Oil and Gas Investor

CHARIF SOUKI

Bada Bing: The LNG Godfather Speaks

STRANGE AND BROKEN

A&D's Swagger Ending in Tatters

PRIVATE EQUITY

Prices Spike Portfolio Profits

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OCTOBER 2022

BUILDING BLOCKS OF A STRONGER OIL & GAS INDUSTRY

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$53 MILLION	UNDISCLOSED	$207 MILLION	$276 MILLION	UNDISCLOSED
KIMBELL ROYALTY PARTNERS	**MULTI-BASIN MINERALS PLATFORM**	ACCRETION ACQUISITION CORP.	BLACK MOUNTAIN ACQUISITION CORP	**BAKKEN SHALE E&P COMPANY**
FOLLOW-ON OFFERING	ASSET DIVESTITURE	INITIAL PUBLIC OFFERING	INITIAL PUBLIC OFFERING	ASSET DIVESTITURE
Co-Manager	Financial Advisor	Joint Bookrunner	Joint Bookrunner	Financial Advisor

$370 MILLION	$199 MILLION	$650 MILLION	$560 MILLION	$535 MILLION
LONESTAR RESOURCES	Cactus	TALOS ENERGY	MARTIN MIDSTREAM PARTNERS	LONESTAR RESOURCES
ACQUIRED BY PENN VIRGINIA CORPORATION	FOLLOW-ON OFFERING	SENIOR SECURED NOTES	HAS SUCCESSFULLY CONSUMMATED ITS DEBT EXCHANGE, FINANCING, AND CASH TENDER	CHAPTER 11 RESTRUCTURING
Fairness Opinion	Co-Manager	Senior Co-Manager	Financial Advisor	Financial Advisor

UNDISCLOSED	$270 MILLION	UNDISCLOSED	UNDISCLOSED	UNDISCLOSED
NORTH AMERICAN TRANSPORTATION AND SERVICE PLATFORM	elkpetroleum	**EAGLE FORD MINERALS PLATFORM**	AETHON	VIKING MINERALS
CORPORATE CARVE OUT	ADVISOR TO THE AD HOC CROSSOVER LENDER	PRIVATE PLACEMENT OF EQUITY	ASSET DIVESTITURE	ASSET DIVESTITURE
Financial Advisor	Financial Advisor	Financial Advisor	Financial Advisor	Financial Advisor

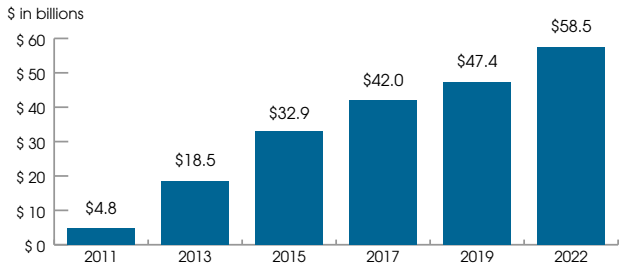
ENERGY GROUP KEY STATISTICS

$58+ Billion
Aggregate Transaction Volume since 2009

$310 Million
Average Transaction Size

189
Transactions Closed since 2009

ENERGY GROUP AGGREGATE TRANSACTION VOLUME



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Oil and Gas Investor

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Oil and Gas Investor

by HARTENERGY

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AROUND THE INDUSTRY

MIDSTREAM

TECHNOLOGY

REGULATORY

ABOUT THE COVER: In an exclusive interview with *Oil and Gas Investor*, executive chairman of Tellurian Inc. and LNG Godfather Charif Souki discussed his perspective on energy and world order. Photo by Sebastian Nevols.

RUSSIAN AGGRESSION, MARKET EXPANSION

RING THE BELL

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We feature Tellurian boss Charif Souki on the cover of *Oil and Gas Investor* this month, a recognition that his longtime championing of LNG proved prescient. And the timing is right on.

Russia's invasion of Ukraine—and the European response to the unprovoked war—has upended global energy markets. Meanwhile, the U.S. is exporting more LNG than ever before.

The White House says Russia is using energy as a weapon against European countries. Russian President Vladimir Putin has shut down the Nord Stream 1 Pipeline for the second time since the war began. This time, it's closed indefinitely, and he is taunting European leaders worried about the coming winter.

"The bottom line is, if you have an urge, if it's so hard for you, just lift the sanctions on Nord Stream 2, which is 55 billion cubic meters of gas per year, just push the button and everything will get going," Putin said in a Reuters article. The Russian president blames the "green agenda" for Europe's energy woes.

Nord Stream 2, which lies on the bed of the Baltic Sea almost parallel to Nord Stream 1, was built a year ago, but Germany opted against proceeding with the pipeline in the days leading up to Russia's invasion of Ukraine on Feb. 24.

Meanwhile, the U.S. has drilled and innovated its way to become a key global exporter of LNG, largely a result of Souki's persistence. Souki had made a variety of billion-dollar bets on the commodity before it was cool and before it made a profit. Some folks thought he was crazy. But Souki worked on eventually becoming known throughout the industry as the "Godfather of LNG."

Second now only to Australia, the U.S. boosted its capacity to 86.1 million tonnes per annum (mtpa) between January and April this year. The growth positioned the U.S. ahead of Qatar's 77 mtpa and into the second position.

LNG trade—especially U.S. LNG exports—continues to grow amid geopolitical issues that threaten energy security for numerous countries. At the same time, a continued global push to decarbonize economies has seemingly jettisoned a move away from fossil fuels such as oil and coal and to low- and zero-carbon sources such as natural gas.

The growth shows no signs of abating. Two LNG liquefaction projects under construction in Texas as well as one in Louisiana will add a combined 5.65 Bcf/d of LNG export capacity when completed by 2025.

LNG has evolved as a vital energy source to "secure and reliable functioning of energy systems around the world … a vital tool for controlling emissions, particularly as the crisis in energy supply is forcing even the most climate-conscious economies to turn back to coal, wiping out emissions reductions achieved in recent years," said the International Gas Union (IGU) in a recent report.

The commodity is "addressing supply constraints [that are] going to be critical to energy security and economic stability in the world."

Global LNG trade in 2021 "reached an all-time high of 372.3 [mtpa], as the strong post-pandemic recovery resulted in a surge in LNG imports," up 4.5% compared to 2020, according to the IGU.

Global liquefaction capacity reached 459.9 mtpa in 2021, up 6.9 mtpa compared to 2020. The average global utilization rate was 80.4% in 2021, up compared to 74.6% in 2020 due to economic recovery following the lift of COVID-19 restrictions, a prolonged European winter and drought in Brazil, all which boosted demand for LNG, according to the IGU's recently released 2022 world LNG report.

But all of these calculations began before Russia invaded Ukraine, upending Europe's longtime energy dynamic. As such, the situation could prove to be a boon for U.S. producers.

"This will have big ramifications for the broader global economy, as well as for the role of gas as a 'bridge' fuel in the ongoing energy transition," said Barclays analyst Amarpeet Singh in a recent note to investors. "The gas crunch in Europe will have profound and long-lasting global effects."

Growth in the euro area is likely to be weaker and inflation higher, poorer countries that are unable to compete for LNG cargoes will be squeezed, and the trade relationship between the U.S. and EU will shift in America's favor, he said.

"Still, there are no easy fixes for Europe's energy problem. The winter of 2022-2023 will be difficult, even if there are no further cuts to Russian gas supply, as prices stay elevated, dragging on demand," Singh said. "Should Russian flows drop to zero, and if the weather is colder than normal, storage levels across the EU at the end of March 2023 could be about two-fifths of the average over 2017-2022, while the reliance on storage would increase further. We see a risk of managed blackouts and rationing of power." OGI

THE WORLD NEEDS US LEADERSHIP

ENERGY POLICY

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As Europe drifts further into an energy crisis and Russia and China flex their muscles at the West, U.S. leadership is needed now more than ever.

In the latest blow to Europe and global energy markets, Russia has cut off natural gas supplies via the Nord Stream 1 Pipeline in retaliation for sanctions related to its invasion of Ukraine. The announcement merely adds to the already staggeringly high electricity and natural gas prices, the looming threat of a catastrophe in the winter and the resulting damage to Europe's industries and economy.

The situation is causing political unrest. European families, terrified by what the future might hold, are questioning the wisdom of Europe's actions against Russia, some taking to the streets in protest of the prospect of a winter without heat and light. Russia's move may be achieving its intended goal of creating political chaos in Europe and fracturing the European-North American Trans-Atlantic alliance.

Europe's energy crisis also has major implications for the global economy and U.S. economic health. A slowdown in European manufacturing means less revenue for its businesses and less investment in their overseas assets, including those in the U.S. That means fewer jobs and wages for Europe's workers, which could signal a prolonged recession and devalue the Euro with less spending power. It also means less production of goods and services, exacerbating global supply chain constraints. All of this is a recipe for stagflation.

Solutions offered in Brussels include caps on natural gas prices and electricity, subsidies for European consumers and windfall profit taxes on non-gas power producers. European governments have already spent $278 billion on subsidies to protect consumers, businesses and manufacturers, which begs the question of how much more can it afford to spend.

With regard to price caps, Europe should remember that it is competing for energy in a global marketplace, with highly competitive U.S. LNG cargoes increasingly important to meeting Europe's energy needs. It cannot artificially suppress commodity prices without either bankrupting itself with more subsidies or cutting itself off from supply.

The U.S. has an excellent opportunity to exert leadership, but whether it has the will to do so is an entirely different story. In March, following initial threats by Russia to stop supplying natural gas to Europe, President Biden made a commitment to supply 15 billion cubic tons of LNG to Europe through the end of this year and increase the supply to 30 billion cubic tons by the end of the decade. Today's soaring natural gas prices, however, make it difficult for Europe to purchase that LNG. At the same time, the trajectory of U.S. energy policies make it difficult for our industry to meet those commitments.

In the U.S., the Biden administration is celebrating a legislative victory through passage of the Inflation Reduction Act that includes $369 billion in energy and climate spending in areas such as grants and tax breaks for renewable energy and climate change programs and the extension of the 45Q tax credit for carbon capture and storage projects. The legislation unfortunately does very little to improve the U.S.' ability to address the crisis in Europe and represents a mixed bag for the oil and gas industry.

Meanwhile, the Federal Energy Regulatory Commission continues to hamper our ability to build pipelines and the infrastructure necessary to deliver natural gas. The U.S. government also continues to make oil and gas production more difficult through regulatory means, making federal onshore and offshore oil and gas leasing less available and permitting more expensive and time-consuming, continuing an anti-fossil narrative that negatively impacts investment in the sector.

At the same time, U.S. production and shipments of LNG continue to be hindered by the shutdown of Freeport LNG's Quintana facility and the U.S. Environmental Protection Agency's rejection of an air waiver that threatens Cheniere Energy's ability to increase production.

U.S. energy policies are disjointed and nonaligned. While our leaders might be making some worthy commitments, their actions and policies are falling short. If the U.S. intends to meet the nation's commitments to our European allies and keep our own energy prices low and economy running, we need comprehensive policies that increase output of all forms of energy, especially natural gas. The U.S. has an enormous opportunity to show leadership and deliver for our allies. To do so, however, we must pursue policies that boost our domestic production at a time of great need for Europe and the U.S. alike. OGI

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

Scan me

CONTINENTAL RESOURCES INC., THE TOP OVERALL PRODUCER IN THE SCOOP/STACK REGION, PRODUCED 5.8 MMBBL OF OIL AND 148 BCF OF NATURAL GAS IN THE PAST 12 MONTHS.

CONTINENTAL RESOURCES INC.

PERMITS

Oil and gas permits sank below 1,100 in July, dropping to the lowest monthly level issued in the past 10 years.

The number issued in Texas fell 22% in the month, though the 768 permits issued still beat the total of 735 from July 2021. And while Texas counties still dominated the permit leader board, two from North Dakota—Williams and Dunn—managed to join them with their own Permian Basin-like numbers. Webb County, Wyo., also cracked the top 10.

July's total of 1,096 was even lower than the start of the COVID-19 pandemic quarantine, when U.S. permits slumped 56% from March to May 2020. The number of permits was down 45% compared to July 2021.

On a January to July comparison, 2022 has seen 20% fewer permits issued than 2021 and 17% fewer than 2020. On a full-year comparison, the number of permits issued in 2021 rose 15% over 2020.

To match 2021's total, permits would need to increase by 75% to an average of about 2,800 per month for the rest of the year. The last time that level was reached was 3,053 in January 2020.

Permitted Wells By State

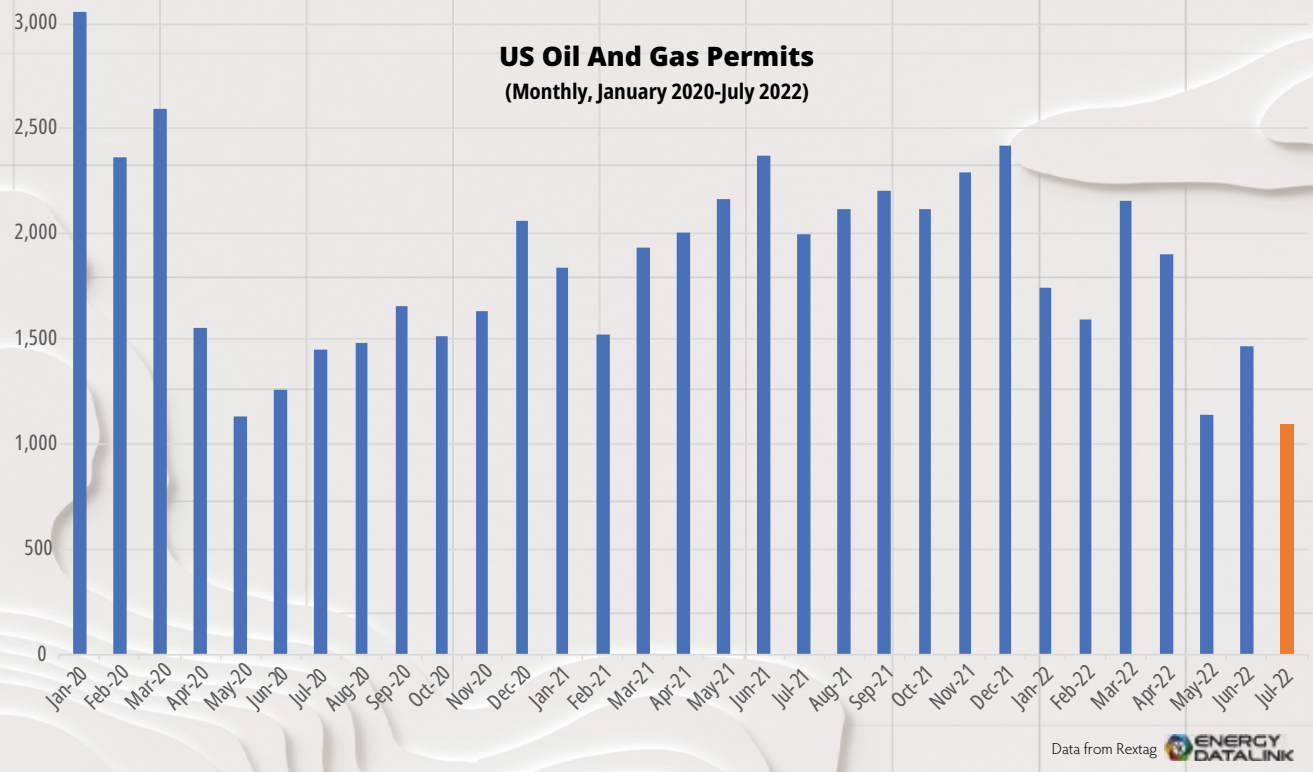
State	Well Count
Texas	760
Oklahoma	121
North Dakota	80
Colorado	58
Wyoming	52
Louisiana	35
All Other	0

Permitted Wells By Operator

Operator	Well Count
Pioneer	37
Continental Resources	36
Highpeak Energy Holdings	22
Oxy	19
ConocoPhillips	19
EOG	19
Crownquest	16
Confluence DJ	14
Cimarex	14

Permitted Wells By County

Operator	Well Count
Reeves, Texas	52
Martin, Texas	48
Howard, Texas	47
Williams, N.D.	33
Andrews, Texas	31
Loving, Texas	30
Dunn, N.D.	29
Webb, Texas	29
Converse, Wyo.	28
La Salle, Texas	25
Crane, Texas	24
Midland, Texas	21
Garvin, Okla.	16
Canadian, Okla.	12
Carter, Okla.	12
Kingfisher, Okla.	12
Montrail, N.D.	11
Red River, La.	10
Laramie, Wyo.	10



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FOCUS ON: SCOOP/STACK

Sweeping from western Oklahoma into the Texas Panhandle, the SCOOP (South Central Oklahoma Oil Province) and STACK (Sooner Trend, Anadarko, Canadian and Kingfisher) shale plays of the Anadarko Basin accounted for about 75% of Oklahoma's oil and gas production from second-quarter 2021 through first-quarter 2022.

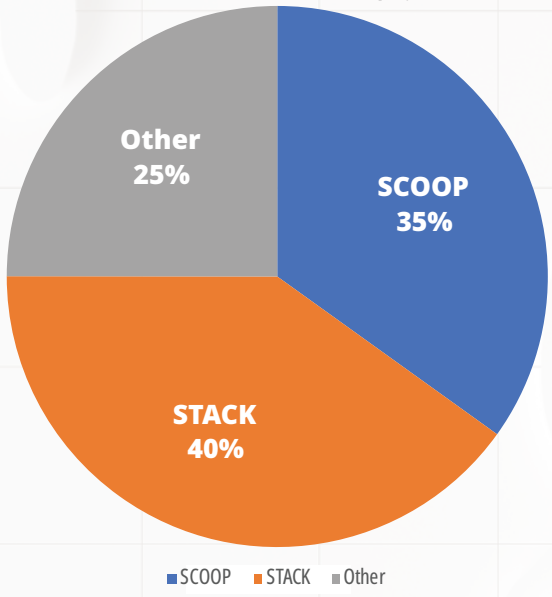
The plays' meteoric rise to prominence began in 2012. Continental Resources Inc. pursued oil in the region to complement its natural gas operations in the nearby Woodford Shale. From 2011 to its peak in 2019, oil production soared 506% in the SCOOP/STACK. During that time, natural gas production jumped 327%.

Continental led all producers in overall production in the past year and was No. 1 in gas output. Ovintiv Inc. followed Continental in overall gas production and was the top producer of oil. Other top producers include Citizen Energy, Cimarex Energy Co., Devon Energy Corp., ONEOK Inc., Southwest Energy LP, Marathon Oil Corp., Coffeyville and Phillips 66 Co.

The U.S. Energy Information Administration (EIA) projected oil production in the Anadarko to rise 12.8% in September compared to September 2021. Natural gas production was expected to increase by 1.7%.

Share Of Oklahoma Output

Three-quarters of Oklahoma's oil and gas production derives from the SCOOP and STACK plays



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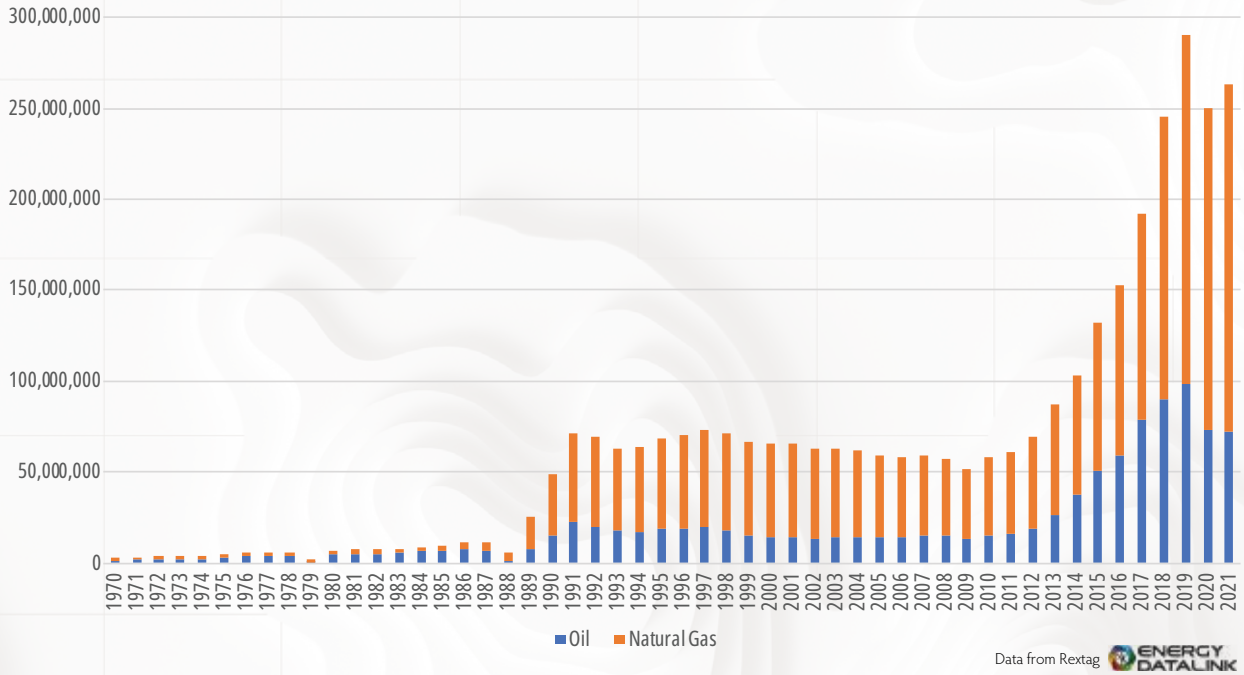
SCOOP/STACK Oil And Gas Production

(Annual, boe, 1970-2021)



Data from Rextag ENERGY DATALINK

Discover a Clear Path to Your Success

Energy is everything. It's how we feed our people, move through the world, build, learn and create. The future of energy is the future of us all.

And yet, this is a volatile industry. Shockingly disruptive events have rocked the energy market over the last few years. Pandemics, wars, wildly variable oil futures, rapidly-changing energy policies, inflation - these events are serious challenges.

But this volatility can also present incredible opportunities.

Change and Opportunity

The energy industry is evolving rapidly. Surging prices, energy shortages, inflation, regulation - to thrive in today's market, you have to be adaptable. But the willingness to change isn't always enough. You need to know how to change, and when. And, you need this intelligence as quickly as possible.

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- Profit Optimization
- Business Automation
- Cash & Budget Management
- Opportunity Sourcing & Management
- Portfolio Management
- ESG Reporting & Compliance
- Project & Activity Tracking
- Project Management
- Forecasting
- Power Congestion Analytics
- Market Data & Analysis

Create More Value, Faster

An adaptable, decisive, fast-moving business can create value out of volatility. But to do this, your business needs:

- Clear, actionable intelligence of the entire energy ecosystem
- A single source of truth that brings all the data together
- Speed to be able to seize opportunities and mitigate risks

A Technology Partner for the Future

Enverus is the most trusted knowledge and analytics platform in the energy industry, with real-time access to analytics, insights, benchmark costs, revenue data and more.

More than 300 financial institutions and 5,000+ energy companies rely on our analytics, intelligence and technology to make capital investment decisions and increase investor ROI.

Our platform is built both by and for our industry. Our source is our own connections; with direct access to more than 98% of U.S. producers and more than 35,000 suppliers, we inform more efficient production and distribution, capital allocation, renewable energy development, investment and sourcing.

Find out today how Enverus can help you remain agile, seize opportunities and focus on your core business in an ever-changing energy world.

ENVERUS

A&D WATCH

EQT BUYS TUG HILL-THQ, MIDSTREAM ASSETS FOR $5.2B APPALACHIA DEAL

BY
DARREN BARBEE

EQT Corp. entered into a $5.2 billion purchase agreement to acquire **THQ Appalachia I LLC**'s (Tug Hill) upstream assets and **THQ-XcL Holdings I LLC**'s (XcL Midstream) gathering and processing assets, the company said on Sept. 6.

The deal is the largest U.S. upstream transaction in about a year since **ConocoPhillips Co.** purchased **Shell Plc**'s Permian assets for $9.5 billion in September 2021, according to **Enverus**. More significantly, it is the largest Appalachian deal in over five years or since EQT purchased **Rice Energy** for $8.2 billion in summer 2017.

Toby Rice

In the highest-valued transaction of the year, EQT will pay $2.6 billion in cash and about $2.6 billion in EQT common stock for the deal, which is expected to close in fourth-quarter 2022. Tug Hill and XcL Midstream are backed by equity commitments from **Quantum Energy Partners**-managed funds.

The Appalachian bolt-on adds 800 MMcfe/d to EQT's current operations. The company will gain approximately 90,000 core net acres offsetting its existing West Virginia core leasehold, with a 96% operated working interest and 83% net revenue interest.

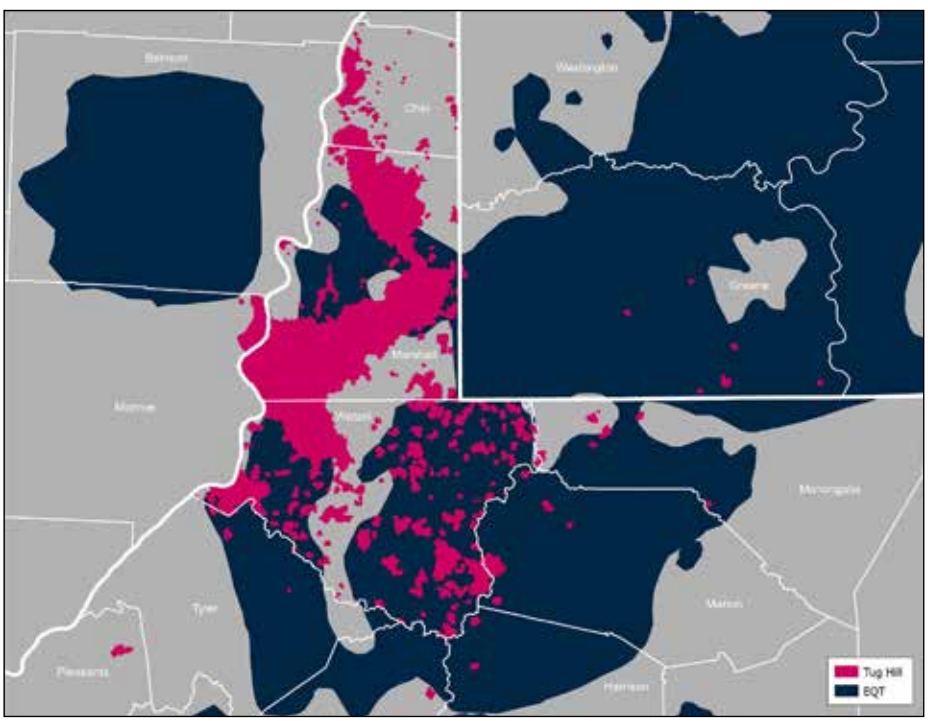
According to the release, the assets are anticipated to generate free cash flow at average natural gas prices over the next five years above $1.35/MMBtu.

Pro forma free cash flow for 2023 is now expected to exceed $6 billion, the company said, with long-term annual free cash flow anticipated to average $5-plus billion. Additionally, the deal caused shareholder returns to increase, doubling share repurchase authorization to $2 billion, as well as raising the year-end debt reduction target for 2023 to $4 billion.

Quantum Energy Partners founder and CEO Wil VanLoh will join EQT's board of directors upon EQT's board approval process and the closing of the transaction.

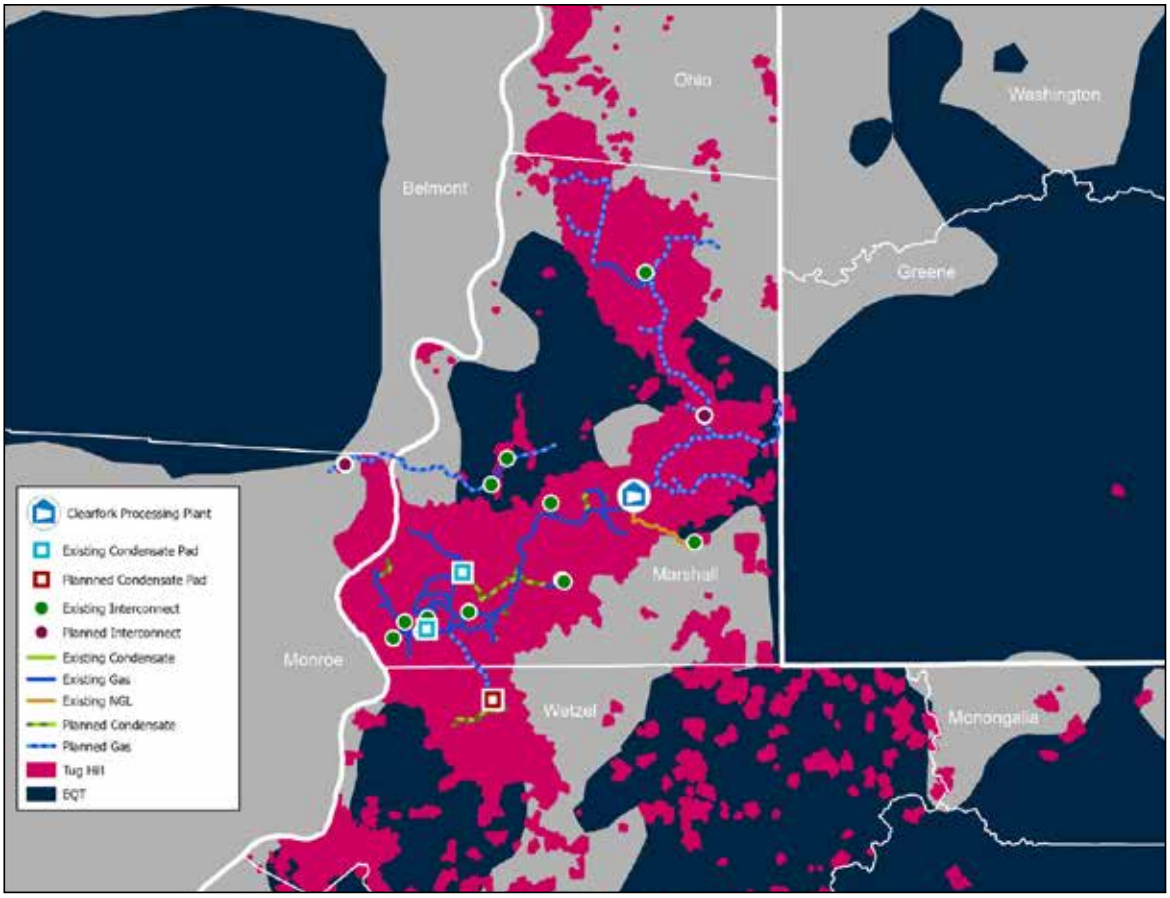
"The acquisition of Tug Hill and XcL Midstream checks all the boxes of our guiding principles around

SW Appalachia Acreage Position



Source: EQT Corp.

