LNG exports been greater or more clearly seen as our patriotic duty. Just the same, never has demand been greater.

Representatives from eastern European nations including Latvia, the Czech Republic, Estonia, the Slovak Republic and Romania are making treks to the U.S. to address officials and energy companies alike in an effort to secure U.S. LNG to meet their energy needs back home. This month in Washington, D.C., more of this sentiment is likely to be heard at the European-American Energy Security and Trade Summit. With such support and demand, it is now critical that we educate members of Congress, the administration, the press and the public about the entire energy value chain and the need for sound policies that enable it to function properly.

The role of sustainability is another critical component of this opportunity. The ESG movement is in full swing, and while the outright rejection of fossil fuels by some institutions might be on hold, demands for lower carbon, highly sustainable natural gas and petroleum products will continue as shareholders, boards and employees remain focused on decarbonization and ESG performance goals. This is fueling the growth of lower carbon products such as responsibly sourced gas and other products that Europe will require under their policies and looming carbon border adjustment tax.

At the same time, the U.S. Securities and Exchange Commission's proposed rule released in April will ultimately result in mandatory disclosure of climate-related data, such as greenhouse-gas emissions, by publicly traded companies. For larger companies, such reporting will extend to the emissions generated by their vendors, suppliers and customers. In the oil and gas industry, it means everyone doing business with those companies will eventually need to know their own emissions and put forth a plan to lower them.

Today, high commodity prices are enabling greater investment in fossil energy activities. It is also attracting some institutional investors who had previously abandoned the sector to return to the fold. Fossil fuels, and natural gas in particular, are recognized by some as a necessary evil and by others as a liberator. Perhaps we are approaching a time where global energy security and sustainability goals can merge. With a little push from allies overseas, hopefully our leaders in Washington can recognize this and support policies and regulations that allow the entire value chain to function properly. Perhaps then, we can provide society with the three things they desire from energy: affordability, reliability and sustainability. Let's hope this opportunity is not here today and gone tomorrow. OGI

Watch the Energy Policy Watch series with Cornerstone's Jack Belcher.

Scan me

DEVON ENERGY PRODUCED MORE THAN

8 MMBBL OF OIL AND

12.5 BCF OF NATURAL GAS IN 2021

FROM ITS WYOMING OPERATIONS,
INCLUDING THIS SITE IN RIVERTON, WYO.

DEVON ENERGY CORP.

PERMITS

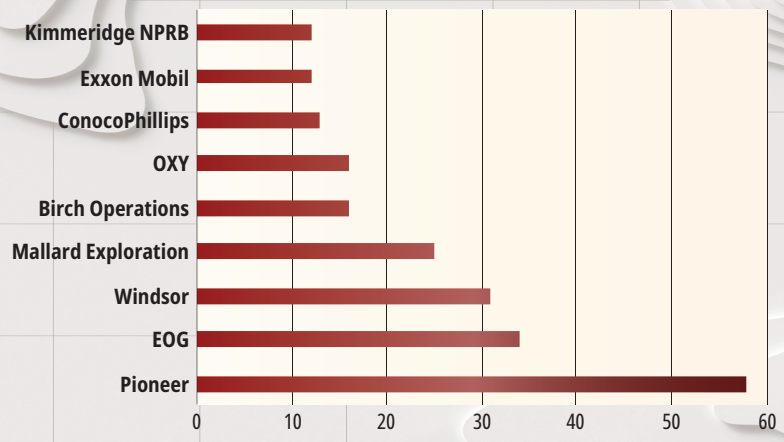
The Permian Basin finished the first quarter with a best-ever mark for its monthly permit filings, Rystad Energy reported. That's a harbinger of a "robust expansion" of horizontal drilling on the way, but it's also a continuation of healthy permit activity in the busy Permian.

Midland County, the most recent leader in approved permits in the Permian and overall, has experienced an increase in combined oil and gas production every year since 2017, pandemic be damned. Its output surpassed 106 MMboe in 2021, according to Rextag Energy data.

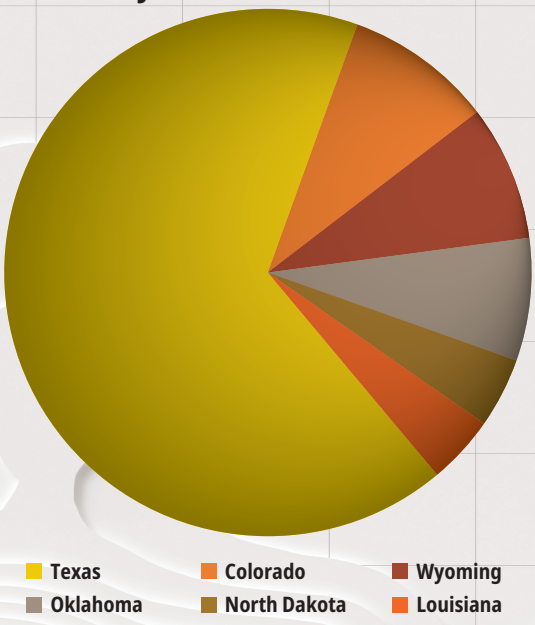
But while Texas and the Permian Basin dominate, others are preparing to flex their production muscles. Converse and Jackson counties in Wyoming put up Permian-like permit numbers this month, and Dunn County in North Dakota's Bakken formation found a slot in the rankings between Karnes and Crane counties in Texas.

The leading permit collector with 58 is Pioneer Natural Resources Co., also the leading producer in Midland County at the moment and for all time. Following Pioneer is EOG Resources Inc., with operations across a wide swath of the middle of the country. ConocoPhillips Co. is No. 2 in Midland, a spot it has always held.

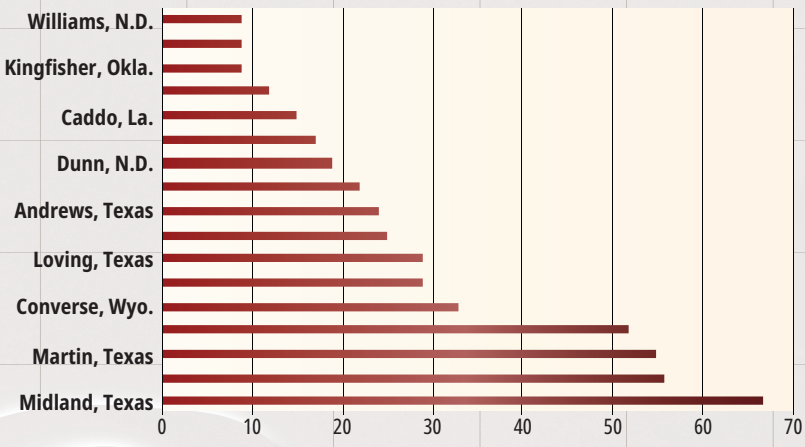
Permits By Operator Well Count



Permits By State



Permits By County



Data from Rextag ENERGY DATALINK

FOCUS ON: POWDER RIVER BASIN

Converse County, Wyo., is home to a post-Civil War U.S. Army Fort, a railroad museum, a natural rock bridge, a World War II POW camp and the wide open stretches of the Thunder Basin National Grassland. It's also home to 14,184 oil and gas wells, or 400 more wells than residents.

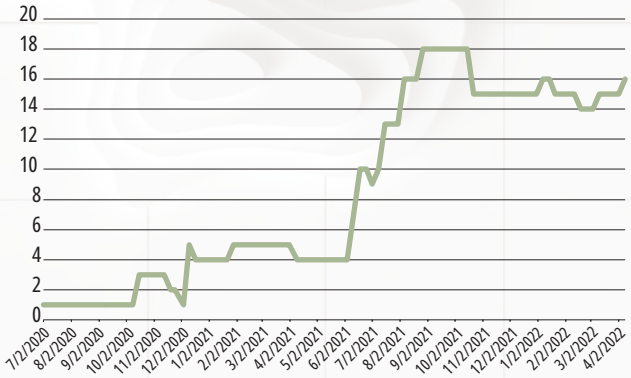
The 4,265-square-mile county in east-central Wyoming was named after a late-19th century banker and rancher, not the maker of Chuck Taylor All Star Classic shoes. Nevertheless, has become accustomed to setting a fast pace in hydrocarbon development and is running well ahead of its fellow Powder River Basin counties in hydrocarbon production as well as permits.

Oil production beats natural gas in the Powder River, but that is a recent turn of events. Between 2000 and 2019, natural gas was ahead of oil, sometimes far ahead. Oil surged ahead in 2019 and has remained ahead since.

In 2019, Wyoming producers ran as many as 37 rigs. That number began to slip in August 2019 and by mid-2020 was down to zero. The count rebounded strongly in 2021 and in early April stood at 16.

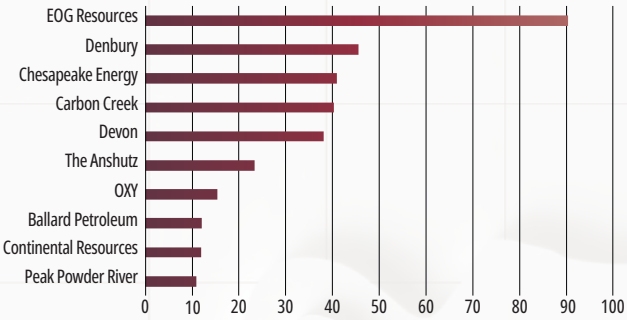
Leading operators in the Powder River Basin are EOG Resources Inc., Denbury Inc., Chesapeake Energy Corp., Carbon Creek Energy LLC and Devon Energy Corp.

Wyoming Rig Count Weekly Since Mid-2020



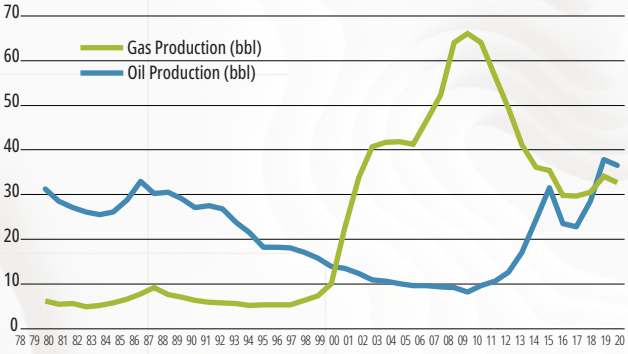
Source: Baker Hughes

Powder River Basin Top Operators

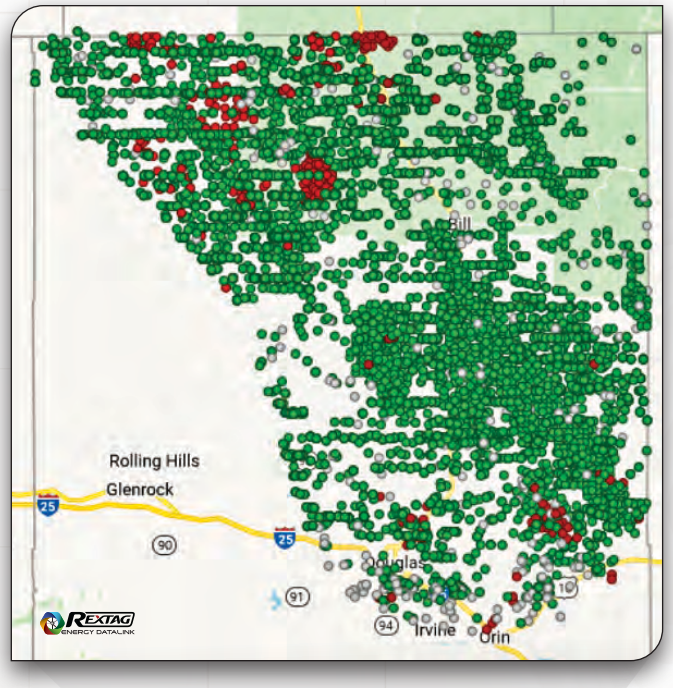


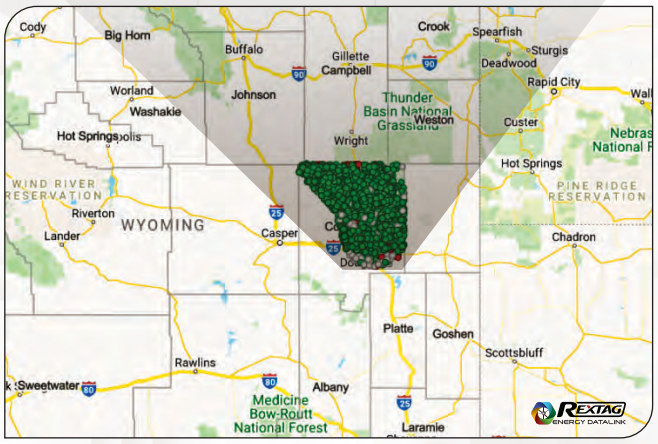
Data by Rextag

Powder River Basin Yearly Production Report



Converse County Wells





A&D WATCH

THE EAGLE FORD SHALE'S MIDLIFE CATHARSIS

At an IPAA forum in January, Christi Clancy, **Shell Plc's** commercial general manager for U.S. shales, observed that the Eagle Ford Shale had seen less consolidation than other basins, despite a rash of mergers to in the Permian Basin and Haynesville Shale.

"I'm actually surprised that there hasn't been more activity there to date, but I think that's also another area probably to watch," Clancy said at the event.

Turns out, Clancy had her eye on exactly the right shale play. The Eagle Ford's second act in the A&D spotlight appears to be at hand.

Eagle Ford Shale deals are suddenly humming, particularly as **SilverBow Resources Inc.** and **Ranger Oil Corp.** vie for assets deals in the Eagle Ford. The two companies have been recently trading bolt-ons. In May, Ranger agreed to add 17,000 net acres to its Eagle Ford position with three bolt-on acquisitions for a total purchase price of roughly $64 million in cash.

"As consolidation in the Eagle Ford continues, we see additional attractive opportunities that, at the right valuation, could add both immediate and long-term value to shareholders," Darrin Henke, Ranger's president and CEO, commented in a company release.

With the additional acreage, Ranger will have more than 155,000 net acres, a greater than 10% increase from year-end 2021, according to the company release.

Silverbow has been busy as well. In mid-April, the company agreed to buy **Sundance Energy Inc.** and **SandPoint Operating LLC**, two independent Eagle Ford operators, for a combined $425 million, plus up to $15 million contingent payments based on future commodity prices.

Enverus also predicted that more mature regions like the Eagle Ford and Williston Basin are likely to see substan-

tial high-production assets placed on the market, possibly at prices that will draw a mix of public and private buyers.

In more recent quarters, the more mature Eagle Ford has trailed the Permian's Midland Basin and Appalachia's Marcellus Shale in deal activity and largely has seen prices priced at PDP value alone, often at discounts greater than PV-10, Enverus said in a January report.

But then there's SilverBow and Ranger Oil, rivals that are set on conquering what they see as fertile, if forgotten ground. The two have been among the more active acquirers in the play. In 2021, SilverBow announced two deals totaling more than $100 million. Ranger Oil also completed two deals last year for a combined price of nearly $410 million.

A return to higher asset-level deal flow would smooth the boom-or-bust cycle of M&A that has characterized the two years since the emergence of COVID, Enverus said.

In January, Enverus estimated that about 17% of the $25 billion in available asset deals were located in the Eagle Ford.

Large independents are also sensing the value the Eagle Ford could unlock for the right buyer. **ConocoPhillips Co.** is among those looking to dip into the renewed interest in the play. The company has offered for sale a mix of operated, nonoperated and overriding royalty interests in DeWitt and Lavaca counties, Texas, including locations in the Basal Austin Chalk.

The ConocoPhillips assets include:

- 231 gross Eagle Ford locations at ~330 ft to 550 ft spacing;
- Average lateral length of about 6,600 ft; and
- EURs ranging from 60 boe to 90 boe per ft with IRRs at more than 150% at current strip prices.

SilverBow Resources Inc. Eagle Ford Acquisitions (Since 2H 2021)

Date Announced	Seller(s)	Location	Value ($MM)
4-14-22	SandPoint Operating	La Salle & McMullen Cos.	$71
4-14-22	Sundance Energy	Atascosa, La Salle, McMullen & Live Oak Cos.	$354
10-11-21	Teal Natural Resources; Castlerock Resources	La Salle, McMullen, DeWitt & Lavaca Cos.	$75
8-13-21	Undisclosed	Atascosa, Fayette, Lavaca, Live Oak & McMullen Cos.	$33
8-4-21	Undisclosed	Webb County	$24

ConocoPhillips is also touting more than 40 Austin Chalk locations and noted that its Langhoff well produced more than 280,000 boe in its first 12 months—about 30% higher than regional expectations, according to **Wells Fargo**.

The position includes 7,497 net acres (34,719 gross) in the Eagle Ford oil fairway with fourth-quarter 2021 annualized field-level operating cash flow of $32 million. The leasehold position yielded 2,304 boe/d of production (53% oil) from 175 horizontal producers as of fourth-quarter 2021, according to Wells Fargo, which is handling the sale process.

ConocoPhillips' offset and nonop partners: SilverBow Resources and Ranger Oil, which have completed more than 25 on-lease wells since 2020, according to Wells Fargo. The two companies have a combined 16 active permits and/or DUCs that will drive near-term production and cash flow.

Wells Fargo describes the leasehold as a "proven Eagle Ford development opportunity" with Austin Chalk potential.

Mercer Capital also picked up on Eagle Ford deal trend as far back in March, observing a steady trickle of deals amassing over the past four quarters, according to Justin J. F. Ramirez, senior financial analyst at Mercer.

Ramirez wrote that the median deal values the past four quarters was $370 million—$282 million higher than the median deal value from second-quarter 2020 to first-quarter 2021, excluding **Chevron Corp.**'s acquisition of Noble Energy in July 2020.

"Average deal value over the past year ($573 million) was more than double the average value ($274 million) over the prior year," Ramirez wrote. "Also notable, larger positions were transacted over the past year, with a median size of 45,000 net acres as compared to 26,500 net acres in the prior year … and an average deal acreage of nearly 80,000 net acres this past year, which was more than double the average of 34,775 net acres in the prior year."

The Eagle Ford's prospects are already looking up, even with "uncertainty" the mantra of 2022.

—Darren Barbee

Eagle Ford Deals June 2021-March 2022

Date	Buyer	Seller	Value ($MM)
3/7/2022	WildFire Energy	MD America Energy LLC/undisclosed	N/A
1/12/2022	Desert Peak Minerals	Falcon Minerals	$1,900
11/22/2021	Paloma Partners LLC	Goodrich Petroleum Corp.	$480
10/11/2021	Undisclosed Buyer	Callon Petroleum Co.	$100
10/11/2021	SilverBow Resources Inc.	Undisclosed Seller	$75
8/16/2021	SilverBow Resources Inc.	Undisclosed Seller	$33
8/11/2021	EnCap Investments	EP Energy Corp.	$1,500
7/12/2021	Penn Virginia Corp.	Lonestar Resources Ltd.	$30
7/9/2021	WildFire Energy	Hawkwood Energy LLC	$650
6/14/2021	Earthstone Energy Inc.	Undisclosed Seller	$48
		Median	**$370**
		Average	**$573**

Source: Mercer Capital

HIGHPEAK ENERGY TO ACQUIRE HANNATHON PERMIAN PROPERTIES FOR $373.4 MILLION

Read the full article here:

HighPeak Energy Inc. agreed on April 27 to acquire the Howard County, Texas, assets of **Hannathon Petroleum LLC** and other nonoperated working interest owners in a cash-and-stock deal worth roughly $373 million.

The bolt-on acquisition adds approximately 150 net locations and 18,600 net acres in the Midland Basin largely contiguous to the company's existing Signal Peak position with 2022E average production of 5,000 boe/d (85% liquids). Chairman and CEO Jack Hightower said HighPeak began its strategic expansion in the Signal Peak area in August 2021 by acquiring a nonoperated ownership interest in these assets.

"Acquiring the balance of the working interest will bolster our drilling potential in the area and give us control of significant infrastructure to support, and accelerate, our development program in the region," Hightower commented in a company release.

The Hannathon acquisition also marks HighPeak second strategic acquisition so far in 2022. The company unveiled in March it had entered into a series of agreements during the first quarter to acquire various crude oil and natural gas properties contiguous to its Flat Top operating area, which in the aggregate consist of approximately 9,500 net acres.

"This acquisition, coupled with our targeted leasing, has increased our total acreage position to over 91,000 net acres," Hightower added on April 27.

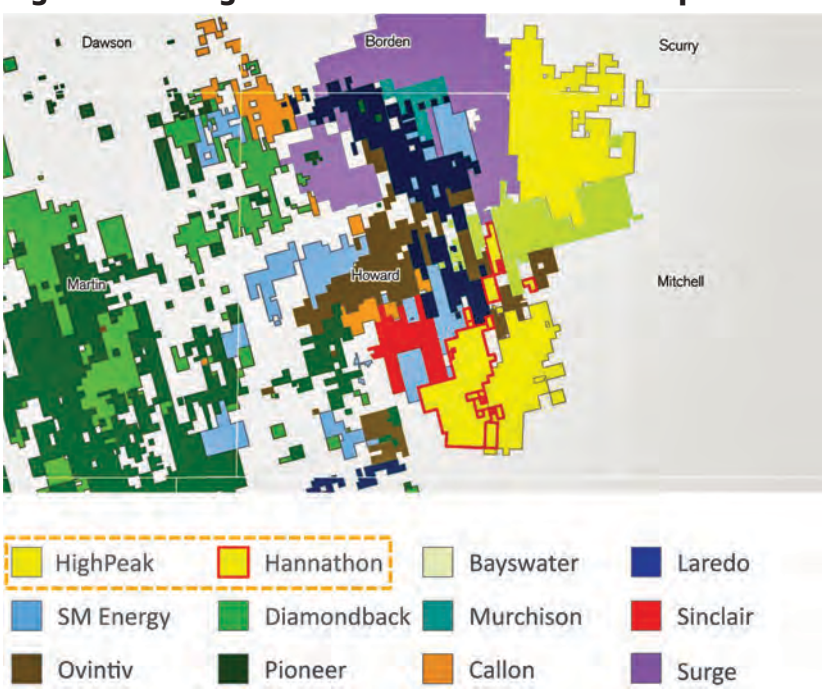
HighPeak Energy is a publicly traded independent crude oil and natural gas company, headquartered in Fort Worth, Texas, focused on the acquisition, development, exploration and exploitation of unconventional crude oil and natural gas reserves in the Midland Basin in West Texas.

The Hannathon acquisition is expected to add further momentum to HighPeak's growth strategy by providing the ability to leverage substantial infrastructure-in-place to accelerate the pace of Signal Peak development. The company, however, still expects to maintain Hannathon's existing one rig drilling program on the acquired acreage through 2022, according to the release.

Credit Suisse Securities (USA) LLC served as financial adviser to HighPeak Energy. **Jefferies LLC** acted as financial adviser to Hannathon. **Akin Gump Strauss Hauer & Feld LLP** and **Vinson & Elkins LLP** served as legal advisers for HighPeak Energy, and **Shearman & Sterling LLP** served as legal adviser for Hannathon.

—Emily Patsy

HighPeak Acreage Position And Selected Offset Operators



Source: HighPeak Energy Inc.

UPSTREAM M&A'S PROMISING START BLUNTED BY UKRAINE WAR, WILD PRICES

A promising first quarter of M&A retrenched in March as Russian forces invaded Ukraine and sent commodity prices into bewildering syncopation not unlike the score of a horror movie.

The first quarter saw announced transaction values of about $14 billion, including a January that opened with $6 billion in deals, and was the strongest start in the E&P sector in five years, according to an April 13 report by **Enverus**.

