Oil and Gas Investor

YOU CAN'T SPELL PERMIAN WITHOUT 'PE'

Portfolio Companies Amplify Abundance

PRODUCER PIVOT

Paving Energy Transition Pathways

All of the Above – and the Resources Below

ConocoPhillips' Chief Ryan Lance Talks Fueling the Future

PUTIN COMES TO SHOVE

European Leaders Scramble for LNG

HARTENERGY.COM

NOVEMBER 2022

CENTERED IN TRUST AND LONG-TERM RELATIONSHIPS

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

Recent Minerals & Royalties Transactions

UNDISCLOSED	UNDISCLOSED	UNDISCLOSED	UNDISCLOSED	UNDISCLOSED
Haynesville Minerals Platform	**Diversified Minerals Aggregator**	**Midland Basin Operator**	**Eagle Ford Minerals Platform**	NOBLE ROYALTIES, INC.
EQUITY PRIVATE PLACEMENT	STRATEGIC PARTNERSHIP	ASSET ACQUISITION	EQUITY PRIVATE PLACEMENT	EQUITY PRIVATE PLACEMENT
Sole Placement Agent	Sole Placement Agent	Financial Advisor	Sole Placement Agent	Sole Placement Agent
UNDISCLOSED	UNDISCLOSED	UNDISCLOSED	UNDISCLOSED	$350 MILLION
VIKING MINERALS	VIKING MINERALS	**Shadow Creek Minerals**	NOBLE ROYALTIES, INC.	VIPER Energy Partners
ASSET DIVESTITURE	ASSET DIVESTITURE	ASSET DIVESTITURE	ASSET DIVESTITURE	FOLLOW ON OFFERING
Financial Advisor	Financial Advisor	Financial Advisor	Financial Advisor	Underwriter
$66 MILLION	$104 MILLION	$53 MILLION	UNDISCLOSED	UNDISCLOSED
KIMBELL ROYALTY PARTNERS	KIMBELL ROYALTY PARTNERS	KIMBELL ROYALTY PARTNERS	**Multi-Basin Minerals Company**	**Multi-Basin Minerals Company**
FOLLOW ON OFFERING	INITIAL PUBLIC OFFERING	FOLLOW-ON OFFERING	ASSET DIVESTITURE	VALUATION ANALYSIS
Underwriter	Underwriter	Underwriter	Financial Advisor	Financial Advisor

MINERALS & ROYALTIES STATISTICS	PRIVATE FINANCING STATISTICS
~$2.4 Billion	~$11.7 Billion
Aggregate Transaction Volume Since 2017	Aggregate Capital Raised Since 2009
15 Closed Transactions Since 2017	37 Closed Transactions since 2009

Keith Behrens, Managing Director, Head of the Energy Group • 214-258-2762 • keith.behrens@stephens.com
Charlie Lapeyre, Managing Director • 214-258-2784 • charlie.lapeyre@stephens.com
Brad Nelson, Managing Director • 214-258-2763 • brad.nelson@stephens.com

300 Crescent Court | Suite 600 | Dallas, TX 75201

For the most recent list of our transactions, visit **stephens.com/buildingblocks**

Stephens
Investment Banking

HARTENERGY.COM

Oil and Gas Investor

NOVEMBER 2022/VOLUME 42/NUMBER 11

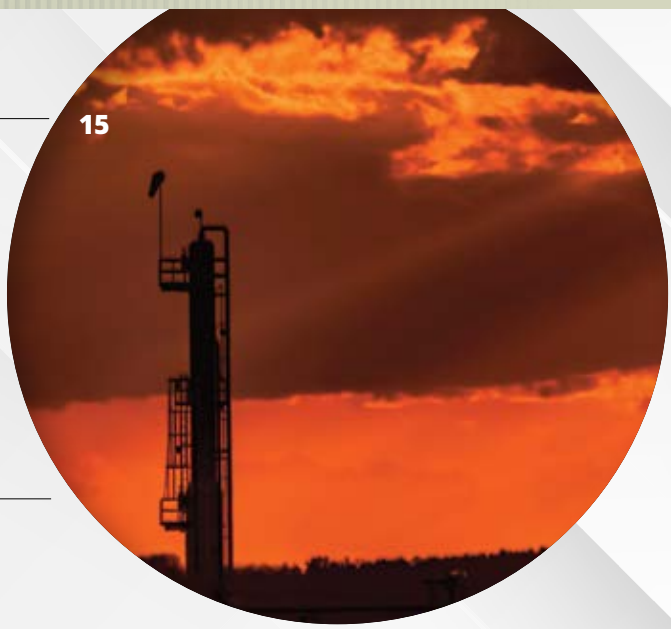
COLUMNS

Oil and Gas Investor (ISSN 0744-5881, PM40036185) is published monthly by Hart Energy Publishing, LP, 1616 S. Voss Rd., Suite 1000, Houston, Texas 77057. Periodicals postage paid at Houston, TX. Ride-along enclosed. Advertising rates furnished upon request. POSTMASTER: Send address changes to Oil and Gas Investor, PO Box 5020, Brentwood, TN 37024. Address all correspondence to Oil and Gas Investor, 1616 S. Voss Rd., Suite 1000, Houston, Texas 77057. Telephone: +1.713.260.6400. Fax: +1.713.840.8585. oilandgasinvestor@hartenergy.com

Subscription rates: United States and Canada: 1 year (12 issues) US$297; 2 years (24 issues) US$478; all other countries: 1 year (12 issues) US$387; 2 years (24 issues) US$649. Single copies: US$30 (prepaymentrequired). Denver residents add 7.3%; suburbs, 3.8%; other Colorado, 3%.

Oil and Gas Investor

HARTENERGY.COM



ACTIVITY HIGHLIGHTS

A&D WATCH

FINANCE & INVESTMENT

GLOBAL ENERGY

PERSPECTIVES

Oil and Gas Investor
by HARTENERGY
1616 S. Voss Rd., Suite 1000 • Houston, TX 77057
1.713.260.6400 Fax: 1.713.840-8585
HartEnergy.com

AROUND THE INDUSTRY

MIDSTREAM

TECHNOLOGY

REGULATORY

ABOUT THE COVER: Before sunrise in the Delaware Basin, ConocoPhillips drilling supervisor Lloyd Shirley (left) and contractor Greg Rivera at the Roulette 3H on a six-well pad in the China Draw prospect in northern Reeves County, Texas, 12 miles north of Orla near the New Mexico border. Photo by Patrick Curry.

THE TRUTH ABOUT CONSEQUENCES

RING THE BELL

DEON DAUGHERTY
@Deon_Daugherty
ddaugherty@hartenergy.com

Consequences. President Joe Biden routinely trots them out when he wants to appear formidable in speeches that address the actions of rogue nations.

But now his promises of consequences against individual countries—Russia, China and Saudi Arabia, to name a few—are running headfirst into the consequences of others' actions.

Amid skyrocketing fuel prices last fall, Biden asked OPEC to open its taps. Instead, the group sent a message. OPEC, in December, stuck with its previous plan of slowly unwinding pandemic-related production cuts.

The irony of Biden's ask was not lost on the group, which essentially told Biden—who has based much of his presidential legacy on a low-carbon future—to increase oil flows in his own country.

But U.S. producers are more beholden to their investors than the politicians who come and go every few years. And they continue to hold the line on disciplined volumes.

When Russia began its invasion of Ukraine in February, Biden warned Russian President Vladimir Putin that "he and his country will bear the consequences."

Biden and Congress punished Putin via a series of sanctions.

Now OPEC and its affiliate nations, one of which is Russia, are instituting their own set of consequences on the rest of the oil-dependent world. The OPEC+ move to take 2 MMbbl/d out of circulation is a large enough supply chunk to raise prices again, helping Russia finance its war on Ukraine while exacerbating the fuel deficit throughout Europe and global inflation.

What's Biden going to do about it?

"There's going to be some consequences for what they've done with Russia," Biden said in an interview with CNN, adding that he believes it's time for the U.S. to reevaluate its relationship with Saudi Arabia.

There's not much that Biden can do without Congress and not much time before the midterm elections, which may upend his slim Democratic majority there. If Democrats can maintain an upper hand on Capitol Hill, they do have a variety of tools to make the Saudis' apparent alliance with Russia less cozy.

However, the U.S. has options to bring Saudi Arabia back to camp, said Jim Krane, Middle East energy expert at Rice University's Baker Institute for Public Policy.

"We've got a very intertwined economic, diplomatic and military relationship with Saudi Arabia," he told *Oil and Gas Investor*. "There's all sorts of tools there—any number of which can be used."

But, as for affecting the prices at the pump, there is actually very little the president can do.

"Presidents act like they can do something about it, and they take the blame for when it goes wrong and they get credit for when it goes their way, even though the things they do have very little influence on it," Krane said. "Other than jawboning the Saudis."

Meanwhile, crude oil maintains its near-monopoly on transportation, Krane said. Americans' favor for large inefficient vehicles exposes the country to the kind of geopolitical game of risk currently being played.

Since the 1940s, the U.S. and Saudi Arabia have enjoyed a cooperative relationship, but there are increasing signs of strain. Former President Barack Obama made two trips to the Middle Eastern nation. Both were low-key affairs, and the lack of fanfare on Saudi television hinted at a chilly reception.

In 2015, the distance between the two countries grew with the death of longtime U.S. ally King Abdullah bin Abdulaziz.

Then, in 2019, President Donald Trump did little to defend Saudi as an ally when Iran bombed the nation's oil facilities.

Brash and favoring Twitter as a means of communicating policy, Crown Prince Mohammed bin Salman (MBS) has become the de facto leader of the county. His power gained eminence by royal decree in September when King Salman bin Abdulaziz named MBS prime minister.

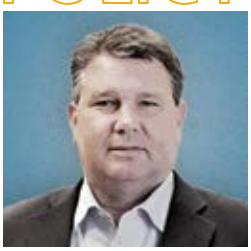
To be sure, Saudi's current leadership under MBS appears more closely aligned with the tactics employed in Moscow. And many analysts around the world speculated the latest move was designed to help Russia finance its invasion of Ukraine.

Krane said the next step for OPEC+ could be more nuanced. Much of Saudi Arabia's social programs and government chest still rely on oil revenues; other OPEC nations are reestablishing their infrastructure; Russia has a war; and some countries want to achieve net-zero emissions.

"The question now is whether Saudi Arabia's tilt toward Russia will hold over the longer term or whether it is a temporary response to mutual Saudi-Russian disdain for the Biden administration," he said on Twitter. OGI

THE WORLD NEEDS US LEADERSHIP

ENERGY POLICY



JACK BELCHER
CORNERSTONE GOVERNMENT AFFAIRS
@JackBelcher1
jbelcher@cgagroup.com

As winter approaches, the U.S. and its allies find themselves in a dangerous predicament in terms of energy supply. Unity, rational and sound policies and strong leadership are needed but currently absent.

OPEC+'s decision in October to cut production by 2 MMbbl was the latest debacle in a series of troubling events on the global energy scene. The announcement came after U.S. officials lobbied Saudi Arabia and Gulf states for weeks, pleading with them to not reduce output. The Biden administration responded to the news by calling the cuts a "total disaster" and even referred to it as a "hostile act."

Saudi Arabia, which calls the shots within OPEC, made its decision based on several factors. First, it saw a softening of prices and demand as the world moved into a state of recession, and it sought to avoid a price collapse resulting from lower demand. Second, it is responding to ongoing U.S. efforts to revive the Iran nuclear deal, which it vehemently opposes. Third, Saudi Crown Prince Mohammed bin Salman hasn't forgotten that President Biden called him a pariah over the killing of a Washington Post journalist in Turkey.

The fact that Russia, the second largest producer in OPEC+, will benefit from higher prices and economic impacts on the U.S. and Europe provided further momentum. Additionally, the U.S. has very little leverage over the Saudis and OPEC, in part due to U.S. policies and restrictions that have inhibited investments in domestic energy production.

In recent weeks, the administration has called on the domestic industry to boost production and accused U.S. refiners of price gouging and profiteering off the Russian invasion of Ukraine. Despite the pleas from the White House, however, little is being accomplished to reverse the damage done to the domestic industry.

Despite the fact that the Inflation Reduction Act (IRA) signed into law in August mandated two Gulf of Mexico lease sales that were previously canceled, they may be significantly pared back or subject to more onerous conditions.

Onshore BLM lease sales in New Mexico and Wyoming, also mandated through the IRA, are currently undergoing public scoping reviews and will be subject to higher royalty rates and the elimination of competitive bids—factors that will likely result in the issuance of fewer leases sold and ultimately less production.

There are also continued threats from the administration to limit or halt crude oil and refined product exports, apparently in a belief that this would keep prices lower in the U.S. In actuality, such a move would thwart efforts underway to rebalance markets resulting from diverted Russian supplies. This would actually lead to a global shortfall and increase prices of crude oil, gasoline and diesel fuel.

Instead of pursuing policies to actually spur domestic production, the U.S. is instead looking to other nations, such as Venezuela, to make up the gap.

Earlier this year, President Biden committed the U.S. to export 15 Bcm of LNG to Europe this year, ramping up to 50 Bcm by 2030. Europe desperately needs this natural gas, especially after the apparent sabotage of the Nord Stream Pipeline, an action signaling a final straw in the cut off of Russian natural gas to Europe. Now, the U.S. is facing enormous pressure to live up to its commitments to its allies who are facing a winter with significantly limited energy supplies and an industrial sector that can no longer afford to operate.

To answer that call, we need policies in place that boost our natural gas production and enable its delivery so we can provide energy to ourselves and our allies. While we are at it, let's get our oil production back to where it should be so that we don't have to court our former adversaries for supply. Aside from asking the U.S. oil and gas industry to boost production, the administration has done little to actually boost domestic production.