Acquired Midstream Assets



Source: EQT Corp.

The XcL Midstream assets consist of about 95 miles of rich and lean gas gathering and transport lines with about 4.5 Bcfe/d of combined capacity.

M&A, including accretion on free cash flow per share, NAV per share, lowering our cost structure and reducing business risk, while maintaining an investment grade balance sheet," EQT CEO Toby Rice commented in the company release.

"The valuation metrics are compelling, and accretion from the deal should lower our Nymex free cash flow breakeven price by approximately $0.15/MMBtu, which gives us greater free cash flow durability through the cycle," Rice said.

Tug Hill and XcL Midstream CEO Michael Radler said EQT is the "face of the new energy paradigm."

"[Rice's] vision around U.S. LNG is something we believe in and because of our significant ownership position, are excited to be a part of that vision," he said.

The deal is the largest in Appalachia in more than five years, since EQT purchased Rice Energy for $8.2 billion in summer 2017 and became a conduit for Toby Rice to become EQT's CEO.

The deal is also a breakthrough of sorts for companies that have tried to bridge the gap between valuations, commodity price volatility and the expectations of private sellers and private buyers, said Andrew Dittmar, director at Enverus Intelligence Research, a subsidiary of Enverus.

"It is highly encouraging for the outlook for M&A to see a private sale of this scale that is well received by public E&P investors," Dittmar said. "While inventory runway is important, investors are currently highly focused on deals helping fuel dividends and buybacks."

The purchase price suggests a conservative 2.3x next-12-month EBITDA for the upstream assets and 2.7x EBITDA for the upstream and midstream assets combined, Dittmar said.

"All in, the assets have a 27% next-12-month free cash flow yield," he said. "The boost to free cash flow per share, plus a doubling of EQT's authorized share repurchase to $2 billion are certainly key factors in why investors seem to be reacting favorably to the deal."

Goldman Sachs analyst Umang Choudhary said integration risk is low since THQ is adjacent to EQT's existing footprint, while the midstream assets provide greater connectivity to long-haul pipelines. The free cash flow breakeven of the acquired asset is about $1.35/MMBtu compared with EQT's current $2.30/MMBtu.

—Darren Barbee

"It is highly encouraging for the outlook for M&A to see a private sale of this scale that is well received by public E&P investors."

—Andrew Dittmar, *Enverus Intelligence Research*

BRIGHAM MINERALS, SITIO ROYALTIES TO COMBINE IN $4.8 BILLION MERGER

Brigham Minerals Inc. and **Sitio Royalties Corp.** announced on Sept. 6 their intent to combine in an all-stock, at-market merger in a joint press release from the two companies.

Valued at approximately $4.8 billion, the merger will bring together two of the largest public companies in the oil and gas sector and the mineral and royalty sector with complementary assets in oil-focused regions, including Brigham's recent Permian acquisition of 3,900 net royalty acres from **Avant Natural Resources LLC**.

Additionally, the company expects to benefit from a step-change in greater scale, enhanced margins and increased access to capital, leading to accelerated consolidation potential, attractive returns and long-term value for stakeholders.

The merged company will continue operating under the Sitio Royalties Corp. name, with Sitio's current management team heading up the leadership team.

The transaction is expected to close in first-quarter 2023, subject to customary closing conditions.

"We believe the merger is the logical next step in the continued evolution of the minerals space and creates an entity of scale with ever improving liquidity and float, as well as a streamlined cost structure that further reinforces the scalability of our industry," Brigham CEO Rob Roosa commented in the release.

The combined company will consist of a total of 259,510 net royalty acres, as well as pro forma net production of 32.8 Mboe/d in second-quarter 2022 and 50.3 net line-of-sight wells operated by a diverse pool of E&P companies as of June 30.

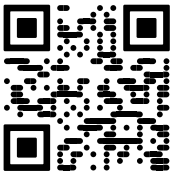
Through the merger, the company anticipates generating approximately $15 million in annual operational cash cost synergies while reducing Sitio's second-quarter 2022 pro forma cash G&A per boe to approximately $1.72/boe (19%) for the combined company.

With a strong balance sheet, including pro forma second-quarter 2022 leverage of approximately 1.0x, the merger is expected to increase Sitio's public float from approximately $320 million to approximately $1.9 billion by 5.8x.

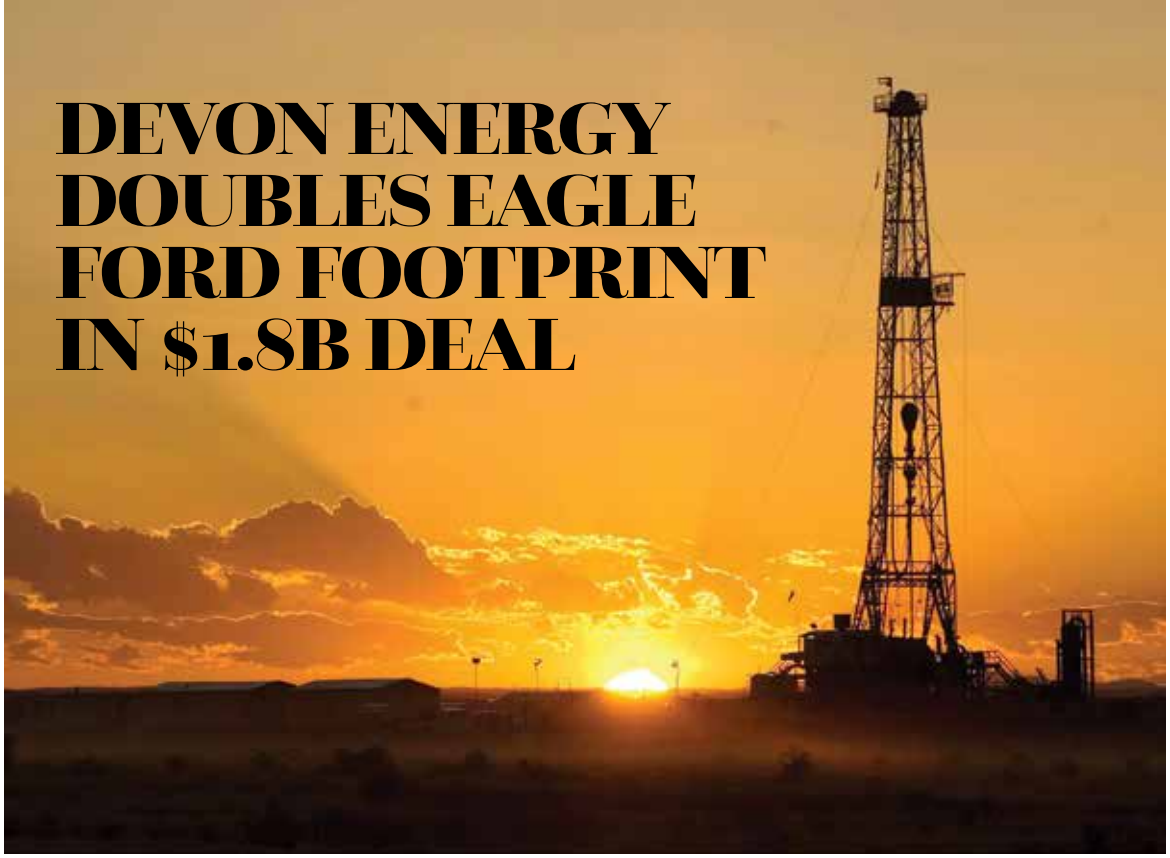
"We believe that achieving material scale in this industry is critical to creating sustained value for our stakeholders and distinguishing Sitio from others, which is why we have been so focused on employing a differentiated, large-scale consolidation strategy," Sitio CEO Chris Conoscenti said.

—Hart Energy Staff

Read the full article here:



DEVON ENERGY DOUBLES EAGLE FORD FOOTPRINT IN $1.8B DEAL



Devon Energy Corp. is scaling up in the Eagle Ford Shale with a $1.8 billion cash deal to buy privately held **Validus Energy**, the company announced on Aug. 9.

Validus is a pure play with a position that includes 42,000 net acres in the core of the Karnes County oil window in South Texas with average production of 35,000 boe/d. The acreage is adjacent to Devon's existing leasehold in the Eagle Ford Shale.

The addition of Validus almost doubles Devon's current Eagle Ford footprint. The company's pro forma position of 82,000 net acres will produce an estimated 73,000 boe/d this year—well above the 38,000 boe/d that Devon recently reported for the basin during the second quarter.

"Color us a bit surprised," said **Tudor Pickering, Holt & Co.** analyst Matt Portillo in a note to investors.

The added scale requires Devon to realize $50 million in average annual cash flow savings from capital efficiencies, operating improvements and marketing synergies, while keeping leverage relatively unchanged at current strip prices, management said.

A cash flow yield of 30% at strip throughout the next year would make the transaction accretive enough that Devon may increase its outlook for its variable dividend by up to 10% and accelerate the firm's ability to close out its existing $2 billion share buyback program.

Validus' inventory, which includes 350 drilling locations, adds ample runway of "highly economic inventory that is complementary to our existing footprint in the Eagle Ford," Devon CEO Rick Muncrief said in a news release.

It's another "sensible" deal for Devon, said analyst Phillips Johnston at **Capital One Securities**.

Devon stock gained almost 2% in pre-market open trading, which priced its shares at $58.65 each.

Quick pricing analysis at Capital One Securities suggests Devon is paying about $51,000 per flowing boe—below the firm's current multiple of $69,000 per flowing boe, Johnston said. Moreover, the Validus acreage has a higher oil cut of 70% relative to Devon's standalone rate close to 50%.

Eagle Ford Transaction Highlights

	Devon	Validus	Pro Forma
Net Acreage	40,000	42,000	82,000
Working Interest	50%	90%	70%
Q2 Production (boe/d)	38,000	35,000	73,000
Effective date		June 1	
Closing		End of Q3 2022	

Source: Devon Energy Corp.

This transaction is Devon's second sizable deal in recent months.

The Oklahoma City-based producer spent some $865 million in a June acquisition of **RimRock Oil & Gas**' position in the Bakken. The Validus deal is roughly twice the size of the previous purchase, but it has similar features—a contiguous position and immediate accretion.

Validus Energy is financially backed by equity commitments from **Pontem Energy Capital**, other institutions and private investors. Led by Skye Callantine as president and CEO, the Denver-based company acquired **Ovintiv Inc.**'s Eagle Ford Shale asset for $880 million in 2021.

The founder of Felix Energy, Callantine previously built and sold roughly $7 billion of assets over an eight-year period under the Felix Energy platform.

Ovintiv had purchased its Eagle Ford position in 2014. Known as Encana Corp. at the time, the company had paid roughly $3.1 billion for 45,500 net acres within the Eagle Ford Shale in Karnes, Wilson and Atascosa counties, Texas, from **Freeport-McMoRan**.

—Deon Daugherty

EOG, COMSTOCK, MURPHY OIL DISCLOSE A&D DEALS IN EARNINGS REPORTS

While A&D was decidedly sporadic in the first half of the year, second-quarter earnings filings disclosed that oil and gas companies weren't entirely dormant.

During the second quarter, **EOG Resources Inc., Comstock Resources Inc.** and **Murphy Oil Corp.** were among oil and gas companies making moves.

The largest splash, arguably, came from **APA Corp.**, which disclosed on Aug. 3 a "tuck-in acquisition" of properties primarily located in Loving and Reeves counties, Texas, in the Delaware Basin. APA management said the $555 million deal, which closed in July, is expected to average 12,000 boe/d to 14,000 boe/d for the remaining five months of the year.

Occidental Petroleum Corp. also reported in August it will extend its joint venture (JV) in the Permian Basin with Colombia's **Ecopetrol SA** through first-quarter 2025. The initial JV, which was announced in July 2019, was valued at up to $1.5 billion.

While those deals generated headlines, other U.S. shale operators made more discrete moves to tidy up or expand acreage.

EOG's version of small ball was a first-half tally of property acquisitions valued at $351 million. The firm filed documents with the U.S. Securities and Exchange Commission that showed its first-half acquisitions included:

- Leasehold for $79 million;
- Property for $5 million; and
- Other property, plant and equipment for $75 million.

During the same period, EOG recognized net gains on asset dispositions of $122 million and received proceeds of approximately $231 million. The proceeds were primarily based on the sale of certain legacy natural gas assets in the Rocky Mountain area and producing properties in the Midcontinent area.

While the company did not specify the assets sold, in January, EOG retained **Detring Energy Advisors** to market oil and gas producing properties, leasehold and related assets in the western Anadarko Basin located in Oklahoma's Ellis and Roger Mills counties. The assets included a large, majority-operated, contiguous and fully HBP position totaling roughly 37,300 net acres and a liquids-weighted production base generating $37 million of high-margin cash flow.

In December 2021, EOG also marketed a Bakken well package that included operations in three producing wells in Montana's Richland and Roosevelt counties.

In East Texas, Comstock Resources said it completed an "attractive bolt-on acquisition" which included about 60,000 net acres prospective for the Haynesville and Bossier as well as a 145-mile high-pressure pipeline and natural gas treating plant for $35.6 million.

Comstock said that, in April, the company acquired the pipeline.

The pipeline and natural gas treating plant were purchased from an unaffiliated third party for $16.8 million. Another $18.8 million was allocated for "deep rights" on undeveloped acreage.

Gulf of Mexico operator Murphy Oil also reported some moves after the second quarter, including two purchase and sale agreements to high-grade its Gulf of Mexico portfolio.

Murphy Oil reported acquiring 3.4% of additional working interest in the nonoperated Lucius Field for about $77 million after estimated closing adjustments. The company said it expected payback in less than two years. The transaction brings Murphy's total working interest in the field to 16.1%. Closing is anticipated to occur in third-quarter 2022.

The company also agreed to divest its 50% working interest in the operated Thunder Hawk Field for about $16 million, before estimated closing adjustments. The Thunder Hawk asset averages about 800 boe/d net to Murphy Oil. The divestiture allows the company to reduce liabilities by roughly $37 million, according to regulatory filings. Closing is expected in third-quarter 2022.

In the second quarter, Murphy Oil also increased its working interest in the nonoperated Kodiak Field to 59.3% from 48.3% in a deal valued at $47 million after closing adjustments. Murphy's management reported an expected payback time of about one year.

—Darren Barbee

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CONSOLIDATIONS CONTINUE

THROUGHOUT 2022

Consolidation continues to drive the storyline in 2022 as oil and gas companies tilt toward scale and synergies through M&A. But will deals face headwinds from policy uncertainty and a focus on renewable energy?

In the current commodity price environment, expect continued demand for consolidation. Also, some majors and IOCs will continue to focus on divesting their noncore assets given the growing focus on ESG and pressures to reduce carbon footprints. As commodity prices stabilize, the relativity strong price tape will allow deal activity to remain elevated throughout 2022. But will private equity funds stay on the sidelines as several larger funds have pledged to reduce or eliminate fossil fuel holdings?

Industry Leading Speakers Include:

- ✓ **ROBERT ANDERSON,** President & CEO, ***Earthstone Energy Inc.***
- ✓ **DAVID DECKELBAUM,** Managing Director, Energy – Oil & Gas Exploration and Production, ***Cowen and Company***
- ✓ **ANDREW DITTMAR,** Director, ***Enverus***
- ✓ **WILL EILAND,** Associate, ***Kirkland and Ellis LLP***
- ✓ **DAVID HARRIS,** EVP and Chief Corporate Development Officer, ***Devon Energy Corp.***
- ✓ **DARRIN HENKE,** President & CEO, ***Ranger Oil Company***
- ✓ **DANIEL KOHL,** Co-Head and Managing Director of Opportune Partners LLC, ***Opportune LLP***
- ✓ **CRAIG LANDE,** Managing Director, ***RBC Capital Markets LLC***
- ✓ **BILL MARKO,** Managing Director, ***Jefferies LLC***
- ✓ **NICK O'GRADY,** CEO, ***Northern Oil & Gas Inc.***
- ✓ **WILLIAM J. QUINN,** Founder and Managing Partner, ***Pearl Energy Investments***
- ✓ **PARKER REESE,** President & CEO, ***Ameredev II LLC***
- ✓ **DOUGLAS REYNOLDS,** Managing Director, ***Piper Sandler***
- ✓ **STEPHEN C. SZALKOWSKI,** Deputy Office Managing Partner, ***Latham & Watkins LLP***
- ✓ **WESLEY P. WILLIAMS,** Partner, ***Akin Gump Strauss Hauer & Feld LLP***
- ✓ **DANNY YICK,** Senior Director, Corporate A&D, ***ConocoPhillips***

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CENTENNIAL, COLGATE MERGER FORM DELAWARE BASIN'S LARGEST PURE PLAY

Centennial Resource Development Inc. and **Colgate Energy Partners II LLC** completed their merger on Sept. 1, marking the debut of **Permian Resources Corp.**—the largest pure-play E&P company in the Delaware Basin

"Permian Resources brings together two successful E&P companies, creating a better, stronger and more strategically compelling company," commented Will Hickey, co-CEO of Permian Resources.

Centennial and Colgate announced an agreement to combine in May, squashing rumors that Colgate, a privately held independent based in Midland, Texas, had been seeking an IPO. The merger valued Colgate at about $3.9 billion and consists of 269.3 million shares of Centennial stock, $525 million of cash and the assumption of about $1.4 billion of Colgate's outstanding net debt.

As the newly formed Permian Resources, the combined company has a deep inventory of "high-quality" drilling locations on roughly 180,000 net acres the companies expect will generate over $1 billion of free cash flow in 2023 at current strip prices, according to the company release on Sept. 1.

"The combined asset base is highly complementary with a deep inventory of high-quality locations that generate robust free cash flow across commodity price cycles," Hickey said in the release.

Permian Resources co-CEOs Hickey and James Walter own approximately 6% of total shares outstanding, representing one of the largest CEO ownership levels in the industry. Furthermore, Permian Resources employees together own over 13% of the company.

"As significant owners of the business, we are closely aligned with shareholders and are focused on maximizing returns," added Walter.

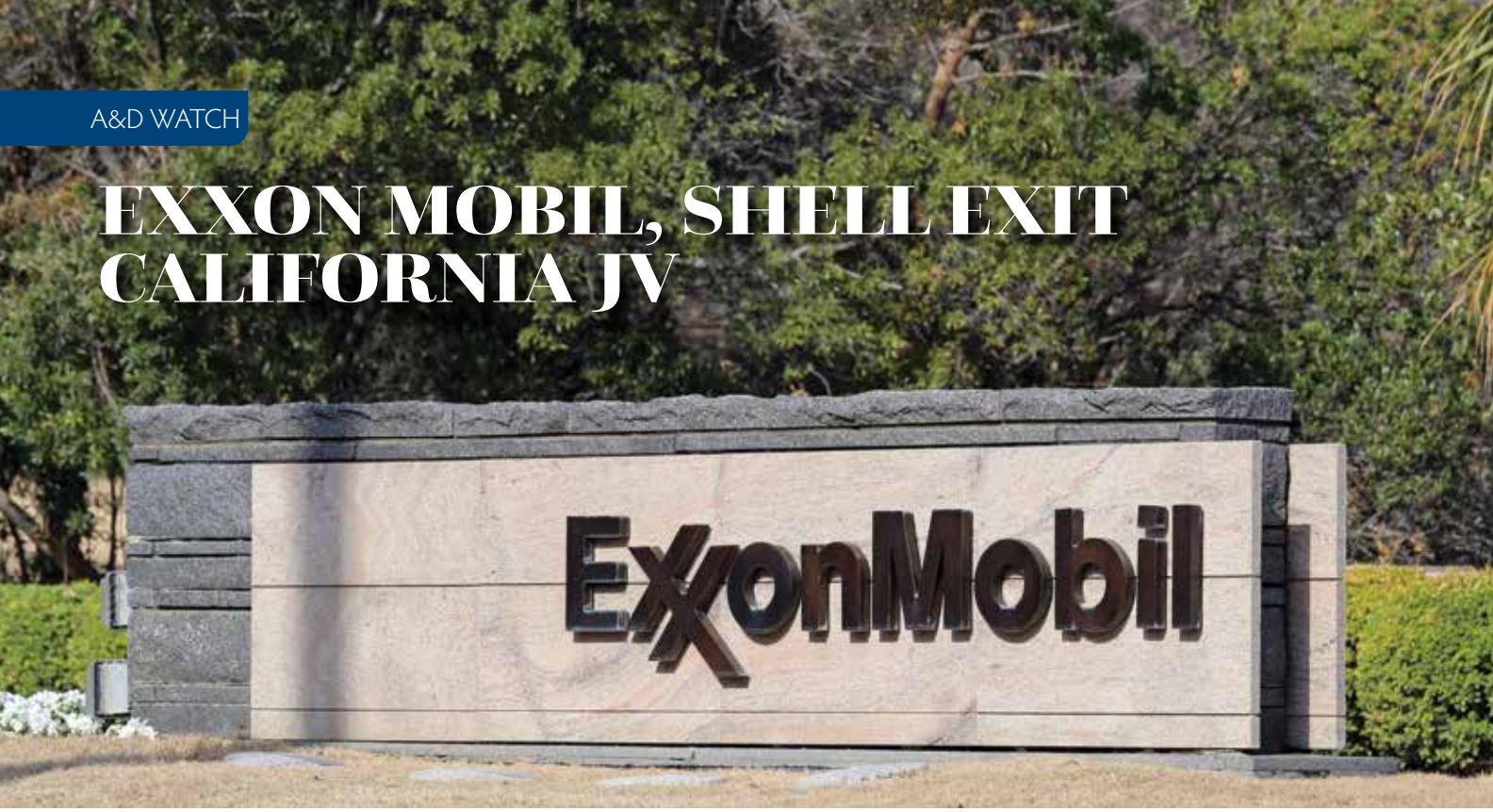
Permian Resources will be headquartered in Midland and, in addition to Hickey and Walter, will be led by George Glyphis, Centennial's former CFO, and Matt Garrison, Centennial's former COO. Sean Smith, formerly CEO of Centennial, will serve as executive chair of the Permian Resources board of directors.

Citi was financial adviser, and **Latham & Watkins LLP** was legal adviser to Centennial for the merger transaction. **Credit Suisse Securities (USA) LLC** and **Jefferies LLC** were financial advisers, and **Kirkland & Ellis LLP** was legal adviser to Colgate.

—Emily Patsy

Read the full article here:

EXXON MOBIL, SHELL EXIT CALIFORNIA JV



Exxon Mobil Corp. and **Shell Plc** on Sept. 1 agreed to sell their California oil joint venture, **Aera Energy**, to German asset manager **IKAV**.

The total transaction value was not disclosed. However, in its release, Shell noted that the sale of its 51.8% membership interest in Aera Energy is for a total consideration of approximately $2 billion in cash with additional contingent payments based on future oil prices, subject to regulatory approval.

Aera Energy is one of California's largest oil and gas producers, accounting for nearly 25% of the state's production. The sale by Exxon Mobil and Shell ends a 25-year-long partnership in California while also continuing a streak of divestments of mature oil and gas properties by the two supermajors.

"This decision supports our strategy to create a resilient and competitive upstream portfolio by focusing on positions with high growth potential and a strong integrated value chain," commented Zoe Yujnovich, Shell's upstream director.

Meanwhile, Exxon Mobil exited its Barnett Shale and Canada Shale positions earlier this year as part of the company's corporate strategy to "prioritize investments on advantaged assets with lowest cost of supply."

Exxon Mobil was also recently reported to have sold its Fayetteville Shale position to **Flywheel Energy**.

"This sale is part of our strategy to continually strengthen our industry-leading portfolio, focusing our investments in low-cost-of-supply oil and natural gas to meet consumer demand and create value for our shareholders," Liam Mallon, president of ExxonMobil Upstream Co., said of the Aera Energy sale in a separate release.

Exxon Mobil formed the Aera Energy JV in June 1997 and has operations in eight onshore fields, according to the Exxon Mobil release.

Aera Energy LLC operates around 13,000 wells in the San Joaquin Valley in California, producing oil and associated gas. In 2021, Aera produced about 95,000 boe/d.

Exxon Mobil's interests in the Aera oil-production operation in California included a 48.2% share of Aera Energy LLC and a 50% share of Aera Energy Services Co. held by Mobil California Exploration & Producing Co. In addition, Exxon Mobil affiliates have entered into a separate agreement for the sale of an associated loading facility and pipeline system.

The sale does not affect Exxon Mobil's branded network of about 500 independently owned retail sites in California.

Shell also still manages a statewide footprint in California that includes gas and power trading, electric vehicle charging, hydrogen and LNG fueling stations, retail and lubricants, distribution facilities and terminals. The company has operated in California for more than 100 years, according to its release.

"California is a key market for our renewables and energy solutions business given its advanced, emerging technology and country-leading research and development," Shell added in the release.

The sale effectively ends Shell's upstream position in California, however. The company said the divestiture is estimated to result in an approximate post-tax impairment of $300 million to $400 million, subject to adjustments.

The transaction has an effective date of Oct. 1 and is expected to close in fourth-quarter 2022, according to the Shell release.

Citigroup was lead financial adviser to IKAV for the transaction. **Truist Securities** and **Wells Fargo Securities** were financial advisers to IKAV as well. **Haynes & Boone LLP** acted as legal adviser to IKAV.

—Emily Patsy

Read the full article here:

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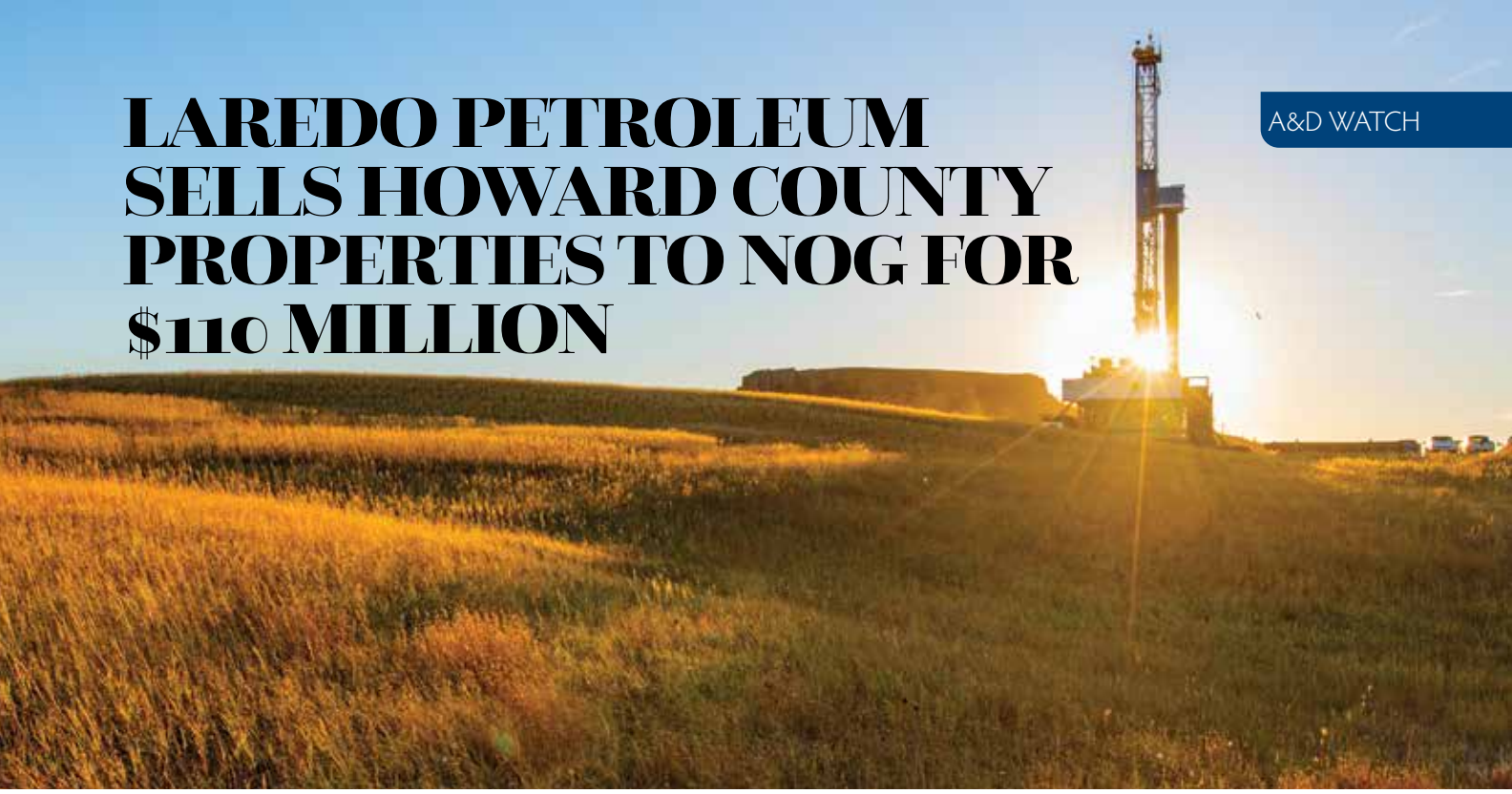
LAREDO PETROLEUM SELLS HOWARD COUNTY PROPERTIES TO NOG FOR $110 MILLION



Laredo Petroleum Inc. agreed on Aug. 17 to divest certain nonoperated properties from its Permian Basin position in Howard County, Texas, to **Northern Oil and Gas Inc.** (NOG) for $110 million in cash.