"All the factors that kept upstream deals resilient in 2021 carried over into the new year," said Andrew Dittmar, director at Enverus. "That included a need for inventory by public companies, ready private sellers and favorable pricing. However, the volatility in energy prices caused by Russia's invasion of Ukraine stalled nearly all deals in March."

Before the latest stretch of price volatility, upstream deals were pricing cheaply on most metrics relative to historical averages, Dittmar said. With buyers cautious about raising offers to match rising commodity prices, deals began to stall in the face of new bid-ask spreads.

"The quick surge in commodity prices that accompanied the war in Ukraine has particularly blown out the gap between what buyers are willing to pay and sellers expect to get. And because they are so far apart, we have seen a pause in upstream deals," he said.

Top 5 E&P Deals, Q1 2022

Date	Buyer	Seller(s)	Deal Type	U.S. Play	Value ($MM)
3-07-22	Oasis Petroleum	Whiting Petroleum	Corporate	Bakken	$3,880
1-25-22	Chesapeake Energy	Chief Oil & Gas; Tug Hill	Corporate	Marcellus	$2,602
1-12-22	Falcon Minerals	Desert Royalty Co.	Royalty	Delaware	$1,421
2-28-22	PDC Energy	Great Western Oil & Gas	Corporate	D-J	$1,271
1-31-22	Earthstone Energy	Bighorn Permian Resources	Property	Midland	$660

Source: Enverus

Private company exits continued to be a "primary theme" to start 2022 and made up four of the five largest deals. Tops among such deals was **Chesapeake Energy Corp.**'s $2.6 billion acquisition of **Chief Oil & Gas** and nonoperated interest held by **Tug Hill**.

By play, deals in the Rockies swelled to about 50% of total first-quarter value, driven by interest in North Dakota's Williston Basin and Colorado's Denver-Julesburg (D-J) Basin. The Permian Basin also remained a magnet for deals with 30% of value while the Marcellus Shale and eastern U.S. captured 20% of value.

Enverus noted that the Haynesville and Eagle Ford remained relatively quiet with few announced deals.

—Darren Barbee

Read the full article here:

DELEK LOGISTICS ACQUIRES 3BEAR ENERGY PERMIAN BASIN ASSETS FOR $624.7 MILLION

Read the full article here:

Delek Logistics Partners LP agreed on April 11 to acquire **3Bear Energy LLC** for $624.7 million in cash, increasing Delek Logistics' position in the Permian Basin. The transaction marks Delek Logistics' entry into the Delaware Basin.

"We are witnessing significant growth in our existing Permian Gathering system," Uzi Yemin, chairman, president and CEO of Delek Logistics general partner, commented in a company release.

Headquartered in Brentwood, Tenn., **Delek Logistics Partners** was formed by **Delek US Holdings Inc.** to own, operate, acquire and construct crude oil and refined products logistics and marketing assets.

In 2020, Delek US agreed to the dropdown of the Big Spring gathering system to Delek Logistics for total consideration of $100 million in cash and 5 million common units representing LP interest in Delek Logistics. The system, now known as Permian Gathering and comprises of a 200-mile crude oil gathering system located in the Midland Basin, has seen its average daily volumes jump due to a recent pick-up in Permian drilling activity, according to Yemin.

From the fourth-quarter 2021 to first-quarter 2022, average daily volumes on Delek Logistics' Permian Gathering system have increased from 83,000 bbl/d to approximately 135,000 bbl/d.

"This level of growth and demand from producers provides us with confidence to move forward with this transaction," Yemin added.

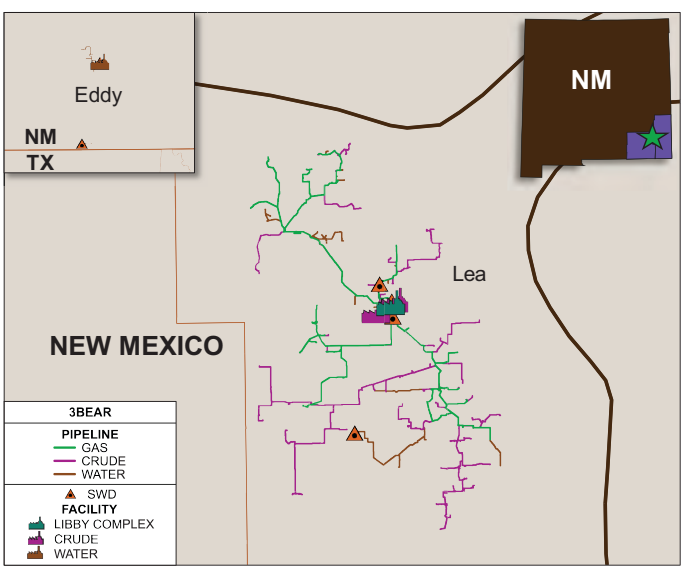
The 3Bear transaction announced on April 11 includes the acquisition by Delek Logistics of 100% membership interests in 3Bear Delaware Holding – NM LLC, an indirect subsidiary of 3Bear Energy, related to 3Bear's crude oil and gas gathering, processing and transportation businesses, as well as water disposal and recycling operations in the Delaware Basin in New Mexico.

The transaction is expected to be completed around mid-year 2022, subject to customary regulatory approvals.

RBC Capital Markets is serving as financial adviser, and **Baker Botts** is serving as legal adviser to Delek Logistics on the transaction. **Tudor, Pickering, Holt & Co.** is serving as financial adviser, and **Vinson & Elkins** is serving as legal advisor to 3Bear on the transaction.

—Emily Patsy

3Bear Energy Delaware Assets



Source: Delek Logistics Partners LP

WHO'S WHO IN E&P A&D: SASHA GUMPRECHT

Sasha Gumprecht's strategy for dealmaking is simple: build relationships.

The vice president of business development at SJ Resource Partners said she has enjoyed her recent work in Arkansas and the great people she's met there.

"I believe I have talked with about every operator in the whole state which is largely due to the friendliness and openness of the people," she said. "My favorite memory was cold calling a gentleman who ended up flying down the following week for a visit on his private jet to meet with our team."

SJ Resource Partners is focused on long-lived, PDP conventional onshore assets. The company has acquires minerals in the Permian Basin and is in the process of acquiring a South Texas asset, she said.

While she enjoys meeting people, her favorite part of her job is finding the right "piece for our puzzle" for the company.

Gumprecht has worked at Houston's SJ Resource Partners since it was founded in 2021 in partnership with the San Juan Holdings. She said the company is willing to look at alternative financing, including drillcos and farm-ins.

SJ Resource Partners looks to maintain a "delicate balance between the technical and financial" sides of an investment.

"When it comes to assessing an asset, not only are we making sure that the deal looks good financially but of equal importance we rely heavily on our technical knowledge to ensure that we will make a good return on investment," she said.

She brings a far-flung background to her role. Growing up in Seattle in the "shadow of both active and dormant volcanoes" Gumprecht discovered an enthusiasm for geology while taking an undergraduate course at Southern Methodist University.

During her geology studies, the oil and gas industry caught her interested after taking a course given by guest lecturer and industry legend Marlan W. Downey.

"His instruction on solving problems that combined both scientific and economic analysis sparked my undivided curiosity."

After graduation, she spent time in Russia teaching ESL courses.

"Immersed in a sea of fur hats and vodka, I discovered that I would ultimately love to combine my passions for geology and travel into a career in international oil and gas exploration."

She added that her time abroad gave her an important perspective on Americans, who "are able to choose our own destiny through hard work and diligence, an option not given equally worldwide."

In the decade before joining SJ Resource Partners, she worked in a broad spectrum of the industry, using her geoscience background in prospect generation and field operations and later management and software-led consulting for E&Ps ranging from small independents to supermajors.

"I have an unusual set of skills with my background with technology, management consulting, technical geoscience and a MBA, which allows me to view an asset or a deal holistically and from a broader perspective to see something in its entirety," she said, "as opposed to having to solely rely on piecing together segments of information from other people or understanding only parts of the who puzzle."

In her dealings with potential sellers, she often sees assets that don't make the cut for SJ Resource Partners' particular needs.

"But keeping those relationships is crucial to my long-term strategy," Gumprecht said. "Sellers may not have what I need now but they could down the road."

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Transaction Highlights

APPALACHIA

Diversified Energy Co. Plc agreed on April 26 to a $50 million acquisition of East Texas assets marking the fifth deal in Diversified's central regional focus area, which the company only established roughly a year ago.

Headquartered in Birmingham, Ala., and listed on the London Stock Exchange, Diversified's business model focuses exclusively on buying high-margin, low-decline producing assets, which, until an acquisition in Louisiana last May, had all been focused in the Appalachian Basin. Since then, Diversified has added to its central region portfolio. This has included previously acquired assets in East Texas and northwest Louisiana from **Tanos Energy Holdings III LLC** and **Indigo Minerals LLC**.

Diversified's latest acquisition comprises certain East Texas upstream assets and related facilities from a private seller that includes 691 gross (346 net) operated PDP wells. Current production is about 3,700 boe/d (100% natural gas), or 22 MMcfe/d, with estimated engineered next 12-month PDP decline rate of roughly 7%, according to the company release.

The total purchase price for Diversified's latest acquisition is $100 million. However, due to a previously announced strategic participation agreement with **Oaktree Capital Management LP**, Diversified has agreed to contribute 50%, or $50 million, of the total purchase price.

HAYNESVILLE

PHX Minerals Inc. continues to grow its Haynesville footprint with the announcement on April 25 of a mineral and royalty acquisition targeting the Louisiana play.

The acquisition is in addition to PHX's $5.1 million acquisition in the Haynesville announced on April 19 and will also be funded with a combination of cash on hand and borrowings under its existing credit facility.

"The company continues to expand its presence in the Haynesville while preserving the strength of our balance sheet," PHX Minerals said in an April 25 company release.

According to the release, PHX agreed to acquire approximately 477 net royalty acres located in three contiguous sections operated by **Chesapeake Energy Corp.** primarily in Caddo Parish, La., for aggregate consideration of $4.3 million in cash from a private seller. The transaction was expected to close May 13.

The acquisition includes three PDP gross wells, two gross DUCs and an additional estimated 10 gross undrilled locations with estimate net reserves of 3 Bcf. No drilling rigs currently running on the acquisition assets.

Estimated next 12 months net production totals between 350 to 450 Mcf/d, comprised of 100% natural gas. The averages 1.8% net royalty interest across three sections, providing impactful future cash flows, the company release added.

BAKKEN

Private equity firm **Warburg Pincus** has placed its portfolio company **RimRock Oil & Gas** up for sale, three people familiar with the matter said, aiming to take advantage of the upswing in commodity prices to offload the Bakken gas producer.

It is Warburg's second attempt to sell the gas producer in just over a year, the sources noted. A 2021 auction process failed to secure a buyer at the valuation that Warburg sought.

While current commodity price volatility makes it more challenging to appraise energy assets, the sources expect RimRock to be valued in the high hundreds of millions of dollars, up from the target price last year of upward of $500 million.

This uplift reflects how sellers' expectations have risen due to a recent boom in U.S. natural gas prices, which have jumped by around three-quarters since the start of the year.

Warburg has retained an investment bank for the sale of RimRock, which owns assets spread over 29,500 net acres in the Bakken Shale play of North Dakota.

MINERALS AND ROYALTIES

Rising Phoenix Royalties (RPR) announced on May 5 the purchase of an overriding royalty interest from an undisclosed seller in the SCOOP/Woodford Basin, located in McClain County, Okla., marking the Dallas-based company's fourth deal so far this year.

"This acquisition was an opportunity for us to expand our position in the Midcon while helping the seller cash out on an overriding royalty interest they had inherited many years ago," Jace Graham, RPR CEO and founder, said in a statement. "Our team was able to go above and beyond to cure several nuances associated with the override's title that ultimately allowed a clean closing with the seller."

Houston-based **EOG Resources Inc.**, one of the largest natural gas and crude oil production and exploration companies in the U.S., is the wellsite operator.

ROMANIA

Exxon Mobil Corp. said on May 3 it will sell its Romanian upstream unit to gas producer **Romgaz** for more than $1 billion as the oil major focuses its investment on assets with a low cost of supply.

Exxon Mobil has been present in Romania's upstream sector since November 2008, when it acquired an interest in the deepwater Neptun Deep Block in the Black Sea.

The deal with Romgaz includes all shares in **Exxon Mobil Exploration** and **Production Romania** along with interest in the XIX Neptun Block offshore Romania. The company said the deal is expected to close in the second quarter of 2022.

RENEWABLES

Shell Plc on April 29 agreed to acquire India-based renewable power platform **Sprng Energy** for $1.55 billion, boosting the energy company's low-carbon output as it shifts away from oil and gas.

Shell said it would buy 100% of **Solenergi Power Private Ltd.**, the flagship company of Sprng Energy group, from U.K.-based investor **Actis**.

Sprng Energy supplies solar and wind power to electricity distribution companies in India, seen as a major growth market in the power sector in the coming decades. Sprng Energy's portfolio consists of 2.9 gigawatts-peak (GWp) of assets and a further 7.5 GWp of renewable energy projects in the pipeline.

"This deal positions Shell as one of the first movers in building a truly integrated energy transition business in India," Wael Sawan, Shell's head of integrated gas and renewables, said in a statement. The deal is expected to close later this year.

■ **Archaea Infrastructure LLC**, a wholly owned subsidiary of **Archaea Energy Inc.**, has entered into a definitive purchase and sale agreement to purchase **NextGen Power Holdings LLC** (INGENCO) for $215 million in cash, according to a company press release on April 28.

The transaction, subject to customary adjustments at closing, is expected to close on or after July 1, 2022. Archaea expects to finance the acquisition of INGENCO, subject to market conditions and other factors, via one or more capital markets transactions or private financing transactions.

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The transaction will includes 14 operating landfill gas-to-electric plants and gas rights for these sites. The acquisition will also bring an estimated pro forma long-term annual RNG production of approximately 6 MMBtu and estimated net annual electricity generated of over 500,000 MWh once development projects associated with the INGENCO assets are completed and ramped to full flows.

CANADA

Tamarack Valley Energy Ltd. unveiled plans for further strategic consolidation of its Clearwater position through the acquisition of **Rolling Hills Energy Ltd.** for CA$93 million.

"The acquisition of Rolling Hills completes the consolidation of our core operating area in the southern Clearwater, which will allow us to fully optimize development and maximize returns from this area," Brian Schmidt (Aakaikkitstaki), Tamarack's president and CEO, commented in a company release on April 21.

Tamarack entered into a definitive agreement to acquire Rolling Hills, a privately held, pure-play Clearwater oil producer, which Tamarack said will fully consolidate its working interest and operatorship to 100% in the greater Jarvie play in the southern Clearwater area.

The acquisition includes 70 (54 net) future development drilling locations across only one-third of the 34,560 net acres acquired with forecast production of about 2,100 boe/d.

Total consideration of CA$93 million consists of CA$46.5 million in cash and the issuance of about 9.3 million common shares of Tamarack at $5.0126 per share.

In conjunction with the Rolling Hills acquisition, Tamarack also entered into additional agreements to further consolidate its Clearwater position through the addition of undeveloped lands in the Peavine area, plus announced a return of capital update that included a 20% base dividend increase and shareholder guidance with respect to delivering enhanced returns through tactical share buybacks and/or enhanced dividends.

Peters & Co. Ltd. and **RBC Capital Markets** are financial advisers to Tamarack, and **Stikeman Elliott LLP** provided legal counsel for the Rolling Hills acquisition. **National Bank Financial Inc.** is financial adviser, and **Burnet, Duckworth & Palmer LLP** is acting as legal counsel to Rolling Hills.

MIDLAND BASIN

Earthstone Energy Inc. recently completed its $770 million cash and stock acquisition of **Bighorn Permian Resources LLC**, a privately held operator in the Midland Basin.

"We are pleased to have taken multiple significant steps in the ongoing transformation of Earthstone as we have closed on the Bighorn Acquisition and on significant debt and equity financings this week," Robert J. Anderson, president and CEO of Earthstone, commented in a company release on April 14.

According to the release, Earthstone closed a $550 million private offering of senior unsecured notes, a $280 million private placement of equity (PIPE) and an amendment to the company's revolving credit facility, which, among other things, increased the borrowing base to $1.325 billion.

Anderson said Earthstone funded the Bighorn acquisition with more than 50% equity in the form of direct consideration to the seller and the new equity investment from the PIPE, "maintaining our conservative capital structure."

Earthstone announced in late January its agreement to acquire the assets of privately held Bighorn Permian Resources in the Midland Basin for roughly $860 million in cash and stock.

Johnson Rice & Co. LLC served as financial adviser to the audit committee of Earthstone with respect to the PIPE. **RBC Capital Markets** was exclusive financial adviser to Bighorn. Legal advisers for Earthstone were **Haynes and Boone LLP** and **Jones & Keller, P.C.** and **Simpson Thacher & Bartlett LLP** for Bighorn.

MIDSTREAM

Southwest Gas Holdings Inc. said on April 18 it would evaluate selling itself, among other alternatives, after an unnamed potential buyer showed interest in acquiring the utility at a price "well in excess" of Carl Icahn's $82.50 per share offer.

Southwest Gas, which did not give any clear details on the interested party's offer, had rejected Icahn's bid as "inadequate" in March.

Icahn had sought to gain control of the Southwest Gas board and replace its CEO after the company adopted a shareholder rights plan in October to stop the investor's push to make the company abandon its $2 billion takeover of **Questar Pipelines**. Icahn holds just under 5% stake in Southwest.

EAGLE FORD

SilverBow Resources Inc. agreed on April 14 to acquire **Sundance Energy Inc.** and **SandPoint Operating LLC**, two independent Eagle Ford Shale operators, for a combined $425 million plus up to $15 million contingent payments based on future commodity prices.

The Sundance and SandPoint deals mark the fourth and fifth acquisitions SilverBow announced since the second half of 2021, which cumulatively total over $550 million of transaction value.

The acquisitions of Sundance, with acreage spanning Atascosa, La Salle, McMullen and Live Oak counties, and SandPoint, which assets target the Eagle Ford and Olmos formations in La Salle and McMullen counties, will increase SilverBow's acreage footprint in South Texas by 50% to approximately 198,000 net acres.

Following the transactions, the company projects an adjusted EBITDA of between $490 million and $530 million with a capex of $260 million to $300 million for full-year 2022.

The Sundance transaction has an effective date of May 1 and is expected to close in the third quarter.

The SandPoint acquisition also has an effective date of May 1, and is expected to close in the second quarter.

Barclays is financial adviser to SilverBow on the Sundance transaction. **Gibson, Dunn & Crutcher LLP** is serving as legal adviser to SilverBow on both transactions. **Piper Sandler & Co.** and **TD Securities (USA) LLC** are financial advisers to Sundance. **Kirkland & Ellis LLP** is serving as legal adviser to Sundance. **Latham & Watkins LLP** is serving as legal adviser to SandPoint.

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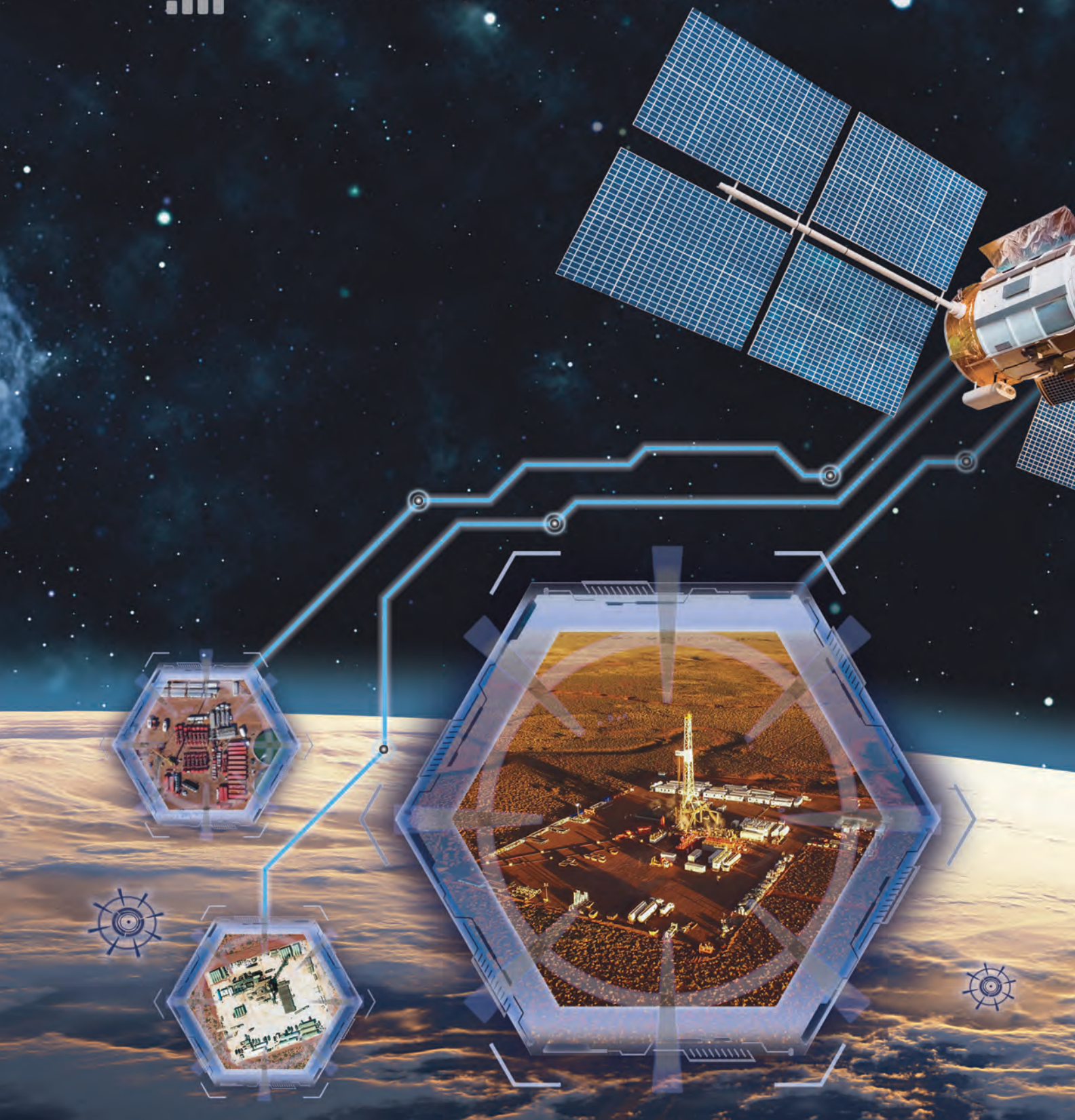

SUPPLY CHAIN DILEMMA

Russia's war inflates U.S. producers' costs throughout the supply chain.

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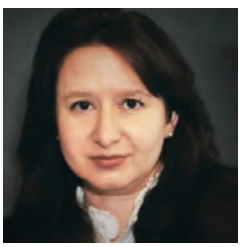

DEON DAUGHERTY

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Economic uncertainty is reverberating around the globe as Russia continues its assault on Ukraine, but U.S. oil and gas producers say they can fulfill volume goals and maintain capital disciple even as ongoing inflation takes a toll on their supply chain.

ConocoPhillips Co. increased its capital budget for the year by $600 million to $7.8 billion in 2022. CEO Ryan Lance said about half of the expense is funding additional activity across the Lower 48.

Ryan Lance

"These are good opportunities that are low-cost supply, very competitive in the portfolio," he told investors during a May 5 conference call. "We certainly don't want to be drilled out of any opportunities."

The balance of some $300 million is driven by inflation, he said. The firm set its budget in December as it appeared the pandemic was waning, and executives expected some inflated costs but in the mid-single digits across COP's global portfolio.

And then Russia launched its assault on Ukraine, quickly snuffing out the burgeoning normalization appearing as the pandemic threat waned.