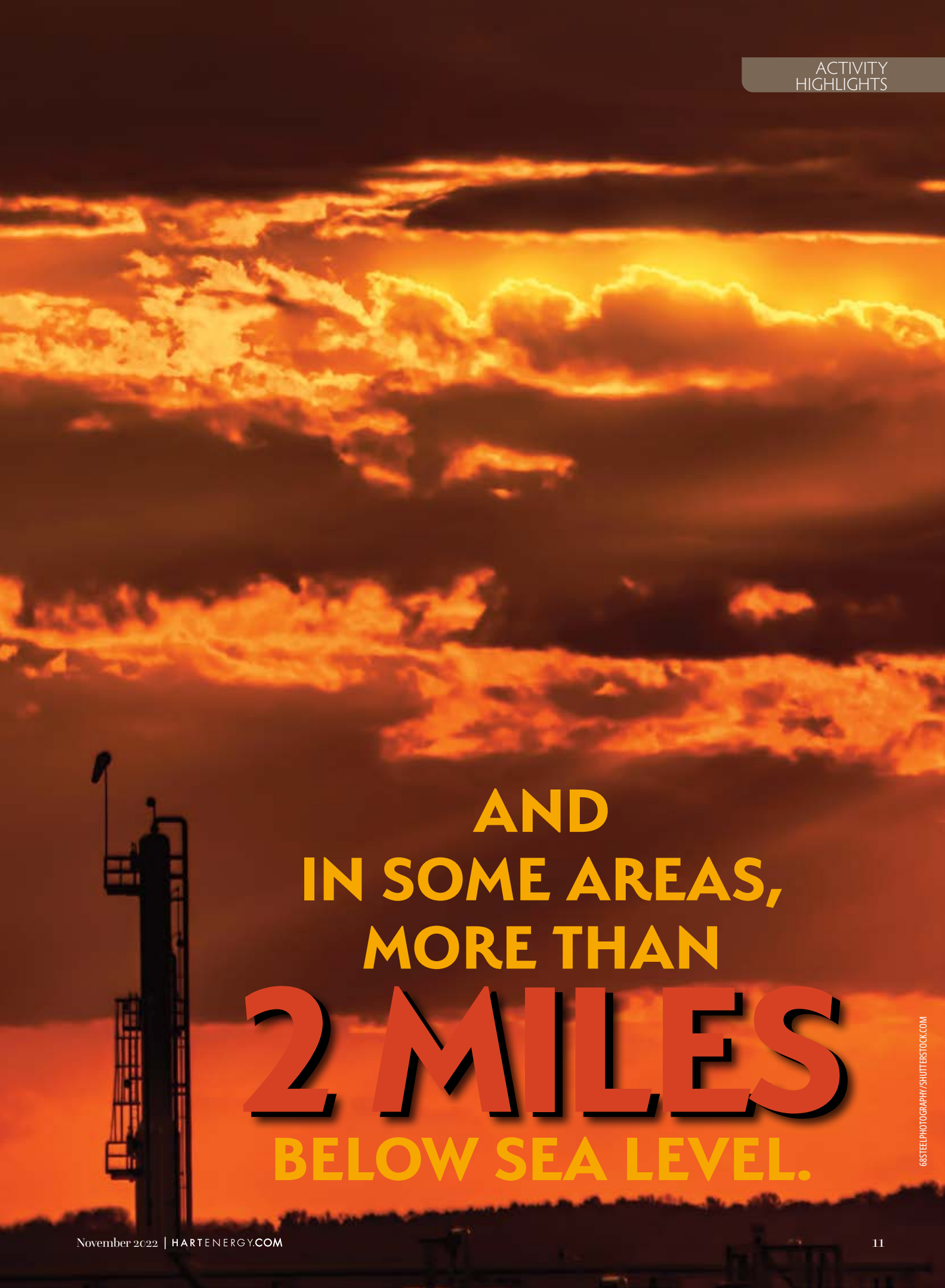
We are now in the "silly season" as midterm elections are upon us. High energy prices will no doubt figure into the outcome.

When a new Congress comes to Washington in January, it needs to ask questions about our current energy situation such as "How did we get here?" and "How can we fix this?" Only with that kind of a rational discussion can we pursue policies that will truly make a difference. OGI

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

Scan me

THE UTICA SHALE COVERS 115,000 SQ MILES



AND
IN SOME AREAS,
MORE THAN
2 MILES
BELOW SEA LEVEL.

68STEEL.PHOTOGRAPHY/SHUTTERSTOCK.COM

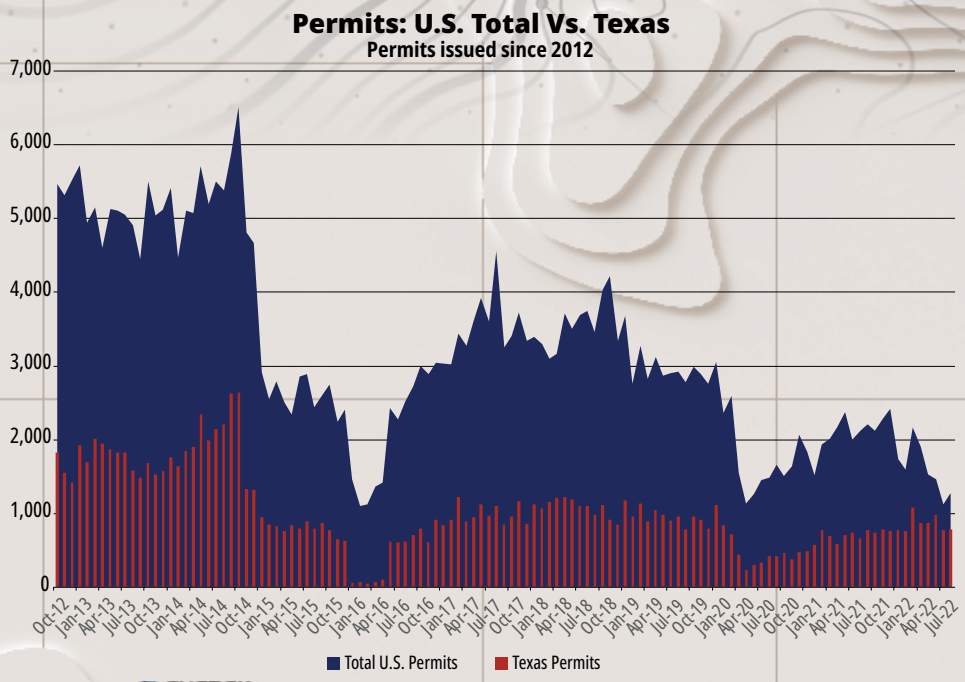
PERMITS

Texas, accustomed to leading the way in oil and gas permits, has assumed such a dominant role since May that it accounts for three of every five permits issued in the U.S.

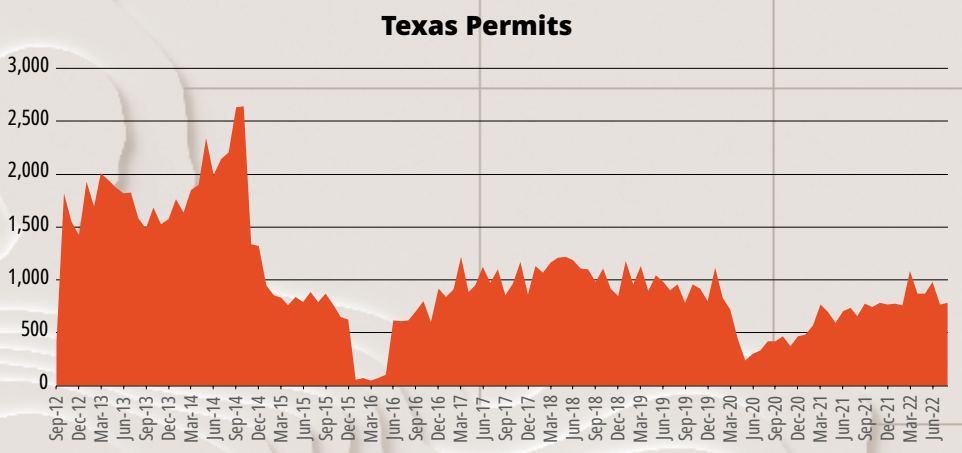
The Lone Star shale hegemony is even more remarkable given the uptick since spring in other energy states like Oklahoma, Colorado, North Dakota and Louisiana.

The overall count for the country has sagged since cresting above 2,100 in March, when the permit total in Texas alone was near 1,100. Between then and August, the U.S. total took a 41% hit, while the Texas drop was a more restrained 28%.

To gauge the trend another way, the August U.S. total was 40% below that of August 2021, while Texas gained 124, or an increase of 19%. It's all about the rock, as they say, and the rocks in eight of the nine top counties for permits in the most recent month happen to be located in the Permian Basin and Eagle Ford Shale of Texas.



Data from Rextag ENERGY DATALINK



Data from Rextag ENERGY DATALINK

Permitted Wells By State

State	Well Count
Texas	578
Oklahoma	72
Colorado	67
North Dakota	54
Louisiana	36
Wyoming	30

Permitted Wells By Operator

Operator	Well Count
Pioneer	36
PDC Energy	26
Endeavor	25
Exxon Mobil	22
SM Energy	21
BPX Operating	21
Continental	21
Windsor	21
Birch Operations	15

Permitted Wells By County

County	Well Count
Martin, Texas	89
Loving, Texas	55
Howard, Texas	35
Webb, Texas	35
Midland, Texas	33
Reeves, Texas	33
Weld, Colo.	26
Karnes, Texas	23
La Salle, Texas	22
McKenzie, N.D.	22
Williams, N.D.	17
Campbell, Wyo.	15
Winkler, Texas	15
Converse, Wyo.	12
DeSoto, La.	10

From the producers of the DUG® conference series and the *Oil and Gas Investor* editorial team

HARTENERGY presents

EXECUTIVE OIL Conference & Exhibition

NOVEMBER 15-16, 2022

MIDLAND COUNTY HORSESHOE ARENA, MIDLAND, TX

THE PERMIAN POWERS ENERGY SECURITY

The world has turned to America's always-reliable energy producers to stabilize decades of over weighted, foreign influence on supply—and prices. What's next for U.S. producers and how do they navigate the near-term and long-term future as markets shift, economic factors flux, and new technologies develop?

Gain insights from industry executives and expert analysts at Hart Energy's 10th Annual Executive Oil Conference and Exhibition (EOC), held November 15-16, 2022 at the Midland County Horseshoe Arena.

EXECUTIVE OIL CONFERENCE WILL COVER:

- The World-Class Permian
- M&A: Barrels in the Ground
- At the Table: Buyers & Sellers
- Delaware North, Central & South
- The Permian in a Polarizing Planet
- Keynote: Permian & Abroad
- Midland Basin North, Central & South: Dial a Btu
- The Money is Here
- The New Oilfield: Heard at the Pad
- To Market: The Takeaway

Confirmed Speaking Companies Include:

Baker Hughes, Diamondback Energy, Double Eagle Energy IV, East Daley Capital Advisors, eLynx Technologies, Permian Resources Corporation, Petrie Partners, Pickering Energy Partners, Shepherd Safety Systems, Sodexo Energy & Resources, Vencer Energy and VTX Energy Partners

Companies that attend the EOC:

Admiral Permian Resources • Avisto Capital Partners • Black Knight Energy • Black Swan Oil & Gas • Blackbuck Resources • BOKF Securities • BP • Brigham Exploration • Chevron • Chisholm Energy Holdings • ConocoPhillips • Crescent Pass Energy • CrownQuest Operating • Deloitte • Devon Energy • Discovery Natural Resources • Durham Capital Corporation • EIV Capital • Enstream Capital • Enverus • EQT • Fasken Oil and Ranch • FMI Capital Advisors • Goodnight Midstream • Hannathon Petroleum • Helmerich & Payne • Henry Resources • Houlihan Lokey • Kinder Morgan • King Operating Corporation • KVL Operating • Mammoth Exploration • Moriah Operating • OXY • Pinnacle Midstream • Piñon Resources • Pioneer Natural Resources • Pontem Energy Capital • Post Oak Energy Capital • Presidio Petroleum • PRI Operating • Raymond James & Associates • Rubicon Oil & Gas • Saguaro Petroleum • Santo Petroleum • Sequitur Energy Resources • Tower Rock Oil & Gas • Triple Crown Resources • UBS Investment Bank • Vaquero Midstream • Vencer Energy • Wilcox Investment Bankers • Williams Companies • Wood Mackenzie • Woodland Midstream • XTO Energy

LEARN MORE & REGISTER TODAY:

ExecutiveOilConference.com

SPEAKER AND SPONSORSHIP OPPORTUNITIES ARE LIMITED

Presented by: HARTENERGY Hosted by: Oil and Gas Investor

Thanks to Our Sponsors:

—PLATINUM—

GR Energy Services

—GOLD—

BAKER BOTTS

—SILVER—

Rystad Energy

Energy Software

—BRONZE—

DATA. INSIGHT. OUTCOMES.

EnCap Investments L.P.

King Operating Corporation

SHEPHERD

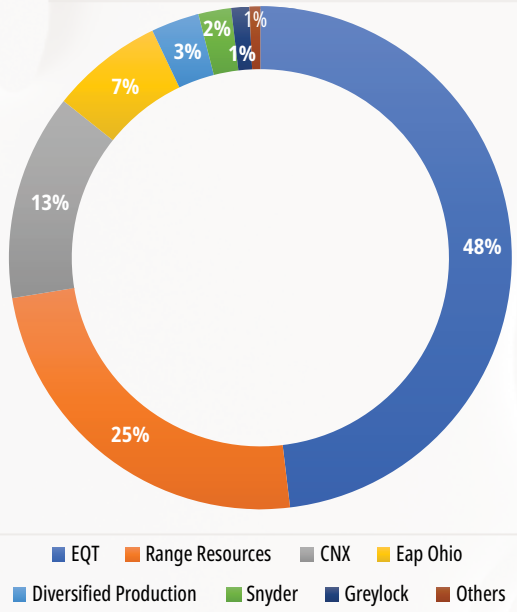
FOCUS ON: UTICA BASIN

The Utica Shale, far from its reference as the "assistant Marcellus Shale," is a natural gas reserve powerhouse in its own right. The 117.2 Tcf of recoverable natural gas reserves in the Point Pleasant Formation and Utica Shale, as estimated by the U.S. Geological Survey, would position the play among the top 15 in the world, sharing the No. 13 spot with Iraq and Australia.