The sale does not reduce Laredo's eight-year inventory of operated, high-quality drilling locations, according to a company release.

"We have built a deep portfolio of high-quality development locations, which we consistently optimize through the acquisition of high-return assets and sale of certain noncore properties," Jason Pigott, president and CEO of Laredo Petroleum, commented in the release.

The nonoperated assets comprise about 1,650 net acres and have expected full-year 2023 average net production of 1,800 boe/d (roughly 72% oil). Laredo plans to adjust production guidance post the closing of the transaction expected in October.

"The implied value of this divestiture is accretive to our net asset value per share and raises proceeds that support the repurchase of our equity and debt," Pigott added.

During the second quarter, Laredo introduced a plan to return capital to shareholders through a $200 million equity repurchase program and repurchased more than $40 million of equity and debt.

For NOG, the Laredo transaction represents the company's second meaningful bolt-on acquisition of 2022.

"Anchored by highly economic inventory, high oil cuts, and a strong operator, this transaction helps continue to build out the Permian Basin as an area of growth for NOG," Adam Dirlam, NOG president, commented in a release.

> **"The implied value of this divestiture is accretive to our net asset value per share and raises proceeds that support the repurchase of our equity and debt."**
>
> —Jason Pigott, *Laredo Petroleum Inc.*

The acquired Laredo assets are located in the Midland Basin in Howard County, Texas, and include approximately 6.4 net producing wells, 1.6 net wells-in-process and 8 net undeveloped locations. Substantially all of the assets are operated by **SM Energy**, according to the NOG release.

NOG expects to fund the acquisition with cash on hand, operating free cash flow and borrowings under NOG's revolving credit facility.

Earlier this year, NOG closed a $406.5 million acquisition of Veritas Energy's nonop position in the Permian Basin, marking the company's largest acquisition to date.

Based in Minnetonka, Minn., Northern aims to be the go-to resource for operators that want to offload nonoperated working interests in leasehold. Originally focused in the Williston Basin, the company has within the last year begun to branch out into the Marcellus Shale and Permian Basin.

"We continue to focus on a balanced approach to growing our enterprise, with a focus on quality and low-breakeven economics," commented NOG CEO Nick O'Grady. "NOG continues to build a stronger, more diversified company built to drive higher shareholder returns for the long term."

The effective date for the transaction is Aug. 1. **Kirkland & Ellis LLP** is serving as legal adviser to NOG. **Truist Securities Inc.** acted as financial adviser to Laredo on this transaction.

—Emily Patsy

BRIGHAM MINERALS' LATEST PERMIAN ACQUISITION RANKS AS LARGEST TO DATE

Brigham Minerals Inc. significantly increased its Permian Basin footprint under highly active, top-performing operators through its largest acquisition to date.

The acquisition comprises about 3,900 net royalty acres in the core of the Mineral Basin in Martin and Midland counties in West Texas. Brigham Minerals said Aug. 22 it had agreed to acquire the assets from **Avant Natural Resources LLC** and its affiliates for roughly $132.5 million in cash.

Rob Roosa

"I personally view this acquisition as the highest quality Midland Basin package we've evaluated to date given both the diversification across two of the most prolific geologic counties in the Lower 48 and the high-quality operator composition," Brigham Minerals CEO Robert M. ("Rob") Roosa said in a company release.

The transaction follows reports citing people familiar with the matter that said Brigham Minerals is exploring options that include a sale or a merger. Despite the rumors, Brigham Minerals executed an active A&D campaign in the second quarter, according to the company's earnings call on Aug. 5.

"Our continued success consolidating core minerals is clearly demonstrated by our largest acquisition to date." Roosa said in the Aug. 22 release. "Our patient and disciplined approach allowed us to capture the opportunity to significantly increase our Midland Basin footprint under highly active, top performing operators including **Endeavor**, **Pioneer** and **Exxon Mobil**, who in total are operating more than 40 rigs in the basin."

The Midland Basin acquisition adds 253 gross wells spud on acreage over the past 12 months with 2023 estimated production totaling between 750 boe/d and 950 boe/d (60% oil). The acquisition also includes 0.5 net DUCs and 0.5 net permits resulting in 12 net pro forma activity wells as of June 30.

Brigham Minerals intends to finance the acquisition through a combination of cash on hand and borrowings under the company's revolving credit facility, according to its release.

The Midland Basin acquisition is expected to close in mid-October. The transaction will have an effective date of July 1.

—Emily Patsy

Read the full article here:

TEXAS

LRG Energy LLC acquired the assets of the **Bjorger Cos.** on Aug. 25, boosting the privately held oil and gas operator's position in the Texas Panhandle.

The Bjorger acquisition includes approximately 800 wells and integrated saltwater disposal wells in the Texas Panhandle in Carson, Gray, Hutchinson, Hansford, Moore and Sherman counties plus North Texas in Montague, Stephens and Wise counties.

Terms of the transaction weren't disclosed.

In total, the acquisition will add production and development opportunities spanning approximately 35,000 acres, all offsetting LRG existing properties, according to the release.

"This is LRG's ninth acquisition in the past four years, making LRG among the largest independent operators in the Texas Panhandle," the company added.

PERMIAN BASIN

Ring Energy Inc. completed its acquisition of privately held **Stronghold Energy** on Aug. 31, adding operations are located primarily in Crane County, Texas, in the Permian Basin's Central Basin Platform.

"This transaction truly complements our conventional-focused Central Basin Platform and Northwest Shelf asset positions in the Permian Basin," Paul D. McKinney, chairman and CEO of Ring Energy, commented in a Sept. 1 release.

Majority owned by **Warburg Pincus LLC**, Stronghold's operations are focused on the development of approximately 37,000 net acres located primarily in Crane County. The company was founded in 2017 by father and son duo Steve and Caleb Weatherl.

Ring Energy announced in July an agreement to acquire Stronghold Energy II Operating LLC and Stronghold Energy II Royalties LP for $200 million in cash at closing and $230 million in Ring equity based on a 20-day volume weighted average price. Consideration also includes $15 million deferred cash payment due six months after closing and $20 million of existing Stronghold hedge liability bringing the total transaction value to $465 million.

The cash portion of the consideration was funded primarily from borrowings under a new fully committed revolving credit facility underwritten by **Truist Securities, Citizens Bank NA, KeyBanc Capital Markets** and **Mizuho Securities**.

Stronghold's asset base is approximately 99% operated, 99% working interest and 99% HBP. In July, Ring said current net production of Stronghold's asset base was about 9,100 boe/d (54% oil, 75% liquids).

McKinney said the acquisition further diversifies Ring Energy's commodity mix, significantly enhancing the company's size and scale and lowering its per-barrel operating costs while also providing for meaningful synergies and increased operations optionality on multiple fronts.

Collectively, Stronghold's owners now are Ring's largest stockholder, according to the release. Ring's board of directors has been expanded from seven to nine directors, including two members proposed by Stronghold.

The effective date of the transaction was June 1. **Raymond James** and Truist Securities are financial advisers to Ring, and **Piper Sandler & Co.** is financial adviser to Stronghold for the transaction. Mizuho Securities provided a fairness opinion to Ring's board. **Jones & Keller, P.C.** provided legal counsel to Ring, and **Kirkland & Ellis LLP** provided legal counsel to Stronghold.

LOWER 48

Riverbend Energy Group recently completed the $1.8 billion sale of nonoperated portfolios, marking the successful monetization for Riverbend of three of Riverbend's five active traditional energy portfolios.

"We have now successfully monetized seven separate funds since our founding in 2003, establishing a consistent and enviable track record of value creation that reflects the excellence of our various disciplines as well as the grit and determination of our team to unearth opportunities in a highly volatile and dynamic business environment," Riverbend CEO Randy Newcomer Jr. commented in an Aug. 22 release.

The transaction, previously announced in June, included its equity interests in Riverbend Oil & Gas VI LLC, Riverbend Oil & Gas VI-B LLC and Riverbend Oil & Gas VIII LLC. The buyer wasn't disclosed.

The divested portfolios represent a substantial, diversified asset base of nonoperated interests across the Bakken/Three Forks, Utica, Fayetteville and Haynesville. As of the effective date of May 1, these properties produced approximately 47,000 boe/d from over 11,000 wells, according to the release.

Based in Houston, Riverbend is a multifaceted investment firm, utilizing risk-weighted deal evaluation processes to deploy capital into a variety of investment theses in the U.S. energy sector. Since 2003, the firm has successfully acquired, developed and managed over $5 billion of total enterprise value across 10 asset portfolios.

Following the recent sale, Riverbend continues to manage and grow funds VII and IX, which target operated Midland Basin properties (Riverbend VII) and mineral and royalty interests across leading shale plays (Riverbend IX).

Additionally, the company is pursuing nonoperated working interest acquisitions in the Midland, Delaware and Williston oil basins and Barnett, Fayetteville, Haynesville and Marcellus/Utica natural gas basins (Riverbend XI and/or successors). Riverbend said these hydrocarbon asset focused prospects are complemented by the growing energy transition opportunities that Riverbend is actively evaluating (Riverbend X).

DELAWARE BASIN

Earthstone Energy Inc. closed on the acquisition of **Titus Oil & Gas Production LLC** and **Titus Oil & Gas Production II LLC**'s New Mexico assets, according to an Aug. 10 press release.

The transaction was previously announced on June 28 and will add 86 net locations on 7,900 net acres of leasehold to The Woodlands, Texas-based Earthstone's holdings in the Eddy and Lea counties, N.M., of the Delaware Basin.

Earthstone paid cash consideration of approximately $535 million net at closing from the $40 million deposit payment made in June. Consideration for the acquisition was $575 million in cash and approximately 3.9 million shares of Earthstone's Class A common stock.

In addition to closing the acquisition, Earthstone also announced the closing of an amendment to its senior secured credit facility. The amendment

increased the borrowing base from $1.4 billion to $1.7 billion and increased commitments from $800 million to $1.2 billion and introduced a $250 million term loan tranche to the credit facility as a portion of the $1.2 billion of current commitments, among other things.

Furthermore, it established a fully funded, fully pre-payable $250 million term loan tranche to the credit facility as a portion of the $1.2 billion of current commitments, with the remaining $950 million of commitments in the form of revolving commitments.

Looking forward, the company will focus on building scale through "accretive acquisitions and organic activity," according to Anderson in the release.

HAYNESVILLE

Tellurian Inc. wrapped up its acquisition of natural gas assets located in the Haynesville Shale from privately held **EnSight Energy Partners LP** on Aug. 18 for $125.5 million in cash.

A subsidiary of the Houston-based LNG developer, **Tellurian Production LLC**, had entered the previously announced agreement in July to pay up to $132.5 million to purchase the natural gas assets from **EnSight IV Energy Partners LLC** and **EnSight Haynesville Partners LLC**. The cash consideration at closing was $125.5 million, revised from the announced $125 million due to preliminary purchase price adjustments, the release on Aug. 18 said.

The EnSight acquisition is part of Tellurian's strategy to acquire, develop and manage natural gas assets to supply long-term, low-cost production to its cornerstone project, Driftwood LNG. The proposed liquefaction export facility located near Lake Charles, La., is expected to have a capacity of 27.6 million tonnes per year.

"By owning and operating upstream assets, a pipeline network and the Driftwood LNG terminal, Tellurian will have the ability to sell natural gas into domestic or international markets," Tellurian president and CEO Octávio Simões said.

The EnSight assets comprise about 5,000 net acres, roughly 45 MMcf/d (100% natural gas) of current net production and 30 gross drilling locations. Proved reserves are approximately 108 Bcf of natural gas. The assets also include 44 producing wells and five wells in progress at transaction close, anticipated in the third quarter.

The assets, which Simões added represent a "compelling value for our shareholders," are located in the core of the Haynesville Shale in DeSoto, Bossier, Caddo and Webster parishes, La. Tellurian funded the acquisition with cash on hand.

At closing, Tellurian Production's Haynesville Shale acreage will increase to roughly 20,000 net acres, with more than 275 gross drilling locations. The company's net resource is expected at over 2 Tcf.

The effective date of the EnSight transaction is Aug. 1. The purchase price is $125.5 million and a contingent payment of $7.5 million, which is based on the price of natural gas and may be payable in March 2023 under certain conditions.

MIDSTREAM

Devon Energy Corp. has entered into a non-binding LNG export agreement with **Delfin Midstream Inc.** that could see a final investment decision (FID) on a floating LNG vessel by the end of the year, the companies said in a joint press release on Sept. 5.

The two companies executed a heads of agreement (HOA) that provides a framework to finalize a definitive long-term tolling agreement representing 1 million tons per annum (mtpa) of liquefaction capacity in Delfin's first floating LNG vessel. The facility would be able to add 1 mtpa, giving Devon up to 2 mtpa of total liquefaction capacity on a long-term basis.

The HOA also provides Devon with the opportunity for additional, future equity investments. Devon said its 2022 guidance would be unchanged by the agreement.

Tudor, Pickering, Holt & Co. (TPH). analysts estimated that the floating LNG vessel would be in service by 2026.

"Without details on the arrangement, we suspect the DVN investment will grow in value as the project is de-risked through FID and eventual in service," TPH said.

As a modular project requiring only 2 mtpa to 2.5 mtpa of long-term contracts to begin construction, and with all necessary permits in hand, Delfin is on schedule to make FID on its first floating LNG vessel by the end of this year.

"Our decision to invest in Delfin was the result of a thorough process intended to create additional pricing diversification for our natural gas portfolio and deliver a sustainable and capital efficient return for our shareholders," said Rick Muncrief, Devon's president and CEO.

Latham & Watkins LLP is serving as legal advisor to Delfin, and **Kirkland & Ellis LLP** is serving as legal advisor to Devon.

CANADA

Crew Energy Inc. successfully completed the sale of certain noncore assets at Attachie and Portage in northeast British Columbia for gross proceeds of CA$130 million, the Calgary, Alberta-based gas and liquids producer said in an Aug. 18 release.

"With completion of the disposition, Crew has successfully monetized a noncore portion of our asset base to focus on production growth in the Greater Septimus and Groundbirch areas. In concert with the strong adjusted funds flow (AFF) and free AFF realized to date in 2022, the proceeds from this transaction will further contribute to our financial flexibility and form the basis for development of an updated strategic plan that builds on the momentum realized over the past 24 months," the company said in the release.

The divestiture includes approximately 47,025 net acres of Montney rights on land north of the Peace River with no associated production or facilities, total proved reserves of 4.7 MMboe, representing 2.3% of total corporate proved reserves. Associated future development capital is $25.7 million. Total proved plus probable reserves are 34.2 MMboe, representing 8.5% of total corporate proved plus probable reserves, with associated future development capital of $182.9 million.

TD Securities Inc. was financial adviser to Crew. TD Securities Inc. and **National Bank Financial** acted as co-financial advisers to Crew in respect of the partial redemption of 2024 notes.

WHO'S WHO IN E&P A&D: ANDY ROGERS

Andy Rogers, vice president of business development and strategy at **Ovintiv Inc.**, grew up in eastern Canada—a place where he didn't really know a "pumpjack from a tire jack." But an internship with Mobil Oil became the springboard to a 30-year career and adventure that has taken him across North America.

Rogers earned a geological engineering degree from Waterloo University in Ontario and spent his early career with Mobil in reservoir and operations engineering.

"This provided a great foundation for later assignments in planning, strategy and leadership," Rogers said. "About 10 years into my career, I went back to school part-time while working and got my MBA. I was blessed to get the opportunity, almost 20 years ago, to start up and lead A&D pioneer Randall & Dewey's [predecessor to Jefferies Energy Group] efforts in Calgary."

Following the acquisition by Jefferies, Rogers relocated and joined a powerhouse group in Houston, completing upstream transactions across North and South America during 10 years on the investment banking side.

One of his biggest clients was Encana Corp., now Ovintiv and in 2014, Rogers rejoined the corporate world. His background, including upstream reservoir and operations experience, and a relationship network coupled with all sides of the transaction spectrum—buy, sell, advisory—gave him plenty to work with.

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

Ovintiv is now mostly focused on modest bolt-on acquisitions in its core operating areas, particularly those that add accretive value with additional operated scale in the company's core plays.

Rogers said Ovintiv focuses on location and quality, available synergies and accretion when doing a deal.

"We are looking for balance when it comes to PDP and upside development locations," he said. "Our industry consumes a little piece of the factory every day, and it is important to the business model to be adding quality future inventory."

Ovintiv's transformation from Encana, beginning in 2019, has been a highlight in Rogers' career.

"Being able to help the company through this process and virtually changing over the entire portfolio in my time here has been a definite highlight," he said. "It has been a wonderful journey with an outstanding team of A&D professionals."

Rogers' core deal philosophy: "Transactions are half art, half science and half luck!" OGJ

E&P EXECUTIVE COMPENSATION: BETTER ALIGNED

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William Janela is a director at Credit Suisse where he leads research coverage of companies in the oil and gas E&P and integrated oil sectors.

Market Watchers

If the U.S. upstream sector of the previous decade was best defined by the shale revolution, the market dynamics of the past three years suggest the current decade will be remembered for the reinvention of the E&P business model itself.

What is driving the change in E&P behavior? Certainly, the sheer magnitude of the 2020 collapse in oil prices and in shares of E&Ps tested the industry's resolve. Intense shareholder pressure on E&Ps to demonstrate true capital *discipline*—no longer just a buzzword—has been critical to revitalizing investor sentiment in the sector.

Related, but sometimes overlooked, is the role of executive compensation metrics, in particular the factors that drive annual incentive plan (AIP) compensation. Credit Suisse's analysis of AIP formulas for 20 of the largest publicly traded U.S. E&P companies revealed just how dramatically executive compensation metrics have evolved in recent years, better aligning management incentives with shareholder interests and, in our view, promoting a more sustainable, financially sound and investable domestic oil and gas sector.

First, E&Ps have substantially de-emphasized, and in many cases even eliminated, production-based metrics from the formula. Currently, just half of E&Ps still have some component of the AIP tied to production targets, down from 60% in 2020 and more than 80% in 2019. This perhaps best illustrates the fundamental difference versus the shale E&P model of the past, which included incentives to pursue ever higher volume growth—in hindsight, often at the expense of capital efficiency, and in too many cases, detrimental to company balance sheets.

Second, the diminishing emphasis on production growth has been accompanied by a notable increase in targets related to free cash flow generation, mirroring the evolution of the underlying business model. Two-thirds of E&Ps now include an explicit free cash flow metric in the AIP formula, up from 45% last year and just 30% in 2019. For many companies, this is also the factor carrying the heaviest weight, on average nearly 25% of the total formula. This underscores the ongoing push from E&P shareholders for management teams to adopt a less capex-intensive business model with a focus on generating more sustainable free cash flows through commodity price cycles.

For an industry that historically spent far in excess of operating cash flow, reinvestment rates for public E&Ps are tracking to come in at less than 40% this year and well below 50% for 2023, assuming recent futures strip prices.

Growing scrutiny on free cash flow generation not only serves to enforce capital discipline, but it is also becoming an important mechanism as energy investors shift focus to cash returns—increased shareholder distributions through a combination of fixed and variable dividends along with share buybacks—which most E&P companies are now paying out formulaically based on a target percentage of quarterly or annual free cash flow.

Many E&Ps are now offering investors a total cash return yield of 10% or higher, considerably above the S&P 500 dividend plus buyback yield, which is near 4%. In Credit Suisse's view, this value proposition has been a key driver of E&P share price performance.

Third, ESG-related metrics have become far more prevalent in AIP formulas and have evolved to include specific, measurable emission reduction targets, which Credit Suisse sees as a noteworthy improvement from the more traditional health, safety and environmental components.

In 2019, none of the large public E&Ps had an explicit emissions intensity metric in the AIP formula. Today, 85% of those companies include at least one. While the current dialogue is understandably more focused on energy security, it is no less critical for the E&P industry to continue demonstrating improvements and transparency on environmental performance. Credit Suisse expects growing emphasis on these metrics as part of management AIP formulas as a way to encourage progress toward longer-term emission reduction and net-zero targets. OGI

Read the full column on HartEnergy.com.

HEARD, SEEN & NOTED

"Who you want to be, and where you want to make investment decisions have to come relatively quickly."

—**Noemie Tilghman**, ***Deloitte's head of U.S. oil, gas and chemicals consulting***, *commenting about how the next couple of years are key for strategy decisions as producers should generate most of that added surplus cash by 2024.*

Read the article:

"The Permian Basin is the largest secure supply of energy in the world. Texas should continue to invest in and expand the infrastructure of the region. This will enhance the ability for the energy industry to provide the energy resources necessary to keep our nation's economy strong and country secure."

—**Don Evans**, ***Permian Strategic Partnership chairman***, *discussing a new report on how the Permian Basin will contribute nearly 1 million jobs by 2050.*

Read the article:

MOVEMENT

Aris Water Solutions Inc. tapped **Stephan Tompsett** to be its new CFO. The move takes effect immediately. Tompsett replaces **Brenda R. Schroer**, who will remain with Aris in an advisory capacity until the end of the year.

Tompsett brings both energy and banking industry experience to his new role at the environmental infrastructure company. His most recent positions were as CFO of Limetree Bay Energy and CFO of EagleClaw Midstream. Tompsett has also held leadership roles at Andeavor (formerly Tesoro), including CFO of Andeavor Logistics, a subsidiary of Andeavor.

He began his career at JPMorgan as an investment banker and earned his MBA and Bachelor of Science degree from the University of Texas at Austin.

Data service provider MicroSeismic Inc. named company founder **Peter M. Duncan** CEO and **Gary Hargraves** president and COO.

While continuing in new technology development and promoting the company offerings' economic and environmental benefits, Duncan will help develop the company's new KarstAlert sinkhole monitoring and CO_2SeQure carbon capture and storage monitoring technologies.

As president and COO, Hargraves will help the company modernize its core business offering while exploring and developing MicroSeismic's ventures into the sinkhole and carbon sequestration markets.

Continental Resources Inc. promoted **Doug Lawler** to serve as president and COO. Lawler joined Continental in February as COO and executive vice president following three decades in the oil and gas industry. The company tapped Lawler earlier this year to fill the void left with the pending retirement of longtime Continental exec **Jack Stark**.

Lawler most recently served as president and CEO of Chesapeake Energy Corp. from 2013 to 2021. He had stepped in at Chesapeake after the departure of the company's then-CEO, Aubrey K. McClendon, who co-founded the Oklahoma City-based company and built it into a shale gas giant.

Canadian government-owned pipeline operator Trans Mountain Corp. named **Dawn Farrell,** former top boss of electricity firm TransAlta Corp., as its CEO and president.

Farrell will take over from interim president **Rob Van Walleghem** on Aug. 15 and inherits a company struggling with ballooning costs and lengthy delays as it builds the Trans Mountain expansion project.

Farrell led Calgary-based TransAlta for nine years, during which the company transitioned away from coal-fired electricity generation, before retiring in 2021.

Since then, she has served on the board of director for Canadian Natural Resources Ltd.

NEW FINANCINGS

EQUITY

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
TC Energy	NYSE: TRP	Calgary, Alberta	$1,800	Completed public offering of company common shares when the company entered into an agreement with a syndicate of underwriters under which they agreed to purchase from TC Energy and sell to the public 28.4 million common shares. Shares sold at $63.50 per share, resulting in approximately $1.8 billion in total gross proceeds. Company also granted underwriters, led by **RBC Capital Markets** and **Scotiabank**, an overallotment option to purchase up to 2.84 million extra shares at the offering price 30 days after offering closing. Proceeds will go toward the construction of the Southeast Gateway Pipeline in southeastern Mexico.
Diversified Energy Co.	LSE: DEC	Birmingham, Ala.	$300	Announced amendment to convert its revolving credit facility into a sustainability-linked loan. Loan will reach maturity in August 2026. Contains borrowing base of $300 million and includes no other material changes to pricing or terms. The loan will reflect the company's ESG commitments by including Scope 1 and 2 greenhouse-gas intensity reduction targets, asset retirement targets above current levels and targeted decrease in total recordable incident rate.
Birchcliff Energy	TSX: BIR	Calgary, Alberta	$88.2	Announced intention to redeem all 2 million Series A issued and outstanding cumulative redeemable preferred shares, as well as all 1.528 million Series C issued and outstanding cumulative redeemable preferred shares. Redemption price is $25 per share. The board of directors declared a quarterly cash dividend of $0.527677 per Series A preferred share and $0.441096 per Series C preferred share, with dividends to be paid on Oct. 3, 2022, to the holders.
Chesapeake Energy Corp.	NASDAQ: CHK	Oklahoma City	N/A	Amended exchange offers related to outstanding Class A, B and C warrants, each of purchase common stock shares at a value of $0.01 per share. Warrant holders will have the opportunity to receive a number of shares of common stock, determined over a 10 trading day volume-weighted average trading price measurement period for warrants validly tendered and accepted for exchange pursuant to the offers. Offer is extended until Sept. 30, 2022.

DEBT

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
Williams Cos. Inc.	NYSE: WMB	Tulsa, Okla.	$1,750	Priced a public offering of $1 billion of 4.65% senior notes due 2032 at a price of 99.635% of par and $750 million of its 5.3% senior notes due 2052 at a price of 99.954% of par. Settlement date is Aug. 8, 2022, subject to customary closing conditions. Proceeds will be used for general purposes, including repayment of outstanding commercial paper notes and near-term debt maturities. **Bank of America Securities Inc., Citigroup Global Markets Inc., PNC Capital Markets LLC** and **Scotia Capital Inc.** are book-running managers in the offer.
PureWest Energy LLC	FRA	Denver	$365	Closed on a second asset-backed securitization comprised of $365 million of asset backed notes collateralized by a portion of the company's producing natural gas assets. Featured a combination of $210 million of 144A Class A1 notes with an "A-" **Fitch** rating and $155 million of Class A2 notes with a "B+" Fitch rating offered and sold as a 4(a)(2) private placement. The transaction follows the company's initial $600 million securitization in November 2021, with the assets collateralized in this securitization representing its retained interest in the same 1,800-plus wells included in the initial securitized financing. **Guggenheim Securities LLC** was sole structuring advisor, sole book-running manager and sole placement agent in connection with the offering.
Antero Resources Corp.	NYSE: AR	Denver	$300	Commenced tender offers to purchase any and all outstanding 8.375% senior notes due 2026 and an amount of outstanding 7.625% Senior Notes due 2029 equal to the difference between $300 million for cash. Tender offers expire Aug. 10, 2022. Note holders may not validly withdraw their notes prior to the expiration dates. Settlement date for the tender off is Aug. 11, 2022, and maximum tender offer will expire on Aug. 31, 2022.

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
Crew Energy Inc.	TSX: CR	Calgary, Alberta	$130	Completed the sale of noncore assets at Attachie and Portage in British Columbia. Proceeds will be used to redeem $128 million principal amount of the company's 6.5% senior unsecured notes, due in 2024. Disposition includes: approximately 47,025 net acres of Montney rights on land north of the Peace River with no associated production or facilities; total proved reserves of 4.7 MMboe, representing 2.3% of total corporate proved reserves, with associated future development capital of $25.7 million; and total proved plus probable reserves of 34.2 MMboe, representing 8.5% of total corporate proved plus probable reserves, with associated future development capital of $182.9 million.
Production Lending LLC	N/A	Houston	$35	Closed and funded a loan to a private oil and gas company based in Midland, Texas, with operations in the Permian. The company has funded 12 preferred equity transactions worth over $15 million since August 2016. Loan proceeds will toward drilling and completing six horizontal wells and provide the company with flexibility around principal payments, additional development and early prepayment of the facility.
Tellurian Inc.	NYSE: TELL	Houston	N/A	Will offer and sell units consisting of 11.25% senior secured notes due 2027 ($1,000 principal amount per note) and warrants to purchase shares of Tellurian common stock in an underwritten public offering. Proceeds will be used to help fund the construction of the company's Driftwood project. Offering is being made pursuant to an effective shelf registration statement of the company previously file with the U.S. Securities and Exchange Commission. **B. Riley Securities Inc.** is the sole book-running manager for the offering.