"In a world already ravaged by the pandemic, this unprovoked invasion is having tragic consequences," Lance said. "This deeply troubling war is also disrupting supply chains at a time of recovering global economic growth and energy demand. It is affecting every aspect of the global economy and impacting the energy security of our allies in Europe, and it's driving significant volatility in commodity prices."

Inflationary forces are driving up costs throughout the firm's global portfolio, with certain hotspots in the Permian Basin and in key expense categories, including labor and rigs, steel, pipes and chemicals, he said.

"And in this '10 seconds,' it's hard to say that that's going to renormalize anytime soon," Lance said. "I think it's here with us for a while. I don't think it's transitory, and we're going to have to deal with it."

Inflation rates pushing up to 20% is also pressuring Coterra Energy's capital guidance between $1.4 billion and $1.5 billion for the year, said CEO Tom Jordan, during an investor call May 3.

"Pricing for drilling rigs, completion crews, fuel, sand, labor, oilfield services and trucking are all moving upward. Lead times for ordering tubulars, compressors, electrical equipment, production equipment and line pipe are, in many instances, 12 to 14 months from order to delivery. Premier drilling rigs and premier completion crews are in short supply," he said.

Coterra is pushing back with operational efficiencies. All six of the firm's Permian rigs can run on power from the electrical grid; currently, 75% of the fleet is powered by the grid for a savings of roughly $50,000 per well, he said.

But it may not be enough to keep the budget flat to initial estimates. Management planned to generate volume growth in the second half of the year, but while Coterra has not added activity, inflation is pressuring existing operating costs, Jordan said.

And although the firm has covered the majority of its big-ticket items with contracts, Coterra is still exposed on items such as diesel, labor and trucking, said Blake Sirgo, vice president for operations.

Veteran shale drillers at EOG Resources Inc. said they, too, are wrangling with inflation driven by the Russian war on Ukraine. The inflated price of fuel is the primary cause of a 2% increase in EOG's full-year per-unit cash operating costs, said Billy Helms, COO.

However, he said, the firm's operating teams are "ever more diligent in their quest to identify new areas of performance enhancements." Further deployment of EOG's Super Zipper completions technique is one example of the firm's self-sourcing that may offset inflation throughout 2022.

"While we have seen increased steel and fuel prices directly associated with the war in Ukraine, we are confident we can still deliver on the capex and volume targets in our original place," Helms said during a May earnings call.

For now, sell-side analysts remain bullish on key U.S. shale players.

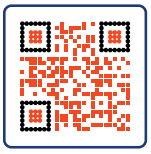
Credit Suisse maintained its "outperform" rating on ConocoPhillips and EOG while raising the share price target on both companies. Similarly, Raymond James analyst John Freeman helped Coterra on his outperform list and raised its price target. OGI

EARNINGS

Highlights of notable 1Q shale earnings. Scan QR codes for full reports.

$COP: ConocoPhillips Co.'s calculated risk not to hedge its production gave it a first-quarter benefit from rising prices on international markets.

$DVN: "A comprehensive execution plan throughout its operations allowed the higher commodity prices to pass directly through our field level margins and generate the highest level of cash flow for Devon [Energy Corp.] in nearly a decade," said Clay Gaspar, COO.



$FANG: "Russia's actions have plunged the global energy markets into turmoil," said Diamondback Energy Inc. CEO Travis Stice. "It has also reminded the world of the importance of the traditional oil and gas to the global economy as we're witnessing the impact high energy costs can have on the consumer and the economy in real time."

$PXD: "Like others, [we] are starting to focus on '23. Our contracting strategy is such that we already have a lot of our services locked in for '23, but we are looking at those services that aren't locked in to make sure that we've got ample supply," Pioneer Natural Resources Co. CEO Scott Sheffield said.

$XOM: Exxon Mobil Corp. continues to grow its Permian Basin output, producing some 560,000 boe/d in March. The increase puts the firm on track to outpace 2021 by 25%, said CEO Darren Woods.

$CVX: Chevron Corp. pumped a record of 692,000 bbl/d of oil and gas in the Permian Basin during the first quarter and has increased its full-year guidance to a range of 700,000 bbl/d to 750,000 bbl/d. "Chevron is doing its part to grow domestic supply," CEO Mike Wirth said. The firm's revenue during the first three months of 2022 swelled 70% to $54.4 billion compared to the same period last year.

MOVEMENT

Civitas Resources Inc. named **Chris Doyle** as its next president and CEO in May following a national search that Civitas had launched in February.

Doyle joins Civitas after serving as president and CEO of Primexx Energy Partners and leading a comprehensive transformation of the privately held Delaware Basin company.

He had also previously served as president and CEO of Olympus Energy, a privately held energy company with upstream and midstream assets in the Appalachian Basin, from 2016 to 2020.

ConocoPhillips Co. in May promoted **Jack Harper** to serve as executive vice president, Lower 48, as **Tim Leach** stepped into a new advisory role at the Houston-based independent E&P.

Both Leach and Harper joined ConocoPhillips following the combination in 2021 of the company with Concho Resources, where Leach and Harper had served as CEO and president, respectively.

ConocoPhillips completed the acquisition of Concho Resources in January 2021. Upon closing the transaction, Leach, founder of Concho Resources, joined the ConocoPhillips' board of directors and executive leadership team as executive vice president of the company's Lower 48 operations.

On May 2, ConocoPhillips announced Leach has become adviser to the CEO, **Ryan Lance**, effective May 1. In addition to his new role, Leach will continue serving as a member of the ConocoPhillips' board of directors.

Halliburton Co. tapped CFO **Lance Loeffler** to lead its Middle East North Africa (MENA) region as part of a "robust succession management process."

Loeffler, executive vice president and CFO, has assumed the role of senior vice president of Halliburton's MENA region. In conjunction, Halliburton executive vice president, Global Business Lines, and chief HSE officer **Eric Carre** will assume the role of CFO.

Loeffler joined Halliburton in 2014 and served as vice president of corporate development for two years before assuming leadership of investor relations. Before joining Halliburton, he held director positions at Deutsche Bank Securities Inc. and UBS Investment Bank where he focused on the firms' oil and gas clients.

EPIC Midstream Holdings LP appointed **Marcia E. Backus**, a member of the executive team at Occidental Petroleum Corp., to EPIC's board of directors as an independent director.

Backus currently serves as senior vice president, general counsel and chief compliance officer of Occidental Petroleum, where she oversees more than 60 lawyers in the U.S. and at Oxy's assets around the world.

NEW FINANCINGS

EQUITY

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
Shell Plc	NYSE: SHEL	London	$4,500	Commenced the second tranche of its $8.5 billion of share buybacks previously announced on Feb. 3. In the second tranche of this buyback program, the company has entered into an irrevocable, non-discretionary arrangement with a broker to enable the purchase of ordinary shares for a period up to and including July 22. The aggregate maximum consideration for the purchase of ordinary shares under the second tranche of the program is $4.5 billion. All shares repurchased as part of this arrangement will be canceled.
Carnelian Energy Capital Management LP	N/A	Houston	$975	Closed its oversubscribed and upsized fourth fund, **Carnelian Energy Capital IV LP**, focused on the investments across the North American energy sector. In addition to opportunities in traditional forms of energy in the natural resources space, the fund will also focus on advancements in decarbonization.
Cardinal Midstream Partners	N/A	Dallas	$300	Secured an initial capital commitment from **EnCap Flatrock Midstream**. Proceeds will be used to pursue acquisition and development opportunities in prolific basins across North America with a focus on natural gas gathering and processing as well as congruent carbon capture and sequestration. Cardinal was advised by **Akin Gump Strauss Hauer & Feld LLP**. **Sherman & Sterling LLC** acted as legal counsel to EnCap Flatrock.
Rangeland Energy LLC	N/A	Sugar Land, Texas	$300	Secured a growth equity commitment from **EnCap Flatrock Midstream** to support the formation of a new entity, **Rangeland Energy IV LLC**, which will continue to pursue midstream acquisitions and development opportunities in both conventional and unconventional resource plays across the U.S. and Canada as well as new opportunities in decarbonized infrastructure.
ProFrac Holding Corp.	NASDAQ: PFHC	Willow Park, Texas	$273.4	Priced its IPO of 16 million shares of its Class A common stock at $18 each. Underwriters were granted a 30-day option to purchase up to an additional 2.4 million shares of its Class A common stock. Shares were expected to begin trading on the Nasdaq Global Select Market on May 13, and the offering is expected to close on May 17. Proceeds will be used to repay certain outstanding indebtedness and for general corporate purposes. **J.P. Morgan**, **Piper Sandler** and **Morgan Stanley** are lead book-running managers.
Denbury Inc.	NYSE: DEN	Plano, Texas	$250	Announced its board of directors authorized a share repurchase program under which the company may repurchase up to $250 million of its outstanding shares of common stock, which represent more than 7% of Denbury's current market cap. The timing and amount of any share repurchases under the share repurchase program will be determined by Denbury's management at its discretion based on ongoing assessments of the capital needs of its business, the market price of Denbury's common stock, general market conditions and applicable legal requirements. Share repurchases may be made through a variety of methods, which could include open market purchases, negotiated transactions, block trades, exchange transactions, other methods or any combination of such methods.
Black Bay Energy Capital LLC	N/A	New Orleans	$210	Closed its oversubscribed second fund, **Black Bay Energy II LP**, with total commitments exceeding its $200 million target. The fund has completed two investments to date, including in Piñon Midstream and Advanced Industrial Devices, and will continue to focus on investments requiring up to $30 million of equity capital in the North American energy sector that provide a differentiated product or service to their clients to help reduce costs, improve operations and achieve ESG initiatives.
Mid-Con Energy Operating LLC	N/A	Tulsa, Okla.	$100	Signed a letter of intent with **HXPN Inc.** to invest up to $100 million in a variety of Mid-Con's projects located in oil rich basins throughout the Midwest, with the option to invest additional capital at HXPN's discretion and upon meeting certain funding targets.
Ranger Oil Corp.	NASDAQ: ROCC	Houston	$100	Announced its board of directors approved a share repurchase program, under which the company is authorized to repurchase up to $100 million of its outstanding Class A common stock. The share repurchase authorization is effective immediately and valid through March 31, 2023. This program is equivalent to approximately 6% of Ranger's current market cap. The shares 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. The company intends to fund repurchases from available working capital and cash provided by operating activities.

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
ComboCurve Inc.	N/A	Houston	$50	Completed a Series B funding round led by **Dragoneer Investment Group** and **Bessemer Venture Partners**. Proceeds will be used to accelerate core product enhancements while expanding into other workflows, including greenhouse-gas emissions forecasting, scheduling and modeling of renewable energy sources.
Galileo Technologies	N/A	Buenos Aires, Argentina	$33	Secured a major cornerstone investment from **Helmerich & Payne** in the form of a convertible note that bears interest of 5% per annum and is due April 2027. If exercised, the note would convert into common shares of Galileo at an enterprise value of $1.35 billion. Proceeds will be used to roll out Galileo's technology to capture natural gas from any source and convert it into LNG on site in North America.
Berry Corp.	NASDAQ: BRY	Dallas	$22.8	Purchased 2 million shares of its common stock representing 2.5% of outstanding shares and leaving over $127 million available on its repurchase authorization. The board's authorization for Berry's share repurchase program permits the company to make purchases of its common stock from time to time in the open market and in privately negotiated transactions, subject to market conditions and other factors, up to the aggregate amount authorized by the board. The board's authorization has no expiration date.
LandGate Corp.	N/A	Denver	$10	Closed a Series B funding round led by a subsidiary of **NextEra Energy Resources LLC** and also included participation from **Kimmeridge**. Proceeds will be used to enhance its product suite, with a particular focus on solutions catering to financial institutions.
Liberty Energy Inc.	NYSE: LBRT	Denver	N/A	Announced the pricing of an underwritten public secondary offering of an aggregate of 14.5 million shares of its Class A common stock by **Schlumberger Technology Corp.**, which intends to offer the shares from time to time for sale in one or more transactions on the New York Stock Exchange, in the over-the-counter market, through negotiated transactions or otherwise at market prices prevailing at the time of sale, at prices related to prevailing market prices or at negotiated prices. Liberty will not sell any shares of Class A common stock in the offering and will not receive any proceeds therefrom. **BofA Securities** and **J.P. Morgan** are joint book-running managers.

DEBT

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
Civitas Resources Inc.	NYSE: CIVI	Denver	$1,000	Entered into an amendment to its senior secured revolving credit facility under which the borrowing base has been increased from $1 billion to $1.7 billion and the elected commitment amount has increased from $800 million to $1 billion in connection with its regularly scheduled semi-annual redetermination. As of March 31, the company had zero borrowings outstanding on the credit facility and approximately $154 million in cash on hand.
DT Midstream Inc.	NYSE: DTM	Detroit	$600	Closed offering of 4.3% senior secured notes due 2032 issued by DT Midstream, guaranteed by certain of DT Midstream's subsidiaries and secured by a first priority lien on certain assets of DT Midstream and its subsidiary guarantors that secure DT Midstream's existing credit facilities. Proceeds were used to partially repay existing indebtedness under its term loan facility and the transaction is leverage-neutral.
SM Energy Co.	NYSE: SM	Denver	$446.7	Announces its intent to redeem the entire outstanding amount of its 10% senior secured notes due 2025. The redemption price is equal to 107.5% of the aggregate principal amount outstanding of approximately $446.7 million, plus accrued and unpaid interest. The company intends to redeem the notes on June 17.
Excelerate Energy Inc.	NYSE: EE	The Woodlands, Texas	$350	Announced that the company and **Excelerate Energy LP** entered into a senior secured revolving credit facility to borrow up to $350 million over a three-year term which expires in April 2025. Borrowings under the credit facility will bear interest at a per annum rate equal to the term SOFR reference rate plus 0.1% for such period plus an applicable margin, which will be based on the borrower's consolidated total leverage ratio as defined under the facility. The facility is expected to be used primarily for letters of credit, working capital and other general corporate purposes. **JPMorgan Chase Bank NA** is administrative agent. **JPMorgan Chase Bank NA** along with **Barclays Bank Plc**, **Morgan Stanley Senior Funding Inc.**, **Sumitomo Mitsui Banking Corp.** and **Wells Fargo Securities LLC** are joint lead arrangers and joint book-runners, with **BOKF NA** dba **Bank of Oklahoma** and **First Financial Bank** as additional lenders. **Gibson, Dunn & Crutcher LLP** and **Frederic Dorwart Lawyers PLLC** served as counsel to Excelerate.
Civitas Resources Inc.	NYSE: CIVI	Denver	$100	Gave notice of its intent to redeem in full the $100 million in aggregate principal amount of its currently outstanding 7.5% senior notes due 2026 on May 1. The redemption price of the notes will be 100% of the principal amount of the motes redeemed, plus accrued and unpaid interest to the redemption date.

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HOW ESG IS DRIVING OIL AND GAS M&A ACTIVITY

Mayer Brown's Peter Wolf discusses why ESG is playing a significant role in the types of target businesses that buyers are looking at in the oil and gas industry.

Peter Wolf is a corporate and securities partner at law firm Mayer Brown. Wolf spoke with Hart Energy's senior editor, Faiza Rizvi, about how ESG considerations are playing a decisive role during the M&A process.

He also shared thoughts on how an increased focus on climate reporting and SEC's proposed rules will impact the dealmaking outlook in the oil and gas sector.

Faiza Rizvi: *How is the increasing focus on ESG impacting M&A deals in the energy sector?*

Peter Wolf: The increased focus on ESG, particularly from the investment community and the SEC, is having a significant impact on the types of target businesses that buyers are interested in acquiring. Previously, the primary consideration as to whether to do an M&A deal was whether acquiring the target business would be accretive to earnings. There have always been a plethora of other ancillary factors that impact the decision whether or not to do a deal, but increasingly there is a focus among energy sector dealmakers as to whether acquiring the target business aligns with the buyer's ESG priorities—principally, any decarbonization targets. Buyers may be willing to pass on deals that otherwise would have been greenlit from an earnings standpoint because the target business does not further their ESG priorities. Even acquiring a target business that fits squarely within the buyer's traditional core business may not align with the buyer's ESG priorities as they transition towards clean energy.

That isn't to say that the increased focus on ESG has slowed dealmaking in the energy sector. One of the most tried-and-true ways of transitioning any business is through M&A, and the clean energy transition is no exception. Energy companies looking to jump-start their decarbonization efforts have been eyeing investments in renewable energy for some time to gain access to new technologies and skilled talent, and that trend will only continue and likely accelerate in the coming years.

We are also seeing energy firms looking to divest fossil-based assets as they seek to shed older, carbon emitting technology as a means to achieve their ESG priorities. This trend is likely to increase in light of the SEC's proposed new rules requiring climate change disclosure, which, among other things, would require public companies to disclose data regarding their direct and indirect greenhouse gas emissions and climate-related expenditures. Divestitures will be a useful tool to improve these metrics.

FR: *Large-scale dealmaking seems to be on hold, but smaller asset sales lie ahead as buyers seek to diversify their portfolios. What role is ESG expected to play in these deals?*

PW: ESG is playing a significant role in the types of target businesses that buyers are looking at. Many traditional energy firms are looking to diversify their portfolios to accelerate their transition to clean energy by acquiring or partnering with smaller solar and wind developers and operators. Additionally, we are seeing a phase of consolidation in the renewable energy space as larger, established players look to acquire new participants to gain access to new services, enter new markets and increase market share.

FR: *What concrete steps can energy businesses take to address ESG considerations in their M&A transactions?*

PW: Aside from a shift in the types of target businesses that energy firms will consider acquiring, there are additional steps that buyers are taking to address ESG priorities. One key step energy firms are taking in M&A transactions is focusing due diligence on the target business's supply chain. This is particularly important in the renewable energies space, which has been hit hard by recent supply chain challenges impacting the supply of components and parts from Asia. Buyers not only want to know that the target business has sufficient plans in place to address these supply chain challenges, but also to confirm that the suppliers are in compliance with applicable regulations and that their practices align with the buyer's ESG priorities.

FR: *Do you think the focus on climate reporting will impact dealmaking?*

PW: The SEC's proposed new rules requiring climate change disclosure, and the SEC's expressed focus on "greenwashing" as an examination priority, are almost certainly going to impact dealmaking in the energy sector. Even before these recent events, our ESG team has been counseling clients about the risks of litigation and liability associated with the voluntary ESG disclosure. As ESG disclosure becomes mandatory, these risks will become more prominent and universal. OGI

Voices

"We've seen a concerted effort over the last 15 months to de-bank the industry, and that's having a significant impact on their ability to capitalize new projects."

—*Tim Stewart*, ***president of the U.S. Oil & Gas Association***, *on Energy Policy Watch addressing top concerns of the trade association's member companies right now, including access to capital.*

Watch the interview:

"Each (crypto mining unit) uses 1 megawatt of power. Miners have flocked to Texas because we have unregulated power ... They're really stressing out the grid."

—*Mike Mayers*, ***business development manager at Aggreko***, *on how using spare gas for crypto mining can monetize operators' resources that would otherwise be flared—a practice that can help companies meet zero-flaring goals while generating income at the same time.*

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"Every time we've given it up for dead, it surprises us, and technology unlocks new ways to produce and complete and economically produce it."

—*Steve Green*, ***president of Chevron's North America E&P division***, *describing the fortuitous and long-term bounty of hydrocarbons that cam reliably be produced in the Permian Basin of Texas and eastern New Mexico.*

Watch the interview:

"Companies are facing this challenge on how to balance between keeping focus on reduced GHG intensity and at the same time ramping up production and overcoming supply chain bottlenecks."

—*Alisa Lukash*, ***vice president of shale research at Rystad Energy***, *discussing how the current environment will impact short- and long-term sustainability strategies of U.S. shale companies.*

Watch the interview:

TOBY RICE: ARREST CLIMATE CHANGE, SECURE ENERGY FOR THE WORLD

From LNG exports and energy security to infrastructure and decarbonization, EQT Corp. CEO Toby Rice has been a vocal advocate for U.S. natural gas. Is the message getting through?

ARTICLE BY

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He's been called "Fossil Fuels' Forthright Defender" by The Wall Street Journal. He's been on countless morning news programs. He's appeared at a plethora of events. In each case, Toby Rice, CEO of EQT Corp., has the same message for anyone who is listening: It's necessary for the U.S. to "unleash LNG" to help decarbonizing efforts in the energy sector and to provide energy security for the nation, and the world, particularly in the wake of Russia's aggression in Ukraine.

The message may be starting to get through. Recent statements and actions from the White House and the Department of Energy indicate a recognition—even if begrudgingly—to produce more LNG for export. But is it enough? Can more gas actually be produced and exported given the dearth of infrastructure and LNG facilities, particularly in the northeast?

In advance of this summer's DUG East Conference & Exhibition in Pittsburgh, Rice continued an ongoing conversation with Hart Energy about the rapidly changing nature of natural gas production, infrastructure buildout, messaging and decarbonization success.

Len Vermillion: *Let's start by talking about the idea of "unleashing" U.S. LNG exports. Can you put it in perspective for us?*

Toby Rice: Let's talk about the reaction we've received to date. It's been absolutely tremendous. The reason why there's been a lot of support, I think, is because the "unleash" plan is targeted. It's addressing the biggest issue: emissions [from] foreign coal. It's incredibly impactful. There's nothing bigger.

It's feasible. Adding 50 rigs, something like that is really achievable for this industry to do. So, we're getting a lot of support, but there will be people that may oppose this plan. People that would oppose it would be those who have a "keep it in the ground" mentality and really will only support zero-carbon energy solutions like solar and wind. Now, we need to have people evolve their mentality from zero-carbon-only solutions to any decarbonizing solution. That's what we want to get to.

It's extremely encouraging to see people like John Kerry actually say natural gas is decarbonizing.

LV: *Wow! Yes.*
TR: Tremendous. Now to see the administration support LNG exports, to see the energy secretary say, "Hey, we've approved some permits"—that's normal course to business, getting FERC permits approved. But the fact that they're trying to take credit for it is a sign that they think it's good, and they want to be associated with it. So, the mentality is starting to change.

The desire to want to get credit and be associated with it is there, but the ultimate show of support is only going to be realized once we start putting really large-scale projects on the table.

These projects are going to be where we can say, "These are the facilities we need. These are the pipelines we need to get it there. These are the policies we need to fast track permitting. And these are the people that support it."

The industry right now is in the process of putting more of those projects on the table. So, in the next year, I think we'll have the opportunity to get a really firm understanding on who's supportive, and that will be a good sign going forward.

LV: *Obviously, you're in the Marcellus and there's a lot of resource there to help out. How much are we talking about, and how can we make that move faster beyond approvals? What else needs to happen?*
TR: Well, No. 1, political signals that there is going to be support here, that the infrastructure that we need to build will not go through [the] process that happened to [Mountain Valley Pipeline].

With those projects slated, we can start working backward.

We need to get the LNG facilities, get the pipelines [and then] get the pipelines connected to those facilities. That needs to happen first. I think once you see those long poles in the tent go up, the upstream side of things ... I mean, we're going to be able to fill the production. But the point is it's going to be sustainable growth. It's going to be a growth with confidence that we get these facilities built.

One thing that's worth people understanding in an unleashed U.S. LNG scenario the potential that we could provide the world is an increase in 50 Bcf [billion cubic feet] a day of LNG exports. How do we get to that number? Why is it 50, not 20 or a hundred? We looked at the resource around the country and said, "How much can we grow that production under the constraint that you can only grow to a point that you can hold flat for 30 years?" With that constraint on the growth, the number translates that we have the resource to be able to support an increase to 50 Bcf a day above where we're at today. Where is that coming from? It's about 15 Bcf a day incrementally coming from the Gulf Coast, Haynesville, and 35 Bcf a day is coming from Appalachia.