The Utica covers about 115,000 sq miles across New York, Pennsylvania, Ohio and West Virginia. The formation itself stretches north to underlie the Island of Montreal. The formation is much deeper than the Marcellus, and in some spots in central Pennsylvania, lies 7,000 ft below the Marcellus. At its deepest, the Utica is more than 2 miles below sea level. Thickness varies from 100 ft to 500 ft.

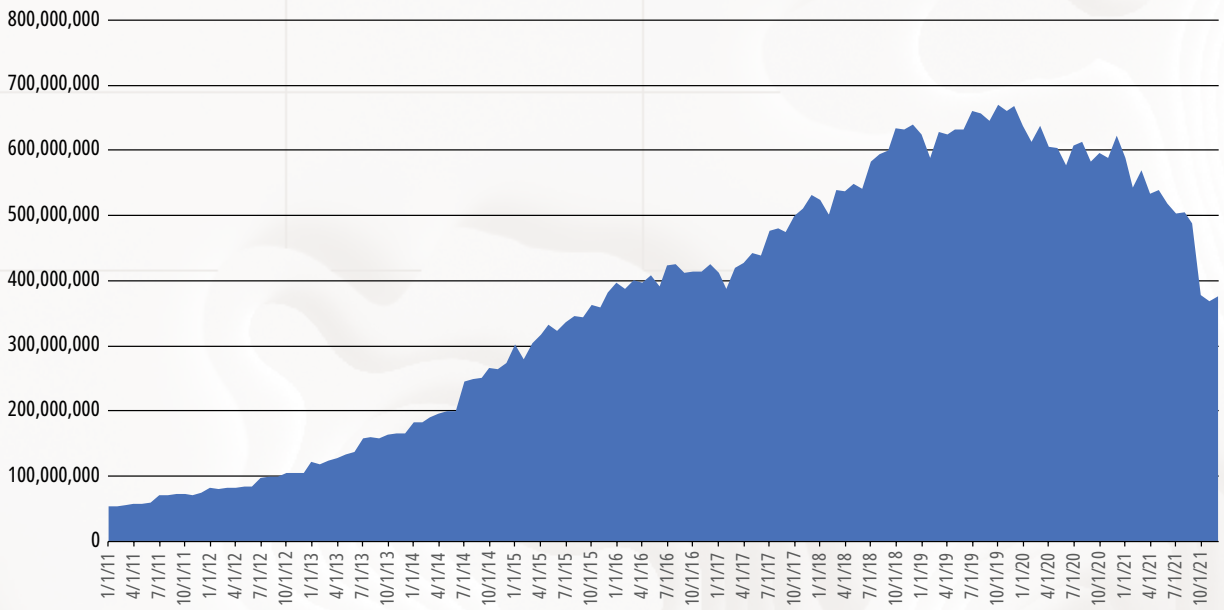
Natural gas production in the play peaked at 669 Bcf in October 2019. By the end of 2021, output was down to about 377 Bcf/month. Leading producers include EQT Corp., Range Resources Corp. and CNX Resources Corp.

Leading Gas Producers
bbl, 12 months



Data from Rextag ENERGY DATALINK

Utica Shale Natural Gas Production
Mcf/month, 2011-2021



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.

What We Provide

Intelligent Connections: empowering you to discover previously unseen insights and opportunities, act fast and deliver extraordinary outcomes.

- Asset Evaluation, Acquisition, Divestitures
- Asset Development & Optimization
- 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

TALOS ENERGY SNAGS ENVEN FOR $1.1 BILLION

Talos Energy Inc. plans to buy **EnVen Energy Corp.** in a $1.1 billion deal that increases Talos' Gulf of Mexico production by 40%.

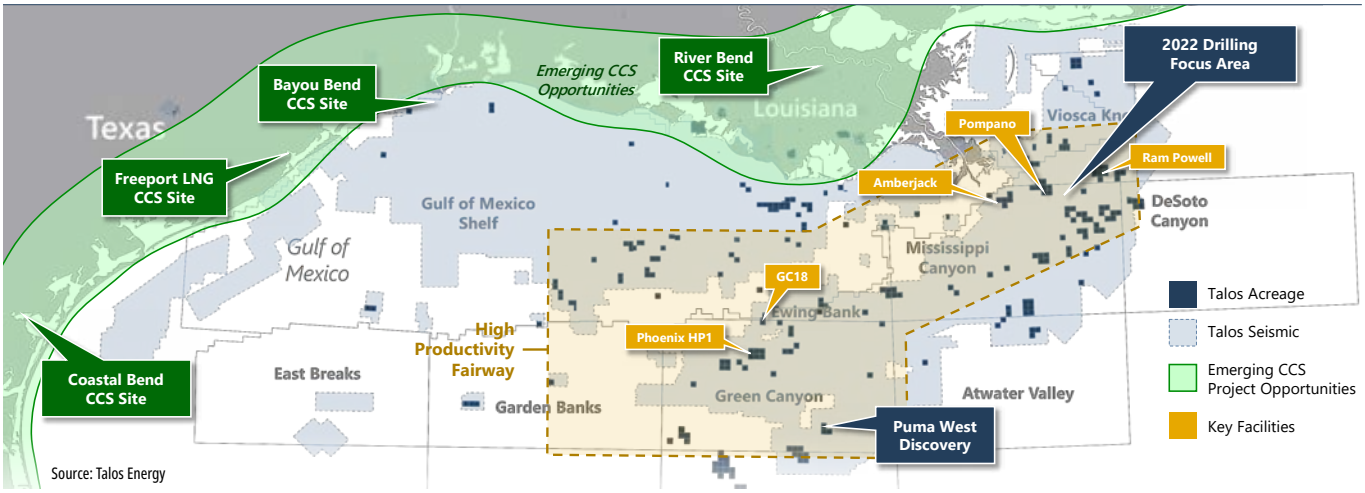
The acquisition of EnVen, a private operator, doubles Talos' operated deepwater facility footprint, adding key infrastructure in existing Talos operating areas. More than 80% of the combined assets will be deep water, with Talos operating more than 75% of the acreage it holds interests in.

In a presentation regarding the deal, Talos said the contiguous operated asset portfolio provides a "hand-in-glove fit in deepwater Gulf of Mexico core areas."

During a conference call on Sept. 22 discussing the deal, CEO Timothy S. Duncan said the EnVen purchase "just checks a lot of boxes" in terms of scale, assets, similar strategies and what Talos is doing from a technology standpoint.

"We're trying to build a leadership position in a basin we've known for a long time," he said. "This gives us more of a presence around our stakeholders as we grow the company in the Gulf Coast region."

Talos' Expansive Operational And Geological Footprint



Source: Talos Energy

And the purchase of EnVen, which is expected to close by the end of the year, is one critical part of that. The purchase is expected to generate $30 million or more annually in synergies related to general and administrative cost reductions. But it also expands the company's Gulf of Mexico footprint with acreage Talos has previously attempted to acquire.

"We're familiar with these assets," he said. "I'm looking at assets I smile about when I look at, because we bid on them."

EnVen holds 78 MMboe of 2P reserves and 420,000 gross acres in the Gulf of Mexico. The deal also adds about 24,000 boe/d to Talos' production stream.

The EnVen asset mix is "similar to what our facilities look like," he added. "They were put in by majors and have been well taken care of."


Tim Duncan

EnVen operates the Brutus/Glider asset in 2,900-ft to 3,243-ft water depth with 100% interest. The production facility has a gross capacity of 120,000 bbl/d. EnVen's operated Lobster Field is in 775 ft of water and has a gross oil capacity of 80,000 bbl/d. EnVen holds 67% working interest in the field.

Duncan said Lobster had been "tremendous" for EnVen, which has an active rig program committed for the field.

"We're just going to step in and execute that plan," he said.

The EnVen-operated Cognac Field in 1,023 ft of water has a gross oil capacity of 30,000 bbl/d. The company holds 63% interest in that field. EnVen operates Neptune with 65% interest. With a gross oil capacity of 50,000 bbl/d, the field is in 4,250-ft water depth.

Prince, which EnVen operates with 100% interest, is in 1,500 ft of water and has a gross oil capacity of 50,000 bbl/d. EnVen holds 50% interest in the **Chevron Corp.**-operated Petronius Field in 1,754-ft water depth. It has a gross oil capacity of 60,000 bbl/d.

Duncan said the expectation is the mix of Talos and EnVen deepwater facilities will encourage more subsea tieback activity for unused capacity at the various production units.

"There will be ample capacity for future subsea tiebacks," Duncan said.

EnVen currently had around three dozen subsea tieback ideas rolling through their inventory. Duncan said Talos would pull together those ideas during planning for the 2023, 2024 and 2025 spending programs.

"They've built a very healthy business, or they wouldn't be here," he said. "We like what they're doing, right out of the box."

Consideration for the transaction consists of 43.8 million Talos shares and $212.5 million in cash, plus the assumption of EnVen's net debt upon closing, currently estimated to be $50 million at year-end 2022.

Following the transaction, Talos shareholders will own approximately 66% of the pro forma company, and EnVen's equity holders will own the remaining 34%. The transaction has been unanimously approved by each company's board of directors. Closing is expected by year-end 2022, subject to customary closing conditions.

The company said the deal implies a valuation of approximately 2.4x 2022 estimated hedged adjusted EBITDA with the transaction more than 13% accretive to Talos shareholders on 2023E free cash flow per share. Talos expects the transaction to be immediately de-leveraging at closing, with year-end 2022 leverage of less than 0.8x. Additionally, Talos will have no near-term maturities. The company expects to provide 2023 financial guidance after closing.

The purchase also means a shake-up on the Talos board of directors, which includes a slate of members who serve staggered three-year terms. On closure, all directors must be elected every year going forward, with two from EnVen and six from Talos. Robert Tichio, the current Riverstone Holdings representative, will step down from the board on closing of the transaction.

—Jennifer Pallanich

NOG BOLTS-ON CORE NORTHERN DELAWARE FOR $157.5 MILLION

TOM FOX

Northern Oil and Gas Inc. (NOG) made a bolt-on acquisition of core northern Delaware Basin properties for an initial purchase price of $157.5 million, the company said in a Sept. 30 release.

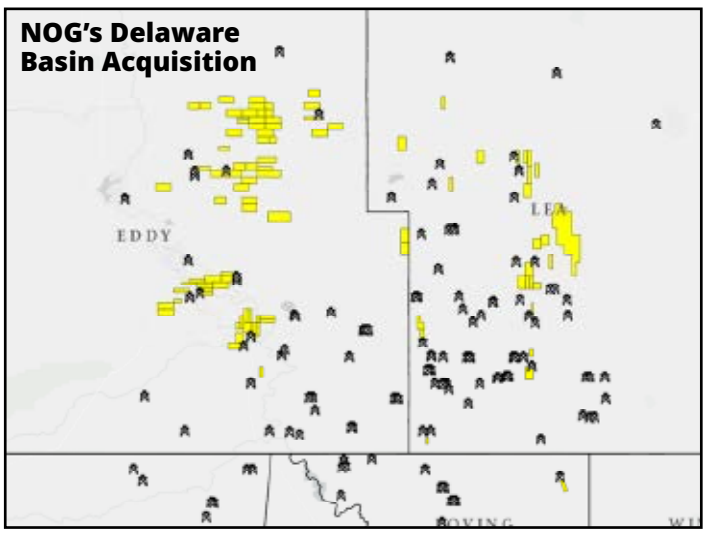
"The northern Delaware Basin continues to be a key target for our consolidation efforts," NOG president Adam Dirlam commented in the release.

Based in Minnetonka, Minn., NOG 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 also expanded into the Marcellus Shale and Permian Basin through a series of acquisitions.

The acquisition announced on Sept. 30 includes certain nonoperated working interests in the core of the Delaware Basin from **Alpha Energy Partners**. The interests consist of 2,800 acres, 9.6 net producing wells, 2.8 net AFEs and wells-in-process in New Mexico's Lea and Eddy counties and Loving County, Texas.

Mewbourne Oil is the primary operator of the asset, which also includes approximately 21.2 net undeveloped locations. Other operators include **ConocoPhillips Co.** and **EOG Resources Inc.**

"This asset has some of the highest-quality, lowest-cost inventory we have acquired and is leveraged to NOG's top operator in the Permian," Dirlam said.



Source: Northern Oil and Gas Inc.

The acquired assets included a highly economic, low breakeven inventory in the core zones of the Wolfcamp and Bone Spring plus additional unbooked inventory in the Avalon and lower Wolfcamp zones, NOG said.

The Alpha acquisition follows NOG's purchase of nonoperated Permian properties in Howard County, Texas, from **Laredo Petroleum Inc.** in August for $110 million. Also, 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.

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

In its release on Sept. 30, NOG said it may deliver Alpha Energy Partners up to $22.5 million of additional cash consideration depending on the average front month Nymex WTI pricing during the first six months of 2023. The additional consideration, if any, would be paid in third-quarter 2023, according to the release.

"NOG continues to execute on creating shareholder value as a proven, reliable and disciplined consolidator of working interests," commented NOG CEO Nick O'Grady in the release. "These assets are squarely in our core focus area and are poised to deliver substantial growth over the coming years, while delivering significant cash flow to bolster shareholder returns."

Citigroup Global Markets served as financial adviser to NOG. **Kirkland & Ellis LLP** is serving as the company's legal adviser. **Tudor Pickering, Holt & Co.**, the energy business of **Perella Weinberg Partners**, served as financial adviser to Alpha Energy Partners. **Holland & Knight** is serving as Alpha's legal adviser.

—Emily Patsy

SILVERBOW 'POISON PILL' ATTEMPTS TO FEND OFF POSSIBLE TAKEOVER

Marcus Rowland

Activist investor **Kimmeridge Energy** signaled a potential takeover stance toward Eagle Ford operator **SilverBow Resources Inc.** on Sept. 23, just a few days after the small-cap E&P adopted a poison pill provision in response to "significant accumulations" of its stock.

Kimmeridge disclosed in the regulatory filing that it has spent more than $100 million to acquire 14.7% of SilverBow's shares. The filing was similar to a July disclosure but was filed in documents more in line with a takeover posture.

Kimmeridge did not respond to a request for comment.

SilverBow "is committed to acting in the best interests of all of the company's stockholders and will continue to take actions that we believe will drive long-term value," Marcus C. Rowland, independent chairman of the board, said in a press release on Sept. 20.