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LNG ALLIANCE

EXPORTING US GAS FROM MEXICO

LNG Alliance CEO Muthu Chezhian spoke with Hart Energy about the proposed Amigo LNG facility in Mexico and the company's plan to export piped gas from the U.S. to South Asia.

INTERVIEW BY

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Above, the Amigo LNG project site in Guaymas in northwestern Mexico.

Singapore-based LNG Alliance continues to move forward with plans for its Amigo LNG liquefaction plant in Mexico to be located in the Sonoran port city of Guaymas on the shores of the Pacific Ocean.

LNG Alliance, a fully integrated turnkey project developer of LNG terminals, received a permit in December 2020 from the U.S. Department of Energy to export U.S.-produced gas to free trade agreement (FTA) and non-FTA countries for a 7.8-mtpa LNG export facility.

Hart Energy senior reporter Pietro Donatello Pitts spoke with LNG Alliance CEO Muthu Chezhian about the company's plan in Guaymas to import piped gas from the U.S. and the potential timeline for initial LNG shipments to South Asia.

Pietro D. Pitts: *Can you give us a quick overview of the project, and where you stand today in terms of its proposed development?*

Muthu Chezhian: We already have the U.S. Department of Energy's permit to export U.S.-produced gas to free trade agreement and non-FTA countries for a 7.8-mtpa LNG export facility, which we received in December 2020. We also have a cooperation agreement in place with the state government of Sonora, which is a key differentiator for our project.

In April 2022, we had a launch ceremony at the project site at Guaymas with the participation of the governor of Sonora, representatives from Mexico's Secretariat of Navy (SEMAR) and the mayor of Guaymas. This is a cooperation between the state government and Amigo LNG project, and the state is providing us the land on a long-term lease.

We are also working with the government of Sonora on a concrete way to accelerate and contribute to some of the sustainability and ESG goals of the state. Part of the project margins will go toward the betterment of the communities and cooperatives in Sonora, and the state of Sonora is actively supporting the project.

Scan to read the full article.

PP: *How many trains could you realistically build, and how much have offtakers committed to purchase?*

MC: Our current execution plan is to have 3.6 mtpa as the first train and 3.6 mtpa as the second train, and that will account for 7.2 mtpa. Another 0.6 mtpa is for the gas that could be used for power generation or for other operational purposes, which takes the plant up to 7.8 mtpa.

To date, offtakers in South Asia have already fully committed to buy 1.8 mtpa. We are also in ongoing and very advanced discussions with potential offtakers in India, Indonesia and China. Although we haven't finalized the

remaining capacity because the current market is very price sensitive, we plan to make an announcement regarding the remaining offtake in December.

We have another 0.6 mtpa, which we have reserved for Mexico's domestic market to address the virtual pipeline demand within the state of Sonora and mainly for LNG ISO truck loading toward the mining sector and industry clusters that don't have pipeline access. For the feed gas supply for liquefaction, we have a gas pipeline that has enough excess capacity and that runs right next to the Port of Guaymas, which is approximately 3 kilometers from our project site. Our site is located inside an industrial estate, which makes it easier for us in terms of the social impact assessment and environmental impact clearance, all of which are progressing very well and within schedule.

Muthu Chezhian

We still have 1.2 mtpa to market related to train 1 and have more than enough market interest. Currently, we are playing around with the idea of increasing the capacity of train 1 because of the way the market has reacted in the last four months. Importantly, we are in negotiations with a Southeast Asian client asking for more LNG volumes, in fact, more than the current train 1 capacity. If they commit to another extra 1.2 mtpa, then we have to ramp up train 1 mtpa to 4.8 mtpa to be aligned within the current pipeline's capacity.

We are fairly certain of getting the first LNG shipment from train 1 by January 2026. From an execution perspective, it really doesn't add more burden on us but beyond that, we'd like to take a measured approach especially for anything beyond 7.2 mtpa as we will need new pipelines.

PP: *When do you realistically plan to start construction of the site?*

CM: We have all the prerequisites after signing an agreement with the state of Sonora this April that provides us with an accelerated permitting process. So, the state is helping us with this and they are a catalyst in this process. The federal government, SEMAR and the Secretariat of Energy are all supporting our permitting process. As long as we can provide the information the regulators are asking for, they have been very supportive of the process. We anticipate all the permits to be in hand by February 2023, when we will start the construction.

PP: *Once you have the permits in hand, is that when we can expect the final investment decision announcement?*

CM: Yes, that's correct. Again, the offtake is very strong, and the investment commitment is firm. The institutional investors backing the project are from the U.S., so we are not worried about the cash part of it. Additionally, the EPC [engineering, procurement and construction] contractors have been shortlisted both in Singapore and China for the LNG liquefaction modules and in the U.S. for the marine facilities.

PP: *When can we expect the first LNG cargoes to leave the Port of Guaymas?*

CM: By December 2025, we expect commissioning to be completed, and by January 2026, the first cargo could be shipped out. This is the current schedule because we have standardized the engineering of the modules. We are running processes in parallel and staying ahead of the curve for the long lead items; we have already got those things sorted out.

"The offtake is very strong, and the investment commitment is firm."

PP: *What's the expected investment commitment for the project considering one or two trains?*

CM: Right now with just train 1 at 3.6 mtpa, we are anticipating an investment of about $2.1 billion. This gives us almost $600 per ton per annum, which is a very attractive price for the LNG buyers and almost 15% lower than the closest competition. If we were to go with a 7.2-mtpa two-train plant, the required investment would increase to around $4.3 billion.

PP: *Are there advantages associated with the project's location in the northwest region of Mexico and close to supply in the U.S.?*

CM: There are two pricing advantages we have. The tolling fee is $0.50/MMBtu cheaper than any other liquefaction facility in the region or the U.S. East Coast because of our optimized design and standardized modular engineering. The project site has water depths of 17 meters so there's no dredging, and the Port of Guaymas is 3 kilometers from us. So the capex for us to set up a LNG facility at Guaymas is substantially lower. It's also 1.5 kilometers from the navigation channel to the Port of Guaymas. So, we will have all the services of Guaymas at our back door, and that reduces a significant part of the opex. Combined, we're able to get a very attractive tolling fee.

We also have an additional price advantage as we don't incur Panama Canal charges and benefit from a shorter shipping distance to Asia, as compared to U.S. East Coast LNG. OGI

Voices

Industry experts from sectors throughout the energy supply chain discussed ESG matters during Hart Energy's Energy ESG Conference on Sept. 8 in Houston.

"Digitization is probably the single best thing you can do for the environment because you are doing things the right way the most efficient way, and you are able to look at the data from anywhere in the world, not just at the wellhead or downstream facilities."

—**Vincent Higgins**, *president of oil and gas digitization, mCloud*

"We really need to be tackling fugitive emissions and make sure we're capturing more of those within our landfill gas collection network, and of course the more we capture, the more we can put into our renewable natural gas infrastructure network."

—**Tara J. Hemmer**, *senior vice president and chief sustainability officer, Waste Management*

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"There's an anti-ESG movement that's underway. Republican politicians [are] involved in this at great levels. We're hearing a lot of questioning about ESG, especially when it comes to consistency and in ratings and reporting."

—**Jack Belcher**, *principal for energy and energy policy, Cornerstone Government Affairs*

"The resistance [toward reporting Scope 1, 2 and 3 emissions] is coming down as people understand we're not trying to phase out fossil fuels. It's really about finding low-carbon solutions."

—**Allyson Anderson Book**, *chief sustainability officer, Baker Hughes*

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THE LNG GODFATHER

Charif Souki was the first to new-build a U.S. LNG import plant this century. He followed with the first Lower 48 LNG export plant. His thoughts on this 2022 chapter of the global natural gas story include "misery" and "nervous" and "total nonsense."

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In early September, more than 50,000 Czechs protested in Prague, calling to renew receiving natural gas from Russia. In London, a chief economist was predicting a natural gas-spawned recession.

"Europe's economic outlook continues to go from bad to worse," wrote Andrew Ross Sorkin in the New York Times' "DealBook" newsletter Aug. 31. While U.S. energy prices appear to have peaked, "economists see more pain ahead for Europe … through the autumn and into next year."

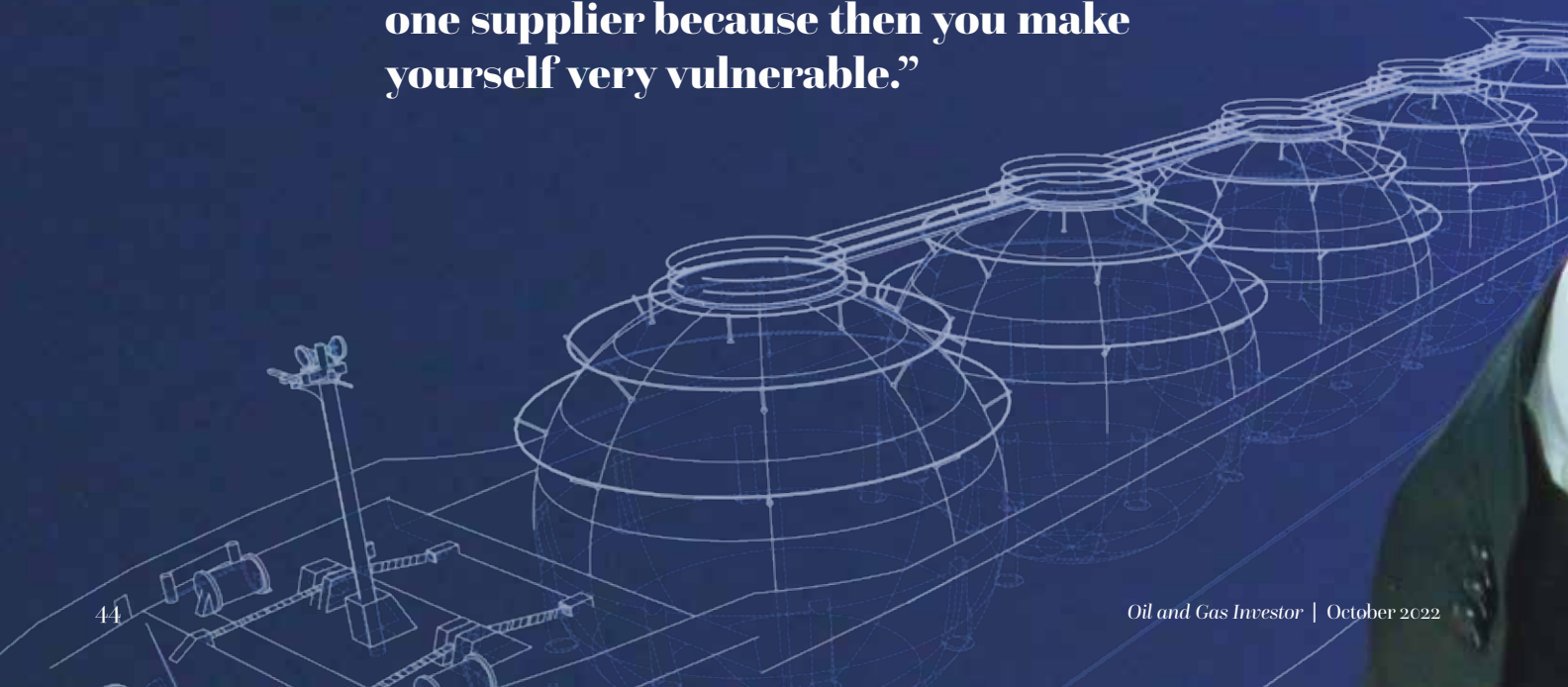
Holger Schmieding, a London-based economist, told Sorkin, "We are paying through the nose for imports of natural gas."

At the time, the Dutch TTF price for LNG—the Henry Hub, if you will, of Europe—was $90 per MMBtu.

Oil and Gas Investor *had visited with Charif Souki two days earlier for his perspective on energy and world order. In addition to leading Cheniere Energy Inc. to become the U.S.' first Lower 48 LNG exporter—there had been exports from Alaska from 1969 to 2015—Souki is a world citizen born in Egypt, spending his youth in Lebanon and traveling the world as the son of a foreign news correspondent and, later, as a private investor.*

Currently, he's building a second LNG export plant, Driftwood, south of Lake Charles, La., as executive chairman of Tellurian Inc.

"It is just common wisdom to diversify your sources. Don't depend entirely on one supplier because then you make yourself very vulnerable."



Nissa Darbonne: *Could energy costs be the new global financial crisis?*
Charif Souki: Definitely. And much worse. It's not just natural gas; there's a shortage of all kinds of energy.

And there's a shortage of mining—for copper and other things that go into solar panels and windmills.

There is a shortage of coal. There's a shortage of oil. So everything is in shortage.

ND: *How soon could this result in a financial crisis?*
CS: Soon.

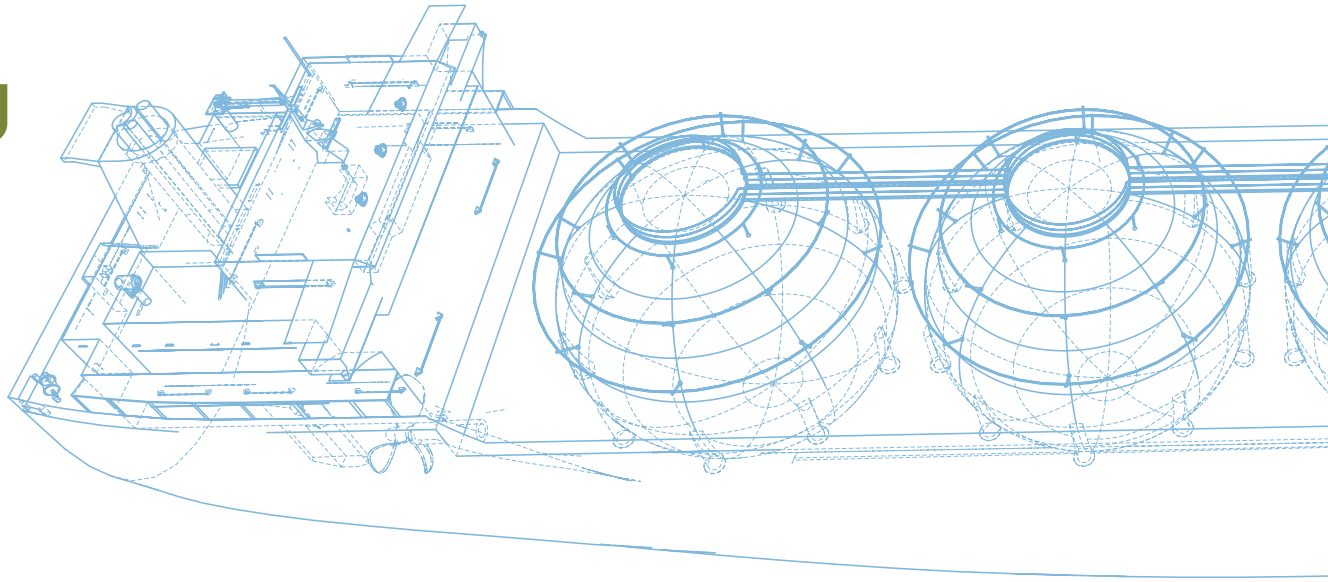
ND: *A couple of years?*
CS: I think we're already seeing it. This winter, you're going to have misery in Europe. Europe is not used to dealing with misery, whereas the emerging countries are.

You say that you're going to have a shortage of fertilizer in Bangladesh or Pakistan and people shrug. They don't think it's very serious. "So what?"

But you start talking about not having enough energy for heating or electricity in Europe and, all of a sudden, everybody pays attention.

The problem has now come to the West, which a year and a half ago wasn't true. Now we're paying attention.

"I think that if you're going to leak methane or you're going to be responsible for CO_2 emissions, put a price on it."



ND: ***The U.K. was going to develop its own shale during the past decade but quit. It's confounding that Europe would dilly-dally about securing friendly energy supply. Is this surprising to you?***
CS: No, I'm not surprised. It's classic. They thought Russia was friendly and, from their standpoint, Russia was part of Europe and the U.S. was not. They took the position, universally almost, in Europe that they were going to prefer to get all their gas from Russia than from the United States. It was a conscious policy decision.

Look, even the Chinese: We're not exactly friendly with them today, but they're hedging their bets. They're not going "all Russia." They are signing agreements in the United States as if we were the best friends in the world.

It is just common wisdom to diversify your sources. Don't depend entirely on one supplier because then you make yourself very vulnerable.

They should have known that.

ND: ***Russia has cut off supply in the past.***
CS: Russia was reliable until about two years ago. But it was too late for Europe to do anything about it.

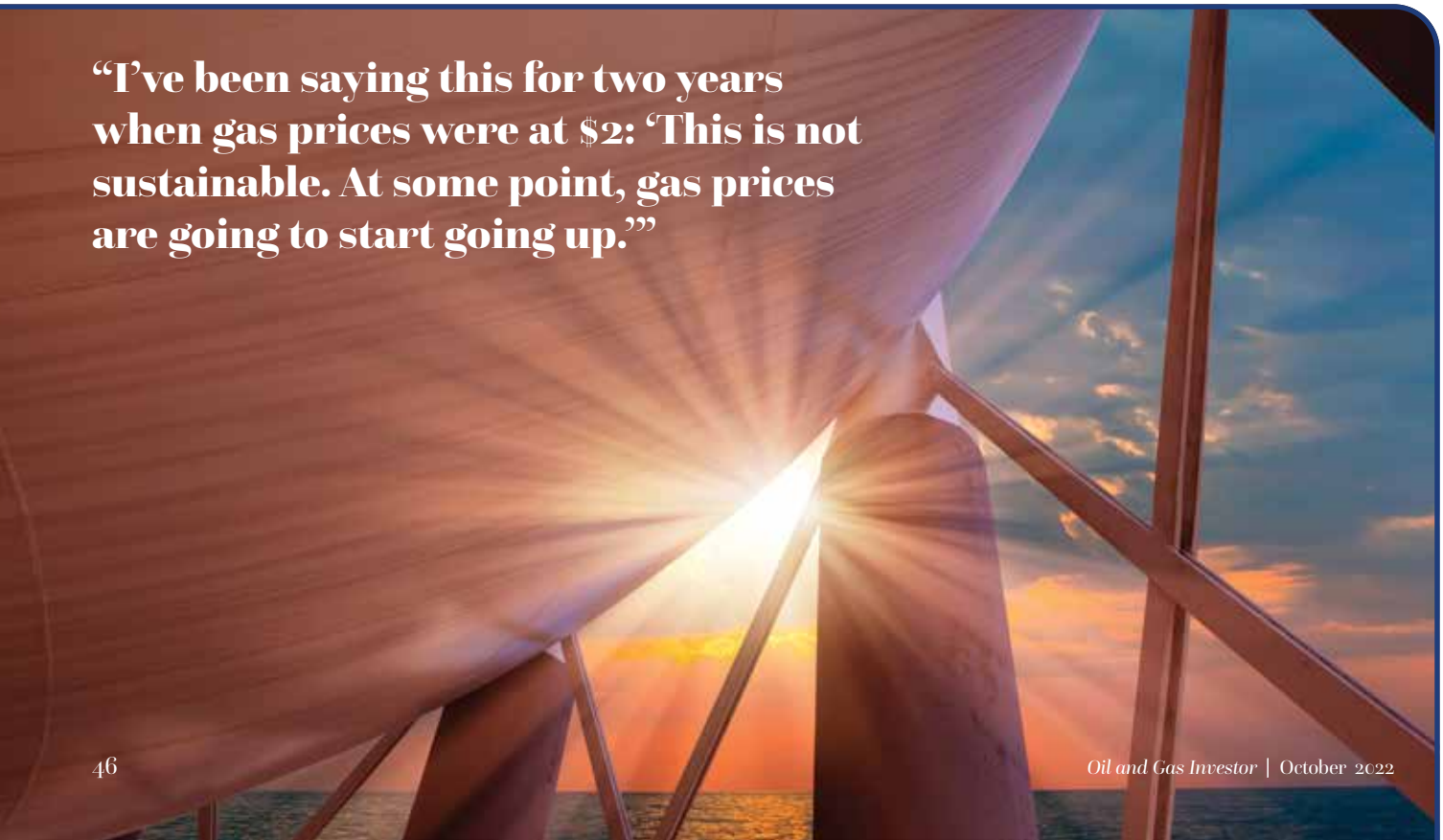
One of the central issues is nobody seems to have an energy policy. Everybody's going about haphazardly.

ND: ***Oil and gas have been too cheap for too long. Has the world become complacent—at least the West?***
CS: Yes. And not just the Western world; it's everybody. It was mostly due to the shale revolution. This is really our fault. We changed the world by becoming the largest exporter of natural gas from only 10 years ago.

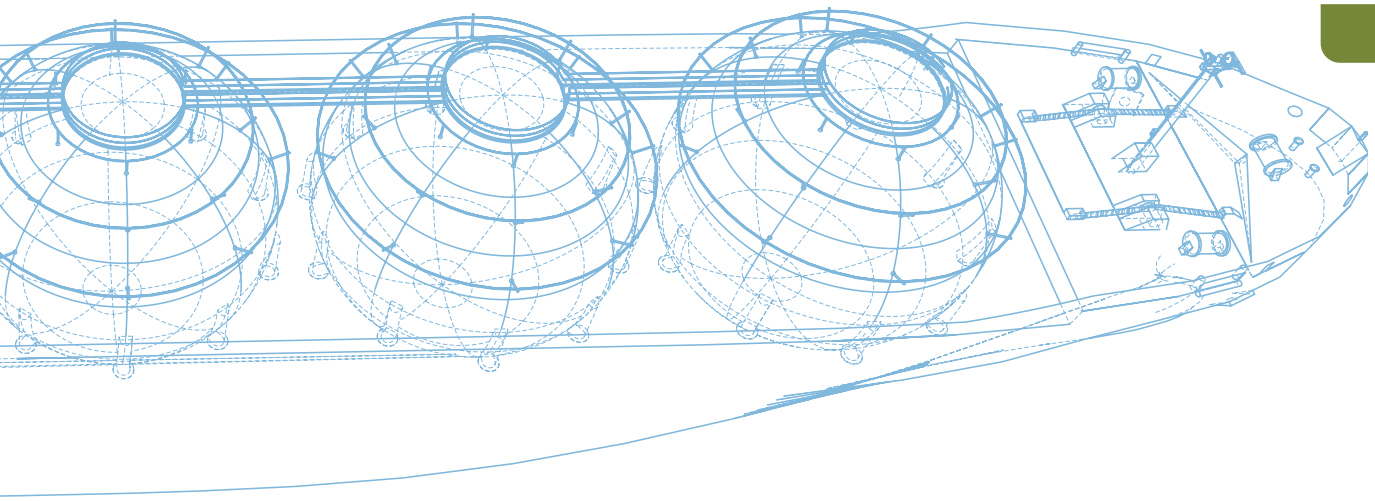
And because of that, the price remained very comfortable. The rest of the world became very complacent, and energy was a miserable place to invest money.

Everything came from that.

ND: ***European demand for U.S. LNG will be undiminished despite the outcome of Russia's war for Ukraine. Is this correct thinking?***



"I've been saying this for two years when gas prices were at $2: 'This is not sustainable. At some point, gas prices are going to start going up.'"



CS: No. European demand will diminish. First, they're going to lose their industries. You're not going to make fertilizers there. You're not going to make steel or aluminum or cement. All the things that are critical to European industry are going to start migrating (abroad).

So they're going to export their energy demand. And at the same time, they're going to export their emissions because it doesn't mean they're not going to buy cars. Their cars will be made in India or China or somewhere else in the world.

So Europe is going to deindustrialize, and they're going to help other places around the world to industrialize. At the same time, they will have a reduction in their emissions, but they will have simply exported them.

They will reduce their demand for natural gas, but what they need to do, in our base case, is to continue to rely on some Russian gas and hope it's going to come, cut their demand for industrial goods by half and double their LNG imports.

They're still going to import a tremendous amount of energy, but they will reduce their demand because they will lose their industries.

ND: ***What will be their economy then?***
CS: They are going to become a service economy. They're already 52% a service economy, and that's going to increase. They're not going to be an industrial economy.

ND: ***Your friends and clients abroad, are they alarmed?***
CS: They're very nervous. They made the mistake of relying on Russia. And now they're wondering whether we have the willingness to step in and help them or not.

We don't exactly send a very consistent, comforting signal, do we? We basically tell them that maybe they can have our gas, but maybe not. Or maybe we can let them have our energy in general or maybe not.

(Europe is) asking: "Can we really count on you?"

We are not at all consistent and not at all comforting to our allies around the world. They don't know if they can rely on us or not.

ND: ***On climate, I've heard of the eventual advent of a type of blockchain form of trading certified-carbon-neutral natural gas molecules, a "blockchain Btu," if you will.***
CS: Total nonsense. You have people in Europe now going for 20-year coal contracts. So we're not at that point anymore. It was fashionable a year ago because people thought this is what financial institutions wanted to hear in order to get over the ESG issue.

But when your choices are to buy coal or oil, and switch from gas to fuel and do all the things that you can to survive, you don't worry about what you call it.

ND: ***(France's) Engie had declined a contract in 2020 for South Texas LNG as being "dirty gas" being that it's from Permian and Eagle Ford oil production, but it quickly signed a contract for it this year.***
CS: I mean, we're not talking about emerging countries that are really desperate. We're talking now about European countries that should have known better.

I think that if you're going to leak methane or you're going to be responsible for CO_2 emissions, put a price on it. And then don't worry about trying to identify what we want to call it. It's impossible.

I've been advocating both a carbon price and, basically, making methane emissions extremely expensive so people don't have the motivation (to not do something).

It's inexcusable: We have the equipment, and it's affordable. We can do this and if we don't, we should be penalized.

But identifying every molecule—this comes from here and this comes from there—it's just nonsense.

ND: ***I'm also hearing of U.S. gas producers working toward contracts for the water price, bypassing the Henry Hub price. EOG Resources Inc. has done a deal. Are you seeing more on the way?***
CS: Yes. I mean, we are seeing this all over the place, but it's a very difficult thing to do for companies that don't have an infinite balance sheet.

You mentioned EOG. So they took less than a million tonnes from Cheniere and that is going to cost them $200 million a year for the infrastructure for 20 years.

So it's $2 billion to $3 billion on their balance sheet. That's not a comfortable position to be in. It's great when everything is going the way it's going now. But if it goes in

"Demand for gas has increased 2.5% (a year) for the last decade. If it continues to do so, there's going to be enormous pressure on the system, and Qatar and the United States by themselves cannot supply the gas that is needed by the rest of the world."

the other direction, for whatever reason, it becomes very expensive.

So Exxon Mobil [Corp.], Chevron [Corp.], ConocoPhillips [Co.] can afford this. But smaller companies can take only small amounts (of risk). They can take a million tonnes; they can't take 5 million tonnes.

So that business model is limited. But it does make sense for American companies that produce natural gas to want to be exposed to the global markets.

ND: ***Tellurian also owns gas reserves in the Haynesville. What's the thinking behind this?***

CS: Demand for gas has increased 2.5% (a year) for the last decade. If it continues to do so, there's going to be enormous pressure on the system, and Qatar and the United States by themselves cannot supply the gas that is needed by the rest of the world.

This is all driven by emerging countries with 7 billion people that continue to aspire to a better life, that continue to want to live the way the West does and want to improve their living standards. That's a major function of how much energy you need.

Natural gas is much cleaner than anything else. And it's unrealistic to ask them to look at renewables because there's not enough renewables for them to be able to reach our standards of living.

They want more electricity. They are starting to get used to air conditioning. They want more mobility. They want home heating.

They're starting to live in more extreme regions; it's either cold and they need heating or it's hot and they need air conditioning. And they are relying on coal and gas for the majority of what they need.

All you have to do is look at New Delhi to realize that gas is better than coal on a day-to-day basis. Last winter, children were kept home from school because the pollution in the streets was so horrible.

You have these kinds of issues around the world. They need to continue to buy gas—if we let them have it.

ND: ***We're at 20 Bcf/d of exports (with Freeport LNG's 1.8 Bcf/d that is currently offline), including the 7 Bcf/d that's going to Mexico via pipe. Do we have enough excess resource to export more but still satisfy domestic demand—affordably?***

CS: I think we have plenty of resource. The question is, "Do we want to build the infrastructure to connect it?" Between the Marcellus and the Permian Basin, which is very soon going to start running into offtake issues again, we have plenty of resource.

The Marcellus, the Haynesville, the Permian Basin—these are all world-class fields that can produce an enormous amount. And not just at current prices—not at $3, but somewhere in the $5 range.

And don't forget that we import from Canada as well. There is a tremendous amount of resource there too. So, we have plenty of resource. We just need to build the infrastructure.

ND: ***I haven't seen growth in Canada.***

CS: It's not going to happen at current prices. We used to say that we can produce as much gas as we want at $3. It's probably going to be closer to $5 very soon. In that neighborhood, we have plenty of resources.

As for Canada, the AECO is trading at under $3 right now. (It was $2.59 on Sept. 2.) So it's a major discount, and nobody there is building infrastructure or can build infrastructure to bring it into the U.S.

ND: ***As far back as heading into the summer of 2021, I saw U.S. natgas begin to find a new minimum of at least $4. Will that new floor stick?***

CS: I've been saying this for two years when gas prices were at $2: "This is not sustainable. At some point, gas prices are going to start going up."

I've been advocating for people to watch two things: Henry Hub in the United States and JKM in Asia. Of course, I never expected the invasion of Ukraine; I failed to tell people to look at TTF as well.