So, when you think about where do the pipelines need to be, where does the LNG infrastructure need to be? It needs to be close to the supply. The most efficient thing we can do is construct LNG facilities in the northeast or the pipelines associated with the production.

LV: *What happens if we can't get this going? What's the risk here? Obviously not only for the industry but for the world. If we can't get these LNG facilities built, we really don't have a way to get this resource out, do we?*
TR: If we're not successful in building these LNG facilities and associated pipelines, then the world will continue to be undersupplied with energy. The world will still be faced with major energy security issues. Russia will still have its influence. The emissions around the world will continue to rise because of the use of foreign coal, and on top of it, 3 billion people around the world will still be left short, living on less electricity that takes to run a refrigerator.

LV: *What can the industry do to speed this process up? How does it get this message out?*
TR: I think it's developing projects. That's No. 1. Also, working in the meantime at developing our reputations. There are environmental concerns that come along with the actual production of U.S. natural gas, namely methane emissions, [which] is a big issue right now. We need to address that. We need to bulletproof our operations. We need to resolve these methane emissions in our operations. The good news is we know exactly where these emissions are coming from. We know the piece of equipment that we can use to replace the source, the leaking emissions. For natural gas players, that is pneumatic devices. We can replace all of those. EQT is going to replace over 9,000 of these devices, and we'll be done with that by the end of the next 24 months. And there's a million of these devices installed around the country. Operators need to continue to work to replace their pneumatic devices with low-bleed or zero-bleed methane emission devices. That's one thing that's going to make our operations cleaner.

The other thing we need to do is we need to certify these results. This is what we say, we need to bring in the third-party environmental accountants to come in and verify the great work that we're doing right now. That can be encapsulated by getting our natural gas RSG [responsibly sourced gas] certified.

"If we're not successful in building these LNG facilities and associated pipelines, then the world will continue to be undersupplied with energy. The world will still be faced with major energy security issues. Russia will still have its influence."

There's a number of frameworks that are out there, and we're incredibly excited to see the industry is already moving in this direction with the record amount of RSG adoption across the board. It's extremely encouraging to see. All of these things mean that we will be successful in showcasing that American energy is the cleanest energy in the world, and as long as we're using hydrocarbons in this world, we should be sourcing that from the United States.

LV: ***I saw in one of your TV interviews that you talked about infrastructure and how the lack of buildout isn't just about hydrocarbons; it affects electricity, it affects hydrogen, everything. Is there a way that helps get a message out? That it's not just about building out for the natural gas industry.***

TR: I think Americans need to understand that we are facing energy insecurity. We are seeing energy insecurity here domestically today. Energy insecurity in general starts showing up as high energy prices. Well, guess what? Look around the country; we've got unnecessarily high energy prices. And when you have that, then you start seeing the economy start to get challenged, [that] shuts down, inflation runs rampant. Guess what? We have that here, too.

So, while I don't feel like we'll ever get to a place where we'll be engaging in the third and final phase, which is military conflict, we see enough of the warning signs here today. We should act now and think about ways that we can unleash American energy to create more supply and get back the energy security that Americans deserve and [that] we are fully capable of achieving, but we need the pipeline infrastructure and LNG facilities to create, not disrupt, the supply-demand fundamentals. That is absolutely incredibly important in the sustainable shale era that we're working in today.

LV: ***You mentioned before about John Kerry. I know you've been saying natural gas is the biggest greenhouse gas initiative out there, so maybe the message is getting through to people? How is it the biggest greenhouse gas initiative that we're facing right now?***

TR: It's really simple. The biggest source of emissions on the planet comes from foreign coal. Almost 50% of emissions around the world come from foreign coal. Fortunately, there's a solution to lower those emissions and replace that foreign coal, and that is U.S. natural gas and the forum of LNG.

Now, what's really amazing is when you replace coal with natural gas, a Bcf a day's worth of coal or a Bcf a day of natural gas will lower emissions by about 30 million tons per year. When we talk about increasing our LNG export capacity by 50 Bcf a day, we're talking about lowering emissions by 1.5 billion tons per year. That is the environmental equivalent of electrifying every vehicle in the United States, putting solar panels in every home and doubling the U.S. wind capacity combined. It's absolutely massive.

By the way, this isn't a new trick. This is exactly what we've done here in the United States to be the world leader in lowering emissions, replacing our domestic coal with natural gas. We've done an amazing job there, but now we have the opportunity to replicate the success on a world stage. This is the only way that the U.S. can influence on a world stage, by leveraging our low-carbon resources to replace and retire high-carbon resources like foreign coal.

LV: ***You're one of the companies who have committed to net-zero initiatives and offsets. Do people really understand how offsets work? Can you explain what that really does to advance the idea that the industry is decarbonizing?***

TR: When it comes to emissions, there are three different scopes that are out there—Scope 1, 2 and 3. Scope 1 and 2 are the emissions that are associated with our operations and what it takes for us to create our product. We understand what our carbon footprint is, and there's things that we can do organically to reduce that. At EQT, we will be reducing our greenhouse-gas emissions to run our business by over 65%. A big part of it is going to come from eliminating our methane emissions. But at the end of the day, we will still have a carbon footprint because

CERAWEEK BY S&P GLOBAL

Toby Rice speaking on a panel at this year's CERAWeek by S&P Global.

it takes energy to run our rigs, run our frac crews, and those will create CO_2 emissions from burning diesel and natural gas … So, we are always going to have a carbon footprint in this industry, but the good news is we can offset that carbon footprint by developing carbon offsets, and carbon offsets are basically creating carbon sinks in the world.

There's a number of different ways we can do it, whether they're land-based, like planting trees or encouraging no-till agriculture or doing things subsurface and injecting CO_2 underground. All these things are ways that we can pull carbon out of the atmosphere and use that to create a net-zero carbon footprint for our businesses to create our product.

Now, Scope 3 is a different scenario. Scope 3 is what the emissions are when people use our product. And this is something that's incredibly important. Now we look at our product and we're saying we want to grow our production of natural gas because we know that putting more natural gas in the world is going to lower coal, and every Bcf a day we put into this world is going to eliminate 30 million tons of emission. At EQT, the gross gas that we produce is actually saving the world over 180 million tons of CO_2 emissions per year. So, we're totally fine having a focus beyond net zero for Scope 1 and 2, but for Scope 3, I think we need to take a holistic approach, and what is our product used for and what emissions does it abate. And natural gas is a really amazing story to tell on that front.

LV: ***Are there factors outside of regulations and infrastructure such as market factors or demand outlooks that actually inhibit us from building a production? Obviously, you want to keep it steady, but is there anything else in the way of us really pulling the resource out, delivering it?***

TR: No, we just need a demand signal. That demand signal is very clear. Those bombs dropping in Ukraine, that was a demand signal to replace Russia's ability to export energy. The world calling for cleaner energy and concerns that people have around the world about emissions, that is a demand signal for natural gas. Russia alone is exporting 20 Bcf a day of U.S. LNG demand that we should be filling.

And something that I'm incredibly excited about: Obviously, there's been acceleration in the demand grab from international buyers because of Russia but also from an environmental front, there's also been a greater desire to decarbonize because we continue as a world to increase our emissions year-over-year.

Every year that we fail to make progress, every year that we fail to unleash U.S. LNG, is another year that the urgency to move quickly just gets greater and greater. The good news is this is something that we can start working on right now and continue on the great work that we've already done by establishing ourselves as the world leader in LNG exports, but we can do a whole lot more.

Toby Rice speaking at Hart Energy's DUG East Conference & Exhibition in Pittsburgh in December 2021.

"We need to bulletproof our operations. We need to resolve these methane emissions in our operations."

LV: ***You're getting known as a defender of the industry. Why is that important to you beyond just the fact that you're leading the biggest natural gas producer? Why are you being so vocal about the need for LNG and natural gas to be used?***

TR: Yeah, because I want to make an impact on the world. When we sold Rice Energy, we had the opportunity to step back, think about what we're going to do next in life. For me, I wanted to make an impact. There's a bunch of ways to do it. But the thing that stood to me was the biggest correlation in driving the quality of life is the correlation between energy use and quality of life. Simply put, the more energy people use, the better the quality of life. And if you can bring the world cheaper, reliable, clean energy, the quality of life around the world will skyrocket.

There's more than 3 billion people in this world that are living in energy poverty. There's billions more people around the world struggling with their energy bills right now. We can address those by putting more energy in the world. But one of the things as of late in the last five years that has prevented us from putting more energy into the world is people's concerns over climate. And what we wanted to do is take a holistic approach on energy transition and say, "What is the most practical, pragmatic way to address climate and meet the emissions targets of the world?" And that answer was very clear. Let's attack the biggest source of emissions on the planet, foreign coal, and let's leverage our resources, U.S. LNG, to be the vehicle that can replace that energy.

So that's why we're doing this. It's incredibly good for the world, but our higher purpose at the end of the day is providing energy security to the world. While arresting climate change, we need to make climate-centric arguments on why we should be able to continue to do the great work that we do. OGI

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The deadline for nominations is December 16, 2022

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ADOPTING THE CLOUD

More E&P operators turn to cloud-based analytics in order to cut costs, streamline operations, and collect and process data efficiently.

ARTICLE BY
ANNA KACHKOVA

The E&P sector is increasingly looking at digital options to boost its performance. The trend is not a new one and has been playing out for a number of years. As technology advances, the uptake of digital tools such as cloud-based analytics has accelerated as E&P companies pursue cost discipline.

"The digital transformation of the E&P sector is accelerating the use of cloud-based analytics and machine learning to make informed decisions that cut costs and optimize operations," Fennex's director of business strategy, Nassima Brown, told Hart Energy.

Cloud-based analytics offer a more efficient option for dealing with large volumes of data that E&P companies typically generate and, in some cases, still store physically.

"Operators rarely make full use of the data available because such information exists in archaic spreadsheets, and reporting is done in different formats, making the data captured unstandardized," said Brown. "Creating digital solutions to consolidate, streamline and process data in real time enables operators to anticipate issues, identify high-risk situations and prevent hazardous situations from occurring."

Cognite's chief information security officer, Susan Peterson Sturm, takes a similar view.

"Cloud-based data storage is an excellent way to de-silo and consolidate the mass amounts of data produced by the E&P sector," Peterson Sturm told Hart Energy.

"Cloud-based data storage is an excellent way to de-silo and consolidate the mass amounts of data produced by the E&P sector."

—**Susan Peterson Sturm**, *Cognite*

She added, though, that there are further steps required in order to fully benefit from cloud-based analytics. "What kind of analytics are leveraged in cloud-based analytics is key to truly extracting value for cost discipline or otherwise," she said.

This is the challenge that companies, including Cognite and Fennex, are trying to address, with both pointing to tangible results for their clients.

> **"Many leaders are now realizing the full benefits that the digital transformation can bring."**
>
> —Nassima Brown, *Fennex*

Fennex's safety focus

Fennex touts its Behavioural Based Safety Solution (BBSS), an automated safety observation program, as being able to help achieve savings in terms of man-hours and costs. The BBSS was delivered to offshore drilling contractor Noble Corp. in 2021.

"The technology, which continues to deliver results across Noble Drilling's full fleet of 22 global assets, reduced the company's overall program cost by 70%, with an ongoing saving of 15,000 man-hours each year," Brown said. "The cloud-based intuitive platform replaced the traditional time-lagged and paper-based manual processes to deliver an efficient, automated suite with live analytics and transparent dashboards," she continued.

"Used as a fundamental base tool for improving a person's risk awareness, the BBSS solution delivers the operator real-time data, supported by critical safety indicators, leading to quicker decision-making to mitigate risks and prevent hazards," she said. "As one of the key metrics of productivity, enhancing safety and mitigating unforeseen activities have a significant impact on the performance of offshore projects."

Brown also noted that the updated process has provided additional benefits by reducing Noble's carbon emissions via the elimination of 500,000 paper cards used for reporting each year. This comes as the energy transition picks up pace, with decarbonization taking on ever greater importance for the oil and gas industry. Against this backdrop, digital solutions that come with additional environmental benefits are likely to be viewed as attractive options by E&P companies.

Fennex also aims to "engineer out" cybersecurity risks to data ecosystems, a growing concern for companies as they increasingly digitize their businesses. Brown pointed to the advancement of security services provided by cloud technology.

"Our approach to developing technologies that are Microsoft-centric ensures that our digital solutions are fully accessible by Azure security services [a highly secure cloud foundation managed by Microsoft] and securely managed by the software company's compliance features," Brown said.

Looking ahead, Fennex anticipates that the oil and gas sector will embrace further technological reorganizations of its business models and industrial processes, following in the footsteps of other industries.

"Many leaders are now realizing the full benefits that the digital transformation can bring, and we now find ourselves at a key moment in time where successful technologies are starting to show real results offshore if they are given the opportunity," Brown said. "With an accelerated number of companies adopting the cloud, there are huge opportunities available to leverage machine learning, automation and collaborative innovation to unlock untapped efficiencies."

Cognite explores possibilities

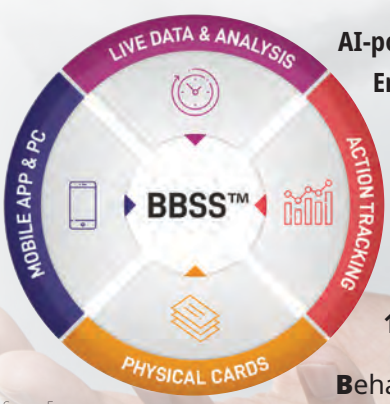
Cognite, for its part, believes its various solutions and applications represent examples of what is possible when asset-heavy industries make their data "available and meaningful," according to Peterson Sturm.

"Extracting the most value possible from data requires putting it in context first … Industrial DataOps provides that context," she said. DataOps, or data operations, is an emerging discipline for managing data across an organization and maximizing its value. It is a discipline that Cognite describes as "absolutely essential" on its website, and its products are built around the concept.

"We offer end-to-end industrial data operations for upstream oil and gas companies," said Peterson Sturm. "Our Industrial DataOps platform, Cognite Data Fusion, makes traditionally siloed operational, engineering and IT data instantly available across the organization, enabling better decision-making to improve operational performance at scale. We work with an ecosystem of partners like Accenture, Microsoft and Google to offer solutions for everything from intelligent workflow automation to emissions monitoring and reporting.

"With Cognite Data Fusion, a subsurface operation can contextualize reservoir data with well and production data to improve and shorten decision-making processes, minimize risks, reduce costs and enable more

Real-Time Insights Into HSE Risks & Hazards



AI-powered cloud solution
Enhanced efficiency, visibility
Drive compliance, safety culture
Innovative, secure, scalable
Half-million paper cards eliminated
30% increased participation
70% cost reduction
15,000 man-hours saved

Behavioural-**B**ased **S**afety **S**olution

Source: Fennex

The BBSS program was delivered to offshore drilling contractor Noble Corp. in 2021.

efficient collaboration across the upstream oil and gas value chain," she continued.

"The beauty of an Industrial DataOps platform like Cognite Data Fusion is that it creates the foundation necessary to build and scale a near-infinite number of digitalization efforts including asset management, production optimization, predictive maintenance, robotics enablement, and emissions monitoring and reporting," Peterson Sturm said. She added that there is considerable scope left for the oil and gas industry to scale digitalization efforts.

Peterson Sturm described cloud-based analytics as "one of the foundational tools of digital transformation," adding that it was digital transformation that Cognite was founded to help the industry with in 2016.

"Since then, we've grown into Norway's first 'unicorn,' helping companies like Saudi Aramco, Exxon Mobil, bp, AkerBP, OMV, Var Energi, PGS, Pembina, Lundin Energy, Hess [Corp.], TotalEnergies, Equinor and more leverage cloud-based analytics and Industrial DataOps to achieve cost savings and other benefits."

In OMV's case, the use of Cognite's solutions is estimated to have helped the company cut planning time by 25% and operating expenses by 50% as well as reducing OMV's environmental footprint, according to Cognite's website.

"While we offer our own applications, we give industrial companies tools that make it easy for them to collect data from multiple sources and combine it into applications and visualizations that improve their operations," Peterson Sturm said.

Meeting new challenges

There are various obstacles that need to be overcome as companies such as Fennex and Cognite roll out their services to more customers.

"As with the introduction of any innovation, trust, internal process and cost are often elements which restrict the full implementation of these types of solutions," said Brown. "Overcoming these can help unlock the potential benefits cloud-based platforms like BBSS can bring. From the beginning, it's paramount to learn of any blockers and adjust the software to suit the company's needs."

Meanwhile, Peterson Sturm pointed out that there were differences between the data realities of greenfield and brownfield sites.

"It is difficult to scale a greenfield digital solution to a brownfield facility," she said. "Brownfields have different challenges around outdated operations systems, data integration and connectivity, governance and other roadblocks like different vendors and data sources. While much progress has been made in greenfields, there is still much room in bringing these technological advancements to brownfield facilities."

Peterson Sturm also cited a lack of digital maturity, which she described as a "measure of an organization's ability to create value through digitalization," as a major obstacle.

Assessing digital maturity, which Cognite offers a tool for, and establishing a clear roadmap for digitalization is the first step to addressing this according to Peterson Sturm. Top- and bottom-line improvement is just one of several benefits of pursuing digital maturity, she said.

The next step is investing in the necessary technology to build a data foundation, she continued.

"Once you have the foundation, the next step is to make your data useful and not just for IT or data scientists. Put the power of data in the hands of all of your experts to innovate en masse and at speed," she said. OGI

CARBON-BASED LIVELIHOODS

From the fossil fuel kingdoms of the Middle East to the Permian Basin, oil and gas companies are finding that the energy transition isn't a fad but a permanent fixture of how they will do business.

ARTICLE BY

DARREN BARBEE

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Sometimes dressed in a self-described pink power suit, Regina Mayor, KPMG's global head of energy, spent March globetrotting. She visited oil companies in India, talked shop with OPEC leaders and saw a new intensity in decarbonization in the UAE.

She listened to world energy leaders irked by their exclusion from the U.N.'s Climate Change Conference, COP 27.

As the world plunges into the chaos of war, inflation and potential recession, Mayor and KPMG, one of the world's largest accounting firms, see opportunities in that disorder. She also sees the necessity for all fossil fuel companies—whether members of OPEC or independent E&Ps in Texas—to find their place in the low-carbon narrative of the future.

Darren Barbee: ***You recently did some traveling in March. What took you abroad?***

Regina Mayor: I was in Delhi for two days, Abu Dhabi for two days and Dubai for two days. So, it was action-packed. Part of my mission was going over to support the launch of one of our decarbonization hubs we kicked off in Delhi. We're creating a series of decarbonization hubs all around the firm; we've got one in Australia, we've got one in the U.K. [and] we kicked off one in India. And these are hubs of expertise to help companies define, achieve, measure [and] report their net-zero commitments. So, what are your pathways to decarbonization, what's your strategy, how do you decarbonize your products and your operations? And then, how do you effectively measure, transparently report, comply with all of the regulations that are swirling around? And we believe, given the fact that we're a public accounting firm, that we can help clients run cradle-to-grave in support of that overall energy transition.

We had a formal event [with] about 100 clients, senior executives there to help us kick it off and talk about the challenges of energy transition for a country that is not as developed relative to its energy ecosystem as India. And it's a country that's highly dependent on fossil fuel imports; they import 85% of all of their energy needs. So, how they make the transition is critically important. I was there for that, did some media, got to meet several senior executives from some of the largest Indian oil and gas companies, as well as the government officials. And it was [when] the war in Ukraine had just started. And so, talking about the opportunity to buy the stress, cargoes of Russian crude and what that could mean for the Indian government and what their strategy was.

Then we headed to Abu Dhabi to see our team that supports ADNOC [Abu Dhabi National Oil Co.]. That was really eye-opening, so we had the discussion about OPEC+ and what they might be considering prior to the actual meeting. And then [we] went to Dubai because I was a guest speaker at the Atlantic Council's Global Energy Forum. It featured a number of very senior executives, as well as energy minister-types. And I got the chance to meet [OPEC Secretary General] HE Mohammad Sanusi Barkindo, and as a groupie of the energy industry that was like the highlight of my trip, having lunch at a small group table with him.

DB: ***Your last trip through this area was in 2018. What things did you see that had changed?***

RM: I think the biggest change is how prominent the energy transition and decarbonization conversation is. When I was at the Atlantic Council's Global Energy Forum, HE Dr. Sultan Ahmed Al Jaber was there. And Abu Dhabi is hosting COP 28, not 27, which is in Egypt this year, but 28, which is next year. And he said, "COP 28 will be the most inclusive COP to date, where the energy industry has every right to sit at the table. Because if we're not there leading from the front, being the scions of technology and innovation in energy as the industry represents itself today, I don't think the world can decarbonize. I don't think you can decarbonize without all of the international

oil companies and the national oil companies leaning in and playing a role."

I think the industry was chagrined that they were left on the sidelines purposefully when COP happened this year in Glasgow, and I think the industry is vowing not to let that happen to them. So, that would be the biggest change, how prominent the energy transition features in, how decarbonization is a part of every conversation; there's not as much talk about, "Oh, maybe this is a fad, maybe this will change." And then the second piece is the global pickle that we all find ourselves in where we just don't have enough oil and gas resources that we need to power the energy demands of today. And so, we're seeing these massive commodity price spikes that a lot of people didn't necessarily expect. I know there were some that said, "$100 oil is coming."

And there are some that are saying now $200 oil is in sight. But $100 oil was not conventional wisdom, even just a year or two ago.

DB: ***As you watch the Ukraine war, how do you make sense of this from a macro point of view, an energy point of view?***

RM: Well, I think that the key ramifications of what's happening today is the heightened focus on energy security and energy diversification because I think some folks would say we sort of sleepwalked our way into the EU being 40% reliant on Russian gas, and how did we collectively let ourselves get into that situation? And 40% is an average. Some countries it's 70%, which is just, that's a big head scratcher.

I think that's what the long-term repercussions of what's happening now are that we as a collective society perhaps got a little spoiled with regard to how everything seems so abundant and cheap and always available. And this is reminding us that we always have to protect [supplies]. So, I think that's the long-term repercussion.

The second long-term repercussion is it will accelerate the move toward alternative energies and the energy transition because the double whammy of really, really expensive fossil fuel commodity prices and the volatility of those prices will push the trillions of spending that we need to make things more reliable, more affordable and trend toward more renewable technologies.

DB: ***Do you have any underlying worries about a possible recession, about demand destruction or the chronic underinvestment in oil and gas production?***

RM: There is a scenario that says, this war, this conflict continues and maybe there is no end. I haven't heard that it could go on for a decade, but I'm hearing it could just continue like this for months. So, what's the repercussion? We're already seeing evidence that Russian production of oil is declining, and you've had very high-profile departures of western energy companies from that region. So, that could exacerbate a more precipitous decline. And they have roughly 10% of the oil that we use today comes from that part of the world. So, that is a scary scenario when you potentially imagine that kind of output coming out of the market.

Hopefully, it doesn't come to that because you still have countries that are amenable to purchasing those crude barrels so they're not completely isolated from the market. And hopefully, nationally owned companies that operate in Russia have the wherewithal to maintain some level of production so that you don't see the precipitous drop.

And then the question of access to capital from other sources. I guess I get less worried about the doom and gloom, negative downward spiral that this scenario that you had just described because I'm seeing bigger [resource] finds. So, you had the announcement from Exxon Mobil on another big Guyana development. You've seen the quieter announcement but the big find of Shell and their partners in Namibia.