SilverBow, with a market cap of roughly $540 million, said in the Sept. 20 release that its board had adopted a limited-duration stockholder rights plan "to protect the interests of all stockholders."

"We want investors to realize the full value of their investment and receive fair and equal treatment, which is what the right plan is designed to ensure," Rowland added.

KeyBanc Capital Markets analyst Tim Rezvan said SilverBow's plan appears to give the board the option of doubling its shares if Kimmeridge acquires 15% of its outstanding stock. The plan would effectively dilute Kimmeridge's ownership to 7.5% of the company.

Rezvan said Kimmeridge did not file as an activist investor when it disclosed its ownership stake in July, and he suspects Kimmeridge and members of SilverBow's management team have engaged in strategic discussions around the Eagle Ford Shale.

"Kimmeridge has multiple public equity investments with companies in the Eagle Ford Shale, including **Callon Petroleum** and **Chesapeake Energy**," Rezvan said in a Sept. 20 report. "The adoption of this plan could be an indicator that discussions are not leading to outcomes desirable to both parties."

Kimmeridge subsequently reclassified its ownership status with a 13D SEC filing, "suggesting an activist campaign may be forthcoming," Rezvan said.

Rezvan additionally said that Kimmeridge had confirmed it had purchased nearby Eagle Ford dry gas producer **Laredo Energy**.

"Kimmeridge ownership of Laredo, a company that operates directly south of SilverBow, raises many questions about the next steps in this escalating situation," he said. "We know that Kimmeridge and SilverBow both believe in the value of scale, but it remains unclear if the two parties can and/or want to combine these two companies, and what form that could take."

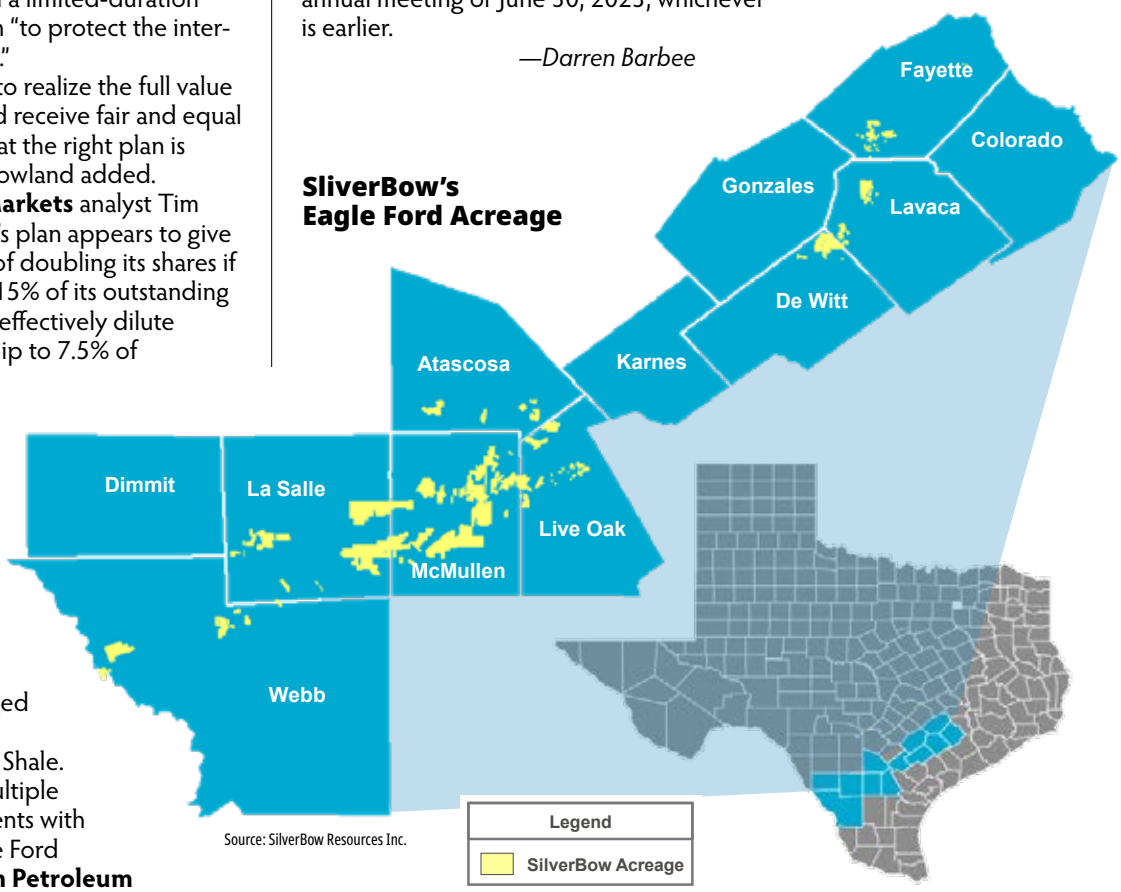
SilverBow has remained active in the A&D market. The company announced in mid-September the acquisition of a new position in the Eagle Ford's dry-gas Dorado play in a series of transactions totaling $50 million.

Johnson Rice & Co. analysts said shareholder rights plans are typically not welcomed by the equity market in the short term, despite the stated design to protect value for all shareholders.

SilverBow's rights plan will expire at the next annual meeting or June 30, 2023, whichever is earlier.

—Darren Barbee

SliverBow's Eagle Ford Acreage



Source: SilverBow Resources Inc.

TAMARACK VALLEY ENERGY TO ACQUIRE PRIVATE PRODUCER FOR CA$1.4 BILLION

Tamarack Valley Energy Ltd. agreed on Sept. 12 to acquire **Deltastream Energy Corp.**, a privately held pure-play Clearwater oil producer, for total net consideration of CA$1.425 billion.

"The acquisition of Deltastream solidifies Tamarack as the largest producer in the Clearwater oil fairway. This transaction builds on the company's core position in Clearwater, which is recognized as North America's most economic play," said Brian Schmidt, president and CEO of Tamarack.

Separately on Sept. 12, **Topaz Energy Corp.** said it will buy a newly created 5% gross overriding royalty on all current and future oil production from Deltastream's entire Clearwater acreage for total cash consideration of CA$265.3 million. Topaz has a strategic relationship with Tourmaline, according to its release.

The acquisition of Deltastream, which is backed by **ARC Financial**, adds an additional 184 net sections of core Clearwater acreage in Alberta at Marten Hills, Nipisi and Canal to Tamarack's portfolio. The company plans to boost output of the acquired assets by 18% to 23,000 boe/d next year.

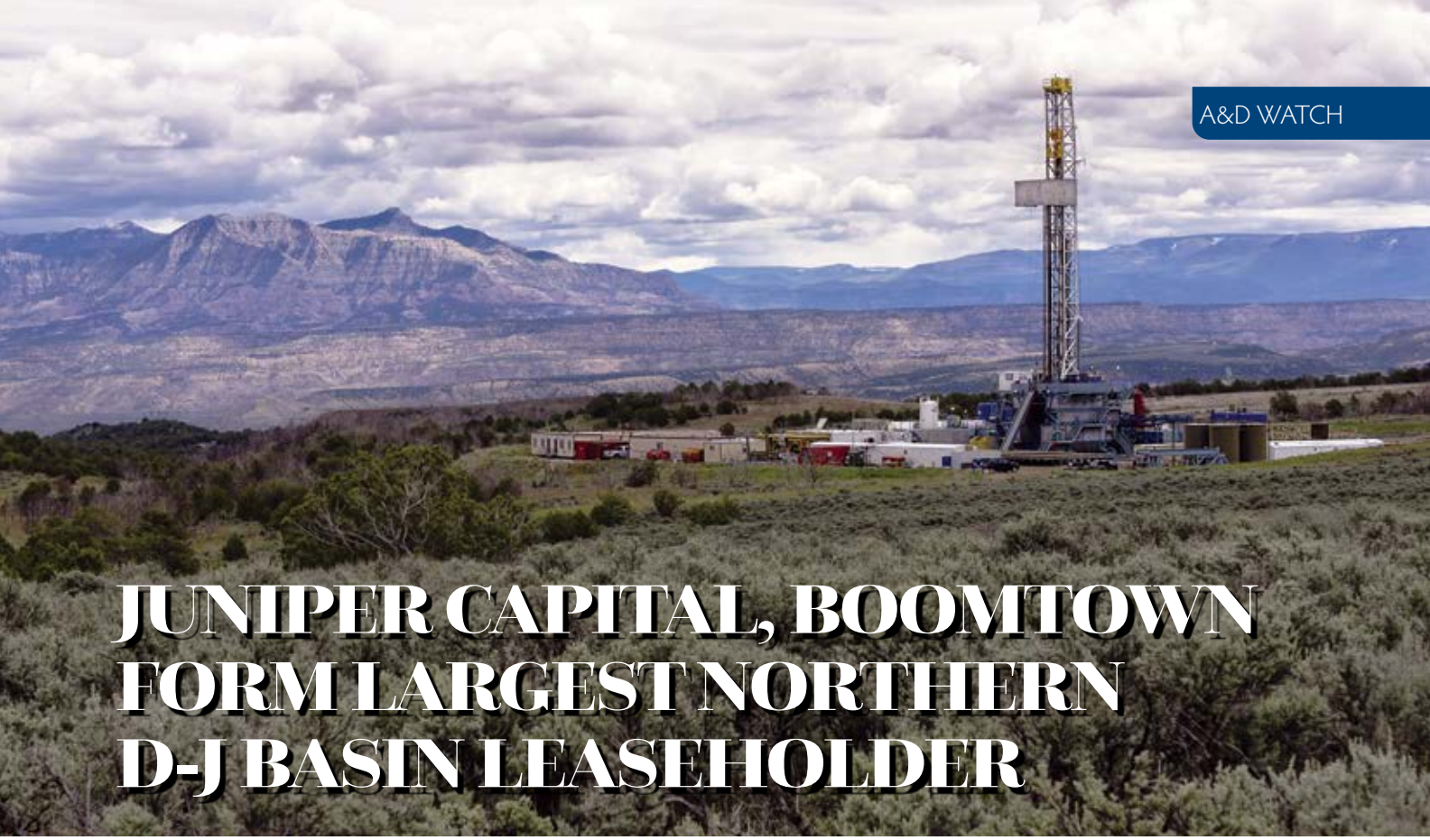
"ARC Financial is excited to be a shareholder in Tamarack and participate in value creation from the company's Clearwater, Charlie Lake and enhanced oil recovery operations," Bill Slavin, managing director at ARC Financial, said, according to the Tamarack release.

"Tamarack has a demonstrated track record of prudent balance sheet management and capital discipline and is led by a highly respected management team with extensive operational and capital markets experience," Slavin continued. "Tamarack's proactive approach to the environment, Indigenous partnerships and ethical governance is aligned with ARC's values."

Consideration for Deltastream comprises CA$825 million in cash, CA$300 million in deferred acquisition payment and CA$300 million in equity at CA$3.75 per share. The company plans to raise its annual dividend by 25% to 15 Canadian cents per share upon closing, expected before the end of October.

At closing, Tamarack will also enter into a hold period agreement with ARC Financial, who owns approximately 85% of the issued and outstanding common shares of Deltastream (on a non-diluted basis). Of the Tamarack shares issued to ARC Financial, 50% will be subject to a six-month escrow period and 50% of the shares will be subject to a 12-month escrow period.

—Hart Energy Staff



JUNIPER CAPITAL, BOOMTOWN FORM LARGEST NORTHERN D-J BASIN LEASEHOLDER

Juniper Capital and **Boomtown Oil & Gas Co.** recently formed **North Peak Oil & Gas LLC**, the largest leaseholder in the Wyoming Denver-Julesburg (D-J) Basin.

The formation of North Peak was made through the combination of **North Silo Resources** and **Longs Peak Resources**, two existing Juniper Capital portfolio entities that were also jointly owned by Boomtown Oil & Gas, according to a release on Sept. 6.

"The benefits of this consolidation into North Peak are very compelling, and we believe North Peak is one of the strongest private oil and gas companies in the U.S.," Sean Fitzgerald, co-founder and partner of Boomtown Oil & Gas who also serves as North Peak co-president, commented in the release.

North Peak also acquired assets from a private oil and gas company that were complimentary as part of its formation. Terms of the transactions weren't disclosed.

With roughly 150,000 net acres and over 11,000 boe/d of production, North Peak Oil & Gas is the largest leaseholder in the northern D-J Basin, according to the release.

North Peak is currently producing over 10,000 bbl/d of gross operated oil production, generating substantial operational cash flow. The company is also scheduled to begin a drilling program in September, which is expected to substantially grow future production.

"We remain steadfast in our disciplined approach to running the business, and we continue to be committed to maximizing returns for investors and protecting the health, safety, and environment of our local communities," Fitzgerald added in the Sept. 6 release. "We look forward to demonstrating compelling results from our planned development program, which is scheduled to begin in the next few weeks."

North Silo Resources was the largest leaseholder in Laramie County, Wyo. Meanwhile, Longs Peak Resources operated in Weld County, Colo., in addition to Laramie County, Wyo.

Combined, the company has "many years of high-quality inventory," with oil reserves per well in-line with Permian Basin and Eagle Ford wells, and some of the lowest drilling and completion costs for long lateral horizontal wells in the U.S., according to the company release.

"Based on its strong operational cash flow, low costs, and attractive well-level economics with years of inventory, we believe North Peak represents one of the most attractive opportunities we have seen," said Edward Geiser, managing partner of Juniper Capital, who noted Juniper also owns assets in the Permian, Eagle Ford and other major basins and regularly reviews oil and gas investment prospects.

Juniper Capital is an energy investment firm based in Houston with over $1.3 billion of cumulative equity commitments and current investments in the Permian Basin, Eagle Ford trend area, D-J Basin and Powder River Basin.

Boomtown Oil is a privately-owned E&P company based in Houston focused on being a value-added partner with landowners, joint-venture members, financial sponsors or service providers.

"We are proud to continue our partnership with Boomtown in this area, and we are excited about what the future holds for North Peak," Geiser added.

—Hart Energy Staff

CHEVRON SHOPS DELAWARE BASIN ACREAGE VALUED AT UP TO $500 MILLION

Chevron Corp. has put up for sale all of its southeast Gomez Field acreage in the Delaware Basin—a 22,124 contiguous net-acre position that could fetch between $100 million and $500 million, according to **Enverus** estimates.