What you could see already was the demand for gas on a global basis was increasing, the production of gas in the United States was lagging, and both Henry Hub and JKM had to go up. And all of this preceded the invasion of Ukraine.

ND: ***What else should we know?***

CS: The most important thing is we need an energy policy, and our energy policy is not going to be the same as Europe's energy policy—because we have abundance; they don't.

We need to decide what we are going to do with this abundance and we need to be very clear about it and not change our mind every two weeks.

We cannot simply react to the situation.

Right now, we don't have an energy policy; we have an election policy: What is going to look good in November and what is going to look good in two and a half years. OGI

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PRIVATE EQUITY'S RETURN

Improved returns are causing some private equity firms to reconsider the opportunities available to them in the oil and gas industry, but they are weighing these against pressures related to the energy transition.

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Recent months have brought about something of a turnaround in fortunes for the oil and gas industry, and this is causing private equity firms, among others, to reconsider the opportunities the sector offers.

The commodity price downturns of the past decade have been weighing on the industry and have caused capital sources to dry up amid years of poor returns. These sources of capital have included private equity firms, a number of which took advantage of rising oil prices in 2021 to exit the oil and gas space. The trend was compounded by pressures related to the energy transition, which had led to several major players in the private equity space to turn their attention to greener investments.

However, the onset of the war in Ukraine in early 2022 upended energy markets, with commodity prices spiking earlier this year and oil and gas coming back into favor as global energy security became a top priority. While there are some concerns about a global economic slowdown and the impact it could have on energy, the broader expectation is that demand for oil and gas will continue to rise. And a pivot away from Russian oil and gas imports—especially in Europe—makes hydrocarbons produced elsewhere a more attractive resource.

Private equity positions

Against this backdrop, some private equity firms are reconsidering moves to exit oil and gas, though this is not playing out across the board, and others remain keen to leave the space while commodity prices are elevated.

"The trend of PE [private equity] firms monetizing their portfolio companies is still very much ongoing," Stephen Trauber, a vice chairman and co-global head of natural resources and clean energy transition at investment bank Citi, told Hart Energy.

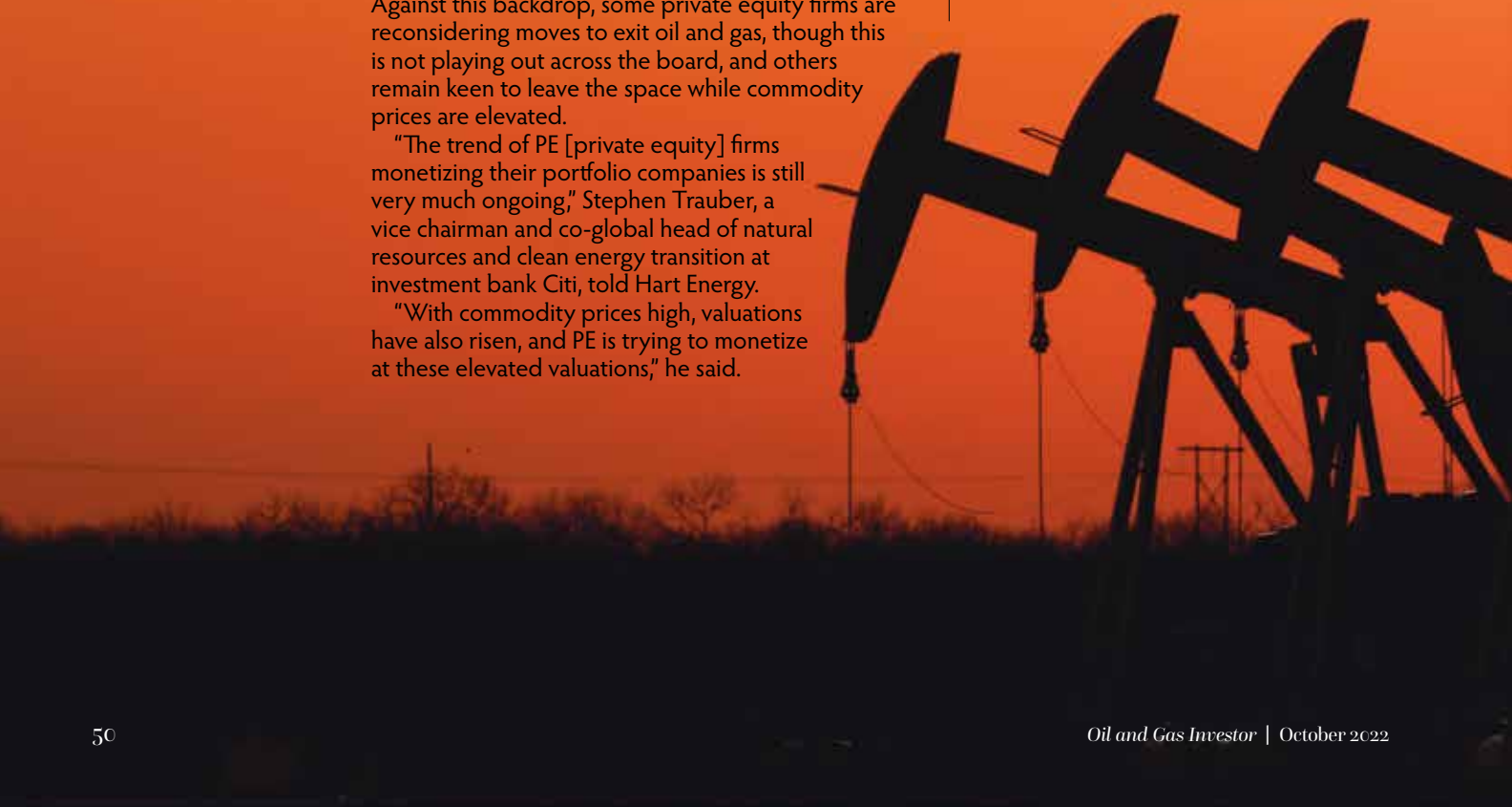
"With commodity prices high, valuations have also risen, and PE is trying to monetize at these elevated valuations," he said.

Trauber warned, however, that bridging the gap between sellers and buyers as far as value expectations go remains a challenge.

"Buyers do not want to overpay in the current high-price commodity environment, so bridging this value gap is the hardest aspect of completing transactions," he continued.

"We have already seen several transactions this year, and I believe we will see several more announced before year-end. Sellers do not want to miss this environment to monetize their assets. Buyers do have much stronger balance sheets and elevated share price valuations, so it is a good environment for buyers to consolidate, capture synergies and create value for their shareholders."

Valuations are far from the only factor affecting private equity behavior, though. As the energy transition accelerated in recent years, pressure has mounted on private equity funds from investors such as public pension funds and endowments to shift their focus to cleaner energy. Certain giant asset managers including Blackstone and Apollo



Global Management recently pulled back from new oil and gas investments. But more recently, other private equity firms that invest in oil and gas have been reported to be talking up the importance of the industry to investors as the spotlight remains on energy security. With the oil and gas industry seeing improved returns, investor interest remains and is indeed rising among some players.

"While there has been some pullback of investments, both in the public markets and from passive limited partners, like insurance, endowments, pensions, foundations and family offices, we continue to see increased investment interest in the right opportunities that minimize risk and provide reasonable returns," Evan Turner, a managing partner at private equity firm Drillcore Energy Partners, told Hart Energy.

Trauber noted that the exit of a number of funds from the hydrocarbon business in recent years has resulted in an environment where there is less competition for assets available. Meanwhile, returns available to private equity firms have been rising, bolstered by higher commodity prices.

"The energy sector has significantly outperformed this year, and investors who have not been invested in energy have largely underperformed," said Trauber. "I do believe some PE firms who have exited the business will return in a balanced manner with the energy transition, and I also believe that new PE firms will be formed to invest in energy as a result of the returns that are able to be generated. We have already started to see some private equity funds who have historically dabbled in energy start to become more aggressive in their investment into the sector."

A degree of caution remains, however, after the hit that many—but not all—investors took on oil and gas over the past decade.

"We believe there will be outliers who are seeking higher-risk, higher-reward investment opportunities that financial sponsors and private equity provide but also realize that many investors did not earn what they expected over the past 12 years or so in oil and gas private equity, while some select ones did very well," said Turner.

Making adjustments

Drillcore's own approach illustrates how private equity firms are adjusting to current market conditions. Founded in 2017, the company targets upstream and midstream acquisition and development opportunities in delineated geologic basins in the Lower 48. Structures that interest the company include traditional buyouts, strategic partnerships—whether joint venture or drillco—and growth equity opportunities across the lower to mid-market, according to Turner.

"We continue to adjust our investment parameters with the economic environment in order to provide the best outcomes for all parties involved in the deals we target," he said. "We believe that increased regulations and higher-for-longer prices lend to a more competitive market for M&A opportunities due to the bid-ask spread with buyers and sellers. We also look for select service opportunities and transition opportunities that make financial sense."

The company is optimistic about the opportunities that remain for private equity firms in the oil and gas space.

"There are many growth and consolidation opportunities," Turner said. "There are a lot of proven management teams with strong track records that have increased the technical expertise across certain basins and can help a financial partner to monetize and extract value from the ground up."

Specifically in the U.S., concerns have also emerged over the attractiveness of shale opportunities waning as Tier 1 acreage is drilled out and operators shift their attention to Tier 2 and 3 zones. However, Drillcore expressed confidence in the potential of some of this acreage.

"We believe that further potential exists in exploration and production of Tier 2 and Tier 3 zones within geologic plays that can be proved up for often more attractive valuations than Tier 1 zones, such as in the Delaware and Midland basins within the greater Permian Basin," said Turner.

Trauber, however, cautioned that while attractive opportunities remain for private equity, it is becoming more difficult to find attractive assets to acquire.

"Buyers do not want to overpay in the current high-price commodity environment, so bridging this value gap is the hardest aspect of completing transactions."

—Stephen Trauber, *Citi*

"The energy sector has significantly outperformed this year, and investors who have not been invested in energy have largely underperformed."

—Stephen Trauber, *Citi*

"First of all, strategic buyers today have synergies, strong balance sheets, strong valuations in their share price and a lower return expectation," Trauber said. "As a result, strategic/corporate buyers are in a stronger competitive position to acquire assets or companies for sale. Despite this, there are still selected assets available such as noncore corporate assets or assets that are small and nonstrategic to corporate buyers. There are also assets in basis."

While Trauber believes private equity firms could still acquire assets at fairly attractive valuations and with the potential for generating favorable returns, he noted that the exit alternatives available to private equity could present a problem with these types of assets.

Transition questions

On top of this, the pace of the energy transition is expected to have a considerable impact on how private equity firms will treat oil and gas over the coming years.

"The movement and focus on energy transition is absolutely playing a large role in PE interest in oil and gas assets," said Trauber.

While for some private equity players this has entailed pivoting away from oil and gas outright, for others it has involved investing in clean energy businesses alongside hydrocarbons or pushing for the oil and gas companies to decarbonize more rapidly.

However, the current focus on energy security alongside the energy transition means that oil and gas is increasingly seen by more players—including national and regional governments—as having a key role to play in the world for longer than previously expected.

"The broader global economies, investors and policymakers are beginning to recognize that the global economy needs more energy from all sources in order to raise the standards of living for impoverished regions and also to make energy affordable to more regions," said Trauber. "Energy security is becoming critically important and recognized. The rapidly increasing and recognized trend is about energy addition not energy transition."

Drillcore too believes that oil and gas has an important role to play globally for decades to come.

"We believe that there will only be a 3% to 5% decline in traditional oil and gas at this point between now and 2050. The reason being is that population growth continues and industry demands accessible and affordable energy and oil and gas provides that, even at some of the recent increased commodity prices caused by supply and demand imbalance and global tension," said Turner.

He added that as ESG policies become more standardized and widespread, this could help bring clarity to investors in energy where there is currently considerable uncertainty.

"We believe that integrated mandated ESG policies will help investors and the world know where their money is specifically going toward," Turner said. "This is one of many catalysts that will likely change the way we work in the future. Time will tell." OGI

"We believe there will be outliers who are seeking higher-risk, higher-reward investment opportunities that financial sponsors and private equity provide but also realize that many investors did not earn what they expected over the past 12 years ..."

—Evan Turner, *Drillcore Energy Partners*

LATIN AMERICA'S INVESTMENT OPPORTUNITIES

Brazil and Argentina offer large-scale investment prospects that focus on electricity, renewables, asset divestments, crude oil and natural gas production, infrastructure buildouts as well as LNG exports.

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Energy-rich Brazil and Argentina offer an abundance of opportunities across the entire energy value chain but not for the faint of heart investor.

Energy investors can have a difficult time navigating the region due to political, economic and financial uncertainties that existed prior to the pandemic and Ukraine war and have been exacerbated in the aftermath. The Brazilian and Argentine governments are actively pursuing energy investors to expand a gambit of projects as presidential elections loom in both countries this year and next.

In terms of M&A, most investments have been seen in Brazil, with individual deals reaching almost $2.3 billion, Welligence Energy Analytics research analyst Omar Rios told Hart Energy, adding that activity elsewhere is and likely will remain quiet over the remainder of the year.

"Earlier this year, we did see a stubborn buyer-seller gap holding back activity that was caused by the volatile commodity price environment after the Russia-Ukraine crisis. We see this trend holding as macroeconomic headwinds, and political uncertainty have been added to the mix," Rios said.

Brazil, home to the famed presalt, offers offshore E&P and infrastructure projects, while Argentina's unconventional shale offers the best opportunities to boost production and infrastructure amid the country's aspirations to join the LNG exporting club of countries. But the opportunities in the two Southern Cone countries don't stop there and span from fossil fuels to clean, low-carbon options aligned with the global energy transition, such as wind, solar and hydrogen.

Brazil's momentum as a presalt exploration hotspot has slowed in recent years compared to Guyana's prolific Stabroek Block, but state-owned Petrobras still looks to bring on 14 FPSO units between 2023 and 2026 to produce earlier finds. As Argentina state-owned YPF continues to confront infrastructure headwinds, it will also push the country to achieve LNG export glory. Combined, the countries offer investors these opportunities and others far beyond.

Both countries already boast the presence of global energy sector heavy weights from Chevron, CNOOC, Equinor, Exxon Mobil Corp., Petronas, QatarEnergy, Shell Plc and TotalEnergies, while others are still being pursued globally.

Brazil: More than the presalt

Brazil, home to the largest country, population and economy in Latin America,

"Earlier this year, we did see a stubborn buyer-seller gap holding back activity that was caused by the volatile commodity price environment after the Russia-Ukraine crisis."

—Omar Rios,
Welligence Energy Analytics

is abound with investment options for investors looking to chase opportunities in unregulated projects, the electric or refining sectors, natural gas infrastructure buildouts and distributed generation, among others. Investments over the near term are forecast to easily surpass $50 billion across various sectors despite the political and economic uncertainties related to presidential elections in October 2022, which will pit right-wing current President Jair Bolsonaro versus former president and leftist candidate Luiz Ignacio da Silva, also known as "Lula."

"The investment size isn't expected to change much if Lula wins reelection, as investors believe he might bring certainty in the sense that he is more predictable in terms what he will do compared to what Bolsonaro does," Americas Market Intelligence (AMI) energy practice co-director Arthur Deakin told Hart Energy. "A lot of the investments are because of policies that are in place and that will not change so that will continue to drive investments."

Between 2022 and 2026, approximately 83% of generation projects under construction in Brazil will be unregulated, representing $30 billion in investments, Deakin wrote in a recent report co-authored with fellow AMI energy practice co-director John Price.

Privatization

Other attractive investment options relate to privatization of Brazil's state-owned companies as currently stipulated by Bolsonaro. These opportunities offer investors a chance to pick up assets across the electric, upstream, midstream and downstream sectors.

A Bolsonaro reelection would see Brazil continue to advance the privatization of state-owned assets, such as Eletrobras and Petrobras, while a Lula victory could see the processes come to a halt due to the perceived threat to Brazil's sovereignty and energy security, Deakin said.

Fundamental to improving Brazil's electric sector is the privatization of the country's largest power utility, Eletrobras. The entire privatization process could raise upward to $17.7 billion, including the primary share offering, concession feeds and the potential divestment of remaining shares, AMI said. Eletrobras controls 31% of Brazil's installed generation capacity and 47% of its transmission lines, while the federal government retains a 51% interest in the company's ordinary shares, which include voting rights. Bolsonaro aims to dilute the government's stake in Eletrobras to around 45%, according to AMI.

Ownership in oil producer Petrobras is also dominated by the government, which holds 50.26% of its voting shares, according to the company's annual report. Petrobras' strategy to focus on the presalt remains that and despite an almost constant churn at the helm under Bolsonaro's watch due to disagreements over fuel pricing. But what remains continuous is the company's plan to divest nonstrategic assets onshore and offshore as well as refineries.

Part of Petrobras' divestment strategy includes its relinquishing various monopolies across Brazil. Investors are already enticed by a recently passed gas sector bill, which offers infrastructure opportunities. Continued development of the country's gas infrastructure, especially pipelines spanning from offshore developments and resources to onshore could unlock nearly $10.6 billion in private investment by 2026, according to AMI, citing government sources.

A recent drought highlighted energy risks related to Brazil's overreliance on hydroelectric generation, which accounted for almost 66% of the country's installed capacity in late 2020 of 108 GW. As a result of severe weather conditions and the energy transition, Brazil's energy generation from wind, gas

"A lot of the investments are because of policies that are in place and that will not change so that will continue to drive investments."

—Arthur Deakin,
Americas Market Intelligence

and solar is expected to rise in the future as well as from other energy sources such as hydrogen as its reliance on hydro falls.

A bill passed in December 2021 that extended the current distributed generation subsidies for existing projects through 2045 is expected to generate 8 GW of installed capacity in a single year compared to a similar installed capacity added from 2012 to 2021 with investments of $3.5 billion.

Argentina: Scaling shale

Argentina is home to the second largest economy in South America as well as the Vaca Muerta Formation, the most developed unconventional play in the Americas outside of the U.S., according to the U.S. Energy Information Administration (EIA). The formation in particular offers investors opportunities to boost shale production and to expand pipeline infrastructure, while other opportunities exist onshore and offshore and across renewable and decarbonization projects despite ongoing political and economic uncertainties.

All the major companies want to keep a foot in Argentina because the Vaca Muerta is too important a resource to not have a presence in, Rice University's Baker Institute for Public Policy's political science fellow, Mark P. Jones, told Hart Energy.

"The difficulty has simply been the Argentine government creating so much above ground chaos and risk that the companies either are reluctant to make deeper investments that might cause them to have fixed assets that could make them vulnerable to implicit or explicit expropriation or to make investments where they don't have the ability to get their product, that is oil and natural gas, to a foreign market where they can get a real return on their investment," Jones said.

Argentina President Alberto Fernandez is taking strategic decisions regarding public policies to encourage investments to mature the country into a reliable and consistent LNG exporter, energy secretary Flavia Royon said Sept. 6, during the AmCham Energy Forum in Buenos Aires.

"Work is being done with the private sector to analyze the best investment, production and marketing schemes for natural gas while contemplating the construction of new high voltage lines that will allow the incorporation of more renewables into the system," she said.

A proper legal framework is also necessary, Royon added, reiterating that Argentina's Economy Minister Sergio Massa was seeking measures to "provide predictability and legal certainty while establishing fiscal order, normalization of subsidies and incorporation of energy efficiency for the long-term sustainability of the country's energy system."

In order for Argentina to become a large gas exporter, Vaca Muerta needs to emulate the success of the Permian Basin, which entails lowering operational costs and accelerating project development while boosting production.

Argentina's "Plan Gas 4" aims to incentivize companies to boost investments in the formation to boost production. A three-year plan includes $5.1 billion in gas subsidies, investments of $1.8 billion from state owned YPF and a tender scheme where gas producers can sell gas up to a price of $3.70/MMBtu.

"The difference between the market price and price awarded at the auction is subsidized by [the] government, which leads to guaranteed returns for the companies," according to AMI.

The proposed activities and investments are part of Argentina's energy transition to cleaner resources such as wind and hydrogen as the government seeks favorable investment conditions to achieve energy self-sufficiency and reliable generation, energy undersecretary Santiago Yanotti said, during the AmCham Energy Forum.

"All the major companies want to keep a foot in Argentina because the Vaca Muerta is too important a resource to not have a presence in."

—**Mark P. Jones**, *Rice University's Baker Institute for Public Policy*

Under pressure

The Inter-American Development Bank (IDB) recently backed a $1.14 billion conditional line of credit for investments to assist Argentina decarbonize its energy sector. Additional financing from the French Development Agency and the European Investment Bank will assist Argentina in reducing its greenhouse-gas emissions while expanding and upgrading its power grid. The lending prioritizes projects that reduce emissions "by expanding transmission capacity for renewable energy, reducing technical losses and decommissioning diesel-fired power plants," the IDB said in July in a press release.

Despite the opportunities, Argentina remains under pressure from multilateral lenders such as the International Monetary Fund that stipulate fiscal austerity and social and economic changes. Rising fuel and energy prices and double-digit inflation will test public support amid a default threat that always looms large over the government.

Under the crunch, Fernandez has extended an invitation to China to invest around $30 billion in sectors from energy to commerce. The expansion of the Presidente Néstor Kirchner Gas Pipeline will increase gas production from the Neuquén Basin and enable the transport of gas production to Argentina's main consumption centers. Additional work envisioned will allow the Kirchner pipeline to reach external markets and have a positive impact on foreign currency savings while creating opportunities to monetize the country's resources, Royon said. OGI

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REPLICATING THE APPALACHIAN BASIN IN OKLAHOMA

Diversified Energy has tallied 21 total transactions valued at about $2.5 billion while returning $492 million in dividends.

ARTICLE BY

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At first blush, Diversified Energy Co. Plc's foray into Oklahoma with its recent ConocoPhillips Co. bolt-on might have seemed counterintuitive that not so long ago the region was regarded as a shale pariah.

Even before a downturn, followed by the havoc of the pandemic, many operators viewed the Midcontinent's hit-or-miss wells as a basin non-grata. Assorted bankruptcies didn't help the Midcontinent's reputation as an underperforming play to be eschewed in favor of easier plunder elsewhere.

Diversified saw something else: steady production.

In late July, Diversified agreed to pay ConocoPhillips $240 million for 250,000 net western Anadarko Basin acres at what Diversified priced at a PV-17 cost. The asset happened to fit glove-like with its 2021 purchase of Tapstone Energy's Midcontinent assets for $419 million, Diversified CEO Rusty Hutson told Hart Energy.

But there's a familiar architecture to the deals Diversified has pursued in Oklahoma and other parts of what it calls its Central Region, which includes Texas and Louisiana. Strategically, the company sees that area as a major source of LNG shipments that, even if Diversified isn't a direct supplier, will provide sustained, solid pricing for domestic energy needs.

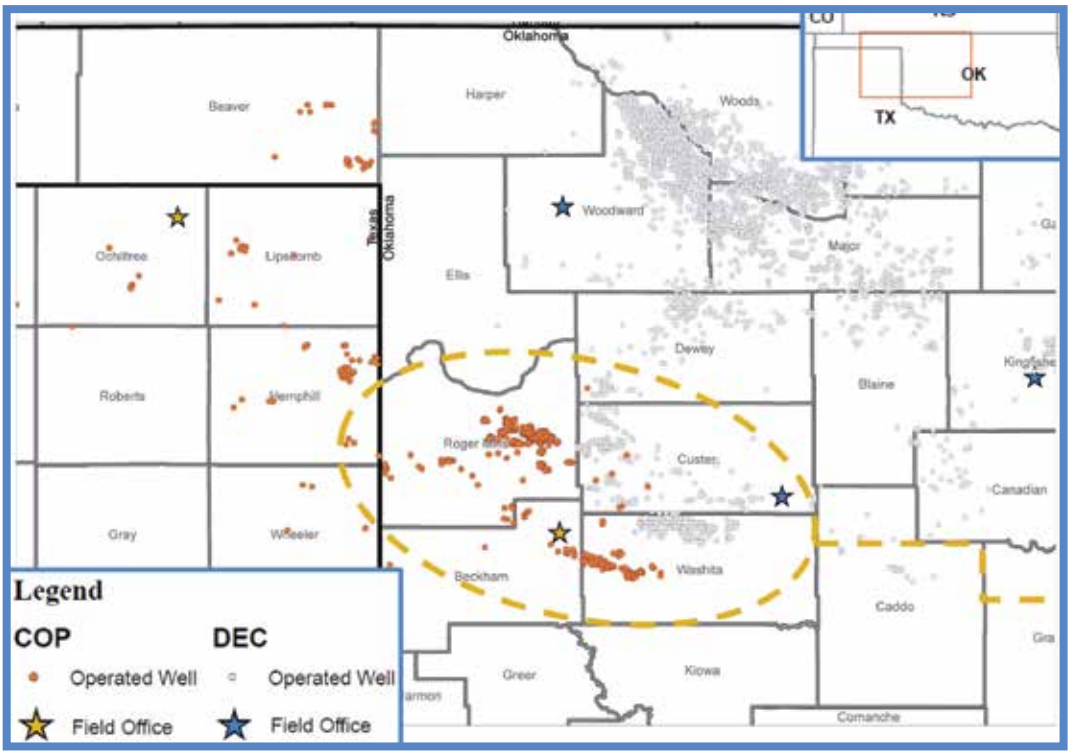
But Diversified's adventures in the Central Region are, in effect, an attempt to repeat what it successfully created in the Appalachian Basin: a PDP machine.

Diversified's strategy

Diversified, which trades on the London Stock Exchange, continues to pursue the strategy that made it successful as it began accumulating low-decline assets in earnest, since 2016. In the ensuing years, the company has knocked back 21 total transactions valued at about $2.5 billion.

The similarities Diversified saw in between the Midcontinent and the Appalachian Basin were simply too good to pass up.

Diversified's ConocoPhillips Acquisition

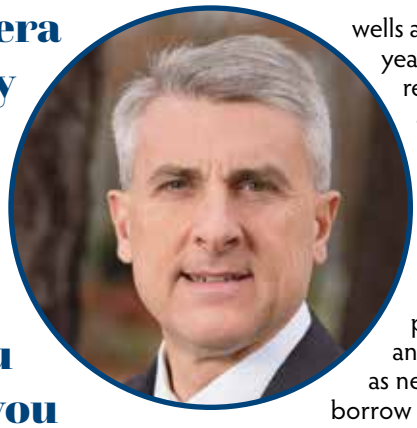


Source: Diversified Energy Co. Plc

Diversified Energy agreed on July 28 to acquire Midcontinent assets from ConocoPhillips for $240 million.

"The mom-and-pop era of oil and gas is pretty much over. You're still going to have a little bit of it here and there, but … you have to have size, you have to have scale, you have to have efficiency."

—**Rusty Hutson,**
Diversified Energy Co. Plc



When Diversified "dipped our toes into Oklahoma, specifically into that western area of Oklahoma, the western Anadarko, we loved that area," Hutson said. Specifically, the basin's production profile looks a lot like its eastern holdings, with typically mature wells that need little maintenance capex.

"There's not a lot of brand new wells with high declines," he said. "They're more mature producing assets."

Diversified ran up transaction after transaction in the Appalachian Basin before now moving to build a similar business of size and scale in the west. The ConocoPhillips bolt-on expands on the theme. It offers low, first-year declines of 8% and a gas-weighted production mix, and the assets are contagious with Tapstone's.

"The mom-and-pop era of oil and gas is pretty much over," he said. "You're still going to have a little bit of it here and there, but … you have to have size, you have to have scale, you have to have efficiency. You have to be able to drive synergies and efficiencies in your operations, keep your costs down, especially in inflationary aspects is what we're seeing today."

Oklahoma's bad rap, according to Hutson, comes from the haphazard quality of wells, which doesn't affect how Diversified approaches its deals.

"That's one thing that we've kind of played off of, is we can go in behind some of these areas where there's been some negative connotations around the drilling and completing," he said.

Diversified, by contrast, concentrates on already producing assets that slowly bleed off production and can be optimized to run more efficiently.

"We buy PDP," he said. "The beauty of our model is that we have low capex because we're not drilling a bunch of wells annually."

ConocoPhillips quietly shopped its Midcontinent assets because they clearly weren't part of the company's larger plans, Hutson said. He isn't sure how many people were involved in the sales process, though in his experience any large company, whether ConocoPhillips, Exxon Mobil Corp. or bp Plc, tends to attract interest.

"I don't know if we were the highest bidder, but I can tell you that we were the only one they really worked with shortly after the bids were taken," he said.

ConocoPhillips' Midcontinent assets consisted of 1,500 producing wells, including 60% operated production. The wells are, on average, about 16 years old and have an estimated remaining life of 26 years, according to Diversified.

If the deal closes in September, as expected, Diversified will implement its "smart asset management" program, which includes tidying up wells, performing maintenance and adjusting compression as needed. The concept, to borrow a baseball analogy, is to "hit a lot of singles and end up with a lot of runs. That's what we're trying to accomplish," Hutson said.

Shareholder returns

Diversified's strategy has essentially remained unchanged since its inception as a vertically integrated business model. It's focused on building size and scale by adding assets that increase its production base. From there it focuses on synergies and lowering expenses.

The company "continues to get better in driving higher margins, which then drives higher cash flows," he said. "And that's where we want to be.

"When I say we can replicate Appalachia, that's what it's all about. It's really size and scale driving those operational efficiencies that we were able to accomplish in Appalachia."