You've got what Chevron is saying that they've got in Israel. So, I think we're seeing other sources that can come to market relatively quickly. I mean, even the Guyana one was 2025, right? So, that's only three years from now for quite a lot of production boost to come in. And then you said you were going to save the shale guys but to me that's another wildcard in here. You are seeing rig activity pick up in the Permian again, and the Permian could end up being a very strong last man standing scenario, even in a 50-million-barrel-a-day energy transition for the outlook.

So I get less pessimistic about the other sources of capital because I think that the markets have tended to show in the past that there's no shortage of capital for oil and gas, and I think that'll continue to be the same. Especially with the companies making their net-zero commitments and demonstrating how they can create lower carbon footprints of the underlying products.

DB: ***I love this idea that the Permian may be the last man standing. How soon do you think we can get to that point?***

RM: I think the Permian will remain the most prolific basin and my sense from talking to the folks that know the rocks and the fiscals out there. My GoM [Gulf of Mexico] players will say they are going to be the last man standing, so is it [the] Gulf or the Permian? And one Permian senior executive said, "I wouldn't dip my big toe in the Gulf of Mexico, absolutely not." This is where we will be the last man standing. I mean, it's easier, it's quicker, it's cheaper, it's faster, it's there [and] it's got the right regulatory regime. You don't have the vagaries of the federal government, are we on, are we off? The investment cycle's nowhere near as long and as large and severe.

And so, I think yeah, if I were to bet on which development in the U.S. has the longest, most prolific, largest source of production, I'd place my money on the Permian.

DB: ***Some investors have washed their hands of fossil fuels. Have you seen any backsliding as we see returns from E&Ps and other energy companies prospering?***

RM: I would say there's two components to what we're seeing. I would say there's still a hardy group of investors that are saying, "No, we're just not going to invest in fossil fuel companies." So, I'm not seeing a change in that demeanor. But when you look at the overall landscape of potential sources of capital, that's still a relatively small fraction of the total. And more discerning investors are seeing what the energy companies can do that could be hugely additive to the world's ability to address climate change, carbon-capture sequestration, clean hydrogen, biofuels and the e-fuels, carbon-neutral gasoline. My clients are seeing a lot of interest from green investors that want in on those kinds of projects.

"I think that the key ramifications of what's happening today is the heightened focus on energy security and energy diversification."

So, what you might end up seeing is several different types and stratas of capital that come in for the clean projects. I may not want to invest in oil and gas production, but my large clients are not worried about the cost of capital at this point. I keep telling them they need to because I do see the inflation rate and the challenges with certain investors. But these guys and gals have phenomenal balance sheets; you'll see it in their earnings coming out. There's not a shortage of capital, I don't think that they see the death knell. I think investors, especially the ones that have committed to green investing, they're going to want in on those specific projects. So I might not own IOC [integrated oil company] stock, but I might buy in.

DB: ***Do you think we're going to see a realignment of the way that Europe gets especially natural gas? And do you see the U.S. emerging as a leader in LNG?***
RM: It does absolutely redraw energy supply routes and trade maps. So, I think Middle Eastern gas becomes so much more important as well, and then I do think U.S. LNG—even though Henry Hub's gone up much further than I would have ever thought—is going to remain a very, very large exporter of LNG. I think you'll see more of those LNG projects come online.

My last client visit pre-COVID was a dry-gas producer in Appalachia in March 2020. I was like, "Good luck with that business model." They're minting money right now, you know?

DB: ***What about oil? Will we see any changes with oil exports?***
RM: The question mark becomes, how much more crude can the U.S. really produce? So, will we get to the 12 million barrel per day mark? Will we get to 13 million? And I think I was hearing a lot of question marks as to whether or not we could see a substantial increase. So a million, 2, 3 million barrels per day, to me that's not a needle mover when you're looking at demand that's greater than 100 million barrels per day. The thing that I get on my soap box about when I'm in developing countries like India is, why are you just relying on crude? The world is long gasoline.

If we started making gasoline a globally traded commodity and having countries like China and India being comfortable buying cargoes of refined products instead of ensuring that they have the capability to do it themselves, then I think we get even more efficient use of the fossil fuel capability and production capacity that the world has. There's just for whatever reason, maybe it's energy security [or] energy diversification, which I was just harping on, that they don't want to. They feel like they have to have the means to create it into the higher-end products themselves, and they only want to access global crude markets.

DB: ***When you look at your client base, how are they aligned regarding fossil fuels or renewables, or do you get a lot of "I don't care which one, as long as it's profitable, as long as it's returning on my investment?"***
RM: They're very focused on return on investment. So, it's not an emotional calculus, it's "What do I think is going to give me the greatest returns? Then that is consistent with what I'm good at today? So, what are my core competencies, where do I invest and what can give the greatest returns?" So as a consequence, the things that can be really interesting is if you look at the biggest integrated oil companies, each one of them has a different strategy on how they're going to compete for the future. This is probably the first time ever that they've all had a different strategy, and I was having lunch with a senior group of them, and they kind of commented on it themselves, "We all have different strategies now, so we'll see."

But they're all pursuing different ones, and to the extent that some are embracing renewables and others aren't, that's them making that choice of, "where can I get the greatest returns that's most consistent with my core competencies?"

DB: ***What advice would you give U.S. independent energy companies as they look at the second half of the year and into 2023 from a strategic point of view and from a financial point of view?***
RM: The biggest piece of advice that I give my clients now is you must have a carbon narrative; you must be able to articulate how your company survives, thrives and navigates the energy transition. It needs to be compelling, and it needs to be backed up by action. So even if you say, "I want to be net zero by 2050," what's the 2030 objective? And most energy companies have put things out there that are compelling and actionable. Whether or not they talk about Scope 3 emissions or not, some choose to, some choose not to. But having that carbon narrative, and then starting to re-architect how your energy company remains viable when the world is using less and less of your products because that's the aim, that's the goal.

There are some utility company executives that I think are incredibly articulate about how they want you to use less of the product that they have to offer, and that's what they're here to do. So I think it's all about your carbon narrative isn't just who you are, it's about encouraging your relationship with your customers to be different too. Use less gasoline, use less electricity and be a part of that narrative for the future. That's my single biggest piece of advice.

DB: ***Those energy companies that have put out their various plans, and I've seen a lot of them, are they realistic in your view?***
RM: I think that they are. I will say that we don't know exactly how we're going to do it yet, and I said to another executive what I hope is not a strategy. But, I also do believe that we will find the technologies that ultimately will get us there. And by placing a lot of mini-bets in different types of solutions, we're going to find those technologies that will ultimately close the gap. So, we can see our way to 2030, seeing our way to 2050 is a lot harder. But I also know that by 2030 we'll know a lot more, so that we know what the 2040s [have] got to look like to get us to 2050. And that's how a moon shot ultimately works. OGI

Read the full interview with Regina Mayor at HartEnergy.com.

THE SEARCHERS

Despite the Hunt family's famous patriarch—legendary oil tycoon H.L. Hunt—Petro-Hunt LLC's dealings, including a recent Permian Basin acquisition, remain a family affair.

ARTICLE BY

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The storied Hunt family has once again surfaced in the Permian Basin to predictably little fanfare.

It's the family's style: Petro-Hunt LLC is a large but quietly enigmatic company often low key about its dealings. The family's patriarch was legendary oil tycoon H.L. Hunt. Despite its lineage, the company prefers to operate far below the radar. Yet it remains a player in the shale world, popping up now and then to make another deal before fading into the background.

In March, Petro-Hunt was again on the move. In a blink-and-miss-it deal, Petro-Hunt LLC closed on the purchase of Delaware Basin assets from Admiral Permian Resources.

"Throughout the family history, even in Petro-Hunt's history, we've been in and out of the Permian on and off," said Marshall T. Hunt, vice president of corporate development. "We were looking at getting back into either the Midland Basin or Delaware Basin and had worked several packages, marketed packages or other non-marketed opportunities.

"This one was one that we had worked and were lucky enough to be the winning bid," he said.

In 2012, the company grabbed headlines as it sold a portion of its Williston Basin position, 81,000 net producing acres, to Halcon Resources Corp. for $1.45 billion.

The company retains a large position in the Williston Basin where it has been a top 10 producer year-over-year, and the Williston remains a core area for the company. In 2018, the company purchased Williston Basin assets from SM Energy Co., including 119,000 net acres and 246 operated wells.

Low key

Even as Petro-Hunt keeps a low profile, it has driven itself into becoming one of the top private E&Ps in the U.S.

"We're not private equity backed. We're not publicly traded," Marshall Hunt said. "We're a family-owned company."

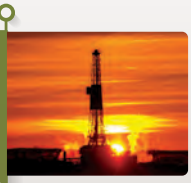
Petro-Hunt's March deal was in the same form. Admiral Permian was a privately held E&P company focused on the acquisition and development of oil and gas properties in the Permian Basin. Admiral Permian was majority owned by Ares Management LP, as well as Pine Brook and members of management, according to their website.

Petro-Hunt acquired Admiral Permian's assets, including operated oil and gas production and 21,430 net acres of leasehold in northwest Reeves and northeast Culberson counties, Texas. Gross operated production averages about 7,000 bbl/d of oil and 100 MMcf/d of gas. In a press release issued by the company, Douglas Hunt, director of acquisitions and divestitures, said, "Petro-Hunt plans to commence a drilling program later in the year" on the Admiral acreage.

The Dallas-based company historically has kept deal terms close to the vest. Petro-Hunt didn't disclose financial details for its purchase of Admiral Permian properties.

COMPANY TIMELINE

1920s

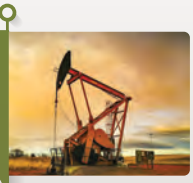


H.L. Hunt starts oil and gas career in El Dorado, Ark.

1930

Hunt plays an active role in developing the East Texas Oil Field at the drill test of the Daisy Bradford #3.

1939-44



Hunt discovers Olla Field and Nebo-Hemphill Field in LaSalle Parish, La., followed by the first well drilled in Alabama.

1961

W. Herbert Hunt and Nelson Bunker Hunt discover Sarir Field in Libya, one of the largest oil fields in Africa.

1970

Placid International opened the Dutch North Sea with the discovery on Block L 10/11.

1975

Placid Refining purchased the Port Allen refinery in Louisiana.

Asked about the company's advisers on the deal, Marshall Hunt said Petro-Hunt doesn't like to use advisors on the buy side and would rather source and make offers on deals themselves.

"It's a family business. It all comes right through the whole family. The family is still involved with several family members working in important key roles and running all aspects of the company day-to-day. All that funnels through the same set of people at the top."

The company largely stays out of the spotlight, despite its history, which is recounted on roadside historical plaques, blogs and Encyclopedia Britannica.

Family footsteps

Inside the company, it's simply family.

"I am third generation here at Petro-Hunt, and my grandad W. Herbert Hunt is still in the office every day. He's 93," Marshall Hunt said. His father Bruce W. Hunt is president of the company.

"We try to stay out of the press, and we chose to do things that way," he said.

Behind the scenes, Petro-Hunt has become a remarkably intricate, integrated private company.

Petro-Hunt's website bills itself as among the top 10 private liquids producers with roughly production averaging 98,000 boe/d in the U.S. with operations in several states, including Texas, Louisiana, Oklahoma, North Dakota, Wyoming, Colorado and Montana. Petro-Hunt affiliate Pillar Energy, founded in 2009, buys minerals, royalties and nonoperated working interests across all basins in the Lower 48.

Pillar Energy has acquired more than 3,000 net acres of leasehold and over 7,600 net mineral acres with interest in 1,850 producing wells in various U.S. basins. Another family company, Pledge Resources, holds 2,800 acres of leasehold and more than 11,000 net mineral acres.

Petro-Hunt also owns and operates a gas processing facility in North Dakota, a part owner of an oil refinery in Port Allen and is actively developing its real estate position in the Dallas-Fort Worth, Texas, area. The company also has an oilfield service company. Petro-Hunt and affiliates also operate a private equity alternative investment division and a 4,600-acre cow calf breeding ranch and exotic wildlife refuge.

In some senses, the company is following in the footsteps of H.L. Hunt, who's first ventures involved cotton speculation and endeavors in other industries unrelated to oil and gas.

But it was H.L. Hunt's endeavors in the oil fields that made his fortune.

As the Encyclopedia Britannica recounts, H.L. Hunt borrowed $50 to begin trading oil leases in Arkansas, buying and selling leases nearly simultaneously "so that he made money without spending any."

His $30,000 bet on the Daisy Bradford No. 3 well in Rusk County opened up an oil boom in Texas and unleashed the production of an oil field that eventually produced 3.5 Bbbl of oil.

Diversified

Petro-Hunt's own diversification has made oil and gas one of its primary focus areas but not its singular pursuit.

"We are diversified in other aspects, whether that's a family office alternative investment arm or our real estate arm," Marshall Hunt said. "And all those are not just kind of small bolt-on business lines, they are big lines of business in their own right."

Herbert Hunt's hobby has always been in real estate and over the past 20 years the real estate department amassed around 6,000 acres of properties across Dallas-Fort Worth. The Hunt's real estate department has been very active, starting and selling a single-family development, developing an industrial park and building and then selling several multi-family complexes in Forney, Texas. They are actively developing and selling their properties in Plano, Fort Worth, Fate and Lavon, Texas.

The Petro-Hunt private equity arm has been very active during the past 10 years, investing well over $500 million in 120 various funds, private equity groups and companies across all types of industries. According to its website, the company has invested in energy, technology, biotech, healthcare, real estate and growth capital, just to name a few.

Its recent Admiral Permian deal added acreage in Reeves and Culberson counties, Texas. Petro-Hunt additionally purchased Admiral Permian's existing gathering systems, pipelines, compression and water treatment infrastructure, Hunt said.

Petro-Hunt will look to "acquire additional bolt-on assets to the existing Admiral acquisition. In addition to the Admiral acquisition, we made other strategic acquisitions in the Delaware and even the Midland Basin, looking for operated, nonoperated, and mineral and royalty assets," he said.

Just don't expect the company to make much of a fuss when it does. OGI

1990

Petro-Hunt drilled and completed the world's first medium-radius, double lateral horizontal well in South Texas.

1990s

Through six strategic acquisitions in the Williston Basin, South Texas, East Texas, Louisiana and Mississippi, Petro-Hunt purchased 348 wells, producing 20,650 boe/d that laid the foundation to becoming one of the top private liquids producers in the U.S. The two fields in the Williston Basin were later developed for the Bakken/Three Forks Formation starting in 2006 and currently produces 33,700 boe/d from 223 wells.

2006

Petro-Hunt drilled the USA No. 2D-3-1H well. The well has produced just under 2 MMbbl of oil and is the highest producing well in the state of North Dakota in the Bakken/Three Forks Formation.

2011

Petro-Hunt operated up to 16 rigs in the Williston Basin and became one of the top liquids producers in North Dakota.

2018

Petro-Hunt purchased 119,000 net acres and 246 operated wells from SM Energy Co. in the Williston Basin.

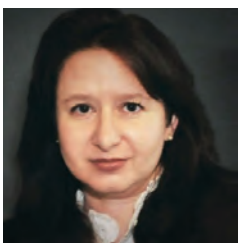
2022

Petro-Hunt purchased over 21,000 net acres and 63 operated wells from Admiral Permian in the Delaware Basin.

HOW TO WIN OVER SKITTISH INVESTORS

Flush with cash, U.S. producers vary in approach to shareholder returns.

ARTICLE BY



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U.S. shale producers are increasingly honoring executive pledges to share their wealth with investors and shareholders, and they may have zeroed in on an approach that's particularly well-suited to the industry's boom-and-bust life cycle.

The addition of a variable dividend gives companies the option to increase shareholder returns when cash flows freely, but it doesn't lock in an expense when the wells run dry.

One of the world's largest independent producers was an early mover toward high-dollar variable distributions. ConocoPhillips Co.'s CEO Ryan Lance in December announced a $1 billion variable distribution as part of the firm's commitment to return 30% of cash flow to investors.

ConocoPhillips was the third U.S. independent to implement a variable dividend last year, suggesting the sector is trending toward this kind of distribution to accelerate its regaining of investor confidence.

"It's required to demonstrate that this is an investible business," Lance said.

Capital destruction, resuscitation

E&P companies have instituted billions of dollars' worth of returns in recent years with share repurchases and base quarterly dividend increases, but some view the buybacks as expensive and unpredictable. Fixed dividend rates can be tricky in lean times, and there is some reticence toward increasing them.

Still, as the pandemic loosened its grip on the world, E&P management has leaned in with these moves to reset the shale narrative.

Indeed, the sector desperately needed to counter the effects of long-term capital destruction, dismal returns and an apparent disregard of stakeholders' demand for capital discipline. While shareholders and investors called for slower growth, producers' appetite for more acreage and spending—an attitude industry insiders described as "reckless"—grew ravenous.

In 2018, mid-cap independent Matador Resources set a record during a federal government auction when the firm anonymously ponied up a record $95,001 per acre of unexplored Permian Basin land in New Mexico.

The messages from angry shareholders and apathetic investors began to resonate inside the C-suite with an exodus of generalist investors prior to the pandemic. Producers' access to capital dried up and massive debt burdens weighed down some of the industry's biggest companies.

One key shale player summed it up for Texas regulators during a hearing in April 2020, one week before the COVID-19 pandemic drove demand so low that oil briefly traded for less than $0 per barrel.

"Our industry has created such economic waste that nobody will buy our stocks," Pioneer Natural Resources Co. CEO Scott Sheffield said of the sector. "Nobody wants to give us capital because we all destroyed capital."

Where companies in 2015 touted their latest acquisition during quarterly earnings calls, contemporary rhetoric is more often built on strategies to generate enough free cash flow and return a chunk of it to shareholders.

Devon Energy Corp. was

> **"Pioneer's first variable dividend marks a significant milestone in our investment framework and demonstrates our commitment to returning meaningful capital to shareholders."**
>
> —**Scott Sheffield,** *Pioneer Natural Resources Co.*

the first player out of the gate in February 2021, when its board of directors declared a $126 million variable cash dividend of 19 cents per share based on the company's pro forma fourth-quarter 2020 financial results. The reward was paid in addition to Devon's fixed quarterly dividend of 11 cents per share at the time for a single fixed-plus-variable payment of 30-cents per share.

"We are excited to reward shareholders and differentiate ourselves from peers by declaring an industry-first variable dividend."

—**Rick Muncrief**, *Devon Energy Corp.*

"We are excited to reward shareholders and differentiate ourselves from peers by declaring an industry-first variable dividend," Devon president and CEO Rick Muncrief said.

During a first-quarter earnings call on May 2, Muncrief announced a fixed-plus-variable divided of $1.27 per share based on its first-quarter performance this year.

Hot on Devon's heels was Pioneer Natural Resources with its variable dividend plan. The Permian Basin pure play in August accelerated its 2021 plan to pay a variable dividend following the first quarter 2022; instead, Pioneer declared a base-plus-variable dividend totaling $1.51 per share on its outstanding common stock, representing some $370 million in shareholder returns, to be paid following the third quarter of 2021.

"Pioneer's first variable dividend marks a significant milestone in our investment framework and demonstrates our commitment to returning meaningful capital to shareholders," said Sheffield.

On May 4, Sheffield said the board had upped the ante and authorized a base-plus-variable dividend of $7.38 per share payable in June.

Tempering expectations

Buybacks and the occasional, special one-off dividend, have some corporate benefit because investors understand their more random nature, London Business School professor Alex Edmans wrote in June 2020. That can hold investor sentiment in check if those methods are absent in subsequent years.

And fixed dividend increases come with some concerns. Management operating in industries susceptible to dramatic swings in cash flow between years or quarters may be reluctant to devote vast amounts of cash to the fixed dividend, said Morningstar analyst David Harrell.

"They may take an overly conservative approach, keeping the dividend low enough to avoid future dividend cuts and the subsequent punishment of the share price by the market," he said.

Indeed, during the depths of the pandemic, several companies cut their dividends and took a market hit.

The dynamic creates a unique slot for variable dividends to pick up some slack in the E&P space where cash flow is driven by commodity prices directly, Harrell said. In general, increasing commodity prices are good for the energy business, and oil prices traded almost 50% higher in May 2022 than in the previous year.

US. E&Ps Variable Dividends

Company	Forward Dividend Rate	Forward Yield	Payout Ratio	Closing Price/Share*
Pioneer Natural Resources Co.	$12.34	4.93%	32.88%	$250.54
Diamondback Energy Inc.	$2.80	2.16%	12.72%	$129.84
Devon Energy Corp.	$5.08	7.97%	49.91%	$63.76
ConocoPhillips Co.	$1.92	1.96%	23.48%	$98
Coterra Energy	$0.06	2.03%	18.20%	$29.32

*Closing per share price on May 10 Source: Morningstar, *Oil and Gas Investor* research

U.S. E&P companies are increasingly using variable dividends to return cash to shareholders.

The obvious appeal of the variable dividend approach for income-focused investors is the greater likelihood they will see more cash than with a fixed quarterly payout, he said. But the downside of the variable dividend is also its uncertainty.

"These commodity price-driven companies would otherwise be unwilling to commit to a dividend rate that isn't tenable from quarter to quarter," he said. "And, arguably, receiving the variable component on a quarterly basis is better than having to wait until the end of a company's fiscal year to receive it." OGI

"It's required to demonstrate that this is an investible business."

—**Ryan Lance**, *ConocoPhillips Co.*

TECH COMPANIES TAKE ON CARBON REDUCTION

New tools and services are being applied across the entire life cycle of oil and gas production to help reduce emissions.

ARTICLE BY
PAUL WISEMAN

Current world events are highlighting an energy transition issue that won't go away: Moving away from carbon-heavy fuels will be a long and pothole-laden road. Even with continued growth of renewables, the world's overall energy demands are expected to expand at an even faster rate, at least through 2050.

This is not to mention the billions of dollars to be spent on infrastructure and redesign of vehicles for land, sea and rail. In the meantime, all that CO_2 must be tracked, evaluated and managed in hopes of finding ways to reduce it. Hence the movement toward carbon management as a rapidly growing sector of every type of industry, including oil and gas itself.

As recently as 2015, the energy sector saw the rise of two significant subsectors in a symbiotic relationship: water management/treatment and automation/data management. The rise of ESG has opened the doors for another sector, as carbon management becomes more top of mind for companies and investors alike.

A recent report on the market, released by Mordor Intelligence, sees the carbon management business almost doubling from its 2020 level around the world and across all industries, from $10.9 billion in 2020 to $19.8 billion by 2026.

In its recent Annual Energy Outlook 2022, the U.S. Energy Information Administration (EIA) projected the nation's CO_2 emissions would fall in the short term, then begin a slow, steady rise through 2050. Many assumptions are made in a long-term study such as this.

One sector is expected to continue to outshine the others over the long haul: electric power grid CO_2 is expected to drop precipitously by 2050, due to continued switching from coal to natural gas and renewables for generation. Conversely, transportation emissions are expected to rise slowly in that time frame as a result of the difficulty in replacing liquid fuel's range and portability compared to alternatives.

Industry and commercial emissions are expected to rise slowly as well, while residential CO_2 drops slightly.

Effective carbon management systems must account for all these sectors, breaking them down even further to computing, power use in buildings and factories and more, said ESG Enterprise president and CEO Alan Lee. Based in Houston, ESG Enterprise is an ESG software, SaaS and data analytics company.

"Carbon management encompasses a bigger picture than how much greenhouse gas is emitted by a particular producer or even a vendor," Lee said. "It reaches every aspect of the supply chain."

That includes the manufacture and shipping of incoming products as well as what happens downstream after the product leaves the company's site or storage.

For tracking purposes, carbon sources are split into three categories. Scope 1 is direct, or the carbon emitted by the company itself. Scope 2 is indirect, including that from suppliers (upstream), and Scope 3 is also indirect, encompassing downstream activities. For complete carbon management purposes, companies must accumulate data from all three scopes.