EnergyNet Indigo, which is handling the sale as financial adviser to Chevron USA and its affiliates, said Sept. 29 that the company will shortly launch a process for Chevron's northwest Gomez Field, which would effectively double the acreage footprint for the Pecos County, Texas, opportunity.

The asset's estimated January 2023 PDP average daily production is about 1,280 boe, EnergyNet said. The asset includes gas infrastructure with takeaway capacity for a full development plan. Next 12-month PDP cash flow is expected to be $7.6 million, the firm said.

Andrew Dittmar, director at **Enverus Intelligence Research**, a subsidiary of Enverus, said bid-ask spreads remain "just brutal" but that, like any seller, Chevron "just needs that one buyer that likes it."

It is hard to get paid for inventory right now, even good inventory," Dittmar said, noting that inventory-heavy Permian assets are now in competition between largely PDP assets found in other basins such as the Williston or the Eagle Ford Shale.

"It's hard to say" what buyers will be willing to pay for the asset.

Offset operators include **Diamondback Energy Inc.**, which has largely been quiet on the upstream A&D front in 2022, as well as private operator **Gordy Oil Co.**

EnergyNet noted in its sales listing that Chevron holds operational control of 99% of production operated with a working interest of 90% in its operated PDP wells. The firm also highlighted:

- Future development utilizes contiguous acreage position for 529-ft to 10,000-ft laterals;
- Gross Wolfcamp thickness of about 400 ft with high TOC and porosity;
- Low-decline, predictable production profile from conventional deep Ellenburger wells; and
- No MVCs or drilling commitments.

A virtual data room for the asset is open. Bids are due Nov. 9. The transaction would have a Jan. 1 effective date, according to EnergyNet.

—Darren Barbee

Read the full article here:

PERMIAN BASIN

U.S. Energy Development Corp. recently acquired three separate asset packages totaling more than $60 million in the core of the Delaware Basin in the Permian region.

The new acquisitions involve partnering with "highly regarded operators" in 17 new wells spanning a three-county area, the company said in a Sept. 13 release.

"With this expanded well count, we anticipate approximately $100 million of new production to come online by the end of the calendar year," Jordan Jayson, chairman and CEO of U.S. Energy, commented in the release.

In addition to the new project acquisitions announced on Sept. 13, U.S. Energy said it expects to acquire an additional $400 million to $500 million in assets on behalf of itself and its partners across multiple basins over the next 18 to 24 months.

U.S. Energy is active in all major U.S. basins and currently maintains approximately 300,000 gross acres HBP for potential future oil and natural gas development. The firm's current operations include the Permian Basin in West Texas and southeastern New Mexico, the Powder River Basin in Wyoming and the Eagle Ford Shale in South Texas, according to the U.S. Energy website.

EAGLE FORD

SilverBow Resources Inc. acquired a new position in the dry gas Dorado play, which the Eagle Ford Shale producer said was made through a series of transactions totaling $50 million.

"We are excited to announce our new position in the Dorado play, which we assembled by leveraging our long-standing relationships in the area and our basin-specific expertise," commented SilverBow CEO Sean Woolverton in a company release on Sept. 15.

The Houston-based company assembled the 7,500 net-acre position in Webb County, Texas, through a series of transactions, including bolt-on acquisitions, leasing and drill-to-earn agreements. According to the company, approximately $40 million of the total $50 million was incurred during the third quarter.

The new position doubles SilverBow's current Webb County acreage, which now totals 15,000 acres with an estimated drilling inventory exceeding 200 gross locations. Woolverton said this represents approximately eight years of development at a one-rig pace.

"Our current plan is to run a contiguous rig to develop the inventory as we ramp our gas production into a very favorable price environment," he said.

The new position in Webb County has similar reservoir characteristics

and economics as SilverBow's prolific Fasken position, also located in Webb, Woolverton said in the Sept. 15 release.

"This new area closely resembles the reservoir quality of our prolific Fasken asset, and aligns with our strategy of adding scale in core areas and bolstering our Austin Chalk and Eagle Ford inventory," he said.

SilverBow estimates a net recoverable resource of approximately 650 Bcf from the new block in Webb County. Current net production is approximately 30 MMcf/d.

The new block adds stacked pay and co-development inventory with over 50 net drilling locations across the Austin Chalk and Eagle Ford formations described by the company as high rate of return.

SilverBow already drilled one Eagle Ford well and one Austin Chalk well on the new acreage, both of which were brought online in late July. Gross production from the Eagle Ford well is 13 MMcf/d, and the Austin Chalk well is producing 17 MMcf/d gross.

EAGLE FORD

Devon Energy Corp. completed the acquisition of Eagle Ford operator **Validus Energy** for $1.8 billion cash, the company announced in a press statement on Sept. 28.

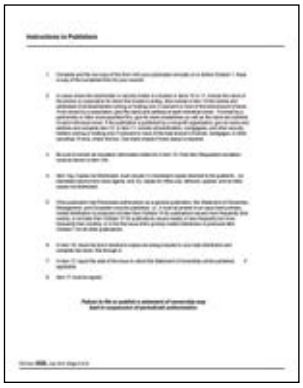
Previously announced on Aug. 9, the acquisition will include 42,000 net acres in the Eagle Ford shale with a 90% working interest. The acquired assets currently yield 35,000 boe/d and are anticipated to increase production to approximately 40,000 boe/d over the next year.

Effective June 1, 2022, the bolt-on will bring Devon's total acreage in the Eagle Ford to 82,000 net acres while increasing its expected annual production to 73,000 boe/d.

In addition, the position adds 350 repeatable drilling locations and 150 high-quality refrac candidates within the Karnes Trough, allowing Devon to sustain its free cash flow generation high-margin production for several years, according to the company.

"The Validus acquisition captures a top-tier oil resource with a meaningful runway of highly economic inventory that is complementary to our existing footprint in the Eagle Ford," president and CEO Rick Muncrief said in an August press announcement. "This accretive transaction also enhances our financially-driven strategy that is designed to deliver per-share financial growth and accelerate the return of capital to our shareholders."

The Validus acquisition marks Devon's second completed transaction since July, with its $865 million cash Williston Basin bolt-on acquisition of **RimRock Oil & Gas LP** closing on July 21.



TRANSACTION HIGHLIGHTS

MONTNEY SHALE

Hammerhead Resources Inc., a Canadian oil and gas producer backed by **Riverstone Holdings LLC**, plans to list on the NASDAQ by merging with a blank-check company also sponsored by Riverstone, the companies said in a joint release on Sept. 26.

The blank-check company, **Decarbonization Plus Acquisition Corp. IV** (DRCD), marks the fourth Riverstone-sponsored special purpose acquisition company (SPAC) focused on global decarbonization to transact. Further, the merger agreement with Hammerhead also marks the first oil and gas transaction by the firm's decarbonization SPAC vehicles.

Jim McDermott, DCRD's lead independent director and a member of the special committee of DCRD's board of directors, is the founder and CEO of **Rusheen Capital Management**, where he spent nearly two decades advancing the private equity firm's net-zero investment strategy by addressing emissions as the centerpiece of sustainability.

In a statement on Sept. 26, McDermott said he believes the world must scale zero- or low-carbon replacements to fossil fuels quickly.

"However," he added, "I also believe global political stability and growth is unlikely to occur without fossil fuels in the next two decades, if not longer. Rather than rejecting emitting categories from the table of net-zero pathways, we should engage them as partners in the energy transformation."

The transaction, which values Hammerhead at CA$1.39 billion, is expected to form a publicly traded upstream oil and gas company with a path toward achieving net-zero emissions on a Scope 1 and Scope 2 basis by 2030.

Based in Calgary, Alberta, Hammerhead's asset base comprised approximately 111,000 net acres and 146 gross producing wells within the light oil window of the Alberta Montney. Additionally, the company has also already embarked on a decarbonization investment campaign across its asset base with its carbon capture and sequestration (CCS) program, according to the joint release.

The combined company will continue to be managed by Hammerhead's current executive team, led by CEO Scott Sobie. Formerly known as **Canadian International Oil Corp.**, Hammerhead was formed in 2009 and has over 85 employees as of Sept. 1.

The pre-money enterprise value of the combined company is CA$1,390 million at a price of $10 per share, according to the joint release.

The transaction is anticipated to generate gross proceeds of approximately $320 million, assuming minimal redemptions. The funds will be used to accelerate Hammerhead's CCS program. Hammerhead's CCS program is estimated to require approximately CA$240 million of capital between 2023 and 2029.

The business combination transaction was unanimously recommended and approved by the special committees and boards of directors of both Hammerhead and DCRD. It remains subject to the approval of DCRD and Hammerhead's shareholders and the satisfaction or waiver of other customary conditions.

Upon closing of the transaction, the combined company is expected to be listed on the Nasdaq Capital Market and trade under the ticker symbol "HHRS." Closing of the transaction is expected to occur in the first quarter of 2023.

Hammerhead is currently majority-owned and controlled by affiliates of Riverstone Holdings. DCRD is also sponsored by an affiliate of Riverstone.

CIBC Capital Markets and **Peters & Co. Ltd.** are acting as financial and capital markets advisers to Hammerhead. **National Bank Financial Inc.** and **ATB Financial** are acting as strategic advisers to Hammerhead. **Burnet Duckworth & Palmer LLP (CA)** and **Paul, Weiss, Rifkind, Wharton & Garrison LLP (U.S.)** are acting as counsel to Hammerhead. **Blake, Cassels & Graydon LLP** acted as counsel to the special committee of the Hammerhead board of directors. **Vinson & Elkins LLP (U.S.)**, **Walkers (Cayman Islands)** and **Bennett Jones LLP (CA)** are acting as counsel to DCRD, and **Maples Group** is acting as counsel to the special committee of DCRD's board of directors.

THE FED'S FIGHT AGAINST INFLATION

RYAN DUSEK
OPPORTUNE LLP

Ryan Dusek is a director in the commodity risk advisory group at Opportune LLP. His industry experience includes commodity trading, risk management, supply chain optimization and derivative valuation.

Market Watchers

How quickly things have changed. Just a year ago, the Federal Open Market Committee (FOMC) gave a picturesque view of the economy. Any inflation was transitory and would likely fall to 2% in 2022. The federal funds rate would remain lower longer with little chance of a recession.

At that same time, we had a different point of view. Given the weak U.S. dollar, cheap money and the U.S. Federal Reserve's (Fed) oversized balance sheet, it was inevitable that inflation would occur.

Now, with the highest inflation rate since the early 1980s, the FOMC is playing catch up with one of the fastest Fed funds rate increases on record. On Sept. 21, 2022, the Fed raised its interest rate by 75 basis points for the third time this year from 3% to 3.25% range and signaled more large increases to come.

This rapid increase in interest rates will have consequences. The U.S. dollar currency index (DXY) has continued to strengthen. A stronger U.S. dollar makes dollar-denominated commodities like U.S. benchmark WTI crude oil relatively more expensive for holders of other currencies. That being said, U.S. corporations not actively hedging their foreign currency exposure will take a hit in earnings. After continued periods of steady U.S. dollar decline, this recent interest rate shock is being felt around the world. This new market will test companies' assumptions about their forex portfolio, another area that equity and debt investors will need to monitor.

With the focus shifted to the FOMC, crude oil demand destruction has taken center stage. Inversion of the yield curve (two-year treasury trading higher than 10-year) is a strong indicator of a looming recession.

Economic growth has slowed more than estimated and the equity markets continue to struggle with the broader S&P index down 24% year-to-date. Given the FOMC's guidance for higher rates over the next four years, we're barely in the second inning of this game.

Although demand destruction is real, the larger issues reside on the supply side. Fundamentally, the energy complex has been under attack. Between politicians wagging fingers and blaming CEOs for higher oil and gas prices and new ESG initiatives impeding new fossil fuel development, U.S. crude production is waning and will likely be slow to respond to any type of supply shortage.

Major headwinds include:

- **Government spending programs**—The deceptively named "Inflation Reduction Act" only adds fuel to the fire. Chasing a carbon-free agenda is expensive and results in higher costs with less reliability. Additionally, providing more stimulus to an already inflated economy will not end well.
- **Restrictive fossil fuel energy policies**—In addition to higher costs, replacing fossil fuels with renewables without established infrastructure creates storage, transmission and reliability issues, especially in geographies where it's needed most (e.g., rural America).
- **Strategic Petroleum Reserve (SPR)**—Depleting the SPR with the largest reserve draws in history is a sure sign that the Biden administration is ignoring the supply side issues.
- **ESG initiatives**—With increased investor and activist pressure to inject ESG programs into their energy portfolios and investments, we're also limiting supply by avoiding and encouraging less investment into new fossil fuel projects.

At the end of the day, this anti-fossil fuel environment will only exacerbate the diminishing crude supply and continue to promote higher energy prices. Although the stronger U.S. dollar has started to impact the price of crude, I believe we're closer to the bottom than the top. With crude prices trading as low as $78/bbl on Sept. 23, the market is primed for a very bullish run. Tight supply coupled with heightened geopolitical tensions concerning the Russia-Ukraine war will likely drive WTI crude oil prices to new highs around $180/bbl.