That model paid off for investors, Hutson said. Since its IPO in 2017, the company boasts a 250% shareholder return with $492 million in dividends paid. Its reported first-half 2022 free cash flow yield of 22%.

And the company will continue to grow.

"Worst-case scenario, all we need to do

ConocoPhillips Midcontinent Acquisition Highlights

Gross Purchase Price ($MM)	$240
Net Purchase Price ($MM)	$210
Effective Date	June 1, 2022
Expected Closing	September 2022
Source of Funding	Cash and debt financing
Post-Acquisition Leverage	2.2x

ConocoPhillips Midcontinent Asset Highlights

Acquired PDP Reserves (MMboe)	~31
PDP PV-10 of Acquired Reserves ($MM)	$297
Current Production (Mboe/d)	~9
Total Cash Costs ($/boe)	$11.40 – $12
Estimated Adj. EBITDA Margin	~70%

Source: Diversified Energy Co. Plc

really is cover our decline rates year-over-year," he said.

Hutson entered the year telling his team he wanted $750 million in liquidity, which the company was able to generate. Diversified retains about $450 million to $500 million in liquidity, "knowing that we can do additional transactions and, I would anticipate, hopefully doing something else before the end of the year of potentially some size," he said.

The opportunities are clearly not in short supply.

"We're looking at every deal," he said.

But the company has no set amount of deals it plans on annually.

"We're going to [be] prepped and ready to do them if they make themselves available," he said. "But we want to make sure we're doing the right deal because it doesn't do any good to do 10 of them if they're all wrong."

Closure for orphans

Diversified has also embarked on improving its vertical integration this year by purchasing a number of service companies as it virtually corners the market on plugging and abandonment (P&A) providers.

Hutson estimated the company's three acquisitions, along with its own internal P&A teams, now account for nearly 40% of all plugging capacity in Appalachia.

"We started with one plugging crew. We were still using outside firms," he said. "What [the acquisitions] do is it gives us the ability to, No. 1, control the cost."

While other E&Ps are being whipsawed by inflation, Diversified has been able to withstand the worst of it, largely because it doesn't drill, buy frac sand or compete for labor.

The larger strategy is twofold. First, the company will address its own plugging needs—doubling to 200 wells a year its pace of sealing its own orphan wells. Secondly, it will be providing services to third parties, primarily states that have federal money to plug and abandon wells.

"The states have put bidding out … to plug orphan wells in their portfolio," Hutson said. "We've been bidding and winning those."

Hutson said the company estimates it can plug 600 wells annually, including 400 for external parties and 200 of its own.

"The 400 [wells] that we're plugging for external parties will cover the cost of our 200" wells, he said, bringing its internal plugging costs to zero.

"We buy PDP. The beauty of our model is that we have low capex because we're not drilling a bunch of wells annually."

"It has a significant impact on our overall liability and our overall net asset value," he said.

Diversified will also have plenty of work to do, potentially, for decades. The company has 15 plugging crews on the ground, and they will remain profitable because they're seldom without work.

"The state of West Virginia probably has 6,500 orphan wells," he said. "That's going to take multiple years to take care of. The same for Pennsylvania and Ohio and Kentucky.

"So, we believe that business will continue to drive substantial revenues," he said. "The key to that business, any service business, is keeping your equipment busy. And so that won't be a problem there."

Diversified likely won't look for similar additions in its Central Region, Hutson said, because it owns fewer wellbores and the area is populated by higher-producing, newer-producing wells.

"That liability is longer term, and there's just lots of service companies in Texas and Louisiana," he said. OGI

Diversified Energy's Acquisitions

Source: Diversified Energy Co. Plc

UPWARD BOUND

Clean energy technology investment is expected to surge as the Inflation Reduction Act helps stabilize climate, experts say.

ARTICLE BY

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The headwinds were fierce with geopolitical and economic woes threatening to knock the energy transition off the path or at least slow its growth.

Some governments shifted policies back into the comforts of fossil fuels, including coal, as they watched energy security hardships—following Russia's savage move into Ukraine—spread across other parts of Europe.

No one escaped inflationary pressure.

Michael Torosian, a partner at Baker Botts, recalled the uncertainty that came to the clean energy technology sector earlier this year. He also recalled its resilience in the face of adversity as companies continued developing clean energy technology, startups continued to emerge, and venture firms continued to invest. It remained to be seen, however, whether clean energy tech would come down off investment highs seen in 2021 given the challenges.

Then, the unexpected happened.

A scaled down version of the failed $1.75 trillion Build Back Better Act emerged as the $430 billion Inflation Reduction Act (IRA). Following months of negotiations led by Sen. Joe Manchin, the act was approved by Congress and signed into law by President Joe Biden in August. With $369 billion for climate and clean energy investment, the IRA—not to be confused with the Individual Retirement Account—represents the single largest climate investment in U.S. history. It aims to put the U.S. on a path to lower greenhouse gas emissions 40% below 2005 levels by 2030, and energy experts believe it will spark a surge in clean energy technology investment.

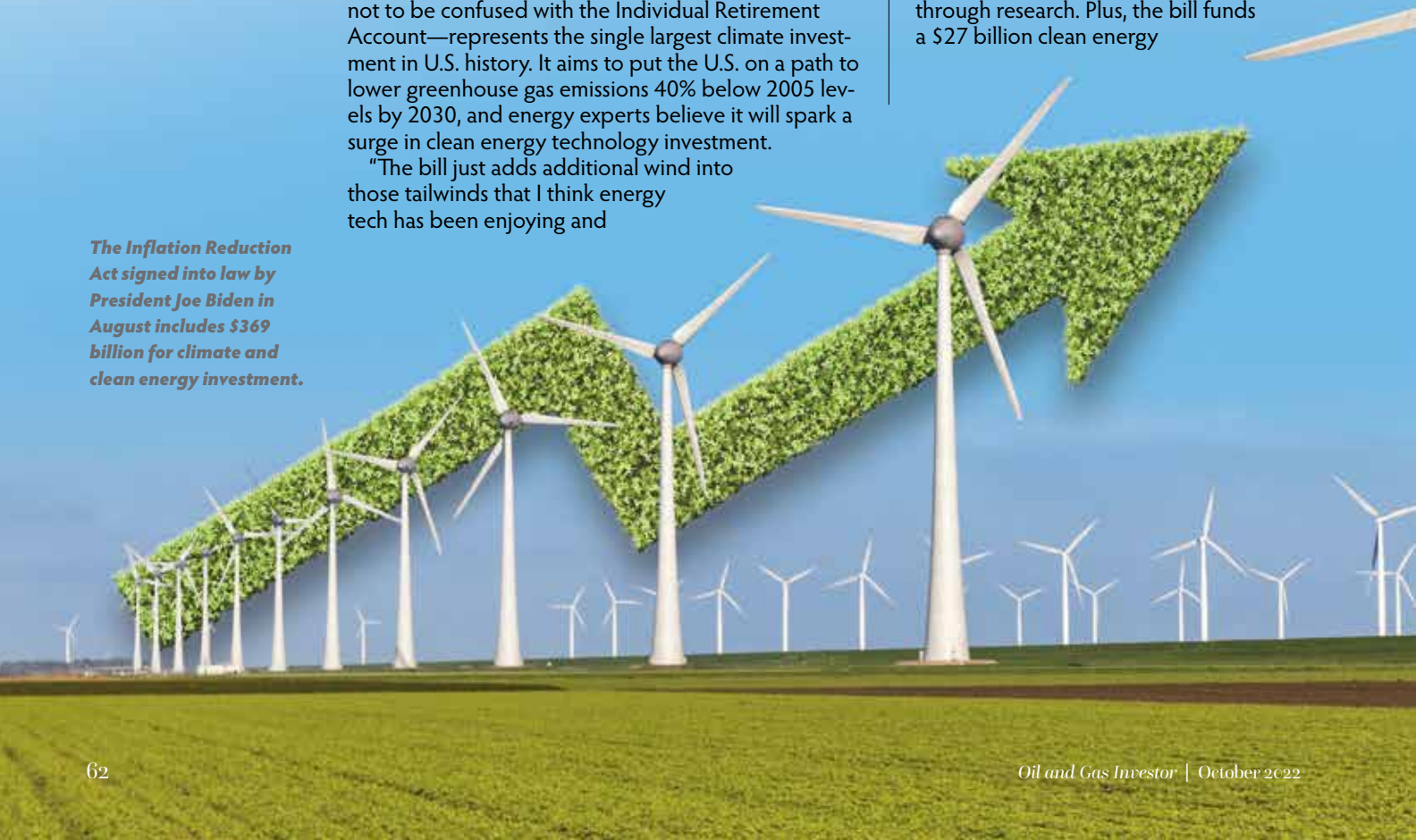
"The bill just adds additional wind into those tailwinds that I think energy tech has been enjoying and now will continue to benefit from going forward," Torosian told Hart Energy. "Energy tech has remained resilient, and I think it will become even stronger now with the passage of this act."

Unexpected windfall

The IRA aims to strengthen energy security in America by taking the all-of-the-above approach, including support for oil and gas as well as clean energy. The decarbonization provisions include $8.3 billion in credits and financing to help install emission-reducing technologies in the power sector. It provides new tax credits to incentivize technologies such as energy storage, fusion and advanced nuclear reactors.

The bill includes a $10 billion investment tax credit to build clean technology manufacturing facilities that make electric vehicles (EVs), solar panels and wind turbines among others.

There's also about $2 billion for National Labs to accelerate breakthrough research. Plus, the bill funds a $27 billion clean energy



The Inflation Reduction Act signed into law by President Joe Biden in August includes $369 billion for climate and clean energy investment.

technology accelerator to support deployment of technologies to reduce emissions, especially in disadvantaged communities.

The value of the 45Q carbon capture tax credit was increased and a hydrogen production tax credit was created, both of which have direct pay for the first five years of production. It includes more than $60 billion for clean energy manufacturing, something legislators hope will alleviate inflation and lower clean energy and clean vehicle costs. There are also production tax credits to accelerate U.S. manufacturing of batteries, critical minerals, solar panels and wind turbines.

Hopes are that the incentives will help alleviate inflation and reduce the risk of future price shocks by bringing down the cost of clean energy and clean vehicles and relieving supply chain bottlenecks, legislators say.

Looking at the solar and wind sectors alone, analysts at Rystad Energy estimate the IRA's incentives could attract an extra $270 billion in investments by 2030 as companies pursue tax credits and other incentives.

Marcelo Ortega, a renewables analyst for Rystad, called the IRA "a game changer for the U.S. wind and solar industry."

The U.S. was on track to have 140 GW of onshore wind capacity installed by year-end, rising to 193 GW by 2030 under the previous credits. The new law could usher in another 85 GW, according to Rystad. Utility-scale solar installations are also projected to rise, growing about 70 GW to hit 270 GW by 2030.

"The internal rate of return [IRR]—a metric used to evaluate the profitability of project investments—will increase by one or two percentage points for solar and wind projects," Rystad said in a news release.

'Multiplier' effect

Torosian said he expects to see more investment from not only traditional clean energy-focused venture funds but also from Fortune 500 companies looking for external innovation and technologies.

"Anywhere where they've mentioned or earmarked areas of tax credits or subsidies, I think you're going to see a multiplier of value in the eyes of the investor," Torosian said, "and it's going to speed up commercialization, bringing these technologies to market" and developing more projects at scale.

Hydrogen startups, for example, are getting lots of capital from the government, venture funds and corporates. Together, each is de-risking the technology and working to commercialize and scale it, he added.

The IRA could even entice investors who may not have previously invested in clean energy technology.

Diversity of investors "effectively makes the research, discovery, development, commercialization and scaling of these new technologies and business cheaper," Torosian said. "It's going to make it more attractive to everyone."

There is a caveat.

Companies that secure funding must develop the technology and get it to users.

"Those companies need to either be potentially acquired, acquire others [or] go public. Do those things successfully," Torosian said, noting that hasn't been the case in the past few years. "The exit opportunities for a lot of technology companies across the board, including energy tech, had proven disappointing. Those markets [must] open back up. We're going to have to see some successes to continue to grow."

Setting records

Globally, since 2020, the pace of clean energy investment growth has increased to 12%, up from only 2% in the five years after the Paris Agreement was signed in 2015, according to the International Energy Agency (IEA). Driving investment growth are fiscal support from governments and more sustainable finance.

"From a low base, there is rapid growth underway in spending on some emerging technologies, notably batteries, low emissions hydrogen, and carbon capture utilization and storage," the IEA said in its "World Energy Investment 2022" report. "Investment in battery energy storage is expected to more than double to reach almost $20 billion in 2022."

"Energy tech has remained resilient, and I think it will become even stronger now with the passage of this act."

—Michael Torosian, *Baker Botts*

"This is big for us, and we expect to see huge, huge growth in the U.S. from the green hydrogen and electrolyzer market."

—Rasool Aghatehrani, *Ohmium*

Energy technology startups in the U.S. and Europe raised record funds in 2021, despite the pandemic, attracting $6.9 billion—double 2021 levels—in early-stage venture capital (VC) funds that typically support entrepreneurs' technology testing and design efforts. The IEA defines early-stage as seed Series A and Series B deals.

The increase shows "continued investor confidence in energy transitions, recognition that the transitions present major market opportunities for disruptive new energy technologies and buoyant VC markets (as investors struggle to find similar returns in other asset classes)," the IEA said. "Across all sectors, VC funding increased by over 90% in 2021, and unlisted clean energy assets continued to outperform market benchmarks."

Later-stage VC funding also increased, rising by 70% and paving the way for businesses—including energy storage, batteries, hydrogen and fuel cells—to scale up.

"However, in early 2022 VC markets were rocked by turmoil in stock markets and changing risk perceptions among investors, favoring near-term value over potential growth," the IEA said. "Data for 2022 do not yet signal scarcity of capital for clean energy startups, but it is unclear if policy will partly insulate climate-related technologies from a downturn that looks set to seriously affect other early-stage technology firms."

In the U.S., the IRA is boosting confidence, while REPowerEU is doing the same in Europe.

"For the investor, it effectively gives them a partner or a non-dilutive partner in funding that scaling and de-risking the acceleration of the business," Torosian said.

Stepping up

Clean energy players are already gearing up to step up investment, given the more stable investment climate.

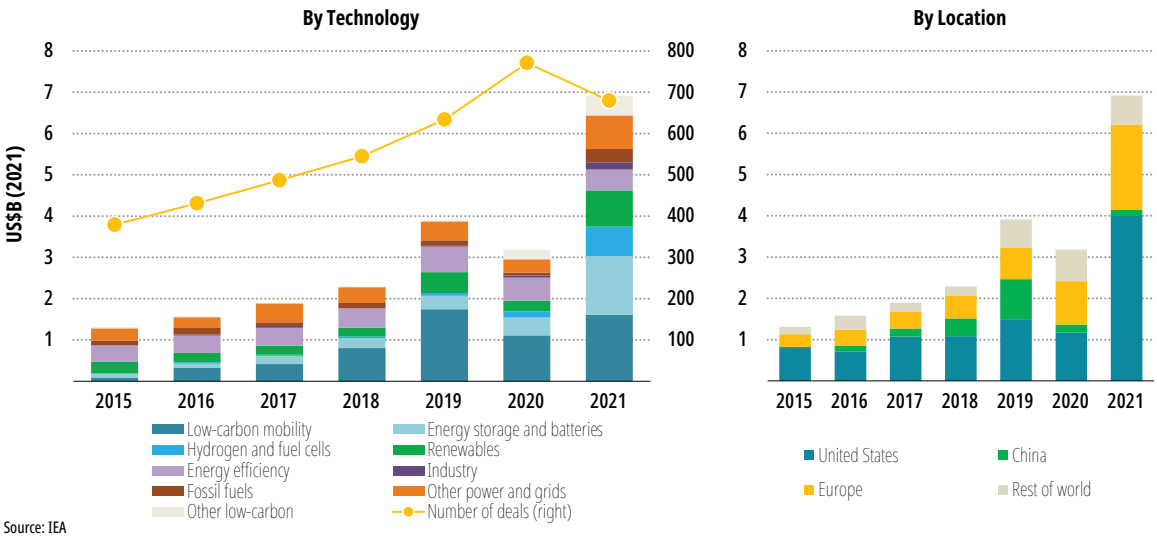
Arizona-headquartered First Solar Inc. plans to invest up to $1.2 billion to build a new solar module manufacturing facility in the southeast U.S., the company said Aug. 30.

"In passing the Inflation Reduction Act of 2022, Congress and the Biden-Harris administration has entrusted our industry with the responsibility of enabling America's clean energy future and we must meet the moment in a manner that is both timely and sustainable," First Solar CEO Mark Widmar said in a statement. "This investment is an important step toward achieving self-sufficiency in solar technology, which, in turn, supports America's energy security ambitions, its deployment of solar at scale, and its ability to lead with innovation."

Shell USA president Gretchen Watkins, who spoke at an energy event in Houston, said companies want a stable investment climate.

"We're very pleased to see that passed into law because we think it's going to actually enable us to invest quite a bit more than we would have previously," she said.

Early-Stage Venture Capital Investments In Clean Energy Startups, 2015-2021



Early-stage clean energy startups raised twice as much money in 2021, as deal size swelled, said the IEA.

Source: IEA

STUART CONWAY/SHELL

The Shell-backed Silicon Ranch Corp., a U.S. solar project developer, raised $775 million in equity capital from new and existing developers earlier this year.

It's been difficult for companies like Shell to invest billions that won't see a return for 10 years, not knowing what could happen by then, Watkins said. She later noted the IRA's carbon capture incentives improve returns and hydrogen incentives allow investment today.

"This is big for us, and we expect to see huge, huge growth in the U.S. from the green hydrogen and electrolyzer market," said Rasool Aghatehrani, chief strategy and marketing officer for Ohmium, which designs proton exchange membrane (PEM) electrolyzers for green hydrogen production.

PEM technology has been used for decades, including by NASA for space applications. So, "there's maturity in the technology. It's more about commercialization of the technology to make it cost effective for a commercial usage," Aghatehrani told Hart.

"Everyone is looking at the green hydrogen as another piece of the clean tech puzzle."

Producers of wind and solar energy have already brought down prices as installed capacity grows. Hydrogen producers are working to bring down costs.

Ohmium is embracing the modularity concept to lower costs, so that projects are easy and cost-effective to build and design.

Pushing forward

While the IRA is seen as a win for clean energy technology, companies behind those emerging companies cannot wait or depend on the government for their success, Torosian said. He added that opportunities will not wait. Neither will the "true investors" and "true believers" in clean energy technology.

"Risks need to be mitigated and overcome without depending on who's in Congress, who's in the White House and what they're actually going to be able to get done," he said. "No one can be waiting for a bill to save them or develop a market. They need to be investing in the technology that they think will solve the real crises and the real issues that we've got, and they have a huge business opportunity for that."

If the clean energy sector is going to have legs long term, it can't rely solely on government subsidies and tax credits, he added. "It's got to be able to independently build, develop and grow on its own."

Ultimately, however, costs for clean energy technologies and products must fall for consumers and other end-users of products. If the IRA doesn't make clean energy more competitive, it fails, Torosian said.

"We've gotten a huge boost to an already strong market, even with all the headwinds macroeconomic and geopolitically," Torosian said. Now, the tasks ahead are to access the funds and tax credits, build and scale clean energy technology and "move the needle in climate tech and beat back climate change." OGI

A STRANGE AND BROKEN YEAR FOR M&A

Sporadic deal flow and the emergence of mineral companies highlight 2022—a year that started out with swagger before the war in Ukraine upended commodity prices.

ARTICLE BY

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In August, Jud Walker, president and CEO of EnerVest, put a preemptive epitaph on the 2022 A&D arena: The year has been "strange and kind of broken," he said at the TIPRO Summer Conference in San Antonio.

Strange, perhaps, because the oil and gas industry is richer than in years past, but its dealmaking remains halting at best. Broken because of war and wildly escalating commodity prices.

M&A started January with swagger as Chesapeake Energy Corp. announced more than $3 billion in deals, including the acquisition of Chief Oil & Gas in the Marcellus Shale. But the A&D market awkwardly lurched forward in late February as Russia's so-called special military operation in Ukraine added a war premium to oil and gas prices, causing severe disconnects between buyers and sellers.

In a sign of the remarkable volatility that ensued, between January and March, WTI spot prices shot to $123.64 by early March from $75.99 in January—a two-month, $47.65 ride of unpredictable chaos for dealmakers. Yet by September, with oil prices in the mid-$80s, OPEC+ announced it would reverse course on an earlier announced increase in oil production.

Likewise, natural gas prices began the year at average weekly prices of less than $3/MMBtu—before blowtorching its way, in the last week of August, to a choking $9.56/MMBtu.

The robust consolidation seen in the wake of the COVID pandemic also cooled as E&Ps began looking inward for deals and away from potential bolt-ons. Companies have largely chosen to pay shareholders, either through dividends or buybacks, while their stock prices remained undervalued compared to commodity prices. The only major public-on-public E&P combination announced this year was the $6 billion merger of equals between Whiting Petroleum Corp. and Oasis Petroleum Inc. that on July 1, resulted in the creation of Chord Energy Corp.

"Going into 2022, it looked like it was going to be a really buoyant year for deal flow because price had risen," said William Marko, managing director of Jefferies' energy, power and utilities group. "Then Russia-Ukraine happened and prices rose dramatically, both on the oil and gas side, and deal flow hates volatility, especially extreme volatility."

One bright spot for A&D has been the resurgence of mineral and royalty companies buying interests, particularly in the Permian Basin. In early September, Brigham Minerals entered into an agreement to combine in an all-stock merger with Sitio Royalties Corp. in a deal valued at $4.8 million.

Andrew Dittmar, director at Enverus Intelligence Research, a subsidiary of Enverus, said mineral and royalty deals were challenging in 2020 as companies slashed capex and drilling plans were scrubbed. That's changed.

"You really didn't know what was going to happen, and A&D subsequently collapsed," Dittmar said. "We did like a billion and a half or so—about 50% less. This year we've done $3.3 billion in deals, so we're pretty much back to the 2018, 2019 highs."

If prices manage to stabilize, M&A could take off in the next three to six months. But now with the lingering inflation, there is a possibility of a strong recession and demand destruction. That could present different headaches for an oil and gas industry that still needs to slim down, analysts and dealmakers said.

"You could see deal flow really take off if prices stabilized," Marko said.

'Slow motion' consolidation

Both corporate mergers and acquisitions have been stifled by turbulent commodity prices, albeit in slightly different ways.

Marko said the bid-ask spread between buyers and sellers broke open as commodity prices spiked, with sellers naturally wanting to cash in on the highest price point while buyers balked.

"A lot of the buyers were trying to cautiously buy, and a lot of the sellers were trying to figure out what was enough to sell. And some sellers kind of stay unreasonable if 'I can't achieve strip of the day, I won't sell.' Others might need to sell for noncore reasons and strategic reasons," he said. "They test the market."

The result has been a deal market that is "elongated" with more time spent getting assets ready for the market.

"If we're working on the sales side, we're trying to set seller expectations to the market," Marko said. "And then we're trying to talk buyers up obviously to find the most aggressive buyers who are going to go deepest into paying toward the strip."

In the processes overseen by Jefferies, buyers remain stingy when it comes to paying for upside potential.

"In the process we've seen, it really depends upon the quality of the asset. If you've got OK assets, then it's hard to get any money for anything beyond PDP," he said. "If you've got good to great assets, then you can get increasing amounts of value paid for near-term development.

"That's where we spent a lot of time too. How do you demonstrate the development and then how do you get the buyers to pay for some of that to satisfy the sellers?"

Marko said the emphasis on shareholder returns and capital discipline has changed the way in which companies do deals from an ultracompetitive growth perspective to a far more thoughtful process in which acquisitions are part of the company's story on growing payouts.

"I think people do have to think about deals differently," he said. "It's really the free cash flow is what people are solving for and the ability to generate that rather than, 'Hey, I'm going to grow 10% a year.'"

"Whether you're private or public, you're looking for 30%, 40%, 50% free cash flow generation, and you're looking for the ability to dividend out payments and the ability to do stock buybacks."

Dittmar said price volatility has buyers and sellers sitting out of the deal market.

"High prices have led to a blowout in the bid-ask spread between buyers and sellers," he said. "Buyers don't want to credit assets at the kind of prices we're at now. They think they need to bake downside protection in, because … there's broad consensus that maybe we're closer to a top than a bottom. Nobody wants to buy at the top."

Sellers, at the same time, can decide that it makes more sense to just produce on their assets and harvest cash flow, he said.

Deals also vary based on the need for inventory, which has typically drawn buyers in 2022 to the Permian, the Haynesville Shale or the Eagle Ford shale.

"We're seeing a trickle of deals out there," Dittmar said. But when an occasional transaction breaks loose in the Eagle Ford Shale, as with Devon Energy Corp.'s acquisition of Validus Energy in August for $1.8 billion, it's of use to the broader market.

"It gives you an updated comp in the current price environment for the fair value on these assets," he said.

"And maybe it makes the next deal a little bit easier because you have that to build off of. A steady trickle of deals can sort of snowball as buyers and sellers coalesce around a reasonable pricing point, Dittmar continued.

"I think as long as prices stay sort of understandable, [and] we're settled for a bit, we should see increasing activity over the next three to six months."

Unsettled M&A

Corporate M&A has been similarly affected as prices have gone up but E&P equity values have trailed.

"Despite this tremendous amount of cash they're generating and the dividends and buyback programs that they have in place, they haven't really run up in the underlying share prices," Dittmar said.

E&Ps are instead looking at their options and choosing between a deal with another company or buying back their own shares, which the industry may view as remarkably cheap.

"Maybe that looks like a better investment of capital … than going out and buying someone's assets," he said. "So, that's causing the problem for M&A markets."

"The big players in the industry, in general, are going to continue to consolidate over time, but it's not going to be a feeding frenzy. Companies are going to be choosy."

—William Marko, *Jefferies*

"I think as long as prices stay sort of understandable, [and] we're settled for a bit, we should see increasing activity over the next three to six months."

—**Andrew Dittmar,** *Enverus Intelligence Research*

The case for consolidation, including more efficient operations, longer laterals and synergies from G&A costs, is still strong, Dittmar said. "There's just not a lot of urgency to do it when you're generating tremendous amounts of cash and doing well as an underlying business."

In the absence of huge multibillion-dollar deals, Dittmar said merging mid-cap companies together might not be necessary for the business but would help attract more attention from Wall Street.

"You need to grab that attention … and basically make yourself competitive for the investment dollars that are available," he said. "I think we will see more. There's just not a lot of urgency. And as the companies get larger, the case for consolidation gets smaller."

Marko said he also expects small- and mid-cap companies to consolidate but thinks it will happen in "slow motion."

"If there are 40 companies in that space, I don't think you're going to see a dozen deals happen. But I think you'll continue to see a deal or two here and there happen as companies kind of eye each other," he said.

But larger consolidation, particularly after COVID, was the result of companies with strong balance sheets buying those with more stressed finances.

"There weren't dozens of them, there were a handful of them and that was in super volatile times," Marko said. "The big players in the industry, in general, are going to continue to consolidate over time, but it's not going to be a feeding frenzy. Companies are going to be choosy."

Uncertainty persists

Mineral companies continue to rebound from the pandemic and in 2022 have been among the most consistent acquirers with total M&A now eclipsing $8 billion.

Prior to its announced merger with Brigham, Sitio announced two Permian Basin deals totaling $547 million. The company itself was formed from the merger of Desert Peak Minerals and Falcon Minerals in combination valued at $1.9 billion.

At the time of the merger's announcement, about two weeks after, Brigham announced its largest deal so far—a pickup of 3,900 net royalty acres in the core of the Midland Basin for about $132.5 million in cash. Brigham also announced a Permian acquisition in February for $32.5 million.

Dittmar said mineral and royalty companies may see an all-time high in A&D activity this year as drilling plans firm up, E&P development of assets becomes clearer and investors continue to see such companies as an "inflation hedge at a time when that's a major concern for investors."

The next major risk the oil and gas industry faces is the wider, global economy. The Federal Reserve and other central banks have signaled they will continue to increase interest rates if necessary.

Dittmar said a recession could stall deal flow because of worries over downside risk. But that's been the story of 2022.

"It's very uncertain," Dittmar said. "Every time it feels like it's more uncertain than before. Maybe it's like a recency bias. It seems like we're in uncharted waters, but you could have said that in 2020 or 2021 or 2019. That's the nature of the world that we live in."

Marko also sees an energy market that's been dragged into a new reality due to the reshaping of gas flows by Russia. Along with inflationary pressures, there are also supply chain problems, with even frac sand becoming hard to come back in some cases.

Natural gas prices may stay higher, meaning above $3, for "a really long time," he said.

"The U.S. market is really connected to the worldwide market more than ever before," Marko said. "We're not just going to have regional pricing."

Were oil prices to settle in the $80 to $90 per barrel range, it could make for a more attractive deal flow in the coming months. But fears of a recession may also spoil dealmaking.

"With a recession, you'd have demand destruction and then price destruction and that would chill the A&D market," he said. "If we had a severe recession again, where there's blood in the water, that could actually boost an M&A market to, again, where strong balance sheet guys can shop for weaker companies."

Alternatively, should prices remain at higher levels, the A&D market may see utilities and steel and chemical companies considering whether they want to purchase assets to reduce their energy generation supply costs.

"They do this every time supply cost goes high and mostly, they never execute on it, but occasionally they do," Marko said. "I think this time it may stick for a long time." OGI

U.S. E&P ACQUISITIONS & DIVESTITURES

Deals closed from Jan. 1-June 30, 2022. All deals, updated in real time, are now available at HartEnergy.com/ad-transactions.