In oil and gas, Lee said refineries are leading the charge in carbon management. In the upstream sector, those leading the charge are the majors, who have the most to gain due to rising ESG concerns of investors.

"The majors and the national oil companies have a vested interest in rebranding or at least attempting to go into energy transition," as they see sustainability and the energy transition becoming top-level investor concerns, Lee said. As such, carbon management is part of their larger decarbonization strategy.

Additionally, service companies who want to do business with majors must also comply with carbon management strategies. Many majors require their providers to fill out at least an ESG/carbon management questionnaire. This is leading many vendors to create standardized carbon management reports rather than fill out a separate one for each client that requires one.

The goal is not just to know a carbon management score, Lee said, but to learn how to reduce the carbon footprint.

"You can't take action if you don't know what you're measuring," he said.

"Our software uses AI, historical data and also Cubase logic to analyze each asset and recommend how much greenhouse gas (GHG) we can reduce if we take certain actions. Those can include using renewable fuels, green computing and more energy-efficient facilities. Some changes may not pay off for five to 10 years."

Lee noted that it is important for a company to set goals both of time and carbon levels. Do they want to achieve net zero by a certain year or simply reduce their GHG footprint by a certain percentage? Those decisions inform both tracking and resulting actions.

The low-hanging fruit—more efficient vehicles, green computing and the like—actually save companies money.

Setting regulations

While oil and gas firms are used to seeing GHG regulations from the Environmental Protection Agency and various similarly-tasked state agencies, a recent climate-related rule proposal has come from the Securities and Exchange Commission (SEC).

Recently proposed rules changes would require registered companies—meaning those who file reports under the Securities Act of 1934—to include specified climate-related disclosures in their statements and reports. The disclosure would be required to include information about "climate-related risks that are reasonably likely to have a material impact on their business, results of operations or financial condition, and certain climate-related financial statement metrics in a note to their audited financial results," according to the SEC statement, dated March 21.

If adopted, those rules changes would require registered companies to address their governance of climate-related

Capturing Carbon A Global Problem

Global emissions of CO_2 is a shared problem. China leads in absolute emissions, accounting for about 30% of the global total and double that of the next in line, the U.S.

India and Russia follow, and Japan completes the top five as its leader in per capita emissions. Together, the five leading emitters account for about 58% of the world's total.

When it comes to capturing that carbon, the math is simpler: there is the U.S. and everybody else far behind the U.S.

China operates three CO_2 capture facilities and Norway has two. Australia and Brazil each have one, and a trio of facilities operate along the Persian Gulf. The majority of the 29 existing plants, however, are in the U.S. with three operating in Canada. Operations are suspended for two of the plants, both in the U.S.

Read the full article here:

Of course, the real story of carbon capture, utilization and sequestration (CCUS) is not merely those facilities in operation but those in development.

Since 2020, the International Energy Agency (IEA) reports, world governments and industry have committed about $18 billion toward CCUS projects. Of the 58 projects identified by the Global CCS Institute as in the advanced development stage, 45 are in the U.S. (Only four plants are under construction at the moment—two in Norway, one in China and one in the U.S., the ZEROS Project on the Gulf Coast.)

The organization identified 44 projects in the early stages of development. Of those, 10 are in the U.S. and four are in Canada.

All of that is impressive, but it won't be sufficient to achieve net-zero emissions goals, the IEA said in its "CCUS in Industry and Transformation" report.

"Although a more inviting investment environment and net-zero goals are raising interest in CCUS, its deployment remains woefully below the level required in the Net Zero Emissions by 2050 Scenario," the report said. "Targeted support for lower-cost and less complex industrial CCUS applications, along with greater investment in CO_2 transport and storage infrastructure, could unlock significant near-term emissions reductions."

The organization's net-zero roadmap, released in May 2021, lays out what countries need to do to achieve their goal of net-zero carbon emissions by 2050. The thrust of the IEA's report has been often misunderstood and sometimes distorted as a dictate for the world to immediately abandon fossil fuel use. Recently, Saudi Arabia led OPEC+ in a decision to stop using the IEA's energy data.

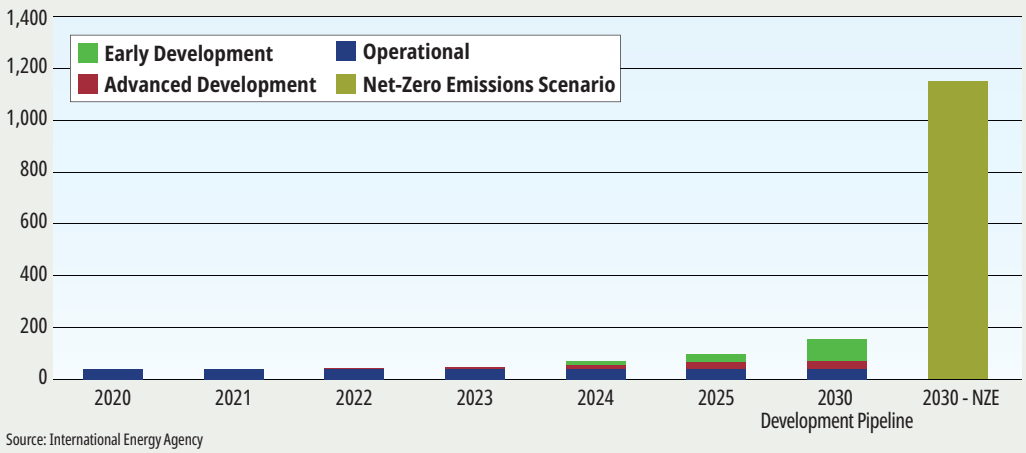
In it, IEA analysts evaluate data to determine what nations would be required to do to meet their own commitments. If the nations involved were to alter their goals or commitments, the data and conclusions would change, as well.

Existing facilities worldwide can remove up to 40 million tonnes per annum (mtpa) of CO_2, the IEA said. If all of the planned projects come to fruition, carbon capture could quadruple.

U.S. projects alone have the potential to more than double industrial CCUS capacity and, if they succeed, can on their own almost double global capacity. In the U.S., project developers can apply for the federal 45Q tax credit and other policies, including the California Low Carbon Fuel Standard, for financing assistance.

—Joseph Markman

Large-Scale CO_2 Capture Projects In Industry And Transformation
(Metric tons captured, actual vs. Net-Zero Scenario, 2020-2030)



Source: International Energy Agency

risks and how to manage them, how those identified risks are related to its business and financial statements, how climate risks have already affected their business model and planning, and the likely impact on the company of any climate-related events such as severe weather.

Those disclosures will include Scope 1, 2 and 3, those both upstream and downstream of the reporting company. "If that gets passed, it's going to be a big change for everyone," Lee said.

Role of carbon capture

Citing the likelihood that energy demand—and therefore oil demand—is expected to rise for decades, carbon capture will be vital, said Shane Mullins, vice president, product development (power industry) for Houston-based Industrial Info Resources (IIR), a global marketing intelligence provider.

"The reality we face is the world and the U.S. will need to keep responsibly producing oil and gas, as you simply can't electrify everything to meet your emissions goals without causing massive inflation," he said.

Demand growth for fossil fuels "is why carbon capture utilization and storage has to be added to the mix. And while it's the early days, we do have a number of CCS [carbon capture and storage] projects in development in North America already."

For many factories, transitioning to clean energy can be a challenge, Mullins said. "There are 1,500 or so plants that would qualify for carbon credits that are hard to electrify, producing more than 100,000 tons per year of CO_2.

"The International Energy Agency has admitted that, to effectively have any chance at achieving the goal of reducing GHG emissions in order to reduce global warming by 1.65 degrees, 22% of global CO_2 emissions reductions must come from CCS. The debate on whether we should pursue CCS is over. Now we have moved on to how to proceed. The government has no choice but to get behind making CCS happen," he said.

To that end, Mullins believes increasing the 45Q tax credit from $50 per ton to $85 per ton will be necessary to make CCS worthwhile. The 45Q tax credit covers industrial facilities emitting at least 100,000 metric tons of CO_2 per year, and power plants emitting at least 500,000 metric tons per year.

One option for oil and gas producers to manage their carbon footprint would be to switch sources of CO_2 for EOR. Instead of using CO_2 produced from wells, which adds carbon to the mix, Mullins said, "One big shift we see is from using CO_2 in the ground for EOR to capturing CO_2 from industrial plants to produce carbon-neutral oil. In total IIR has identified over 29 carbon capture projects in various industrial segments."

Mullins cited Denbury Inc. as a leader in that category. The company captures more CO_2 than it emits in the production process, with plans to offset carbon from all the oil it produces by 2030.

The midstream sector is also getting on board. ONEOK Inc., Talos Energy Inc., Williams Cos. Inc., Enterprise Products Partners LP and Kinder Morgan Inc. have invested capital and are seeking opportunities. Kinder Morgan is a leader in providing in-ground CO_2 for EOR and has a large CO_2 delivery system in place, transporting approximately 1.3 Bcf/d of CO_2 to eastern New Mexico, West Texas and southwestern Utah.

One major international CCS project in Norway is led by Northern Lights Joint Venture. According to a press release, Northern Lights was established "to develop the world's first open-source CO_2 transport and storage infrastructure, providing accelerated decarbonization opportunities for European industries, with an ambition to store up to 5 million tonnes of CO_2 per year based on market demand."

Schlumberger will also be involved, as the North Lights project selected the company's DELFI cognitive E&P environment to help handle subsurface workflows, along with modeling and surveillance of the sequestration process.

Longship, of which Northern Lights is part of, is the largest climate initiative in Norway. A full-scale project, it is scheduled to start operating in 2024, with an expected annual capacity of 1.5 million metric tons of CO_2 per year. It will have the capability of adding 3.5 million metric tons after the beginning phase.

Other carbon footprint options

Exxon Mobil Corp. is advancing its net-zero goals by planning to add a plant to make low-carbon hydrogen—also known as blue hydrogen—at its Baytown, Texas, refinery. Plans are for the facility to produce as much as 1 Bcf/d of natural gas-based hydrogen. Approximately 95% of CO_2 emitted by the process would be captured and stored underground.

DT Midstream is targeting net zero by 2050, with a goal of reducing emissions by 30% by 2030. The company is applying using CCS applications, while also replacing diesel equipment on site with electric power and looking into renewable gas connections.

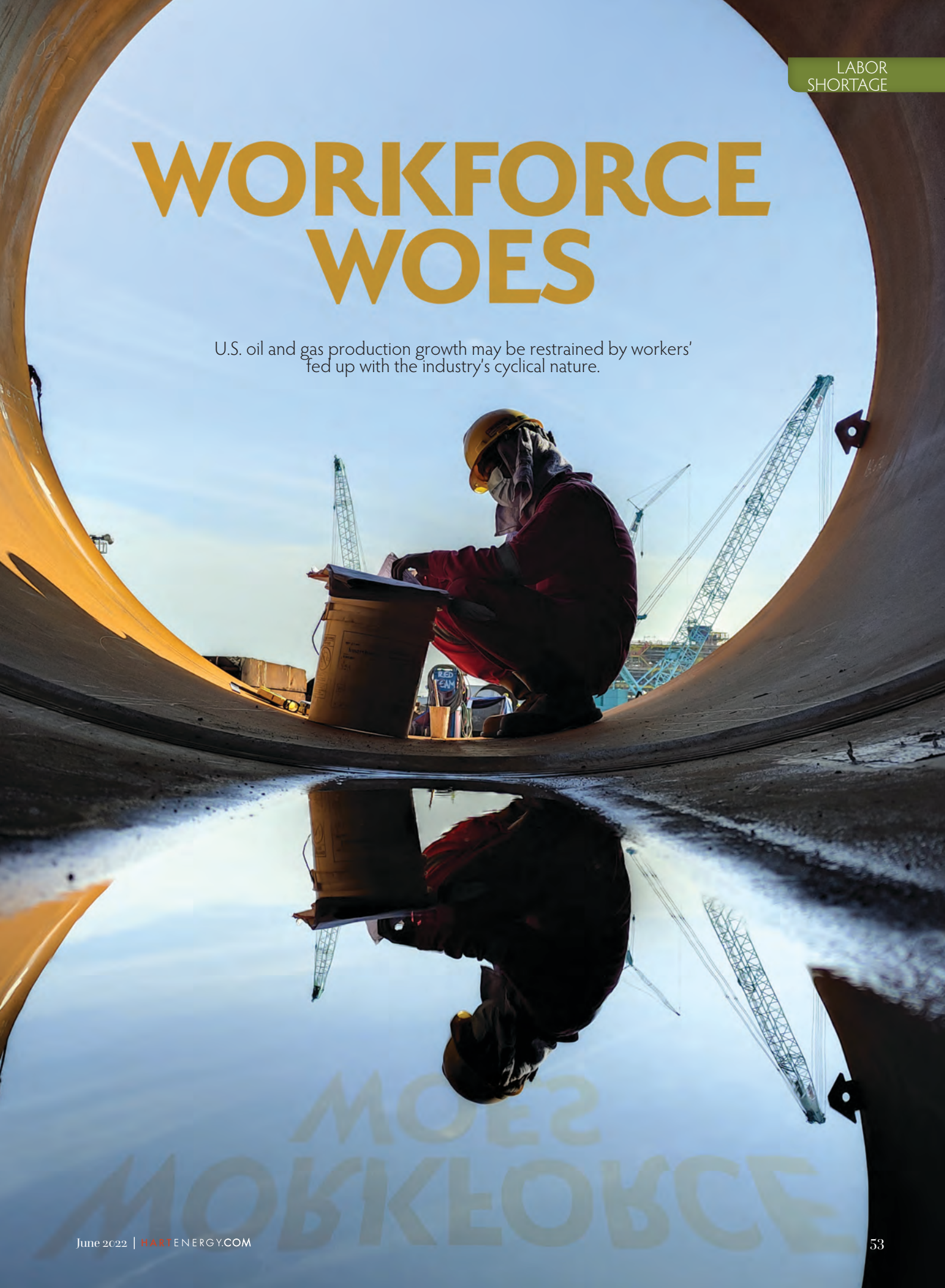
Permian Basin-based upstream companies such as Diamondback Energy Inc. have issued plans for reducing the flaring of stranded natural gas. In the years immediately preceding 2020, insufficient takeaway capacity in the Permian Basin led to much flaring of gas that was otherwise stranded in order to keep the oil flowing. The pipeline issue has eased since the onset of COVID-19 restrictions in 2020, and producers are finding other ways to use associated gas in onsite power generation for production, bitcoin mining and other options.

Currently, the main companies leaning into carbon management are those who are hearing from investors, whether stockholders or private equity providers, requiring them to adopt ESG-friendly policies. As state and federal regulators get more involved, rules and regulations may force smaller companies to adopt carbon management strategies as well. This appears to be a true growth sector for oil and gas as well as the rest of industry. OGI

Paul Wiseman has written extensively in the energy sector, including oil and gas, for more than 25 years. He can be reached at fittoprint414@gmail.com.

WORKFORCE WOES

U.S. oil and gas production growth may be restrained by workers' fed up with the industry's cyclical nature.



LABOR SHORTAGE

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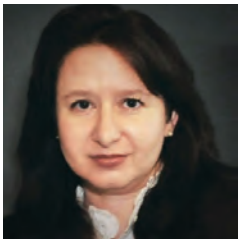

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The greatest threat to the U.S.' ability to ramp up production this year could be an absence of workers who know how to do the job.

The Russian onslaught against Ukraine that began Feb. 24 continues without abatement, and the U.S. government has encouraged operators to produce more oil and gas to counter the energy instability left in the wake of war.

The sector is responding with signs of some growth.

Drilling permits are piling up; the Permian Basin finished the first quarter of 2022 with a best-ever mark for its monthly permit filings in March, Rystad Energy reported.

Producers have added rigs during each of nine consecutive weeks, according to energy services firm Baker Hughes. The U.S. rig count for May 20 reached 728. The total rig count is up some 60% from this time last year.

Jobs to drill the wells are also on the rebound. Rystad forecasts that U.S. oil and gas employment is expected to recover this year, rebound in the coming years and surpass pre-pandemic figures to an oilfield workforce of almost 1.1 million by the end of 2027. By the end of this year, U.S. oil and gas employment is expected to expand 12.5% to almost 971,000, Rystad said.

But the energy industry slashed 20% of its workforce since the pandemic gripped the global economy in 2020. Not all of those workers appear poised to come back, and there may be little incentive this year to do so.

"The biggest risk to production in the U.S. oil and gas industry is if the skilled blue-collar workers who left the sector during the downturn of 2020 do not return now that production is ramping up again," Rystad senior analyst Rob Mathey told *Oil and Gas Investor*. "We have seen evidence from E&Ps and service companies alike that labor is a constraint on meeting production growth targets."

Counting concerns, seeking stability

Indeed, a sluggish return of its workforce topped the concerns this spring as oil and gas producers reported their earnings for the first quarter.

> **"In terms of efficiency and making sure that every dollar we spend there is productive, the challenge for [the Permian] team is to make sure we don't lose productivity and the capital that we're spending."**
>
> —**Darren Woods**, *Exxon Mobil Corp.*

Moreover, inflation is pinching the production and service sectors, indicating that wage increases this year will be meager, Rystad reported. Across the industry, salary growth is unlikely to top 2.9% by year-end, providing little incentive for specialized workers to return to a cyclical field.

Recent years have presented a longer trough than many employees have ever experienced in their careers, Halliburton Co.'s vice president for human resources, Tracy Josefovsky, told *Oil and Gas Investor*. Half of the global services firm's workforce is younger than 40 years old.

"During the low points of the cycle, oilfield employees and candidates left for jobs outside the industry, hoping for more stability," she said. "In the U.S., CDL [commercial driver's license] drivers have seen an unprecedented spike in demand. The need for drivers exists across industries, and the shortage is significant. Some oilfield employees who had labor-intensive jobs before can easily get a job just about anywhere as a driver."

Business unusual

In the heart of the Permian Basin, unemployment is at pre-pandemic levels near 3.5 % in the Midland, Texas, metropolitan statistical area (MSA) tallied by the U.S. Bureau of Labor Statistics (BLS). Unemployment in the Pittsburgh MSA is well below spring 2020. The BLS reported the March 2022 unemployment rate at 4.7%; the rate didn't fall below 5.2% in 2020. Similarly in the Bakken, the unemployment rate of 3.1% in the Bismarck MSA is on level with pre-pandemic numbers.

"With unemployment rates the lowest in decades, the short-term effects are driving the market to increase wages, and companies face more pressure to find new ways to attract potential candidates," Josefovsky said.

Workforce size by basin varies on base production as

"The biggest risk to production in the U.S. oil and gas industry is if the skilled blue-collar workers who left the sector during the downturn of 2020 do not return now that production is ramping up again."

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—**Tracy Josefovsky,** ***Halliburton Co.***

well as projected drilling and completion activity levels, Mathey said. The Permian has the largest ongoing production, as well as largest expected growth for 2022 from 2021 of all U.S. basins.

"We expect labor to be tightest there, followed by North Dakota," Mathey said.

The workforce shortage is a challenge not just for the oil and gas industry. Job vacancies within the U.S. in April 2022 totaled 11 million, the highest level ever recorded by the Federal Reserve Bank of St. Louis, indicating that workforce shortages are an issue facing every corner of the economy.

Considering employment numbers by country or region, the U.S. is among the top employers in the world along with Russia, China and the Middle East.

Discipline the capital

Exxon Mobil Corp. CEO Darren Woods said tightening resources is driving inflation in the Permian, but he expects production to grow nevertheless as "some of the logistics constraints get resolved."

The U.S. super major is taking a "disciplined" approach, he told investors during a recent quarterly earnings call.

"In terms of efficiency and making sure that every dollar we spend there is productive, the challenge for [the Permian] team is to make sure we don't lose productivity and the capital that we're spending," Woods said.

Many independents like Pioneer Natural Resources Co. have promised shareholders they will maintain capital discipline and hold the line on production. Pioneer CEO Scott Sheffield has reiterated the company's plan to keep growth at or below 5%.

But Mathey suggested that an insufficient workforce will slow even the most meager of growth plans.

"The production growth strategies set forth by E&Ps at the beginning of the year are dependent on a sufficient labor force," he said. "There is risk to these plans given the current tightness of the labor market,

and operators may be forced to slow down production growth if they cannot find workers."

Efficiency may not be enough to restore the workforce needed to ramp up production. A loss of long-term field experience is more difficult to calculate; those specialized workers will be highly competitive.

"For certain positions, there are a finite number of people with the skills necessary to carry out the work, with expertise and training being developed over many years," Mathey said. "There is also the risk of decreased labor productivity as operators are forced to compete for workers with less training or expertise than during times of contraction."

Rystad anticipates overall production in the U.S. to grow from 11.7 MMbbl/d at the end of 2021 to 13.1 MMbbl/d by the year-end. More than 75% of those barrels are expected to be produced in the Permian Basin.

"Labor shortages in that region threaten overall U.S. production gains in 2022 more than any other region," he said.

While most producers point to the Permian Basin as the tightest market, it's not the only one where labor is in tight supply. And a variety of factors may weigh into the availability of a workforce.

Halliburton's Josefovsky said that in the Rockies area, Pennsylvania and Ohio, constraints on hiring include cost-of-living, competition for workers, extremely high wages, lack of interest in labor-intensive jobs and even industry reputation challenges. Workforce challenges are primarily in hiring experienced and entry level field staff along with truck drivers.

Woo the workforce

Mathey said energy companies will have to be creative to rescale its workforce.

"Producers will need to raise their daily or hourly rates to attract and retain workers, and some operators are likely to set up extra performance targets during upswings like this to incentivize workers to join or stay with the company," he said.

Halliburton actively works in traditional and nontraditional ways to find and retain the best talent, including partnering with technical schools, truck driving schools and military bases, Josefovsky said.

"We're advertising on social media, national satellite radio and billboards, and we highlight full annual earning potential for key jobs, benefits and career progression, not just hourly rates," she said. "We couple this with education about the oil and gas industry, enhanced training programs, conversations on career options and earning potential and even having our employees talk about why they love this industry and Halliburton in general." OGI

FINDING BALANCE IN ESG

Plans for energy security and ESG must be balanced, Lisa Epifani, manager of ESG and sustainability for Chevron Corp., said at Hart Energy's Energy ESG Conference.

ARTICLE BY

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Amid pressure to grow production to meet today's oil and gas needs while focusing on emission reduction targets and addressing ESG concerns, traditional oil companies like Chevron Corp. aim to find balance.

This comes as many companies move toward different business models, responding to evolving investor expectations and need to address climate change. For Lisa Epifani, manager of ESG and sustainability for Chevron, companies can either replace oil molecules with electrons, shrink their footprints or remove carbon from the air.

"Some companies are choosing to shrink their business by replacing the oil molecule with electrons. That's not what Chevron is pursuing," she told a roomful of people gathered for Hart Energy's Energy ESG Conference on April 27. "We believe that our assets, our capabilities and our partnerships are best focused on trying to reach reductions in the hard-to-abate sectors. So, we're very focused on that reduce and remove part of the formula."

Chevron, which is targeting net-zero Scope 1 and Scope 2 emissions by 2050, has allocated $10 billion toward advancing its low-carbon future. Of that, $8 billion is allocated for low-carbon investments and $2 billion toward carbon-reduction projects by 2028. Its low-carbon business projects are focused on renewable fuels, hydrogen, offsets and carbon capture.

"We've set a target of 25 million tonnes a year of CCUS [carbon capture utilization and storage] storage by 2030, and this is a very ambitious target. If you think about the fact that Chevron today operates one of the largest CCS [carbon capture and storage] facilities in the world at Gorgon in Australia, that puts about 4 million tonnes a year away," Epifani said. "We're trying to build four to five Gorgon-sized CCS [facilities] over the next 10 years. It's not going to be a giant one-sized facility, but a lot of storage hubs and networks and partnerships. It's going to take a lot of work. So, collaboration will be key."