The scariest part is I don't believe the industry has seen peak inflation. By my calculation, the current 8.5% inflation rate will be at least doubled. With a target DXY of 120, we should ultimately peak well above 20%. The highest prices are still on the way. With winter approaching and energy costs expected to double, keeping warm could be an expensive proposition. OGJ

NEW FINANCINGS

EQUITY

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
EQT Corp.	NYSE: EQT	Pittsburgh	$5,200	Entered an agreement to purchase **THQ Appalachia I LLC**'s upstream assets and **THQ-XcL Holdings I LLC**'s gathering and processing assets effective July 1. $2.6 billion will be funded in cash and approximately $2.6 billion in common stock. **Royal Bank of Canada**, **Mizuho Bank Ltd.** and **PNC Bank National Association** jointly committed $2.5 billion in financing in connection with the transaction. Post effective date purchase price adjustments will be split 50:50 against the cash and equity consideration and are expected to result in a total purchase price reduction of approximately $300 million to $400 million at closing. **RBC Capital Markets** was financial advisor, and **Kirkland & Ellis LLP** was legal counsel to EQT.
Crescent Energy	NYSE: CRGY	Houston	$3,300	Expanded revolving credit facility borrowing base to $2 billion from $1.8 billion with a flat elected commitment amount of $1.3 billion. Extended credit facility by 28 months through September 2027 with no near-term maturities. Decreased interest rate margin for amounts outstanding on credit facility by 50 bps. Amendments were approved by 11 member banks.
Silver Hill Energy Partners	N/A	Dallas	$1,020	Closed on **Silver Hill Energy Partners III LP**, its third partnership and first institutional private equity fund. Will focus on the direct acquisition and development of U.S. operated onshore oil, natural gas and infrastructure assets. **Aviditi Financial LLC** served as placement agent, and **Shearman & Sterling LLP** served as legal counsel.
Trace Midstream II	N/A	Houston	$400	Secured equity commitment to form company from **Quantum Energy Partners**. Company will develop carbon capture and sequestration assets and support North American midstream infrastructure.
Crestwood	NYSE: CEQP	Houston	$306.7	Announced pricing of underwritten secondary offering of certain **Chord Energy Corp.** subsidiaries. Offer consists of an aggregate of 11.4 million common units representing limited partner interests of Crestwood resulting in total gross proceeds to the selling unitholders of approximately $306.7 million. Entered common unit repurchase agreement with one selling unitholder that intends to repurchase up to an aggregate of $125 million of common units from the selling unitholder. **Citigroup** served as sole bookrunning manager for the offering.
Evolution Petroleum	NYSE: EPM	Houston	$25	Declared increased quarterly cash dividend of $0.12 per common share for first quarter of the 2023 fiscal year and announced share repurchase program. Dividend was paid Sept. 30, 2022, to common stockholders of record on Sept. 21, 2022. Through share repurchase program, the company intends to fund repurchases from working capital and cash provided by operating activities.
Grey Rock Investment Partners	N/A	Dallas	N/A	Invested in **Rebellion Energy Solutions** and will fund additional company growth. Rebellion will use the committed capital to reduce methane emissions and mitigate the environmental impact from legacy oil and gas wells. The company operates with a strategic approach to quantifying and diminishing the negative environmental impact of nonproducing oil and gas wells by properly and efficiently decommissioning them and restoring impacted lands.
Outfitter Energy Capital	N/A	Houston	N/A	Closed on a new fund to purchase a portfolio of U.S. shale assets from affiliated funds. Fund closing backed by funds from **LSV Advisors LLC** to provide company investment opportunities in an established upstream oil and gas portfolio. Fund will focus on ongoing development activities in Marcellus, Oklahoma, Wyoming and East Texas Cotton Valley locations.

DEBT

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
EQT Corp.	NYSE: EQT	Pittsburgh	$1,000	Announced underwritten public offering in aggregate principal amount of senior notes consisting of $500 million in aggregate principal amount of its 5.678% senior notes due 2025 and $500 million in aggregate principal amount of its 5.7% senior notes. Notes are due in 2028, and offering will close Oct. 4, 2022. Offering proceeds will be used to fund the cash consideration relating to its previously announced acquisition of all of the issued and outstanding membership interests of each of **THQ Appalachia I LLC** and **THQ-XcL Holdings I LLC**. **RBC Capital Markets**, **Mizuho Securities USA LLC** and **PNC Capital Markets LLC** served as joint bookrunning managers and underwriters.
Ranger Oil	NASDAQ: ROCC	Houston	$950	Increased borrowing base for revolving credit facility by 25%, the third increase year-to-date totaling 60%. Increase is consistent with the company's commitment to maintain robust liquidity while executing plans to profitably grow, capture accretive acquisitions and return significant cash to shareholders. Held $400 million in senior unsecured notes and approximately $192 million on revolving credit facility as of Sept. 26, 2022.
Coterra Energy Inc.	NYSE: CTRA	Houston	$705.495	Issued notices of redemption with respect to its 4.375% senior notes, which are due in 2024, and **Cimarex Energy Co.**'s 4.375% senior notes due 2024. Redemption price for each series of notes will be equal to the greater of 100% of the principal amount thereof and the "make-whole" redemption premium specified in the respective indenture governing such series of notes. In the case of either series of notes, accrued and unpaid interest to the respective redemption date for each series of notes.

Scan to see the New Financings database.

Company	Exchange/ Symbol	Headquarters	Amount ($MM)	Comments
CNX Resources Corp.	NYSE: CNX	Pittsburgh	$500	Closed private placement of aggregate principal amount of 7.375% senior notes, which are due in 2031. Sale net proceeds will go toward general corporate purposes, as well as purchasing up to $350 million aggregate principal amount of its outstanding 7.25% senior notes, due 2027, pursuant to the tender offer that commenced concurrently with the offering of the notes to repay borrowings under the revolving credit facility.
CNX Resources Corp.	NYSE: CNX	Pittsburgh	$350	Commenced cash tender offer to purchase up to half the aggregate principal amount of $7 million amount outstanding of 7.25% senior notes due 2027. Offer expired Oct. 7, 2022, at 5 p.m. EST, with tendered notes able to be withdrawn any time before Sept. 23, 2022, at 5 p.m. EST. **Citigroup Global Markets Inc.** served as dealer manager for the offer.
HighPeak Energy	NASDAQ: HPK	Fort Worth, Texas	$85	Closed an aggregate private placement of 3.9 million newly issued common stock shares valued at $21.61 per share. Proceeds will go toward general corporate purposes. CEO Jack Hightower purchased 462,749 shares, while additional management team members purchased 220,969 shares, and the John Paul DeJoria Family Trust purchased 2,313,744 shares. Initial private placement closing occurred on Aug. 22, 2022, with subsequent closings occurring through Sept. 2, 2022.
Tellurian Inc.	NYSE: TELL	Houston	N/A	Withdrew its proposed public offering on unites consisting of 11.25% senior secured notes due 2027, as well as warrants to purchase shares of company common stock.

HARTENERGY
presents

25 INFLUENTIAL WOMEN IN ENERGY

Meet the Influential Women in Energy for 2023

NETWORKING LUNCHEON

February 7, 2023
10:30 AM - 2:00 PM
Hilton America's - Houston

Now in its sixth year, the 25 Influential Women in Energy awards luncheon has quickly established itself as the blue ribbon awards program for women in the energy sector.

Hart Energy's Oil and Gas Investor holds its 2023 Women in Energy luncheon on February 7th at the Hilton Americas- Houston downtown. The gala lunch will showcase the accomplishments of 25 distinguished women who have influenced all aspects of the oil and gas industry, rising to the top of the industry.

Mark your calendar and join us as we raise a glass and toast these amazing women.

HARTENERGY
Oil and Gas Investor

REGISTER HERE

NICK PHOTOWORLD/SHUTTERSTOCK.COM

VACA MUERTA HEADWINDS

The Baker Institute for Public Policy political science fellow Mark P. Jones speaks about the headwinds confronting oil and gas investors eyeing shale opportunities in Argentina's massive Vaca Muerta Formation.

INTERVIEW BY

PIETRO D. PITTS

@PietroDPitts

pdpitts@hartenergy.com

Argentina is home to the Vaca Muerta Formation, the most developed unconventional play in the Americas outside the U.S.

The South American country's technically recoverable shale gas resources are estimated at 802 Tcf, while China has 1,115 Tcf, according to the U.S. Energy Information Administration. Argentina also boasts a technically recoverable shale oil resource of 27 Bbbl, the agency added.

But despite this massive subsurface resource base and potential to develop a thriving LNG export business, economic and political issues seemingly always brewing above ground remain formidable headwinds for foreign and domestic investors.

Hart Energy senior reporter Pietro Donatello Pitts spoke briefly with Mark P. Jones, the Joseph D. Jamail chair in Latin American studies at Rice University in Houston, about some of the above headwinds investors confront in Argentina. Jones is a professor in the Department of Political Science, the James A. Baker III Institute for Public Policy's political science fellow and the faculty director of the Master of Global Affairs program.

Pietro D. Pitts: ***Are oil and gas companies still interested in Argentina's Vaca Muerta shale play despite the ongoing economic and political uncertainties?***

Mark P. Jones: Argentina is a country that in oil and natural gas has tremendous potential. So, it's tough to overstate the potential that the Vaca Muerta has.

The problem of getting the natural gas in particular to market has always been above ground in terms of regulatory and transportation infrastructure as well as having the logistics to take full advantage of the gas in terms of the petrochemical industry and LNG.

All the major companies want to keep a foot in Argentina because the Vaca Muerta is simply too important of a resource to not have a presence in. The difficulty has simply been the Argentine government creating aboveground risks such that companies either are reluctant to make deeper investments that might cause them to have fixed assets that make them vulnerable to an implicit or explicit expropriation or to make investments where they don't have the ability to get their oil and gas to a foreign market where they can get a real return on their investment.

PDP: ***What's missing for Argentina to move forward as an LNG exporter?***

MPJ: They need two big things. One is the new gas pipeline, the Gasoducto Néstor Kirchner. That will help things quite a bit and resolve the twin problems. First, it will allow Argentina to use domestic gas instead of importing it, which will save billions in terms of foreign currency. Second, during the austral summer and boreal winter, it will provide Argentina with the potential to export LNG to Europe and elsewhere.

Although the problem with that is who's going to build the LNG plant. [Apart from that], in the U.S., we've built several LNG plants from the Beaumont/Lake Charles area down to Corpus Christi, so we have experience and [know] it takes a long time here in the United States. And anything that takes a long time in the United States can take double that amount of time in an environment like Argentina.

"One of the dangers for Argentina is that at some point the window on LNG is going to close as a fuel."

—Mark P. Jones,
Baker Institute for Public Policy

I think one of the dangers for Argentina is that at some point the window on LNG is going to close as a fuel. You may start to have some countries or companies be reluctant to make an investment in an LNG plant that won't become operational for two to four years and may not essentially pay for itself for another 10 years because you're trying to predict gas demand in the world in 2035.

PDP: ***What about the opportunity to export Argentine gas to Chile and then use the existing plants there to build out liquefaction capacity?***
MPJ: That's an option, but the difficulty there, [even though] you don't run the risk of your LNG plant being expropriated, is the risk of the gas being turned off, and that's what the Chileans experienced during the late 2000s. The Chileans built their entire energy matrix based on cheap natural gas from Argentina, and then the Argentines slowly but surely turned off all the gas.

PDP: ***So even if you did make the investments in Chile, there's still a lot of risk?***
MPJ: Yes, as you're just still depending on Argentine gas at the end of the day. Let's say I built that gas plant in Chile, the Argentines can't expropriate so it can't be an explicit expropriation, but implicitly they can say, "Yes, we'll sell you gas, but we're only going to sell it to you at a price say, for instance, of $15/MMBtu." So the fear is you can't trust any contracts, and the only way I think the LNG plant in Argentina gets built is the same way the pipeline gets built and that is by the government.

PDP: ***If we have to rely on the Argentine government, which is seemingly always confronting financial and economic headwinds, the long-term LNG exporting options is something that might never materialize, right?***
MPJ: Right, especially because we're about to hit the bewitching period where—even with the Gasoducto Néstor Kirchner—[whereby] if the government doesn't think they can get it operational by the next Argentine winter or the spring before the election, then at some point they may just pull the plug. Why spend money or scarce hard currency on a pipeline that's only going to benefit your successor, which is likely going to be an opposition politician like Horacio Rodríguez Larreta, Patricia Bullrich or Mauricio Macri?

So, that's where the country could get even further behind the eight ball because no real progress would be made regarding the pipeline. It's only when the new government takes control that we're able to focus back on it, but that means redoing all the contracts and then you've lost another couple of years. Even then, you can't even really start to think about building an LNG plant until you actually have that pipeline operational.

PDP: ***LNG exports from Argentina are still not really promised any time soon?***
MPJ: No, and I think the fear for Argentina as a country is that at some point the global demand for gas is going to start to plummet. And they may hit a point in the not-too-distant future where there is no LNG market anymore because a sufficient number of countries have gone to renewables. And, as a result, the gas market is satisfied by the Permian and other existing sources for the most part. OGI

SOBREVOLANDO PATAGONIA/SHUTTERSTOCK.COM

ARGENTINA OFFICIALS BOAST VACA MUERTA'S POTENTIAL

Argentina's Neuquen Province governor, Omar Gutierrez, says that more investment, development and infrastructure expansion are needed to boost production in the country's prolific Vaca Muerta shale formation.

ARTICLE BY

PIETRO D. PITTS

@PietroDPitts

pdpitts@hartenergy.com

Argentina's sleeping giant shale formation, the Vaca Muerta or 'Dead Cow,' in the country's Neuquen Province, is on par with the U.S. Permian Basin and Haynesville Shale in terms of resources. Still, its development and production lag amid numerous persistent headwinds.

Activity in Neuquen is at an all-time high, but growth will stall without incremental rigs, Rystad Energy head of shale well research Alexandre Ramos-Peon told about 160 attendees Sept. 29 at the Vaca Muerta Shale Day in Houston, which was hosted by the Instituto Argentino del Petróleo y del Gas (IAPG).

Ramos-Peon highlighted problems owing to a lack of available equipment while saying that frac fleet availability was "a massive bottleneck" with activity levels still extremely low. Other headwinds confronting development of the Vaca Muerta Formation include a lack of gas takeaway capacity due to Argentina's major pipelines operating near maximum capacity, the executive added.

Executives from Shell Argentina, Chevron Corp., TotalEnergies SE and Exxon Mobil Corp. highlighted some investment fears and headwinds their companies confront in Argentina during an operators panel discussion.

Companies in Argentina "need a competitive and stable regulatory framework … and access to foreign currency," Shell Argentina country manager Ricardo Rodriguez said during the event. "Vaca Muerta will not be completely developed without solving some of these issues," said Rodriguez, who recently replaced outgoing country manager Sean Rooney.

"Fiscal conditions ... and certainty is needed," Chevron general manager asset development Mike Maneffa said, adding that one or two pipelines will not resolve all the infrastructure issues.