Deal No.	Estimated Value ($MM)	Buyer/Surviving Entity	Seller/Acquired or Merged Entity	Month Deal Closed	Comments
1	2,600	Chesapeake Energy Corp.	Chief Oil & Gas LLC; Tug Hill Inc.	3	Acquired Marcellus operator Chief E&D Holdings LP and associated nonoperated interests held by affiliates of Tug Hill in exchange for $2B cash and about 9.44 million commons hares; includes 113,000 net acres producing 835 MMcf/d.
2	1,900	Sitio Royalties Corp.; Kimmeridge Management Co. LLC	Desert Peak Minerals; Falcon Minerals Corp.	6	Acquired in all-stock merger creating a mineral and royalty company with a significant Permian and Eagle Ford footprint and an enterprise value of $1.9B; combined assets include over 140,000 NRAs, 105,000 of which are located in the Permian Basin, and projected production of 13,500-14,500 boe/d for 1H 2022.
3	1,300	PDC Energy Inc.	Great Western Petroleum LLC	5	Acquired the privately held D-J Basin operator owned by affiliates of EIG, TPG Energy Solutions LP and The Broe Group; includes 54,000 net acres in the Wattenberg primarily in Adams County, CO, about 55,000 boe/d (42% oil, 67% liquids) of PDP and 315 operated locations.
4	805	Undisclosed	APA Corp.	2	Purchased mineral rights in the Delaware Basin in the Permian with about 7,000 boe/d of production.
5	690	Crescent Energy Co.; KKR & Co. Inc.	Verdun Oil Co.; EnCap Investments LP	3	Bought in an all-cash transaction 145,000 contiguous net acres (>85% HBP) and over 400 producing vertical and horizontal wells, primarily located in Duchesne and Uintah Cos., UT.
6	604	Earthstone Energy Inc.	Chisholm Energy Holdings LLC; Warburg Pincus LLC	2	Acquired privately held Permian Basin operator with approximately 36,100 net acres and a drilling inventory of 414 gross (237 net) operated identified locations in the northern Delaware Basin in Eddy and Lea Cos., NM; current net production is about 13,500 boe/d (61% oil, 79% liquids).
7	450	Continental Resources Inc.	Chesapeake Energy Corp.	3	Purchased Chesapeake's Powder River Basin position comprising approximately 172,000 net acres and 350 operated wells in SE WY average about 19,000 boe/d (58% oil and NGL) of 4Q 2021 production.
8	440	Maverick Natural Resources LLC	ConocoPhillips Co.	4	To buy certain producing properties in the Permian Basin spanning 144,500 net acres across the Central Basin Platform and Northwest Shelf in Andrews and Ector Cos., TX, and Eddy and Lea Cos., NM; assets are largely operated and HBP and average more than 11,000 boe/d (50% oil) of production.
9	402	North Hudson Resources Partners LP	LOGOS Resources II LLC; ArcLight Capital Partners LLC	6	Purchased LOGOS Resources II LLC; includes net production averaging 106 MMcfe/d across a 230,000 net-acre position in the San Juan Basin of NM and CO.
10	351	EOG Resources Inc.	Undisclosed	6	Leasehold, property and plant and equipment sales in unspecified areas.
11	347	HighPeak Energy Inc.	Hannathon Petroleum LLC	6	Acquired the Howard County, TX, assets of Hannathon Petroleum LLC and other nonoperated working interest owners in the Permian Midland Basin largely contiguous to HighPeak's existing Signal Peak position; consideration comprised of $237MM in cash and 3.5 million shares of HighPeak common stock, were both reduced prior to closing.
12	323	Sitio Royalties Corp.	Foundation Minerals LLC; Quantum Energy Partners	6	Purchased over 19,700 net royalty acres in the Permian Basin.
13	310	Sentinel Peak Resources LLC	Seneca Resources Co. LLC; National Fuel Gas Co.	6	Bought CA oil assets producing about 40 MMcfe/d of which 92% is oil; consideration includes $280MM in cash at closing and up to three annual contingent payments potentially totaling $30MM from 2023 to 2025.
14	300	Civitas Resources Inc.; Kimmeridge Energy Management Co. LLC	Bison Oil & Gas LLC; Carnelian Energy Capital Management LP	3	Acquired D-J Basin operator Bison II in an all-cash transaction that includes assumption of $176MM in debt and other liabilities; Bison II holds leases covering roughly 40,000 net acres, production of about 9,000 boe/d (75% oil, 90% liquids) and 102 gross locations.
15	271	Lime Rock Resources LP	Undisclosed	1	Bought Austin Chalk and Eagle Ford properties on approximately 46,000 highly contiguous net acres located in Burleson, Milam and Robertson Cos., TX, from a private seller; properties produced approximately 7,700 boe/d as of the closing of the acquisition.
16	237	Whiting Petroleum Corp.	Undisclosed	3	To buy nonoperated assets in the Williston Basin's Sanish Field; includes 14,563 net acres in Mountrail County, ND, and about 4,500 boe/d (67% oil) of production.
17	230	Undisclosed	Colgate Energy Partners III LLC	1	Bought approximately 6,000 net acres in Ward County, TX, within the Delaware Basin of the Permian.
18	190	Colgate Energy Partners III LLC	Undisclosed	1	Purchased approximately 22,000 net acres directly offset Colgate's existing position in the northern Delaware Basin of the Permian in Eddy and Lea Cos., NM; includes 750 boe/d of estimated average net production and over 200 "high-quality locations."

Deal No.	Estimated Value ($MM)	Buyer/Surviving Entity	Seller/Acquired or Merged Entity	Month Deal Closed	Comments
19	162.9	HighPeak Energy Inc.	Undisclosed	3	To buy through a series of agreements entered during 1Q 2022 various oil and gas properties contiguous to its Flat Top operating area within the Midland Basin in Borden and Howard Cos., TX, which in the aggregate, consist of approximately 10,200 net acres, associated estimated production of 2,500 boe/d, 40 additional horizontal drilling locations and more; combined purchase price is up to 7.73 million shares of HighPeak common stock and $4 million in cash.
20	87	Lime Rock Resources LP	Abraxas Petroleum Corp.	1	Acquired the Williston Basin properties of Abraxas consisting of approximately 3,500 acres in McKenzie County, ND.
21	77	Murphy Oil Corp.	Undisclosed	6	Acquired 3.4% working interest in Lucius Field in the GoM.
22	71	SilverBow Resources Inc.	SandPoint Resources LLC; Carnelian Energy Capital Management LP	5	Bought SandPoint, which operates roughly 27,000 net contiguous acres in La Salle & McMullen Cos., TX, targeting the Eagle Ford and Olmos formations with production of 4,650 boe/d (70% gas, 30% liquids).
23	50	Diversified Energy Co. Plc; Oaktree Capital Management LP	Undisclosed	4	To buy certain East Texas upstream assets and related facilities including includes 691 gross (346 net) operated PDP wells with current 100% natural gas production of 3,700 boe/d, or 22 MMcfe/d, and an estimated engineered next 12-month PDP decline rate of roughly 7%.
24	47	W&T Offshore Inc.	Ankor E&P Holdings Corp.	2	Acquired working interests in and operatorship of oil and gas producing properties in federal shallow waters in the central region of the U.S. GoM; includes approximately 3,400 boe/d (74% oil) and average working interest of 80%.
25	35.6	Comstock Resources Inc.	Undisclosed	6	Bolted on 60,000 net acres prospective for the Haynesville and Bossier shales as well as 145 miles of pressure pipline in E TX.
26	33	Brigham Minerals Inc.	Undisclosed	4	Acquired in a cash-and-stock transaction roughly 1,800 net royalty acres in the Midland Basin of the Permian and production of 225,000-275,000 boe/d of production estimated for 2022.
27	26	Evolution Petroleum Corp.	Exaro Energy III LLC	4	Acquired nonoperated natural gas assets in Jonah Field in Sublette County, WY; includes working interest in 648 producing wells and approximately 1,040 net acres producing about 14.2 MMcfe/d.
28	26	S.T.L. Resources LLC	Tilden Marcellus LLC	6	Purchased shale natural gas assets previously owned by Tilden Marcellus through a Chapter 11 bankruptcy auction; includes 100% WI and operatorship of natural gas wells across about 24,000 net mineral acres in Tioga and Potter Cos., PA, located in Marshlands Field in the core of the Marcellus and Utica shale dry gas fairway.
29	26	Evolution Petroleum Corp.	Foundation Energy Management LLC	1	Acquired 50% of certain interests held by Foundation within the Williston Basin in Billings, Golden Valley and McKenzie Cos., ND; includes 2.3 MMboe (80% oil, 9% NGL) of long-life producing reserves and a joint development agreement.
30		Citizen Energy LLC	Bricktown Energy; Red Bluff Resources	6	Purchased substantially all of the oil and gas properties of Red Bluff Resources and Bricktown Energy adding 80,000 net acres, 13,000 boe/d (56% liquids) plus 200 operated and 739 nonoperated wells located in the Midcontinent region.
31		Dorchester Minerals LP	Undisclosed	3	Purchased mineral and royalty interests of approximately 3,600 net royalty acres located in 13 counties across CO, LA, OH, OK, PA, WV, WY, in exchange for 570,000 common LP units of Dorchester.
32		Greylock Energy LLC	Undisclosed	3	Acquired roughly 290,000 gross acres and other assets, including 1,400 producing wells, in the Uinta and Green River basins in UT and WY.
33		IOG Resources LLC; First Reserve Corp.	Tier 1 Merced Holdings LLC	3	Purchased producing oil and gas assets in the Delaware Basin in the Permian consisting of nonoperated wellbores primarily located in Eddy and Lea Cos., NM, with about 3,800 boe/d of net production; operators include Devon Energy, ConocoPhillips and Marathon Oil.
34		OneEnergy Partners II Holdings LLC	Trainer Partners Ltd.	1	Purchased all the partnership interests of Trainer Partners, family-run oil and gas company in the Permian Basin with a portfolio of minerals, overrides and nonoperated working interests across Lea and Eddy Cos., NM; Gaines, Andrews, Hemphill and Midland Cos., TX; and Roger Mills County, OK.
35		Peregrine Energy Partners	EnerVest Ltd.	3	Bought EnerVest Ltd., as a general partner, EnerVest Institutional Fund XI-A LP and EnverVest Institutional Fund XI-WI LP; includes ORRI in 340,000 acres across multiple counties in the Marcellus and Utica reserves.
36		Petro-Hunt LLC	Admiral Permian Resources LLC; Ares Management Corp.	3	Acquired predominantly operated oil and gas production and 21,430 net acres of leasehold in northwest Reeves and northeast Culberson Cos., TX, in the Delaware Basin of the Permian; current gross operated production is approximately 7,000 bbl/d of oil and 100 MMcf/d of gas.
37		Rising Phoenix Royalties	Undisclosed	1	Bought 98 net royalty acres within the Marcellus Shale in the Appalachian Basin in Washington County, PA, operated by Range Resources.
38		Rising Phoenix Royalties	Undisclosed	1	Bought roughly 5 net royalty acres (49% oil / 51% natural gas) in the Woodford Basin operated by Ovintiv Inc. in Stephens County, OK.

Deal No.	Estimated Value ($MM)	Buyer/Surviving Entity	Seller/Acquired or Merged Entity	Month Deal Closed	Comments
39		Rising Phoenix Royalties	Undisclosed	5	Purchased an ORRI in the SCOOP/Woodford Basin located in McClain County, OK, operated by EOG Resources.
40		Undisclosed	Rio Grande E&P LLC; Intrepid Investment Management LLC	6	Purchased conventional S TX assets and unconventional Lower Eagle Ford Shale assets primarily located in Webb and Zapata Cos., TX, to two separate undisclosed buyers.
41		UpCurve Energy Partners II LLC	Undisclosed	1	Purchased roughly 2,000 additional net acres in Reeves County, TX, within the southern Delaware Basin of the Permian; includes about 2,000 boe/d of production.
42		WildFire Energy LLC	MD America Energy LLC	3	Acquired the Fort Worth, TX-based private E&P company with approximately 45,000 net acres, 200 operated wells and 3,200 boe/d (85% liquids) of production in the E TX Eagle Ford.

Deals shown are those closed during second-half 2022, involving U.S.-based assets or companies only, and having values of approx. $20MM or more. Deals are ranked in descending estimated dollar value, when available, and then alphabetically when no value was made public or when the deal was significant but valued at less than $20MM. Deals shown as pending may have since closed. The next E&P A&D list, covering July 1-Dec. 31, 2022, will appear in the March 2023 issue. Details on all dealmaking, updated in real time, are available at HartEnergy.com/ad-transactions.

PENDING DEALS (AS OF JULY 1, 2022)

43	6,000	Chord Energy Corp.	Whiting Petroleum Corp.; Oasis Petroleum Inc.	Combined and in exchange Whiting shareholders will receive 0.5774 shares of Oasis common stock and $6.25 in cash for each share of Whiting common stock owned; combined company will have an enterprise value of roughly $6B and operate 972,000 net acres with production of 167,800 boe/d in the Williston Basin. *This deal closed in July*.
44	3,900	Centennial Resource Development Inc.	Colgate Energy Partners III LLC	To acquire in a merger of equals transaction Midland, TX-based Colgate Energy to create the largest pure-play E&P company in the Delaware Basin of the Permian with approximately 180,000 net leasehold acres and 135,000 boe/d of current production. *This deal closed in September*.
45	1,800	Undisclosed	Riverbend Energy Group	To buy affiliates Riverbend Oil & Gas VI, VI-B and VIII comprising nonoperated assets in multiple shale plays including the Bakken within the Williston Basin plus the Fayetteville, Haynesville and Utica shales; assets produce an average of 47,000 boe/d from 11,000 wells. *This deal closed in August*.
46	1,300	Granite Ridge Resources Inc.; Executive Network Partnering Corp. (ENPC)	Grey Rock Investment Partners	To acquire oil and gas assets in the Permian Basin, Bakken, Eagle Ford Shale, D-J Basin and Haynesville Shale plays to form Granite Ridge Resources through a business combination.
47	856	Devon Energy Corp.	RimRock Oil & Gas LLC; Warburg Pincus LLC	To acquire the leasehold interest and related assets of RimRock Oil & Gas, a Warburg Pincus portfolio company focused in the Williston Basin; includes 38,000 net acres and 15,000 boe/d (78% oil) of production. *This deal closed in July*.
48	750	BKV Corp.	Exxon Mobil Corp.	To acquire Exxon Mobil's operated and nonoperated Barnett Shale gas assets in N TX with additional payments contingent on future natural gas prices. *This deal closed in July*.
49	627	Earthstone Energy Inc.	Titus Oil & Gas Production LLC; NGP Energy Capital Management LLC	To acquire the Permian Basin NM assets of Titus Oil & Gas Production LLC and Titus Oil & Gas Production II LLC and their affiliates located in the northern Delaware Basin in Eddy and Lea Cos.
50	465	Ring Energy Inc.	Stronghold Energy II Holdings LLC; Warburg Pincus LLC	To acquire Stronghold Energy II Operating LLC and Stronghold Energy II Royalties LP consisting of 37,000 net acres located primarily in Crane County, TX, in the Permian Basin's Central Basin Platform; includes strong current net production of about 9,100 boe/d (54% oil, 75% liquids). *This deal closed in August*.
51	354	SilverBow Resources Inc.	Sundance Energy Inc.	To acquire Sundance in a cash and stock transaction that includes up to an additional $15 million dollars of contingent payments based on future commodity prices; assets comprise 39,000 net acres in Atascosa, La Salle, McMullen & Live Oak Cos., TX of highly contiguous Eagle Ford acreage and net production of 11,100 boe/d (84% liquids / 65% oil). *This deal closed in July*.
52	350	Undisclosed	Ovintiv Inc.	To acquire, separately, portions of Ovintiv's assets located in the Bakken and Uinta basins; Bakken assets include about 88 wells, located mainly in Richland County, MT, and Uinta assets are mature waterflood assets including about 3,000 gross vertical wells.
53	224	Sitio Royalties Corp.	Momentum Minerals LLC; Apollo Global Management	To buy over 12,200 net royalty acres in the Permian Basin.
54	175	Northern Oil and Gas Inc.	Undisclosed	To acquire nonoperated interests in the Williston Basin primarily located in Dunn, McKenzie and Williams Cos., ND; includes approximately 3,500 acres, 9.2 net producing wells, 2.6 net wells-in-process and 14.9 net engineered economic undeveloped locations.
55	122	Andros Minerals LLC; Andros Capital Partners LLC	Undisclosed	To purchase a portfolio of mineral and royalty interests located in the Eagle Ford Shale and Permian's Midland Basin and Delaware Basin.

Deal No.	Estimated Value ($MM)	Buyer/Surviving Entity	Seller/Acquired or Merged Entity	Month Deal Closed	Comments
56	64	Ranger Oil Corp.	Undisclosed		To purchase through three separate transactions approximately 17,000 net acres of oil producing properties in the Eagle Ford Shale contiguous to Ranger's existing assets in Gonzales & Fayette Cos., TX.
57	56	Undisclosed	Unit Corp.; Unit Petroleum Co.		To buy Unit Corp.'s Gulf Coast oil and gas properties.
58	52.5	WhiteHawk Energy LLC	Undisclosed		To buy minerals and royalty assets covering 475,000 gross unit acres located in SW PA primarily focused in Washington and Greene counties.
59	46	Ranger Oil Corp.	Undisclosed		To purchase through three, separate bolt-on acquisitions additional working interests in existing Ranger-operated wells along with contiguous producing assets and undeveloped acreage with production of 1,600 boe/d (~79% oil, 92% liquids), primarily associated with low-decline, legacy wells.
60		Shell Plc	Equinor ASA		To buy a 51% interest and operatorship in the North Platte deepwater development project, to be renamed Sparta, in the Garden Banks area of the U.S. GoM.
61		Silver Hill Energy Partners III LP	Pine Wave Energy Partners LLC		To buy certain Haynesville assets located in Caddo Parish, LA and Harrison and Panola Cos., TX, consisting of approximately 12,500 net acres with ownership interests in 10 operated wells with 100 MMcf/d.

INDEX: U.S. E&P ACQUISITIONS & DIVESTITURES

DECARBONIZATION INTERSECTION

Waste Management has reached the decarbonization crossroad and is increasingly looking to convert methane gas at its numerous landfills in North America.

ARTICLE BY

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Waste Management (WM) is at the intersection of decarbonization and circularity and has a huge opportunity to convert methane gas, the company's senior vice president and chief sustainability officer, Tara J. Hemmer, said during her opening keynote address at Hart Energy's Energy ESG Conference in Houston.

WM, the largest environmental solutions provider in North America, is involved in taking materials from residential locations to recycling facilities and is "increasingly at the intersection of two key trends that we are seeing in the world today: decarbonization and circularity," Hemmer said, as the company focuses on getting those material back into the circular supply chain.

In terms of ESG, Hemmer said WM's aim was to be a people first company while also focusing on environmental justice.

"We have thousands of facilities across North America and some are located in areas that either are economically underserved or have high ethnic populations, and at the end of the day, we need to have the right community engagement models where our facilities are."

In North America, WM is the largest residential recycler, handling over 15 million tons per year. The company boasts a network of over 50 single stream recycling facilities. The company has over 255 landfills across North America that are active and another 300 that are closed.

ARNALDO LARIOS/HART ENERGY

Waste Management senior vice president and chief sustainability officer Tara Hemmer at Hart Energy's 2022 Energy ESG conference.

"Most of the landfills generate landfill gas, and our landfill gas is roughly 50% methane. So, we have a huge opportunity to really think through how we convert that methane, in some cases which is currently flared, to bring it to a renewable fuel … renewable natural gas. So that's a big growth platform for us."

Earlier this year WM announced plans to invest $1.6 billion over a five-year period aimed at its recycling renewable gas infrastructure The company looks to build 17 renewable natural gas plants and grow "the number of million Btus that we convert to renewable natural gas six times," Hemmer said.

In terms of emissions, the executive highlighted that over 90% of WM's Scope 1 emissions come from its landfills and that the company was looking at containing the releases.

"We really need to be tackling fugitive emissions and make sure we're capturing more of those within our landfill gas collection network and of course the more we capture the more we can put into our renewable natural gas infrastructure network," Hemmer said.

In the U.S. and Canada, WM operates over 15,000 daily routes with the largest fleet of compressed natural gas (CNG) vehicles in North America. Approximately 70% of WM's routed fleet runs on compressed natural gas.

CNG from renewable natural gas that is produced in WM landfills has a role in the energy transition, Hemmer said.

"If you go back to 2010, we've reduced our fleet emissions by over 46% over that time horizon and it's because we have been leveraging compressed natural gas as a transportation fuel," Hemmer said. OGI

DEVON ENERGY'S GASPAR ON CONSOLIDATION: EVERYONE IS EXPENDABLE

With $2.6 billion in acquisitions this year, Devon Energy Corp. has made its first expansions since it merged with WPX Energy in January 2021. Still, COO Clay Gaspar said the industry remains "fractured."

ARTICLE BY

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More than 19 months after Devon Energy Corp. merged with WPX Energy, COO Clay Gaspar sees a too-crowded oil and gas industry with executives who should recognize that being "expendable" comes with the job.

In the fallout from the Devon-WPX merger, half of the executive team was left without a job, and Gaspar "knew going in there was a 50:50 chance that was going to be me in the process," he said.

"I truly believe in the benefit to the shareholders; that it was going to be worth the exercise," he said. "That's really what we're paid for, especially on the public side. You're paid to be expendable at some point, if necessary."

Gaspar, who served as WPX COO prior to the company's merger with Devon, made the remarks at the TIPRO Summer Conference during a wide-ranging discussion that included ESG, global energy needs and carbon offsets.

Devon this year has made its first moves since closing its merger with WPX, both to consolidate positions in plays where it operates.

In July, the company completed its purchase of RimRock Oil & Gas LP's Williston Basin assets for $865 million in cash. Then, in August, the company announced it would double its footprint in the Eagle Ford Shale with a $1.8 billion deal to acquire private operator Validus Energy.

Validus' position in the Eagle Ford, adjacent to Devon's, includes 42,000 net acres in Karen's County, Texas, and produces an average of 35,000 boe/d.

Gaspar said on Aug. 25 the industry remains "fractured."

"There's still too many of us, too many of me, too many accounting shops and too many legal shops and too many of us trying to do essentially the same thing," he said.

Gaspar sees consolidation wringing out efficiencies in the upstream, midstream and service sector that will make the industry better.

"Comparing us to other industries, it is amazing the number of us trying to do what we do [and] just the natural inefficiencies," he said.

The largest headwind for consolidation is price volatility, with price valleys and peaks. Whether at a steady $100 or $50, a consistent price would allow buyers and sellers to have a place to start "the conversation."

But as with other companies, the personal interest of executives remains a barrier for consolidation moves that could result in job losses. Public company executives need to "keep front and center" that they're working for the owners, stakeholders and communities they serve.

"I am pro consolidation. It just hasn't been communicated well," he said.

Deals that don't work logically can be detrimental to further consolidation. "Real splashy, overpaying, overhyped, underperforming mergers—that doesn't help the industry move continually in the right direction as we should," he said.

Gaspar also addressed the energy transition and ESG, particularly as environmentalists vilify oil and gas companies. Conversations need to be more centered and that the industry should avoid being defensive and negative.

"The transition or evolution is always happening," he said. "If you start in very aggressive and negative, you're labeled a denier and the ears are shut."

He prefers to acknowledge bad things about the industry, such as carbon emissions, and then the good, including reliable energy before finding middle ground with practical ways to address increased energy demand.

"The crisis that's happening with energy scarcity, it's an incredible opportunity to have those conversations," he said.

Gaspar, who heads Devon's ESG functions, said there are also value-creation opportunities in reducing emissions.

"Now, they may not be heads up as good of an investment as drilling a well, but they are value-creating," he said. OGI

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The deadline for nominations is October 21, 2022

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Oil and Gas Investor

TALOS ENERGY CEO TOUTS INFLATION BILL

Talos Energy president and CEO Tim Duncan said offshore lease sales, which could be restored by the Inflation Reduction Act, are a key component of the company's Gulf of Mexico strategy.

ARTICLE BY

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Not everyone may like the Inflation Reduction Act of 2022, but Talos Energy Inc. will take the win.

The bill firms up Gulf of Mexico (GoM) lease auctions, restores blocks the company previously won and enhances tax credits for carbon capture, according to Talos president and CEO Tim Duncan. Speaking at EnerCom's investor conference on Aug. 9, Duncan said the legislation will restore 10 GoM blocks the Houston-based company won as high bidder in a 2021 auction.

"If I were a pharmaceutical executive, I wouldn't be up here telling you how much I love this thing," Duncan said in reference to provisions in the bill intended to lower prescription drug prices. "But we've had a lot of questions this year," he added, regarding lease sales in the GoM.

"It's obviously an enormous resource. It's a valuable resource to this country," he said. "We're talking about energy security, and we certainly wanted lease sales to come back."

Duncan also said he welcomed enhancements to carbon tax credits, known as 45Q, including an increase to $85 per ton credit of permanently sequestrated CO_2. The previous 45Q tax credit was $50 per ton.

The enhanced 45Q tax incentive is important to Talos, which in May saw Chevron Corp. acquire a stake in Talos' offshore carbon capture and sequestration (CCS) hub.

"I think we're certainly a beneficiary to what happened in Washington over the weekend," he said. The 45Q tax credit will be "an important part of the broad decarbonization" efforts.

The legislation, which was not supported by Senate Republicans, also reinstates to Talos the Lease Sale 257, which was held in 2021 and awards high bidders their leases. Talos was one of the most active bidders and won 10 blocks totaling more than 57,000 gross acres.

The legislation also requires previously canceled GoM sales to be held and ties future offshore wind lease auctions to oil and gas sales. Increased royalty rates won't affect the company, since deepwater royalty rates are capped at current rates for 10 years. Talos' existing 1.3 million gross acres are unaffected by the royalty increases.

Duncan said the lease sales serve an important function in GoM development because new operators will often pick up where others have left off.

"These are 10-year leases in deep water. They roll off. Somebody wants to be there on the other side and pick those up," he said. "So, having predictable lease sales is an extremely important part of our long-term strategy."

Duncan also addressed M&A potential in the GoM, saying an "unprecedented" opportunity is coming into focus following a period of volatile commodity prices.

"There's a lot of stuff on the market," he said. "When the commodity [prices] are choppy, the bid-ask spread is equally chopping and that means it's not easy" to transact.

Tim Duncan

Talos sees more than $100 billion in divestments targeted by supermajors by 2025, as well as the potential for deals with private offshore E&Ps.

Shell Plc and ConocoPhillips Co. are both reportedly exploring the divestiture of assets in the U.S. Gulf of Mexico, according to media. Duncan said he's seen some movement on the market but whether majors want to sell or not remains to be seen.

"You're seeing things start to show up on the market with both the majors," he said. "There's a couple of packages out there right now."

Like other major plays onshore, consolidation in the GoM is of equal importance.

"Ultimately, we want to be there in the space, building out the oil and gas side," Duncan said. OGI

Events Calendar

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

EVENT	DATE	CITY	VENUE	CONTACT
2022				
USAEE/IAEE North American Conference	Oct. 23-26	Houston	Omni Houston	www.usaeeconference.com
North American Gas Forum	Oct. 24-26	Washington, D.C.	Park Hyatt Washington, D.C.	energy-dialogues.com/nagf/
Energy Capital Conference	**Oct. 25**	**Dallas**	**Fairmont Hotel**	**hartenergyconferences.com**
A&D Strategies and Opportunities Conference	**Oct. 26**	**Dallas**	**Fairmont Hotel**	**adstrategiesconference.com**
Rice Energy Finance Summit	Nov. 11	Houston	Rice University	business.rice.edu/rice-energy-finance-summit
Executive Oil Conference	**Nov. 15-16**	**Midland, TX**	**Midland County Horseshoe Pavilion**	**executiveoilconference.com**
OK Petroleum Alliance Fall Conference	Nov. 16-17	Oklahoma City	The National Hotel	thepetroleumalliance.com
SPE Innovation & Entrepreneurship Summit	Dec. 7-8	Houston	Norris Conference Centers	spegcs.org
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
Women In Energy Luncheon	**Feb. 7**	**Houston**	**Hilton Americas-Houston**	**hartenergyconferences.com**
The Energy Venture Investment Summit	Feb. 16-17	Golden, CO	The Colorado School of Mines	theenergyventuresummit.com
Energy Sustainability Forum	Feb. 22-23	Houston	Petroleum Club of Houston	usenergystream.com
DUG Midcontinent	**March 1-3**	**Oklahoma City**	**Oklahoma City Conv. Ctr.**	**dugmidcontinent.com**
CERAWeek by S&P Global	March 6-10	Houston	TBD	ceraweek.com
The Energy Summit of Texas	March 21	Tyler, TX	Green Acres Crosswalk Conf. Ctr.	tylertexas.com
DUG Haynesville	**March 28-29**	**Shreveport, LA**	**Shreveport Convention Center**	**dughaynesville.com**
Mineral & Royalty Conference	April 10-11	Houston	Post Oak Hotel	mineralconference.com
Energy Investment Forum	April 11-12	Houston	Petroleum Club of Houston	usenergystreamforums.com
Energy Workforce & Technology Council Annual Mtg.	April 26-27	Austin, TX	Omni Barton Creek Resort	energyworkforce.org
Offshore Technology Conference	May 1-4	Houston	NRG Park	2023.otcnet.org
Williston Basin Petroleum Conference	May 16-17	Regina, Saskatchewan	Delta Hotels Marriott Regina	wbpc.ca
AGA Financial Forum	May 20	Fort Lauderdale, FL	Ft. Lauderdale Marriott Harbor Beach	aga.org
DUG Permian & Eagle Ford	**May 22-24**	**Fort Worth, TX**	**Fort Worth Convention Center**	**dugpermian.com**
Louisiana Energy Conference	May 31-June 2	New Orleans	The Ritz-Carlton New Orleans	louisianaenergyconference.com
CIPA Annual Meeting	June 8	TBD	TBD	cipa.org
Monthly				
ADAM-Dallas	First Thursday	Dallas	Dallas Petroleum Club	adamenergyforum.org
ADAM-Fort Worth	Third Tues., odd mos.	Fort Worth	Petroleum Club of Fort Worth	adamenergyfortworth.org
ADAM-Greater East Texas	First Wed., odd 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.org
ADAM-Permian	Bi-monthly	Midland, Texas	Petroleum Club of Midland	adampermian.org
ADAM-Tulsa Energy Network	Bi-monthly	Tulsa, Okla.	The Tavern On Brady	adamtulsa.co
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	Petroleum Club of Houston	hapl.org
Houston Energy Finance Group	Third Wednesday	Houston	Houston Center Club	hefg.net
Houston Producers' Forum	Third Tuesday	Houston	Petroleum Club of Houston	houstonproducersforum.org
IPAA-Tipro Speaker Series	Third Tuesday	Houston	Petroleum Club of Houston	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.