Energy companies are evolving as the world moves further into the energy transition seeking low-carbon energy sources to minimize the impacts of climate change. The transition, however, must be orderly, Epifani said. Reality should not be overlooked.

She recalled a challenging conversation with some investors who she said wanted Chevron to use the International Energy Agency's (IEA) net-zero scenario as the company's business plan.

"We use it as a stress test and offer scenario analysis … but it's not the basis of our business planning," Epifani said, calling the IEA's assumptions lofty. "We don't see them unfolding today. The world governments are not moving fast enough to put carbon prices in place. Governments are not offering the technology innovation, subsidies and support and so on. So, it's very important for people, again, to be realistic about the ambition versus the reality."

More people recognize that the energy transition must make sense for customers, she added, and when that doesn't happen, supply and demand disruptions occur and customers suffer. "We want to ensure that we have both a plan for ESG but also a plan for energy security and the two have to be balanced."

There has also been more recognition of the continued need for reliable and affordable energy, Epifani added, pointing to the crisis in Ukraine as evidence. The oil and gas industry has always provided long-term value and it needs to continue doing so, she said, as well as maintaining financial and climate discipline, improving performance and being transparent.

Still, ESG is not going away, she continued. "You'll see customers asking for more information related to the carbon intensity of the products, looking for a responsibly sourced gas. For me, I think of ESG as a long-term paradigm that's always focused on constant improvement."

Chevron's ESG strategy is centered on three pillars, she explained: protecting the environment, empowering people and getting results the right way. "We focus on lowering the carbon intensity of our assets in the most cost-efficient manner and growing our lower carbon business. Our objective is higher returns, lower carbon."

For companies just starting on their ESG journeys, she advised them to remember the industry has always focused on safety, communities and partnering with policymakers.

"Sometimes people say, 'Oh, it must be really hard to be in the oil and gas sector today.' I think there's never been a more important time to be in the oil and gas sector," Epifani said. "I'd say embrace this challenge. Talk about what the company is doing and things that you may not have realized were ESG," ensuring the contributions toward advancing lower-carbon initiatives are known. OGI

PUBLIC MINERAL COMPANIES LOOK FOR DAYLIGHT

Time, patience and volume are required for mineral and royalty companies to start attracting more investor interest, executives said at the World Oilman's Mineral & Royalty Conference.

ARTICLE BY

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Public mineral and royalty companies are ready for their due, but the leaders of Kimbell Royalty Partners LP, Viper Energy Partners LP and Brigham Minerals Inc. also recognize they need to be patient.

This just may not be their time, yet.

At the World Oilman's Mineral & Royalty Conference on April 19, Kimbell CEO Bob Ravnaas, Viper president Kaes Van't Hof and Brigham CEO Rob Roosa expressed their pride in what their companies have been able to accomplish—along with frustrations that the market still hasn't caught on to the value proposition they said they offer.

During a panel discussion, Van't Hof said a few years ago he expected minerals to be a large public asset class and that "clearly is not as large as we thought."

"But it's also an asset class that's incredibly capital efficient," he said, noting that even in the depths of COVID, mineral companies still made money.

The three executives said they are limited to some extent by the scale, liquidity and volume of shares their respective companies trade on an average day.

Investors are concerned about being able to move in and out of stock quickly, Roosa said, saying that can be a limiter for companies.

Though mineral companies have improved their average daily trades, they still lag similar or even smaller companies. Brigham averages about 475,000 trades per day, Viper averages about 375,000 trades per day and Kimbell nearly 300,000.

Similar market cap companies such as SM Energy Co. average about 1.8 million trades per day, while smaller Northern Oil and Gas Inc. averages roughly 750,000 trades per day.

"Ultimately where we need to be is probably $4 billion to $5 billion in market cap," Roosa said. "At that point I think you afford investors the ability to get in and out of these stocks very quickly if needed."

Ravnaas said mineral companies are also still a newer subsector of the energy industry.

One thing they need is time because "there hasn't been public mineral companies out there for that long." He noted that in the early days of mineral acquisition even private equity wouldn't invest "because they were worried about the returns."

"Now they see with time going by … you could make good money," he said. "Maybe it isn't a home run and a 100% return like you ... but you make good money at it."

A higher profile and further differentiation from E&Ps are needed, the executives said.

One way to get there is a larger-scale company built through large-scale deals such as the January merger announced between Falcon Minerals Corp. and Desert Peak Minerals. The companies have said their enterprise value after the deal closes will be $1.9 billion.

Smaller, incremental deals remain the standard for many mineral companies for now, with financing even for $100 million deals still expensive.

That's largely required companies such as Viper, Kimbell and Brigham to persuade sellers to take cash and stock.

In October, Viper purchased Swallowtail Royalties in a cash-and-stock transaction estimated to be worth nearly $500 million. Viper bought the Blackstone Energy Partners-backed Swallowtail in exchange for 15.25 million common units representing limited partnership interests in Viper and approximately $225 million in cash.

"It just depends what you afford," Van't Hof said. In the Swallowtail deal, "we were giving up a lot of stock but we couldn't pay all cash and compromise the balance sheet."

Roosa said mineral companies' reason for going public to begin with was an effort to consolidate the industry.

"When you think about that, that's being able to execute on any A&D transactions that are out there," he said. "So, it's just a continuation of being able to consistently show to investors that you're undertaking transactions."

But Van't Hof said mineral companies will get the attention they deserve when they create enough separation from E&Ps, even those such as Viper that are tied closely to Diamondback Energy Inc.

"I think you need a space's big enough for the investor to pay attention to," he said.

Investors bracket mineral companies with E&Ps and don't look at "minerals as a separate asset class as they should." OGI

HEARD AT THE OFFSHORE TECHNOLOGY CONFERENCE

"We believe we can participate in areas where we know the biggest and most sophisticated companies in the world are going to be there, but we can be there too, and the thing goes for CCS."

—**Tim Duncan,** ***CEO of Talos Energy****, addressing the company's transition into both an offshore E&P and carbon capture operator.*

Read all of our coverage from OTC on HartEnergy.com.

"We see that you have better decision-making when you've got different voices and different perspectives."

—**Kassia Yanosek,** ***consultant at McKinsey & Co. Inc.****, during a panel on how attracting and retaining women in the oil and gas workforce is key to ensuring different outlooks in the executive ranks.*

"You'll have to invest in technology, and you have to believe in the ingenuity of scientists and researchers."

—**Anish Simon,** ***vice president of emerging technologies and innovation, Equinor****, commenting on why technology is the key to the energy transition.*

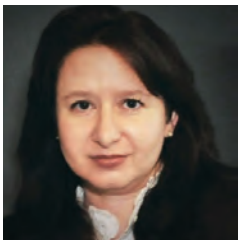
"We cannot have just the mindset that you spend the money that you have to decarbonize [without a] win-win solution financially."

—**João Henrique Rittershaussen,** ***chief production development officer of Petrobras****, discussing putting value on the carbon the company captures and how that can be realized in a pricing reality.*

ENERGY SECURITY ISSUES TRUMP ESG CONCERNS

"Nobody's going to drop ESG, but energy security has become 10 times more important than ESG," Pioneer Natural Resources Co. CEO Scott Sheffield told DUG Permian and Eagle Ford Conference attendees.

ARTICLE BY



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The E&P sector in the U.S. has made such strides in recent years to accommodate shareholder demands for returns and emissions mitigation that ESG matters are taking a backseat to energy security fears, Pioneer Natural Resources Co. CEO Scott Sheffield told attendees of Hart Energy's DUG Permian Basin and Eagle Ford Conference and Exhibition on May 18.

Russia's invasion of Ukraine flipped the narrative two months ago. Part of the fallout is a continent plunged into fuel and power uncertainty, propelling energy security fears above ESG matters in the view of investors and shareholders, he said.

"Nobody's going to drop ESG, but energy security has become 10 times more important than ESG," he said. "And we're seeing all the changes in Europe and hopefully we'll have an administration that'll make the appropriate changes in this country, too."

Meanwhile, the largest pure play in the Permian Basin continues to be among the top of its peers in addressing ESG issues. Pioneer has largely led the sector in dramatically downshifting on flaring and developing technology to mitigate methane leaks, as well as leading the drawdown in growth in recent years. Pioneer's target growth plan today targets 5%.

But that came several years after the industry became a pariah on the S&P 500 with its capital destruction and dismal shareholder returns. Five years ago, the firm targeted growth of 20%; when Sheffield rejoined the company as CEO, management lowered the growth rate to 15%. As the pandemic spread, Pioneer took the rate of growth down to 5% where it remains for now.

"Obviously, the reason we did that was to return more capital. The industry had the lowest return on capital employed among any industry in the S&P 500 for the last 10 years," he said. "Now we're contributing 8% to 10% of the earnings on the S&P 500—that's the energy sector."

The 5% cap on growth makes it easier for the firm to manage the ups and downs of the industry. Investors are taking notice and finding appeal in energy stocks that have set a target on 5% growth, Sheffield said.

"It's easier to get equipment, it's easier to plan," he said. "You don't have to go up and down. When we go through those downturns [with growth capped at 5%], your staff can plan ahead, they can get the equipment needed, and then in addition, you can return 75% of your free cash flow back to the investor, which is what Pioneer is doing."

After an exodus of investors from the space, many are beginning to regain confidence in the sector, he said.

"There is a movement, and you can see it at the largest money managers," Sheffield said, referencing BlackRock, which manages some $11 trillion worth of assets.

In recent years, BlackRock CEO Larry Fink has fired off excoriating letters to oil and gas executives urging them to take responsibility for climate impacts of their work.

Sheffield said that following several meetings with BlackRock executives in recent weeks, "You can see a mindset change at the top." OGI

EMILY PATSY/HART ENERGY

Pioneer Natural Resources CEO Scott Sheffield (right) speaking at Hart Energy's DUG Permian and Eagle Ford Conference on May 18.

CHEVRON ANSWERS POLITICAL CRITICISM OVER HIGH OIL PRICES

The Biden administration mistakenly believes that the shale industry can "just run out, set up a bunch of rigs and grow production overnight," said Steve Green, president of Chevron's North America E&P division.

ARTICLE BY

DARREN BARBEE

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After taking political fire that oil and gas companies haven't responded to commodity prices as they should, Steve Green, president of Chevron Corp.'s North America E&P division, said he has recently spent time in the nation's capital trying to explain it's not that simple.

Chevron and other Big Oil companies have come under fierce criticism by Democrats that they are artificially keeping prices high, which those companies say is not true.

Even as Chevron announced at the end of April that it would increase production by 15%—a 5 percentage point increase from its initial 10% growth forecast—Green told an audience at Hart Energy's DUG Permian and Eagle Ford Conference on May 17, that everything takes time, even ramping up shale production.

"That's frustrating to Washington right now because they mistakenly believe the industry can just run out, set up a bunch of rigs and grow production overnight," he said. Green said he visited Washington D.C. about a month ago to explain the company's position to President Joe Biden's administration.

The company has also been upfront and public about its commitment to adhering fiscal discipline, he said.

"I think every player in the sector now is focused on running their business with an eye on returns and earnings rather than just chasing a production number or how many rigs we have running," he

said. "That's not really our measure of success. It's what are earnings for our shareholders?"

Green drew a direct line to the current macro environment of commodity prices and the industry essentially taking "a year, year-and-a-half off from investments" due to the pandemic.

In Chevron's case, the company's plans were drawn well in advance of this year as it phased in increased production as global illnesses fell. Chevron had continued to drill wells during the height of the pandemic but not completing them. It only began adding back production in mid-2021, largely using its stockpile of DUCs.

"There was still a lot of uncertainty about what oil and gas demand was going to be" this year, Green said. After its initial growth target of 10% was set—and has already been exceeded—Chevron is now "well on our way to 15%," he said.

Green added the company's DUC inventory was worked through quickly, which has allowed it to meet and revise its growth target. The company prefers to retain a small "margin" of DUC wells.

"We're a decline based business," he said. "We'll have less to produce tomorrow than we have when we started today. If there's not a pattern of reinvestment and redevelopment, eventually production is going to decline."

He also pointed toward a lack of stable policies and regulations that allow for sustainable investments in production. That will mean "you're going to see more excursions like this, where prices fly up and then the economy reacts and demand goes down and prices go down."

Both the oil and gas sector and the economy would be better off, Green said, with a more consistent regulatory framework.

While Green said he has learned "painfully" that he cannot predict oil and gas prices, he said that the supply and demand fundamentals suggest bullish commodity prices will persist for some time. Partly that's due to geopolitical events, such as the war in Ukraine, and the continued recovery from the pandemic.

Green also addressed Chevron's environmental stewardship, reaffirming the mantra of Chevron CEO Mike Wirth that the company is committed to "higher returns, lower carbon."

Chevron is trying to make environmental progress through a several avenues solutions, including adding solar power generation, using electric rather than diesel rigs and deploying an array of methane leak detection devices to lower its emissions.

"Currently we're not using any diesel rigs in the Permian," he said, adding that the oil major is also committed to not turning on production without a "solution" to natural gas, meaning the "only natural gas flaring we do is [in the event of] upset conditions or safety issues."

Green said he is hopeful that "we can make progress with some of our critics … if we just take the responsibility and run our business with … respect for the environment."

Green said that the Permian has made a strong case for more than a century that it will be a reliable production source for years to come.

"Every time we've given it up for dead, it surprises us and technology unlocks new ways to produce and complete and economically produce it," he said.

Green also said the Permian also complements Chevron's deepwater Gulf of Mexico investments. The Permian tends to be shorter cycle, with less upfront capital demands that also given the company the flexibility to "moderate activity levels according to what supply and demand is."

With more than 2 million acres in Texas and New Mexico, including positions in the Midland and Delaware basins, Green said Chevron has forecast that "we're going to have sizeable activity and production from the Permian for many decades to come."

The company will continue to be engaged in dealmaking of one type or another.

"We're always in the market looking for additions to our portfolio. We make divestments from time to time as assets either are no longer strategic or don't offer us the growth platform that we're looking for," he said.

Chevron also said that it makes trades or swaps with other operators. A broader lull in the shale M&A market isn't necessarily a surprise to Green.

"It takes just that right alignment of sun, moon and stars, if you will," he said. "There's always consolidation in our industry, always, but it's hard to predict any pace or when that might happen, because there has to be a fit for each company involved." OGI

CAPITAL PROVIDERS REMAIN ON SIDELINES

The flight of capital from the E&P space is among the limiting factors keeping the U.S. from responding to the growing global demand for crude and natural gas, said VTX Energy CEO Gene Shepherd.

ARTICLE BY

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Gene Shepherd, CEO of VTX Energy Partners, is on the hunt for $1 billion deals in the U.S. Lower 48 and the Permian Basin in particular.

But what the founder and former president and CEO of Brigham Resources LLC finds concerning as he wades back into the industry is that strong oil prices and formidable E&P returns haven't pushed capital providers to open up their wallets.

"The degree to which the financial community has been willing to overlook what appeared to me be very attractive returns and … the practical needs of the growing global economy—that's alarming," Shepherd said at Hart Energy's DUG Permian Basin and Eagle Ford Conference. "That's a little bit alarming."

VTX is backed by Vitol, a global commodities trading firm that trades about 7.6 MMbbl of oil and other productions daily. Vitol, Shepherd said, had a long history of investing in physical assets that complement their trading activities. In February, they teamed with Shepherd to begin investing in upstream activities in the U.S. Lower 48.

Such firms may well end up being the alternative capital source the world needs, particularly after the industry has weathered downturns, a pandemic and is suffering through chronic underinvestment.

Shepherd said the lack of access to capital for E&Ps remains an impediment for a world that isn't producing enough crude and natural gas to offset supply disruptions and geopolitical tensions in Europe.

Shepherd said the flight of capital from the space is among "the limiting factors that are restraining or keeping U.S. upstream from responding to the growing global demand for crude and natural gas."

Vitol intends to "deploy several billion dollars of equity capital" into the Lower 48, without a particular disposition to commodity type or basin, although Shepherd said his preference is the Williston and Permian basins because of his experience there as an explorer.

"We are pretty open-minded obviously," he said. "We have a lot of experience in the Permian, and the Williston feels like it's a little more mature."

VTX is intent on finding assets that have a large component of associated development and, "ideally, we'd like to be in a position to take over operations."

"It's really hard to buy something exclusively PDP," he said. "The benefit of having a large development opportunity set is that you might not get the commodity price right, but you certainly have the opportunity then to go in after the fact."

If prices fall and service costs come down, that will give operators a chance to enhance a position's economics.

Shepherd's career has been firmly rooted in frontier exploration up until now.

Shepherd, CFO for Brigham Exploration Co., said the company purchased its Williston Basin assets beginning in 2002 for an average of about $400 per net acre. In 2011, the company sold its assets to Norway's Statoil ASA, now known as Equinor, for $4.4 billion.

Gene Shepherd speaking at a previous DUG Permian Basin Conference while serving as CEO of Brigham Resources.

Then as president and CEO of Brigham Resources, Shepherd led the company in its acquisition of southern Delaware Basin acreage for $4,000 starting in 2013. In February 2017, the company sold to Diamondback Energy for $2.6 billion.

But as 2020 and the pandemic took a toll, as well as the headwinds of ESG and climate, "at that time decided to pivot," Shepherd said.

"We moved away from what had historically been more of an exploration frontier focus in favor of a strategy more focused around developmental opportunities [in a] recovering global economy."

However, Shepherd said he's optimistic that alternative capital will "attempt to fill the void" created by investors less constructive on upstream and the departure of most private equity funding sources.

Those capital sources have historically given the industry's smaller, more innovative E&Ps the ability to create advancements the shale sector has been reliant on for the past decade.

Still, Shepherd believes that organizations such as Vitol will come to the table, attracted to the industry's potential for returns.

"By virtue of a constructive view on commodity prices and … the associate return opportunity, that will attract capital back to the space," he said.

Shepherd also said he expects a glut of marketed assets this year that, because of the scarcity of funding, will end up in "maybe busted or tabled processes," he said.

As for bid-ask spread concerns, Shepherd said VTX is willing to pay for inventory.

Part of our business today is you have this wide bid-ask spread, and we'll just have to see, as prices normalize, if sellers and buyers can come to agreement," he said. "It feels pretty challenged right now." OGI

NEW E&P MATH AND ENERGY'S PIVOTAL MOMENT

Things have changed for the upstream sector, and the first quarter proves it, according to energy analyst Subash Chandra, who shared several of his takeaways at the DUG Permian Basin and Eagle Ford Conference.

ARTICLE BY

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Despite the ups and downs of oil and gas, energy analyst Subash Chandra reassured attendees of Hart Energy's DUG Permian Basin and Eagle Ford Conference and Exhibition that these are good times.

"We are in a pivotal moment, I think, for the energy sector," said Chandra, an equity research analyst at The Benchmark Co. LLC, on May 16. "It's a point of redemption that we've waited a very long time for."

Subash Chandra

Chandra has covered the energy sector since 1997 and, prior to joining Benchmark, worked throughout his career for various firms, several of which have dropped traditional energy research "because they never thought this moment would arrive," he said.

The main pushback for the last three to four years was that capital discipline in the upstream sector was what Chandra described as an "unknown element." Things have changed; however, and the first quarter proves it, which he shared during his presentation at DUG Permian Basin and Eagle Ford in addition to a new math for E&P investment.

"The first quarter, the main message that we got—and Steve referenced this, it was probably the main part of the conversation," he said, referring to the conference's opening keynote by Chevron's Steve Green, "is investors first."

The market was waiting for the first quarter to see if this was the moment that upstream companies break their promises of capital disciple and chase growth and, as Chandra pointed out, that didn't happen

Asked what his top picks for the upstream sector were by session moderator Jay Young, who serves as president and CEO of King Operating Corp., Chandra gave three: Earthstone Energy, Antero Resources and Talos Energy.

"Earthstone, ESTE, is one of our top Permian names," he said. "They've been the fastest growing—and organically—company of 2021."

Based in The Woodlands, Texas, Earthstone Energy is a growth-oriented oil and gas E&P company focused on the Permian Basin and Eagle Ford Shale. Within the past year, Earthstone has transformed itself into a larger scaled, low-cost producer utilizing M&A of small operators in the Midland Basin.

"Tremendously counter-cyclical [and] has not gotten credit for it," he said. "They will get credit for it when a lot of the haze settles."

Still, Chandra said a new market focused on return of capital brings a new math for E&P investment.

"What you don't see here is type curves, IRRs, wells per section—every other conference we've been at for 10 years, that math is out," he said. "The new math is—this is 99.8% of the investors I talk to look at two numbers—primarily what is free cash flow yield versus multiple."

As a result, Chandra believes the market is increasingly basin-agnostic when it comes to upstream companies. Still, he noted that, year-to-date, natural gas was the best performing of the sub-sectors this year.

Chandra also reassured DUG attendees that type curves still matter, they just matter less these days. A key number, though, that he monitors is the S&P 500 weighing of the E&P sector, which is currently at 4%.

"We need to get to a number that is closer to 10%," he said. "Closer to 10%, the engagement to investors will be magnitudes higher than it is today because as well as the sector has done ... the investor engagement isn't there yet. It isn't because of this one key metric."

In addition to a bright outlook for natural gas producers and big strategic changes ahead for LNG, Chandra also touched on another hot topic during his wide-ranging discussion: inflation.

According to Chandra, there have been two types of inflation starting with post-COVID, which include supply chain bottlenecks.

"I think some of that, if not a bunch of that, was anticipated in the 2022 budgets," he said of post-COVID inflation.

However, following COVID, the Russian invasion happened, leading to a second wave of inflation involving diesel, steel, etc.

"That was unanticipated," he said. "I think we're seeing capital programs drift toward the upper end of the 2022 guidance but we don't know where it's going to stop. We don't know what 2023 is going to look like and that's going to be a key focus." OGI

Events Calendar

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

EVENT	DATE	CITY	VENUE	CONTACT
2022				
Mexico Gas Summit	June 1-2	San Antonio	St. Anthony Hotel	mexicogassummit.com
Louisiana Energy Conference	June 1-3	New Orleans, LA	The Ritz-Carlton New Orleans	louisianaenergyconference.com
Petroleum Alliance of Oklahoma Annual Mtg.	June 9-11	Irving, TX	Four Seasons Resort	thepetroleumalliance.com
CIPA Annual Meeting	June 9-12	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**	**dugrockies.com**
SPE Innovation & Entrepreneurship Summit	July 14-15	Houston	Norris Center City Centre	spegcs.org
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
Energy Workforce & Technology Council Summer Mtg.	Aug. 3-5	Westminster, CO	The Westin Westminster	energyworkforce.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. 14-16	Wichita, KS	Hyatt Regency	kioga.org
The Energy Summit	Aug. 22-24	Denver	Denver Center of Performing Arts	coga.org
SEG/AAPG IMAGE Conference	Aug. 28-Sept. 1	Houston	George R. Brown Conv. Ctr.	imageevent.org
OGA Annual Conference	Aug. 29	Norman, OK	Embassy Suites by Hilton Norman	okgas.org
Energy ESG Conference	**Sept. 8**	**Houston**	**Royal Sonesta**	**hartenergyconferences.com**
GPA Midstream Convention	Sept. 11-14	San Antonio	Marriott Rivercenter	gpamidstreamconvention.org
America's Natural Gas Conference	**Sept. 27**	**Houston**	**Royal Sonesta**	**hartenergyconferences.com**
North American Gas Forum	Oct. 24-26	Washington, D.C.	Park Hyatt Washington, D.C.	energy-dialogues.com/nagf/
USAEE/IAEE North American Conference	Oct. 24-26	Houston	TBD	usaeeconference.com
Energy Capital Conference	**Oct. 25**	**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**
2023				
IPAA Private Capital Conference	Jan. 19	Houston	The Post Oak	ipaa.org
NAPE Summit	Feb. 1-3	Houston	George R. Brown Conv. Ctr.	napeexpo.com
CERAWeek by S&P Global	Mar. 6-10	Houston	TBD	ceraweek.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.