TotalEnergies technical director of Total Austral operations Joaquin Lo Cane said "clear and sustainable rules" were needed as well as reasonable selling prices, while Exxon Mobil development manager Bakken, Argentina and Central U.S. Tabitha Hensley said "more foreign exchange and macro-economic predictability was needed."

> "Just 8% of the Vaca Muerta is undergoing industrial development ... and to reach the 2030 goals we'll need to reach 25%."
>
> —Neuquen Province Gov. Omar Gutierrez

Vaca Muerta potential

Argentina is home to technically recoverable shale gas resources estimated at 802 Tcf, according to the U.S. Energy Information Administration (EIA), which continues to draw the attention of investors. China is home to the largest accumulation of technically recoverable shale gas resources with a whopping 1,115 Tcf.

The Vaca Muerta Formation is home to recoverable resources of 308 Tcf, according to the EIA, putting it on par with the U.S. Permian Basin and

Haynesville, which hold around 297 Tcf and 304 Tcf, respectively, according to Rystad data.

The shale formation is located in Argentina's Neuquen Basin and far from the country's main consumption centers such as Buenos Aires. In terms of technically recoverable shale resources, the formation holds 53% of the basin's resources as well as 38% of the country's resources, according to the EIA.

Looking ahead, Neuquen's average oil production is expected to reach 750,000 bbl/d in 2030 compared to 380,000 bbl/d in 2022, while gas production is expected to reach 5 Bcf/d compared to 3.3 Bcf/d, according to Argentine company Tecpetrol.

Despite the resource comparisons and projections, development of the Vaca Muerta has progressed at a seemingly very slow pace while production is still far from its projected potential.

The government of Argentina continues to move forward with efforts and agreements to accelerate development of the Vaca Muerta by attracting investors and expanding infrastructure capacity such as the Gasoducto Néstor Kirchner, Neuquen Province Gov. Omar Gutierrez said during the event.

This year Argentina's energy-related commercial balance deficit of $8 billion would have been $14 billion … Vaca Muerta generated $2 billion in exports and savings of $4 billion from the substitution of LNG imports through 22 cargoes versus 52 cargoes, the Neuquen Province official said.

The Vaca Muerta Formation is home to recoverable resources of 308 Tcf, putting it on par with the U.S. Permian Basin and Haynesville.

"Just 8% of the Vaca Muerta is undergoing industrial development … and to reach the 2030 goals we'll need to reach 25%," Gutierrez said as he paced the floor and answered questions. "With investments in production … Argentina at the hands of Vaca Muerta will achieve energy auto-sufficiency in 2024," the executive said. OGJ

ECOverse™

EcoVerse™ is our versatile family of environmentally friendly pressure pumping technologies designed to reduce emissions and fuel consumption and improve ESG performance.

ECOplus™

Dual fuel equipment capable of instantaneous substitution up to 85%

ECOstart™

Fully automated engine idle reduction system

patenergy.com/universal

Voices

HART ENERGY GOES TO LONDON

Every year, the Energy Intelligence Forum in London brings together leaders of the largest oil and gas companies from around the world. They discuss industry trends and global events. Russia's war on Ukraine and Europe's exposure to Russian natural gas dominated much of the discussion in October. Hart Energy editors Darren Barbee and Pietro Pitts reported from the ground on how industry giants view the winter that is coming to Europe.

"Gas is not a transition fuel. It's a destination fuel."

—**Saad Sherida Al-Kaabi**, *president of QatarEnergy and Qatar's minister of state for energy affairs*

"What we've been able to do together in the Midland Basin was something I didn't think we could do. The wells are better than [Oxy and Ecopetrol] expected, and the development's been positive for both of us."

—*Vicki Hollub*, *CEO, Oxy*

Scan to read more

"Gas in Europe is the ground zero of the energy challenge at the moment."

—**Ben van Beurden**, *CEO, Shell Plc*

"The world should be worried because there is not going to be any buffer for any hiccup, any interruption, any unforeseen event anywhere in the world."

—*Amin Nasser, president and CEO, Saudi Aramco*

"We've been in [Venezuela] for over 100 years and we have employees there, and we're committed to our employees and the communities where we operate."

—*Clay Neff, president/international E&P, Chevron Corp.*

HARTENERGY.COM

LISTENING TO RYAN LANCE

The E&P leader at the helm of ConocoPhillips Co. has worked with peers and governments throughout the world. On the energy future, he says, "It's really going to take 'all the above.'"

Overseeing interests that span the globe from the U.S. to the North Sea, Australia, Qatar and Asia, ConocoPhillips Co. chairman and CEO Ryan Lance knows where the hydrocarbon resources and demand are—and where infrastructure is woefully short.

Among the leading E&P's many moves in the past year, it added resources in the Permian Basin, signed on for more LNG capacity in the U.S. and abroad and moved its exploration emphasis to existing properties—exiting Argentina, for example.

In the Permian, where it was producing 634,000 bbl/d in the second quarter, Lance expects further growth.

"If you look at the Lower 48 in total, our view is growth this year will be somewhere around 800,000 bbl/d [from all producers]," Lance said. As for next year, "it probably grows that same amount," predominantly from the Permian.

The basin has several more years to go before peak production. But when the output will peak is "largely a function of commodity price," he added.

In Alaska, ConocoPhillips is also hoping to receive a permit by year-end to proceed with its Willow project on the North Slope. "That's potentially a several hundred-million-barrel resource. The peak rate would be 160,000 bbl/d."

It takes six to eight years on the Slope from permitting to development drilling to first production. "The resources are there; the issue is a lot of it's on federal land. And you can only construct during the winter. But the resource is plentiful."

Will Alaska's output ever grow again? "It's tough to say. Just mitigating the decline is quite remarkable." In the past decade, there was concern the rate of decline would make the Trans-Alaska Pipeline System no longer operable.

Lance assures all is fine. "It's well above its low-flow rate, which is what you have to worry about."

Oil and Gas Investor visited with Lance on his world view in mid-September.

Drilling ConocoPhillips' Roulette well in Reeves County, Texas, at sunset.
CONOCOPHILLIPS CO.

INTERVIEW BY

NISSA DARBONNE
EXECUTIVE EDITOR-AT-LARGE
@NissaDarbonne
ndarbonne@hartenergy.com

Nissa Darbonne: ***Your LNG interests in Qatar and Australia—what's your view of global gas demand?***
Ryan Lance: Well, we're pretty bullish, which is why we've done some of the things we did. The LNG business goes in long waves and cycles. If you just think back to 2018 and 2019, it was pretty much a buyer's market with single-digit gas prices.

A lot of capacity was coming on at the time. But the demand kept growing and the supply flattened because no new projects were being built.

Then, of course, you get this Ukrainian invasion by the Russians, which accelerated everything with regards to gas. But, even before that, we were quite constructive on demand growth—and growing dramatically.

We expect that there will be a time [of oversupply] towards the end of this decade with four [more] trains in Qatar and more liquefaction capacity in the U.S.

But demand will catch up. So we're bullish long term on gas demand.

ND: ***Word is that more global gas supply is essential to the energy transition.***
RL: It's going to take coal out of the system. Asian countries need it and, now, European countries are going to need it because of who their major gas supplier is.

Europe's going to realize that overreliance on that one gas supplier has been a problem and is going to continue to be a problem.

So all those things together were bullish for long-term LNG demand, which is what prompted us to increase our ownership in our Australian business and to bid and win additional trains in Qatar.

And it prompted our recent announcement of a nonbinding heads of agreement with Sempra Energy [in North America].

ND: ***You might make more LNG investments?***
RL: We're hopeful there's going to be more expansion trains in Qatar, and we would like to be a part of that if we can.

ND: ***With Sempra on the Port Arthur, Texas, LNG facility, you're in a different type of contract than in Qatar and Australia.***
RL: Qatar and Australia are fully integrated projects where we're an equity owner in the upstream. We're physically connecting those molecules that we're developing to a liquefaction plant that's shipping it to a customer, with whom we have a long-term—typically oil-linked—contract for 20-plus years.

In the U.S., it's more of a merchant model where gas is just taken off the grid. You're not physically connecting to a specific train the molecules that you're producing.

ND: ***Your recent Permian Basin acquisitions—Concho Resources Inc. for $9.7 billion in stock and Shell Oil's assets for $9.5 billion in cash—are part of your North American LNG plan?***
RL: When we did [these] transactions, we looked at how much [associated] gas we were going to be producing. We wanted to make sure we had access to the waterborne market [price] and not be subject to only Henry Hub prices.

So we saw this disconnect coming. It's been exacerbated by the Ukrainian

ConocoPhillips currently operates (47.5%) the LNG facility on Curtis Island in Queensland, Australia.

CONOCOPHILLIPS CO.

CONOCOPHILLIPS CO.

LNG vessels at Qatar's Ras Laffan gas terminal on the Persian Gulf Coast, loading from one of the world's largest LNG complexes and one of ConocoPhillips' key assets.

invasion, but we saw Europe and Asia as good markets [already].

We looked at all the LNG developers on the Gulf Coast, and Sempra [stood] out because they have two trains that are fully permitted at Port Arthur.

They have a site that's capable of [hosting] seven or eight trains, and they're one of the best operators in the business.

And we have an option to participate in any expansion projects.

ND: ***You're also interested in Sempra's Energia Costa Azul LNG facility on Mexico's Pacific Coast.***

RL: [With the Port Arthur deal], we got an option to acquire offtake and equity participation in Phase 2 [at ECA in Mexico]. They're going to build an expansion train that gives us West Coast access to the Asian LNG market.

Sempra is a very unique partner. Not only are they quality [operators], they had the right mix of assets that they were willing to give us expansion options if we were to take an equity in those first two trains [at Port Arthur].

So we agreed to take a 30% equity in the first two trains. And, importantly, we agreed to take about half the offtake.

So we're going to be responsible for moving 5 million tonnes into Europe and Asia [from the Gulf Coast].

ND: ***The project in Mexico, I'm seeing the gas will be sourced from the Permian and also from the Rockies.***

RL: The gas that's in the El Paso pipeline—the one that gets gas to the [U.S.] West Coast—comes from the Rockies, the San Juan Basin and the Permian. Some makes its way into northern Mexico. We have capacity on that line.

More gas is going to be required to fill those [new Sempra] trains. And that would probably come largely from the Permian because that's the only growing source.

ND: ***Is there a new price floor for U.S. gas? Maybe $5?***

RL: I'm not sure it's that, but it's tough to say. Right now, we're low on U.S. storage. The supply hasn't caught up. But it's coming. So you shouldn't be thinking about $7 or $8 gas long term.

I'm not sure if it's going to be $2.50 or $3. But $3.50, $4 or $4.50—it's probably in that range once the system kind of re-equilibrates, Europe's storage is full and the U.S. gets back to normal storage levels.

The supply is coming; it just takes a few quarters. The rigs are working in the Permian and the Haynesville. Unfortunately there's not enough pipe from the Marcellus. That's always been a problem.

But we don't expect $7 and $8 gas to persist. It's going to come back down to somewhere in [the $3.50 or $4.50] range.

ND: ***You've testified to Congress on how the oil and gas business works. Do you see any change on getting more pipe out of the Marcellus?***

RL: It's desperately needed. We're all watching what's happening in Congress.

If we can't get the pipelines built to deliver gas to [the Gulf Coast], it's going to be a tough situation. We're not going to be able to export as much as we should to help our allies. And what happens even to the domestic price of gas?

We have to get the pipelines built from the Utica, the Marcellus, the Haynesville and the Permian—both to the Gulf Coast and to the West Coast.

Exporting more to Mexico is necessary as well to make sure we get the North American system properly balanced relative to what we're trying to do with the rest of the world.

ND: ***No matter the outcome of Russia's war on Ukraine, is its commercial reputation burnt for another century?***

RL: I was in Europe [recently], talking to some of the major suppliers and consumers. My sense was Russia has

permanently damaged its reputation as a consistent and reliable supplier of both oil and gas.

ND: ***Would Europe resume Russian imports?***
RL: I think it's probably naive to believe Europe would never import more gas and oil from Russia. They probably would.

But I don't think they would ever go back to the singular reliance that Germany and some of the others had on Russia. I can't imagine that they would go back to that situation again.

So what you see happening is Germany is permitting and building regas facilities as fast as it can. They're starting up nuclear plants again. They're actually starting up coal-fired power plants in the U.K.

I think you see a recognition that diversity of energy sources is critical to your country's energy security—and, at the end of the day, to your *country's* security.

So will Russia *never* be a supplier to Europe again? I kind of doubt that. But I also think it won't be the *predominant* supplier to Europe.

ND: ***Europe had been on path to reach its climate goals.***
RL: They're quickly trying to diversify supply sources and running into "How do we do that sustainably?"

That's their real conundrum: How do they ensure their energy security at the same time they're meeting their climate commitments?

ND: ***At a higher cost of gas abroad, is there a possibility of a global financial crisis and an upset to world political order?***
RL: I think it's happening right now in Europe. While I was in Europe, a gentleman told me he has an 800-square-foot flat in London with no air conditioning—just, basically, power and cooking. His last bill was £450—for one month.

The U.K. is trying to levy super-profits taxes on producers to redistribute that money. Yet, when you put more taxes on producers, what do producers do? They cut their capital program, then there's less supply.

So you don't tax something to get more of it.

That's the real conundrum they're putting themselves in.

There are countries there that are in a recession today and their energy costs are going through the roof and their solution is to tax it and redistribute the wealth to help the consumers, which is laudable, but they're taxing the thing they want more of.

I hope the Yellow Vests of France don't come back and [spread] in Europe, but [Europe's leaders] are walking a very tight line right now to address energy security and national security and do it such that the economy doesn't get destroyed in the interim.

It's going to be very tough.

A lot will depend on the harshness of the winter. I hear stories of people cutting down trees and putting wood in their backyard to have fuel and heat for the winter. Those are pretty extreme responses to the problem that they're dealing with today.

ND: ***On the "E" of ESG, the industry appears to be doing a remarkable job on emissions abatement.***
RL: I think our industry has three things we have to fix, and they're very fixable: We've got to take care of fugitive emissions from our operations, we have to take care of flaring and we have to deal with orphaned wells.

Those are the three things this industry is working hard to do.