SNUG CAPITAL MARKET FOR MIDSTREAM

Consolidation among public majors and opportunities in LNG and carbon, capture, utilization and storage are attracting renewed interest, but capital for the midstream sector stilll remains tight.

TALL OAK MIDSTREAM

ARTICLE BY

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This is a great time to invest in midstream, said William R. Lemmons, Jr., a managing partner and founder of EnCap Flatrock Midstream. "That is both in mergers and acquisitions activity as well as in new construction. There are a lot of both in our portfolio."

Taking a slightly more circumspect view, Amol Joshi, vice president and senior credit officer for energy at Moody's, said that "E&P capital discipline has generally been a drag on midstream volume growth. However, it is certainly getting harder to maintain that discipline at high oil and gas prices. And while public companies are more focused on free cash flow, some private companies without a public shareholder base are significantly growing volumes.

"We are seeing meaningful volume growth," Joshi continued, "but not enough to spur significant midstream investment yet. We will not be at pre-pandemic oil production levels until sometime next year, and existing infrastructure should generally suffice. For natural gas, we see volume growth led by exports, spurring new LNG investments."

That capital discipline may be one manifestation of a wider structural change.

"We believe the industry has moved beyond Shale 1.0," said David Cecere, a partner at Tailwater Capital LLC. "That was when E&P companies as well as midstream were willing to pursue high growth, outspend cash flow and have inefficient, fragmented assets just to be in the game."

The industry now seems to be entering Shale 2.0.

"Both upstream and midstream are still growing, albeit slowly, and within cash flow," said Cecere. "Tactically, the E&P focus has been on full-field development, which plays well for midstream because it allows better use of assets. There has been a lot of consolidation, and we've tried to get out in front of that, especially in gathering and processing. It's been a big part of our strategy."

The general thesis was to identify nearby assets that would create better capacity utilization overall when combined with Tailwater operations. "We did a lot of gathering and processing consolidation in 2020 and 2021. It felt a bit lonely making deals during the downturn, and we got a lot of questions, but it worked well. Overall those assets have performed very well and produced strong returns for us."

Time of consolidation

In terms of capital formation for the midstream, Cecere's characterization is that, "equity has been sluggish, but debt has been supportive. We have yet to see

significant change with capital flows into the midstream, but we are starting to see green shoots."

In terms of public perception, Cecere noted the E.U. statements that natural gas is a climate friendly fuel and that it would facilitate LNG import infrastructure.

"If we look at coal to gas switching globally [for power generation] there is a massive opportunity for CO_2 emissions, double that of converting to 100% electric vehicles," said Cecere.

"Over time, all those advantages will be taken into account by investors and regulators. Not yet, but it has to come."

Signals from the upstream could not be clearer, said Lemmons. Rig counts in EnCap Flatrock Midstream operating areas have risen about 60% during the past 12 months. "The whole system is expanding. There are new wells, new connections and new processing capacity. And we are seeing new management teams approach us with some great ideas. Many times through the cycles there have been times of both consolidation and expansion at the same time, but at the moment I feel we are in a time of consolidation."

There has been an increase in midstream M&A, according to Joshi. "Crestwood buying Oasis Midstream in the Bakken [Shale], Enterprise buying Navitas in the Permian [Basin], Targa's Lucid [Energy] purchase and GCX [Gulf Coast Express Pipeline] sale."

As traditional organic growth prospects have slowed, M&A activity will become more appealing to midstream operators as they seek synergies from relatively mature assets to improve cash flow.

Team Trace

There has also been at least one realignment. In mid-August, Trace Capital Management was formed via the "lift out" of Denham Capital's Energy Resources investment program, including active funds, people and associated infrastructure. Denham has long been particularly active in the midstream.

Trace, based in Houston, manages funds with invested and committed capital of more than $1.4 billion across two active investment funds. Trace's portfolio includes 11 active investments, including Rushmore Resources, Rockies Resources, Canes Midstream and BANGL Pipeline.

Trace will continue the Denham strategy of making investments in energy infrastructure, upstream oil and gas and low/no-carbon assets and businesses and will continue to be led by the same team as under Denham: Jordan Marye, managing partner; Stu Porter, managing partner of Denham and senior partner of Trace; as well as Geer Blalock, Steven Smith, James Obulaney and Anil Pillai.

"Public sentiment is linked to the capital necessary for this industry."

—William R. Lemmons, Jr., *EnCap Flatrock Midstream*

The Trace leadership team has worked together for more than 10 years during which time the team managed more than $2.9 billion in total committed and invested capital and 26 investment platforms.

"We are [also] seeing expansion projects associated with existing infrastructure," added Moody's Joshi. "It's certainly early days, but some companies have also started focusing on allocating modest capital to ESG issues, such as investing in renewable natural gas or evaluating carbon capture projects. These efforts are new and in their initial stages, so it remains to be seen how it starts affecting capital allocation decisions. And finally, there could be more capital-intensive LNG investments along the Gulf Coast if supported by long-term offtake contracts."

"Midstream industry capital spending has declined overall by roughly 30% in each of 2020 and 2021."

—Amol Joshi, *Moody's*

New gas projects

LNG is an avid topic of discussion, especially with autumn approaching and critical gas shortfalls in Europe because of the Russian invasion of Ukraine.

"We have seen companies such as Kinder Morgan, Williams Cos. and DT Midstream announcing related growth projects," Joshi said. "However, midstream industry capital spending has declined overall by roughly 30% in each of 2020 and 2021. We expect capital spending to stabilize at low levels, while still growing for some companies with good projects."

There is consequently less need for capital raising relative to peak levels, Joshi explained.

"Several companies had cut dividends in the past few years, and larger companies are funding the equity portion of their projects through cash flow. While those companies are now increasing shareholder returns through larger dividends and buybacks, it will be interesting to see how they balance shareholder returns with capital required for modest growth," Joshi said.

"Inflation manifesting through higher cost of debt funding is pushing the cost of new projects, and it will also be a drag for anyone refinancing maturing low-cost debt," he said.

Overall, midstream companies are largely funding the equity portion of capital spending through internally generated cash, Moody's has found.

Rig counts in EnCap Flatrock Midstream operating areas have risen about 60% during the past 12 months.

"So while better equity prices are boosting market capitalizations and lowering dividend yields, companies are also boosting shareholder returns through increasing dividends and buybacks from previously lower levels, rather than issuing equity," said Joshi. "Natural gas is certainly attracting renewed midstream investment and is supported by LNG export demand, while companies are also evaluating investments in new areas such as carbon capture, renewable natural gas and infrastructure electrification."

Tighter capital, more concerns

That said, there are long-term ESG and demand concerns.

"Spending on renewable infrastructure such as solar should accelerate," Joshi said, "and fossil fuel energy demand competes with things such as renewable power, electric vehicle uptake and battery storage."

Furthermore, legal and local opposition to midstream projects is not going away. "I do not see a pathway for robust midstream capital spending, other than specific to certain areas with meaningful supply or demand growth, such as the prolific Permian Basin, Haynesville, the Gulf Coast with its industrial demand," Joshi said.

Demonstrating his perspicacity, Lemmons reflected on how one emerging idea underscores a recurring theme in the midstream. Specifically how all the attention on carbon capture and sequestration is on just those two things: the capture and the sequestration. Few of the project announcements mention the pipe, connections and compression needed to get the CO_2 from one to the other.

"In a career that is approaching four decades, I've seen so many cycles of new opportunities driven by new technology or new markets that are dependent on getting the right types of molecules to the right places. That is exactly where we are with the new chapter of CO_2. There are pipelines in place, but they may not be adequate to get the molecule from node to node. There is a need to go back and replumb to meet the new need, and that is a new opportunity."

To meet the needs to move molecules to market will take money, which Lemmons said is not as readily available as it has been. "We entered this part of the cycle with plenty of dry powder, and we are putting that to work. Broadly, though, I would say capital is tighter in the market than we have seen in a while."

Part of the reason, Lemmons explained, is that "many opportunistic investors, especially in private equity, have cycled out of the sector. We're okay with that because of the dry powder we have and also because those opportunistic investors will return when they see the early movers in this sector get rewarded."

Debt is also getting tighter, Lemmons added, though not difficult. Inflation is also a factor in project financing and execution, as supply-chain issues are lingering. "You have got to be thorough in securing all components, as well as labor, especially in the trade crafts," Lemmons cautioned. "Over the last six to 12 months, we have seen an improvement in lead times, for steel in particular, but there are still challenges."

Similarly, there is progress but still challenges in public markets and public perception. Lemmons stressed that private equity is not insulated from those.

"We believe the industry has moved beyond Shale 1.0."

—David Cecere,
Tailwater Capital LLC

"Public sentiment is linked to the capital necessary for this industry," he said. "Public equity has historically played a very big role in the midstream. It is important for public investors to be aware that the 'new' roles for midstream are actually things that we have been doing for years."

On a more tactical level, Lemmons said that "not too many years ago it was all about master limited partnerships. More recently, there has been a shift back to C corps. More importantly, the large strategics in our space have gotten their balance sheets in order and are very strong now." OGI

BETTER WELLBORES USING SPACE-AGE TECHNOLOGY

Oil and gas drillers are using space-age guidance technology to help land their wellbores in the right location.

ARTICLE BY

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Even the tiniest of positioning errors can compound, landing a directionally drilled well in the wrong place. That didn't sit well with former NASA engineer and Superior QC president Chad Hanak. Hanak saw a number of ways that complex algorithms could help directional drillers create better wellbores. But getting from his space-age vision to deployment required the development of multiple technologies along the way.

Directional drilling technology needs to be able to project forward past the bit while taking into account data such as rotation and motor yield to keep the wellbore on the intended path.

The problem, Hanak said, is that more information is necessary, such as position of the bit, velocity, how the bottomhole assembly (BHA) orientation evolves during drilling, acceleration of drill speed and so forth. One of the big problems is that traditional surveys don't provide fine detail about the position in the rock being drilled through, he said.

For the directional driller to project the future position of the bit, the driller needs to know what needs to be altered and by how much to change the future state, he said.

"Coming from aerospace, I was not satisfied with that," said Hanak, who co-designed and wrote the navigation algorithms for NASA's Orion Crew Vehicle, which successfully flew in space in December 2014.

He said even a small variation in positioning data can compound, especially in true vertical depth (TVD).

For example, Hanak said, if the survey is thought to be always reading at 90 degrees, but in fact sometimes is reading at 89.75 degrees, it could lead to TVD error that the driller is unaware of.

"It could be significant," and the driller would be "getting more and more off course, and not realizing it," he said. "I wish more people understood the TVD error they don't know is there, that builds up."

If TVD is not where the well is expected to be, it can affect production. The same process can cause errors to build up horizontally, potentially causing lease line crossings or even intersection of other wellbores, he said.

David Gutierrez, senior technical adviser at Superior QC, a Patterson-UTI company, said, "Surveys are the best estimate of the position of the wellbore, but it's very likely that's not where the well is, that it's actually somewhere in the ellipse of uncertainty. It's not an exact science," and the tools measuring wellbores can have errors.

He said having better data can lead to better navigation guidance, which means better wellbores. With that combination, directional drillers can reduce wellbore tortuosity, improve consistency of wellbore placement, and increase average rate of penetration (ROP) over wells, he said.

Superior QC's HiFi Guidance software can help directional drillers with less experience in the art of directional drilling to

> **"I wish more people understood the TVD error they don't know is there, that builds up."**
>
> **—Chad Hanak,** *Superior QC*

"It [HiFi Guidance] sees into the future to see what you may need to do down the line."

—David Gutierrez, *Superior QC*

drill a well more accurately, Gutierrez said.

The software helps directional drillers see beyond the normal one to two stands into the future they can typically see.

It delivers "a set of instructions to achieve the wellbore most optimally," he said. "It sees into the future to see what you may need to do down the line," he said.

A suite of tools

Hanak said development on the HiFi suite of products started years back and includes fault detection, isolation and recovery (FDIR), a cloud-based correction software to reduce measurement-while-drilling error. The HiFi Guidance algorithm uses a deliberate trajectory optimization approach to place slides in a manner that limits sliding and tortuosity while maximizing ROP and footage placed in the drilling window, the company said.

The latest piece of technology is HiFi Nav, which combines standard MWD survey data with drilling data that may be overlooked from a wellbore trajectory perspective, and then synthesizes the combined dataset to calculate a more accurate wellbore shape and trajectory at 15-ft increments, the company said.

For starters, he said, Superior QC had to develop its own neural net parser capable of detecting whether the BHA was sliding or rotating.

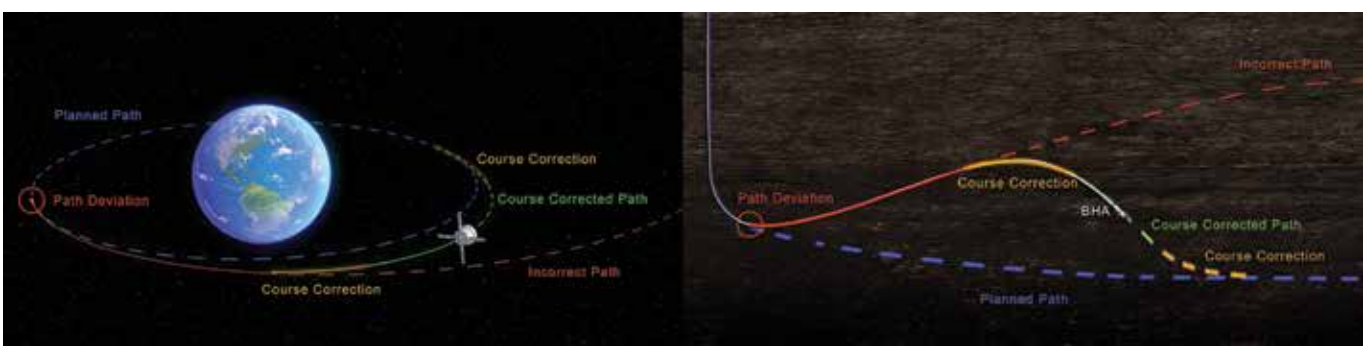
"It took us a while to perfect that," Hanak said. "That is a product of its own but a necessary piece to build the HiFi Navigation system."

HiFi Guidance liaises the directional driller with a real-time operating center. The driller can interact with HiFi Guidance through a desktop app, although Superior QC is developing a web-based version to eliminate the need to download software, Gutierrez said.

In the field

One operator in the Permian Basin who deployed the HiFi suite of tools needed a way to judge how much the directional driller was following HiFi Guidance recommendations for each stand, Hanak said. Once HiFi Guidance was implemented, "you could see very clearly in both cases as adherence scores went up, the slide percentage went down fairly dramatically. This has all sorts of implications," he said.

Total ROP increased, which resulted in savings on the spread cost, and because torque and drag was reduced, the resulting lateral was less tortuous, he said.



SUPERIOR QC

Course corrections can keep both spacecraft and drill bits on the correct path.

The benefit of the algorithmic framework used by HiFi Nav is that it standardizes the way data is processed and combined to infer things such as rotational tendencies, motor yield, and bit orientation between surveys that are not directly measurable, but are discernable because of the impact they have on the orientation of the BHA at a given MWD survey station.

In short, Hanak said HiFi Nav "answers the questions 'Where am I?' and 'Where am I going if I don't do anything?'"

HiFi Guidance provides feedback on how to adjust drilling to meet the plan, and HiFi Control executes HiFi Guidance directives, he said.

"In aerospace parlance, it's a guidance navigation and control framework," he said.

But, Hanak noted, some of the technology that makes HiFi Nav possible took some time to develop.

An enhancement to HiFi Guidance is the company's curve assurance technology that makes it possible to land the curve on plan every time despite drilling through formations with known motor yield reduction, Hanak said. Superior QC deployed that technology for a rig that had failed to land the curve on previous wells, he said.

"They used this planning process to inform what they were doing, and they were able to land it in one run," he said.

Hanak said Superior QC is developing a similar guidance system for rotary steerable systems.

"There's still a decent amount of work to be done on that," he said. OGI

USING INFRARED IMAGING TO QUANTIFY EMISSIONS

Telops' Hyper-Cam products can help operators protect their work sites and reduce methane emissions through continuous imaging and volatile organic compound detection.

ARTICLE BY

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As companies in high-emissions sectors strive to comply with environmental and safety regulations imposed by governments and regulatory agencies, emissions monitoring and quantifying technologies are in high demand.

A leader in the field, Canadian technology company Telops has been developing thermal infrared imaging solutions as a cost-effective answer for clients looking to reduce emitted methane and other greenhouse gases.

During a webinar on Aug. 25, Telops field applications engineer Ben Saute explained how these infrared imaging solutions, specifically hyperspectral imaging, work in the field to benefit operators to monitor, quantify and ultimately reduce harmful emissions, primarily methane.

"The primary message here is that we are very confident that infrared hyperspectral imaging can be a valuable tool for gas leak detection, identification and quantification," Saute said. "The Hyper-Cam is a unique high capability instrument for gas analysis that's designed to be easy to integrate and easy to operate."

Since the company's inception in 2000, Quebec City-based Telops has been offering practical technology solutions in the optics and photonics field. Today, its portfolio includes systems that focus on manufacturing and application of high-end thermal infrared imaging solutions.

The Hyper-Cam is an advanced passive infrared hyperspectral imaging system developed by Telops that combines high spatial and spectral resolution. It provides real-time radiometrically calibrated data for gas and mineral detection and identification.

"We feel strongly that it can be a cost-effective tool for reducing methane emissions and increasing regulatory compliance," he added. "We continue to challenge our instrumentation and data processing routines with measurement campaigns in real-world environments."

The Hyper-Cam

The market is expanding for emissions detecting and mitigating technology systems as oil and gas companies rush to get a handle on unwanted greenhouse gases coming from their operations. However, this can also make it difficult to understand which products serve each site best.

Through conferences and workshops, Telops researched the best way to meet as many operators' emissions regulation needs as possible, according to Saute.

"What has become clear to us … is that there's no single technology that's going to be able to do it all when it comes to methane analysis, no single technology is going to allow us to analyze the wide range of leak sizes that we can encounter," he said.

"So, the thought now within the industry is that we're going to need to think about an array of sensors or a technology toolkit that can allow us to identify and quantify emissions of different sizes," he continued.

Telops set out to create such a "technology toolkit" with the Hyper-Cam portfolio. With two installments—the ground-based Hyper-Cam Mini xLW and airborne Hyper-Cam Airborne Mini—the products allow for safe and noninvasive detection, identification and quantification of volatile organic compounds.

Both the Mini xLW and Airborne Mini systems provide real-time chemical imaging and emissions quantification from systems as far away as 5 km through the generation of automated detection reports. The reports can show what leaks are present and which gases are emitted, as well as how much gas there is—that is, how big of a problem the leak is.

"The Hyper-Cam is essentially a staring Fourier transform infrared imaging spectrometer with integrated calibration sources," Saute said, "so we provide calibrated, spectral radiance data cubes."

Through a high level of hyperspectral imaging, the system collects pertinent emissions data that can be applied for gas detection, identification and quantification.

"Our hyperspectral imaging system measures a scene and collects a three-dimensional data construct, which we call a hypercube," Saute continued. "Essentially what we're doing is collecting a set of images across a series of narrow spectral wave bands and then stacking those images to form a continuous three-dimensional structure." OGI

Read the full article here:

MAINTAINING ENERGY COMPLIANCE THROUGH CARBON RESILIENCE

An EY report outlines first measures for oil and gas companies looking to appease investors through emissions reporting.

ARTICLE BY

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After the U.S. Securities and Exchange Commission (SEC) published an update on climate disclosures in March, giving clearer definitions of Scope 1, 2 and 3 emissions, it became critical for oil and gas companies to put a greater emphasis on their emissions reporting.

A recent report from EY Americas—"How oil and gas can leverage past lessons for future resilience"—surveyed 50 major oil and gas companies on their ESG practices and emissions disclosures.

In addition, the report outlined the beginning steps for energy companies looking to appease investors and customers through emissions reporting while maintaining energy security and shared the next steps toward reducing global greenhouse-gas emissions.

"There is a critical need to translate more substantive reporting into meaningful impact on climate change," the EY leaders wrote in the report.

The report, published Aug. 17, was co-authored by: Herb Listen, EY Americas energy assurance leader; Dr. Paul Bogenrieder, EY U.S. energy analyst; David Johnston, EY U.S.-west region strategy and transactions energy leader; and Ryan Bogner, EY Americas digital sustainability leader.

Of the 50 major oil producers surveyed, 82% reported publishing an ESG or sustainability report, according to EY data.

Additionally, 86% of companies surveyed currently report greenhouse-gas emissions, with 62% having a specified greenhouse-gas reduction goal.

Only 26% of companies included third-party assurance over ESG metrics in their reporting.

"Oil and gas companies should be deliberate and transparent about what they are and what they want to be to manage the complex political landscape—including the contradictory goals of boosting capital expenditures to increase supply while also reducing fossil fuel consumption," the report stated. "To this end, many companies are refreshing their sustainability materiality assessments to appropriately align with their ESG strategy."

According to EY, some integrated oil companies are attempting to rebrand as energy companies by selling core oil and gas assets along with acquiring proved and unproved properties. However, while this rebalancing might earn short-term gratification from investors, it ultimately doesn't help reduce the amount of emissions created across the industry.

"While these moves may positively impact individual companies' emissions reporting, the net effect of this realignment may be higher industrywide emissions, as less carbon-intensive operators sell their worst-performing assets to operators with less scrutiny over their carbon emissions," EY said.

EY's proposed solutions

Instead of shuffling assets around, the report suggested a better long-term solution to the emissions reporting problem—and securing more environmentally positive operations—is threefold: decarbonization, collaboration and digitalization.

The first step in this process, EY Americas oil and gas leader and Ernst & Young principal Patrick Jelinek told Hart Energy, is laying a common foundation

to establish where to begin and what operators can feasibly do to report and manage their emissions.

"What are your options to decarbonize? What assets, what alternatives do you have?" he said.

From there, EY offers solutions as to "how we actually help deliver those in more efficient ways, such that we're both solving energy poverty, but also making improvements on an everyday basis around emissions," Jelinek continued.

Entry-level decarbonization efforts include carbon offsetting, electrifying operations, installing carbon capture, utilization and storage technology or any combination of the three. After identifying which methods will be the most effective and cost-efficient, companies can work with suppliers and policymakers to help create collaborative standards for sustainability.

"Many of these larger companies, not just oil and gas companies, but all companies are realizing that they have different standards to report against either at a jurisdictional level, local municipal or in different geographies," Jelinek said, continuing on to point out the importance of the SEC's attempt to standardize the reporting process.

Beyond decarbonization and collaboration, digitalized technologies, such as carbon monitoring solutions, carbon-enabled digital twins and other carbon management platforms, will allow companies to intervene faster, cutting off emission problems at the source.

"Some oil and gas companies are using the traceability of these systems in conjunction with high-quality offsets to offer differentiated products at a significant margin premium in specific markets (such as California and Asia)," the report continued.

Scope 3 potential

While the practices mainly focus on Scopes 1 and 2, there is potential for Scope 3 emissions to become more important among investors. Since Scope 3 emissions are harder to quantify, and they look different to different parts of the sector, it has been harder for organizations to define standardized guidelines across the energy industry.

"It will be for different sectors potentially," Listen told Hart Energy. "I do think Scope 3 is going to continue to get a lot of focus. And certainly depending on the sector that you're in, that the more important Scope 3 might be viewed by those investors and those stakeholders."

At least for the time being, though, Listen and Jelinek believe investors and customers will focus more on Scopes 1 and 2.

"Those are the types of things that the companies and operators can control and that they can focus on and that they can make meaningful improvements on," Listen added. "Scope 3 is going to be a natural outcome as a result of the products that are either produced at an oil and gas company and sold to customers, or that are manufactured through a refining process." OGI

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THE ENERGY BATTLEFIELD

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Interviewing LNG leader Charif Souki in late August for this month's cover story, I asked if energy prices might result in a new global financial crisis: $90/MMBtu natural gas seemed unsustainable to LNG-importing nations' economies.

Yes, said Souki, the founder of U.S. Lower 48 LNG exports and currently executive chairman of Tellurian Inc.

Two weeks later, I'm still stunned.

What would become of world order, then, particularly among NATO members? And might emerging countries realign, kindling favor with Russia and undoing 70 years of U.S. efforts to diminish the spread of communism?

In "Mercury Rising," historian Jeff Sheshol describes in great detail how the space race was an effort in U.S. messaging to countries that were toying with taking up communism that success is derived from capitalism instead.

The constituents of energy-rich nations—whether rich by indigenous supply or rich by affording imports—are easily angered without heating or cooling, clean drinking water, gasoline and other comforts.

What does anger look like when deprived of *necessities*?

And what of global food supply without fertilizer? Souki mentioned this. It came up again a couple of days later when hearing from John Harpole, president of gas consulting firm Mercator Energy.

I spent some of the summer revisiting World War I, WWII, the American Revolution and the French Revolution, while also reading Walter Isaacson's biography of Benjamin Franklin.

The cost of comforts, conveniences and necessities are typically leading motivators of revolt. We'll have a better idea when exiting winter of how this has played out.

A tweeter, "Twain's Mustache," wrote, "Europe is a caricature at this point because they have listened to 'experts' like [the one he retweeted] here. This is a multidisciplinary real-world problem, not a theoretical classroom exercise."

The tweeter, Lion Hirth, had written, "There is really only one way out of the European energy crisis: investing hundreds of billions of (euros) into wind and solar. Any policy that makes such investments less attractive will prolong the crisis."

Dan Pickering, founder of investment firm Pickering Energy Partners, tweeted, "We are watching Europe literally fear for their lives and endure a massive hit to their economy around energy scarcity/security."

There was a bright spot shortly after Labor Day: The new British prime minister, Liz Truss, lifted the frac ban. We wrote during the summer about the U.K.'s Bowland Shale and its potential. At the time, the British energy minister, Kwasi Kwarteng, was working toward resuming shale development.

Well, Kwarteng is now chancellor of the exchequer—the British equivalent of treasury secretary. Kwarteng's first tweet about his appointment was about energy: "This evening, we've been finalizing our package of urgent support to help with energy bills."

The energy battlefield is large, and it's not isolated to Europe.

The U.S. will be exporting its natural gas to Mexico's Pacific Coast as LNG export plants are not going to get built in California. The gas will come via pipe from Texas and the Rockies.

The Kenai LNG export plant in Alaska was closed in 2017. But a new LNG export plant nearby is underway, while Canadian gas can't get to western British Columbia.

Marcellus gas could be exported from Canada's Atlantic Coast, but it would need to get through New England. Franc James and his fellow team members at Penn America Energy are new-building a plant on the Delaware River in southeastern Pennsylvania.

Sufficient U.S. natural gas storage capacity is a renewed concern this decade as existing exports total 20 Bcf/d. But, U.S. production of some 96 Bcf/d already is commonly challenged to refill existing capacity of roughly 4 Tcf.

Tudor Pickering, Holt & Co. gas analyst Matt Murphy expects storage of 3.5 Tcf exiting autumn, "which could push Henry Hub well north of $10/MMBtu."

Meanwhile, inflation is holding back U.S. production growth. Jack McClendon, CEO of Siena Natural Resources, tweeted, "I can tell you costs are through the roof and every company is coming in 30% to 50% above initial AFE [authorization for expenditure]."

Another tweeter put out a call: "Call me if you have a coil rig in the D-J (Basin) looking for a home tonight."

A reply: "Thoughts and prayers." OGI

Hart Energy's inaugural America's Natural Gas Conference concluded Sept. 27 with speakers ranging from NGP co-founder Ken Hersh and bpx energy to Berkshire Hathaway and Kinder Morgan.

The conversation continues into this quarter at the Energy Capital Conference, Oct. 25; A&D Strategies & Opportunities, Oct. 26; and the Executive Oil Conference, Nov. 16.

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