GAS MARKETS PROMPT INVESTORS TO RETURN TO ENERGY

Europe's rejection of Russian natural gas could translate into a boom in infrastructure to meet demand.

ARTICLE BY

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Russia's invasion of Ukraine and the subsequent tightness in the global natural gas market have opened a window of opportunity for LNG export terminal developers looking to make a final investment decision (FID), according to investment banking advisory firm Evercore ISI.

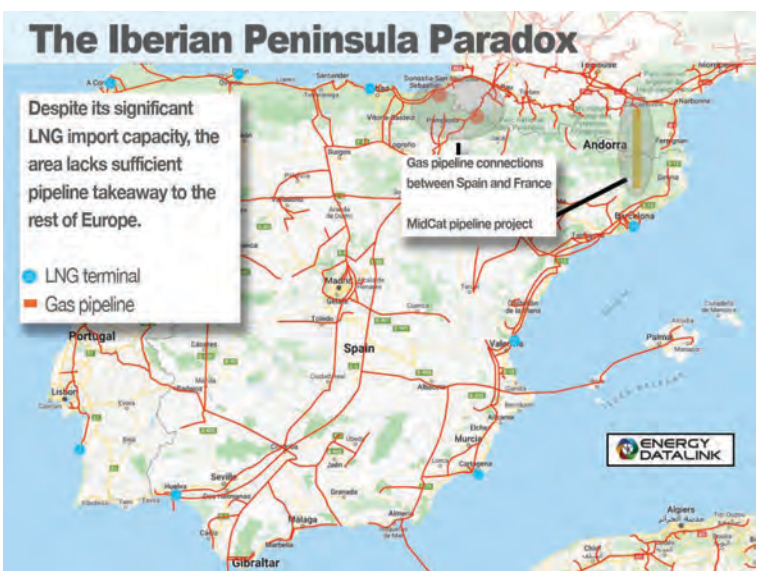
For energy exporters, the environment for obtaining construction approvals and bank financing to build a new export facility is much more positive than it was just 12 months ago, said Evercore's Sean Morgan during a recent webinar.

The U.S. benchmark Henry Hub natural gas price settled at $8.78/MMBtu on May 5, compared to $32.95/MMBtu in Europe and $24.15/MMBtu in Asia.

Morgan said he looks to Cheniere Energy Inc., pioneer of Gulf Coast LNG liquefaction and export terminals, as the bellwether for the U.S. response to Europe's pivot away from Russian-supplied gas.

"Most people have the next phase of production at Corpus Christi Stage 3 already built into their models, so they're basically going to be looking at either reduction in terms of the discount rate as the company grows and cash flow improves, or multiple expansion unless they do more expansion," Morgan said.

It's not entirely clear yet which path Cheniere will take. Assuming a generational shift in market share with Russia losing 155 Bcm a year, he said, will the company be emboldened to buy a FERC-approved competitor or invest in a private project as a means to expand capacity?



> **"It takes a long time to build these projects. You look at the volumes that are coming through 2024 and it is absolutely miniscule."**
>
> —Sean Morgan, *Evercore*

Cheniere CEO Jack Fusco said the company expects sustained growth in the global LNG market on May 4 when the company announced first-quarter earnings. The company took a loss in the quarter, though it beat Wall Street estimates. Cheniere raised its earnings estimate to $8.2 billion to $8.7 billion from $7 billion to $7.5 billion.

Supplying Europe

Complicating the European energy equation have been policies to turn away from fossil fuels to meet climate change decarbonization goals. Cutting off imports of Russian energy accelerated the effort to meet those goals but without a corresponding increase in replacement clean energy sources, such as renewables.

The short-term solution to Europe's energy crunch has been to return to fossil fuels and redirect LNG tankers headed elsewhere. In January and February, Morgan said about 70% of LNG volumes

shipped from Cheniere's terminals found their way to Europe via resale, a benefit of the U.S. market's destination flexibility. There are limits, of course, to what U.S. exporters can provide to Europe because of contracts with customers in Asia and export plant capacity.

There are also limits to European import plant capacity. Germany relies on gas for 24% of its energy needs and on pipelines for all imports. Two LNG import terminals, in the coastal towns of Stade and Wilhelmshaven, are about 24 months from being online, but their combined capacity will be less than 2 Bcf/d, far below the country's 8.6 Bcf/d consumption in 2019, according to the U.S. Energy Information Administration.

HÖEGH LNG

Höegh LNG's* Independence*, left, a floating storage and regasification unit (FSRU) operating in Klaipeda, Lithuania, connects to the company's* Arctic Princess *LNG carrier. As European countries cut off imports of pipelined Russian gas in response to that country's invasion of Ukraine, shipments of LNG have increased and FSRUs have been relied on to compensate for a shortage of LNG import facilities on the continent.

On May 5, the German government announced that Wilhelmshaven would be designated an LNG hub and be able to receive seaborne LNG as early as the winter of 2022-2023. Two floating storage and regasification units (FSRUs) were chartered for 10 years for that purpose, and the country's economy ministry has said it sought to secure four vessels. The price for those four floating LNG terminals is about 2.5 billion euros (US$2.64 billion).

The EU's total LNG import capacity is significant. In 2021, regasification facilities produced 157 Bcm, or about 40% of the EU's consumption, the European Commission said. However, many of the terminals are on the Iberian Peninsula, and only two small gas pipelines connect from Spain to France.

An extension of the Midi-Catalonia (Mid-Cat) Pipeline, which would pump about 7.5 Bcm per year of imported Algerian gas across Spain's border with France, was canceled in 2019 as part of a European move away from fossil fuels. There is support to revive the project, but if successful, completion would be about five to six years off.

On May 3, Greece and Bulgaria announced they would deploy an FSRU 11 miles offshore the northern Greek port of Alexandroupolis. The vessel's capacity will be about 5.5 Bcm per year. It is scheduled to begin operations in late 2023. When combined with an existing FSRU offshore Athens, Greece, will be able to triple its regasification capacity.

FSRUs can be completed in a fraction of the time it takes to build an import terminal and at much lower cost. The global fleet almost doubled, to 43 from 24, between 2016 and 2020.

'Critical stage'

When Russia invaded Ukraine on Feb. 24, Morgan expected to see a big jump in the number of contracts signed with European gas companies. That was not the case. China, however, moved aggressively at the time to secure long-term LNG supplies ahead of European utilities that had not yet pivoted from Russian gas.

The situation has changed, though. With the conflict entering a stalemate period in what former U.S. Defense Secretary Leon Panetta calls a "critical stage of this war," European countries are moving quickly to keep energy cash flows from funding Putin's war machine. That, Morgan said, will benefit U.S. LNG operators as more European customers enter into sales and purchase agreements.

The LNG sector is in flux as it responds to the war. Not only has output plateaued to a large extent, but expected future volumes may not materialize. That has changed the outlook sharply in the past 12 months for developers seeking investment backing to get to FID. For operators of existing projects, wide arbitrages will be the rule for the next three years.

"It takes a long time to build these projects," Morgan said. "You look at the volumes that are coming through 2024 and it is absolutely miniscule."

The next major project on the schedule is Novatek's $12 billion Baltic LNG project in Ust-Luga on the Gulf of Finland. Morgan expects the 13 million tonnes per annum (mtpa) project to be delayed without western financing or know-how.

Chinese banks might be able to step in to finance Baltic LNG, but it's unlikely that China could build it. There are no Chinese equivalents of Schlumberger, Baker Hughes or Halliburton that are able to take over a project. Another major project, TotalEnergies' $20 billion Mozambique LNG with capacity of 12.8 mtpa, has been held up following a 2021 attack by insurgents tied to the Islamic State.

In North America, however, Shell's 14 mtpa LNG Canada project is scheduled to begin deliveries by mid-decade, and the $10 billion Qatar/Exxon Mobil Golden Pass project on the Gulf of Mexico is on track to go online in 2024 with capacity of 15.6 mtpa. OGJ

CARBON MANAGEMENT LEADS MIDSTREAM PROJECTS

Companies such as Oxy Low Carbon Ventures and Wolf Midstream are focusing on sequestration hubs around North American in this roundup of the latest midstream developments.

ARTICLE BY

GREGORY DL MORRIS

Enterprise Products Partners and Occidental Petroleum Corp. plan to develop a CO_2 transportation and sequestration system for the Texas Gulf Coast, the two companies announced in late April. The initial focus will be the corridor from Houston to Beaumont/Port Arthur and would combine Enterprise's large midstream energy sector with the subsurface characterization and CO_2 sequestration experience of Oxy Low Carbon Ventures (OLCV) subsidiary.

According to the agreement, Enterprise would develop the CO_2 aggregation and transportation network using a combination of new and existing pipelines along its expansive Gulf Coast system. OLCV, through its 1PointFive business unit, is developing sequestration hubs on the Gulf Coast and across the U.S., some of which are expected to be anchored by direct air-capture facilities.

"For many years, Enterprise and Oxy have successfully collaborated in developing traditional oil and gas projects," said A.J. Teague, co-CEO of Enterprise's general partner.

Enterprise Products Partners has more than 50,000 miles of pipelines; over 260 MMbbl of storage capacity for NGL, crude oil, refined products and petrochemicals; and 14 Bcf of natural gas storage capacity.

Meanwhile, OLCV and lumber company Weyerhaeuser are exploring a potential carbon capture and sequestration (CCS) project in Livingston Parish, La. Under a lease, OLCV has exclusive rights to develop and operate a carbon sequestration hub on more than 30,000 acres of subsurface pore space controlled by Weyerhaeuser. OLCV will use the land to permanently sequester industrial CO_2 in underground geologic formations not associated with oil and gas production, while Weyerhaeuser continues to manage the aboveground acreage as a working forest.

The lease agreement, with the potential to expand acreage, is a pivotal step in OLCV subsidiary 1PointFive's plan to build, acquire and operate a series of CCS hubs around the U.S.

Weyerhaeuser has identified multiple locations for potential CCS projects across a portion of its 7-million-acre footprint in the U.S. South using proprietary geological data covering its lands. Weyerhaeuser, technically a real estate investment trust, is one of the world's largest private holders of timberlands. It owns or controls about 11 million acres in the U.S. and manages additional timberlands under long-term licenses in Canada.

Albert sequestration hub

Wolf Midstream, Whitecap Resources, the First Nation Capital Investment Partnership and Heart Lake First Nation

were selected by the government of Alberta to pursue development of a carbon sequestration hub in the Fort Saskatchewan area, an agreement that was finalized in March. Wolf and partners will conduct a technical evaluation of the geographic area this year to confirm its suitability prior to applying for a long-term lease from the province.

"Our proposal was anchored in our partnership's proven CO_2 infrastructure and subsurface capabilities, as well as our plan to use existing infrastructure by connecting to our Alberta Carbon Trunk Line system to minimize the project's environmental footprint," said Jeff Pearson, president of carbon operations at Wolf Midstream.

Wolf has agreements with several CO_2 emitters, including large industrial gases company Air Products, which is building a major net-zero hydrogen-energy complex in the region. Those supply agreements are projected to provide initial CO_2 delivery to the hub of 2 million to 3 million tonnes per annum (mtpa), with ultimate hub volumes that could exceed 6 mtpa.

Wolf, a Calgary, Alberta-based private company, is backed by the Canada Pension Plan Investment Board. Wolf owns and operates CO_2 compression facilities and the 240-km Alberta Carbon Trunk Line (ACTL) Pipeline, a multi-party, open access CO_2 pipeline that transfers from capture sites to secure underground storage.

"The presence of the ACTL was one of the factors that led us to select Edmonton for our net-zero hydrogen energy complex," said Seifi Ghasemi, chairman, president, and CEO of Air Products. The ACTL became operational in 2020 and, by the end of 2021 had moved 2 mtpa of third-party CO_2 to permanent storage.

"We expect to have the system in operation by the end of 2024," said Gordon Salahor, senior advisor for Wolf. "We stress that sequestration by itself is not a project. Supply, capture, transport and sequestration are a project."

In many ways midstream CCS is little different from traditional hydrocarbon midstream, in that it benefits greatly from economies of scale, Salahor explained.

"The key exception is at the front end of the pipe. Carbon supply and capture usually does not benefit from economies of scale because it is generally so diverse and very source-specific," Salahor said. "That is why most of the cost in CCS is in capture and the related supercritical liquefaction-compression, rather than in transport and sequestration."

Transport challenges

One important difference between CCS midstream and hydrocarbon midstream is pressure.

"You can move CO_2 in vapor phase, but it is ridiculously inefficient compared to moving it in supercritical phase," Salahor said. "That is 2,000 psi, the pipe for which is more expensive than the 1,000-psi pipe that is common to the North American hydrocarbon midstream. No one would build 2K pipe for standard oil and gas operations, so the main option for repurposing existing pipe would be to run CO_2 in vapor phase at lower pressure. While you can run short pieces of CO_2 pipe at lower pressure, for gathering perhaps, that is just not economical for any meaningful transport."

"We stress that sequestration by itself is not a project. Supply, capture, transport and sequestration are a project."

—Gordon Salahor,
Wolf Midstream

That means that even for midstream operators with extensive networks of pipe, it is likely that their plans for expansion in CCS will mean lots of new building. That certainly can be along existing rights of way, but even then, there is only limited benefit.

"If a midstream operator has multi-pipe rights for a right-of-way, that is a great advantage," Salahor said. "But in most cases the rights agreement will require permission from the landowner to add any new pipe. So, between the permits, rights of way and 2K pipe, to build CCS midstream you have to go through mostly the whole process."

Wolf is already involved in CCS and hydrocarbon midstream in both the U.S. and Canada. Its next expansion is the NGL North project due to be in service in 2023. NGL North is a proprietary, integrated NGL recovery, transport and separation system. By recovering higher carbon NGL from the regional natural gas system, NGL North is intended to reduce CO_2 emissions in the Christina Lake area of Alberta by more than 200,000 mtpa and will provide feedstock to support the petrochemical industry in the region.

An NGL recovery facility with an ultimate capacity of approximately 1 Bcf/d is being built in Northeast Alberta and will send the NGL to a feedstock separation complex utilizing Wolf's existing idle 16-in. pipeline. The separation complex northwest of Edmonton is next to Wolf's existing Sturgeon Terminal and Alberta Carbon Trunk Line origin point. The separation complex will produce about 70,000 bbl/d of NGL, including ethane, propane, butane and condensate. The gas processing unit, pipe connections and fractionator are all underway.

Whitecap, based in Calgary, Alberta, is a public energy company focused on oil and gas production in western Canada. Whitecap operates the Alberta Joffre and Saskatchewan Weyburn CO_2 EOR projects and manages more than 200 CO_2 injection wells and associated pipelines and infrastructure. Those sequester 2 mtpa. The Weyburn CO_2 EOR project is the largest anthropogenic carbon sequestration project in the world with over 38 metric tons stored to date, according to Whitecap. OGI

DEFENSE FOR CYBERSECURITY IN A CONNECTED WORLD

Companies must understand their vulnerabilities and the potential damage a successful cyberattack could wreak.

ARTICLE BY
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Companies need both a good cybersecurity defense system as well as a playbook for what to do during an attack, according to cybersecurity experts.

As the upstream energy industry becomes increasingly connected through information technology (IT), operational technology (OT) and the Internet of Things (IoT), the number of entry points into a system increases. There are several challenges to planning an effective cybersecurity strategy, and companies must understand their vulnerabilities and the potential damage a successful attack could wreak, as well as have a trained plan for how to respond, experts said during the AWS Energy Symposium in May.

Ben Miller, vice president of service and R&D at Dragos, said the threat landscape in cybersecurity is only increasing. The proliferation of connections for OT equipment is one reason, he said.

"You can't get less connected, that's just not happening," he said.

And all of those connections are potential entry points for a cyberattack, he said.

"No adversary is out there saying, 'I'm not going to attack OT systems,'" Miller added.

Many attackers are now focusing on stealth operations, "moving as quietly as possible in these environments to stay there for a long time," he said.

Leo Simonovich, global head, industrial cyber and digital security at Siemens Energy, said the company asked people who were responsible for OT about their experiences with cyber threats.

"What we found was really disturbing," he said. "Most are experiencing at least one major event per year" that's causing problems, and some are experiencing even more each year.

The points of entry are increasing and cyberattack strategies are evolving, but there are additional challenges the energy industry faces when it comes to securing their assets and networks.

Miller said there can be limited data collection or analysis of that data, partly because coordination between internal teams can be lacking. That lack of coordination and sharing of information inside organizations can lead to attempts to defend a system in isolation, he said.

Finally, if existing information isn't shared quickly, it can mean a company doesn't have sufficient time to plan a defense or response, he said.

Simonovich highlighted some other reasons that it can be difficult to secure a network or asset in a "hyperconnected digital space."

First, there can be a problem with visibility, he said.

"Visibility is the most overused word in cybersecurity," he said. "But it's still important."

That's because if a company doesn't know how exposed the network or asset is, it's hard to protect it, he said. And it's necessary to identify those vulnerabilities that, if exploited, could have "real-world consequences," he added.

He cited other factors that make cybersecurity more challenging, such as the existence of brownfield legacy assets. If they've been under-maintained for a while, securing those assets can be difficult, especially if they are being connected at an accelerated pace, he said.

At the same time, he said, "the traditional boundaries between OT and IT are beginning to blur."

A new approach is necessary, Simonovich said.

"Traditional IT approaches have not worked," he said. "It's not a technology problem. It's a strategy problem."

Miller said a world-class cybersecurity program needs five elements: a defensible architecture, monitoring of the industrial control systems network, remote access authentication, vulnerability management programs and disaster recovery plan.

And Simonovich emphasized that companies need to know how to respond and train that response, he said.

The companies that win, he said, "will have to become more digital and embrace cybersecurity as a core competitive advantage." OGI

THE NEXT STEP IN ESG IMPROVEMENTS

Through its application of energy-efficient services in traditional oil and gas operations, Patterson-UTI is ensuring drillers are able to operate both sustainably and productively.

ARTICLE BY

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Service providers in the oil and gas industry are met with the challenge of staying loyal to their original goal of supplying oil and gas operations while adjusting to the widespread changes the industry is undergoing.

As Houston-based service provider Patterson-UTI evaluates the needs of its customers, it has turned its attention to automated systems and renewable partnerships while never losing sight of its original goal of providing assistance with oil and gas operations.

While remaining dedicated to its drilling solutions, Patterson is implementing environmental solutions to traditional drilling operations. For example, the company's GenAssist automated generator software has helped operators utilize engine automation to maximize fuel efficiency. In addition, it made an investment in geothermal company Criterion Energy Partners in March to further advance its commitment to renewable energy.

"I think probably [in] the last few years, we're seeing more and more interests around ESG technology, specifically, how do we reduce fuel consumption and emissions at the well site."

—**Katy Holst Dickson**, *Patterson-UTI*

In an exclusive interview with Hart Energy, Katy Holst Dickson, vice president of technology at Patterson-UTI, shared how the company is adapting to the changing needs of the oil and gas industry, from creating award-winning carbon capture technology to reducing energy consumption across each aspect of the work site.

"We are an oil and gas services provider, and we'll continue to provide those services as our core business," Dickson said. "We'll still work to understand any other opportunities there may be, while still providing those core services, which is likely to include more projects in the renewable energy sector.

"There's going to be opportunities in that space moving forward. I think as a company, we're very open to exploring these opportunities with different partners and ... really helping them be successful throughout the life cycle of their projects." OGJ

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

Quotable

"The oil and gas industry has a long history of using enabling sensors and sensor data to drive improved performance and better decision making. If you look back over decades, we've literally put in millions of advanced instruments into our facilities—and I'm talking as an industry as a whole."

—Carri Lockhart, *Dril-Quip board member and former CTO of Equinor, during a video interview discussing what's next for IIoT and E&P.*

Watch the interview here:

Oil and Gas Investor

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"Do what you're supposed to be doing, when you're supposed to be doing it." Steve Herold told me in 2013 that was the mindset at Petrohawk Energy Corp., formed with eight figures by Floyd Wilson, culminating in a $15 billion sale in 2012 after figuring out the Haynesville and Eagle Ford shales.

It's an apt description of successful American enterprises, particularly those of the oil and gas industry. It was George Mitchell's position when insisting the Mitchell Energy & Development Corp. team crack the code in the '80s and into the '90s on the Barnett Shale.

Anything less wasn't an option.

Same for other U.S. shale leaders that now collectively produce 91 Bcf/d.

Same for additional E&P executives—Charif Souki and Michael Smith—who entered LNG and stepped up to turn two Gulf Coast import terminals around. Today, those and three newbuild facilities, along with a couple of turned-around Atlantic Coast terminals, are shipping 13 Bcf/d to allies globally.

Same for the pipeline operators that are shipping up to 7 Bcf/d to Mexico, which was once a net gas exporter to the U.S.

And, although the U.S. produces some 96 Bcf/d altogether, it was looking a bit gas short in May as working gas in storage was barely refilling. The U.S. exited the withdrawal season in April about 25% shy of the 2021 exit, according to the Energy Information Administration (EIA).

A gas trader said last summer that the U.S. needs additional storage capacity, while exports are a daily call and not seasonal. The industry is actively developing carbon storage projects. But no word on additional gas storage yet.

Subash Chandra, an energy analyst for The Benchmark Co. LLC, told Hart Energy's DUG Permian and Eagle Ford attendees last month, "Without supply rising to (between) 97 and 98 Bcf/d this summer, we can't close the massive year-over-year storage deficit based on current weather forecasts."

An associated-gas producer said at the conference that there is concern that some folks in the U.S. might be freezing in the dark this winter. This happened in the 1970s as the U.S. Northeast ran out of gas.

Matt Murphy, an analyst with Tudor, Pickering, Holt & Co., reported in mid-May that "power generation remains a key focal point for demand." Generation through May was 9% ahead of a year ago with gas-fired generation alone "tracking 4 Bcf/d above the five-year average in the past few days."

He expects supply to grow later this year to up to 99 Bcf/d. Still, like Chandra, he's concerned storage will come up short. Murphy is seeing it at 3.3 Tcf entering autumn; it's usually about 4 Tcf.

In parts of Europe, they weren't doing what they were supposed to be doing to securing friendly energy supply. Despite the enormous volumes of U.S. LNG to Europe this year, EU storage was 41% full in mid-May. Member countries aim to get that number up collectively to 85% before this winter, according to Reuters.

Meanwhile, in France, power provider Engie SA decided in 2020 to not close on an LNG contract from a to-be newbuild terminal in Brownsville, Texas. The problem: The LNG would be derived from Permian and Eagle Ford associated gas, thus "dirty gas" because it was only produced as a result of producing oil.

A few weeks ago, Engie signed a contract with the LNG plant developer, NextDecade Corp., after all.

It takes more than two years to build an LNG tanker, and the fastest U.S. newbuild LNG export plant to come online was in 29 months. With a contract with Engie in 2020, the Brownsville plant might have been ready to begin exports this winter.

Scott Sheffield, chairman and CEO of Pioneer Natural Resources Co., said at DUG that, because of the Ukrainian situation, "energy security has become 10 times more important than ESG."

The U.K. had rejected development this past decade of its Bowland Shale, which is estimated to be roughly the size of the Fayetteville Shale. A few anti-frackers made noise, and the British ran away.

Now, the U.K. is curious about its indigenous shale gas. But there isn't a frac spread around.

It's a lesson to all gas-consuming nations: Do what you're supposed to be doing, when you're supposed to be doing it. OGI