On flaring, we have to eliminate non-routine flaring. I think we're becoming pretty close to getting there. Some of the smaller

Infrastructure at ConocoPhillips' Battleship property in Reeves County, Texas.

operators are still flaring too much and that's largely because the pipeline infrastructure isn't built to handle all the gas.

Again, that goes back to permitting.

But we can take care of flaring.

ND: ***What if there is methane regulation?***

RL: We're fine with trying to regulate it. But let's do it smartly.

We just joined Oil & Gas Methane Partnership (OGMP) 2.0, which is government, companies and NGOs working together with third-party verification to understand what you're emitting and how you can reduce that over time to zero.

The technology's not quite there yet to quantify it. We can see it when it's happening. For example, if a flange breaks apart a bit and leaks, you can identify it with [gas-detection] cameras. But you can't really quantify the amount.

We're censoring our operations so we can identify when something happens. Then we dispatch our operators with cameras to look at what's leaking, such as a hatch on a tank top that may be ajar.

I think regulation is catching up with what industry's been doing the past five or six years voluntarily. And OGMP 2.0 is just trying to take that to the next level.

ND: ***What else?***

RL: The energy system is so complex, so huge, it's really going to take "all the above." These transitions can't be *substitutive*; they're always *additive*. In other words, you can't pluck oil and gas out of the energy mix, put in renewables and hope to fix it.

They're all additive. And right now we need "all the above." We need oil, we need gas, we need wind, we need solar, we need nuclear, we need nature-based solutions.

When you recognize that it's going to take everything, then you can get into quality policy conversations around what sort of infrastructure is needed to help support oil and gas.

What's the right kind of infrastructure? How do we do that in North America to offset Russian crude or Russian gas?

What sort of infrastructure in terms of high-voltage transmission lines is needed for wind and solar? How do we permit that?

What do we think about offshore wind, and what are the permit requirements? What do we think about nuclear, and how do we build "small nuclear?"

And how do we take emissions out of coal? Coal is going to persist in the mix for a while. How do we clean it up? You can't just take coal out tomorrow, but over time you want coal to get displaced with natural gas or with a lower-carbon alternative.

When you can get your mind wrapped around "It's going to take all the above," you can build policy for each one of those energy sources to make sure it fits that whole scheme.

That's been my message to Washington, D.C.: It's all of the above. And if we're going to incentivize and spend government money on certain things, can we do the cheap things first?

Can we do the things that have the lowest cost of mitigated carbon? Can we do those first and really make a difference?

ND: ***On this path, the energy world should be remarkable starting with the next couple of generations.***

RL: There's a way to ensure your energy security, your national security and your climate goals. There's a way to manage it.

Unfortunately, collectively we're not managing it as well as we could.

There's a better way to do this. OGI

CONOCOPHILLIPS CO.

INVESTORS TO TOP PERMIAN PRODUCERS: GO GET 'EM!

Confident that E&Ps will continue to temper growth and prioritize cash flow generation, investors have enthusiastically returned to the oil and gas fold, providing the industry with index-beating stock performance.

ARTICLE BY

JOSEPH MARKMAN

@JHMarkman

jmarkman@hartenergy.com

Investors will avoid the oil patch, we were told, until they become convinced that E&Ps are serious about financial discipline.

And they did, until they became convinced. Now, they're back—big time.

An array of factors, including Russia's invasion of Ukraine, underinvestment in the sector for the past five years and a tilt toward renewables, have propelled demand and, subsequently, price for fossil fuels in 2022, Michael Underhill, co-founder and chief investment officer of Capital Innovations, told Hart Energy. The resulting financial sheet bonanzas have not only allowed companies to return excess cash to shareholders but encouraged investors on the sidelines to join in, pumping up share prices.

The leading producers in the Permian Basin have benefited from this turnaround, but they are not the only ones. In the 12 months ended Aug. 31, the share of energy stocks on the S&P 500 Equal Weight Index rose 77.7% for equal weight and 75.8% for market capitalization weight, clobbering all other sectors (utilities were No. 2 at 13.1% and 11.7%).

An equal weight investing strategy diversifies investments broadly within a sector, as opposed to a market cap strategy, which favors larger stocks. So in this investing environment, there has been a pretty good chance of making serious money in the publicly traded energy space without restricting choices to the giants.

"This longer-term investment case has appealed to more generalist investors as the S&P 500 energy weighting has increased from a low of 2.5% versus 9% to 10% in 2007 to 2008," Underhill said.

While its weight on the S&P 500 index was still only 3.7% as of the end of August, energy was the top performing sector over the preceding 12 months.

The inflation situation

Despite sparkling earnings reports, big producers must grapple with inflation like everybody else. This has been a particular challenge for companies guiding long-term projects through a changing economy.

"We did a great job, certainly, during the pandemic, especially when you think about … longer projects that our global project group was executing, in terms of ensuring that we were at that point in time when we were in a deflationary environment," said Kathy Mikells, Exxon Mobil Corp.'s senior vice president and CFO, during the company's second-quarter earnings call with analysts. Exxon Mobil worked with service providers to extend contracts and revise schedules, she said, while positioning the projects to move forward rapidly when the market improved.

ConocoPhillips Co., which pumped an average of 634,000 bbl/d of crude oil

in the Permian during the second quarter, expected a 7% to 8% inflationary impact on the company for 2022, said Bill Bullock, executive vice president and CFO, during the second-quarter earnings call.

"Like everyone else, with our higher activity levels in the Permian, that's where we're experiencing the most inflation, what we're watching, and we're continuing to keep an eye on that," Bullock said.

Midland, Texas, in the heart of the Permian Basin, is experiencing some of the roughest impacts from inflation in the country, according to a Moody's Analytics report in May. The area is remote, so most goods must be transported there over long distances, which drives up prices in any economic climate. The city also suffered more than most from the COVID-19 pandemic, when the collapse in demand for oil forced a drastic reduction in its workforce. Filling positions in the oil fields as the industry booms means paying high wages to induce workers to return.

Concern about inflation in the Permian was echoed by Robert L. Peterson, senior vice president and CFO of Occidental Petroleum Corp. (Oxy), during the company's earnings call. Oxy will shift $200 million to its Permian operations in 2023 to account for the inflationary impact in the region.

In mid-September, Credit Suisse increased its price forecasts for Brent and WTI, citing inflation in the upstream supply chain and underinvestment in the sector. A mid-September research report noted that between 2015 and 2021, oil and gas project capex declined by more than 25%. The impact will be elevated crude prices and a curtailing of significant projects coming online.

Financial discipline

So, why would an investor favor an E&P (shares up 25% as a group for the first half of the year) over the broader S&P 500 (down 20%) or Apple Inc. (down 25%) or Amazon Inc. (down 38%) or Tesla Inc. (down 44%)?

It wasn't the realization that fossil fuels were not, in fact, on the verge of irrelevance, nor was it the soaring revenue that accompanied skyrocketing commodity prices. Neither of these factors are particularly novel and they failed to spur investor stampedes in the past. The difference is the industry's pivot from growth to free cash flow generation.

"After the near-death experience in 2015 to 2020, the Permian producers focused on financial discipline, focusing on return on capital on projects and companywide,

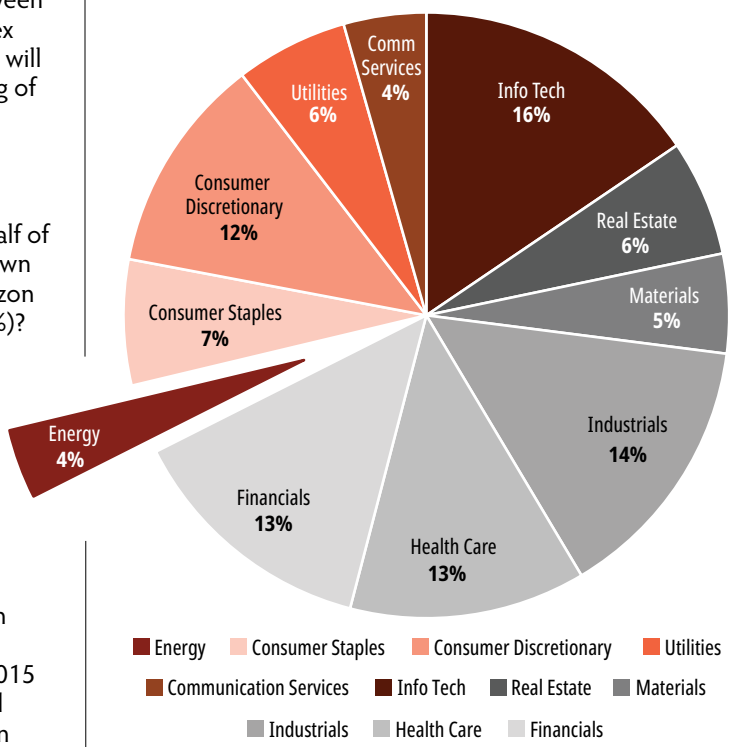
"We expect the producers to continue the focus on financial discipline until they get the tacit approval from investors to increase capital spending given the higher oil/natural gas prices."

—Michael Underhill,
Capital Innovations

and other financial metrics, versus just production growth and, most importantly, including these financial metrics for executive compensation," Underhill said. "They took operating costs out, lowered their breakeven oil/natural gas prices, reduced financial leverage (Oxy), increasing free cash flow and returned excess cash to shareholders via share repurchase and dividends."

Vicki Hollub, president and CEO of Oxy, acknowledged the changed priorities when she discussed the primary reallocation of cash flow to shareholders instead of debt reduction. The company expects to repurchase $3 billion of stock by the end of the year, Hollub said during the company's earnings call. The plan for 2023 is to return capital to shareholders through a common dividend. The

How Energy Compares By Weight In The S&P 500



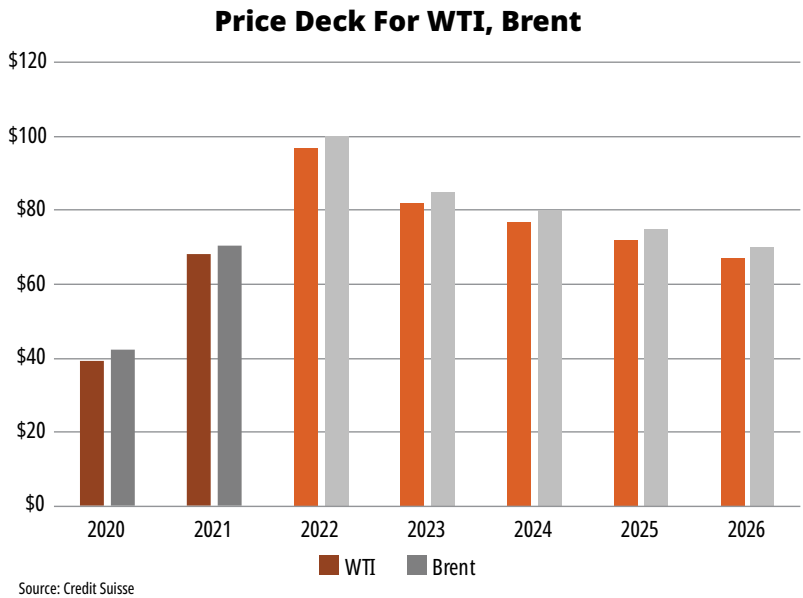
Source: S&P Dow Jones Indices LLC

While energy stocks only constitute about 4% of the value of the S&P 500, that figure is quickly on the rise.

Credit Suisse forecasts crude oil prices to slip by mid-decade but remain strong.

plan relies on a $40/bbl price of WTI.

"Given our focus on returning capital to shareholders, it is possible that we may reach a point next year where we've returned over $4 per share to common shareholders over a trailing 12-month period," she said.



Source: Credit Suisse

Time to buy back

Nothing illustrates the transformation better than the reaction to this year's massive revenue expansion. Companies resisted the impulse to "drill, baby, drill" in favor of "distribute, baby, distribute." Not as catchy, perhaps, but from the perspective of investors, a strategic improvement.

"The companies have continued to maintain financial discipline through the upturn in oil prices, which has reassured investors that they will not make the same mistake as before by escalating capital spending too fast," Underhill said. "This is a big difference versus previous cycles and investors have rewarded this strategy by oil producers with higher stock valuations, which has reinforced these disciplined strategies."

Devon Energy Corp. president and CEO Rick Muncrief was not shy about pointing this out during the company's earnings call: "The first call on our free cash flow is the funding of our fixed plus variable dividend."

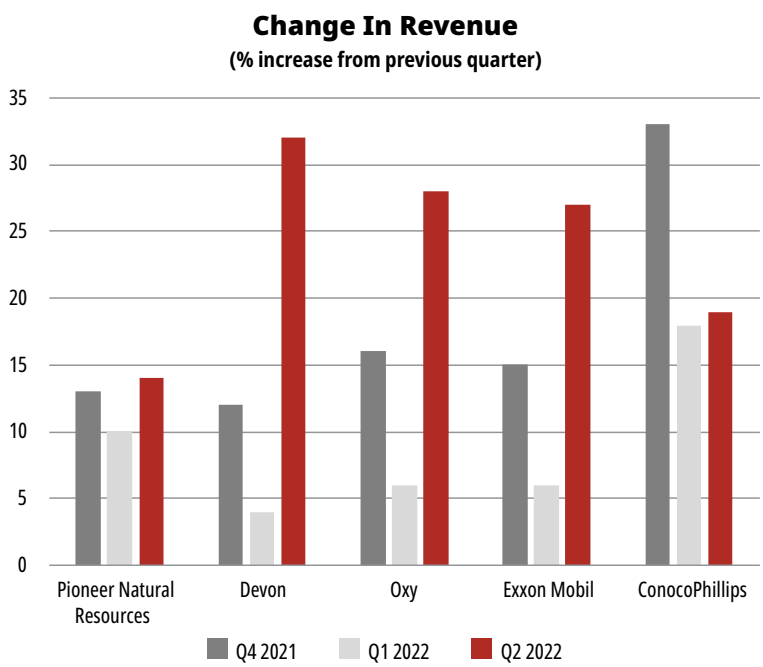
Devon expects to pay out about $5 per share, an 8% yield, this year, which ranks it No. 5 on the U.S. News list of the highest-yielding stocks in the U.S. market. No. 1 on that list: Pioneer Natural Resources Co., the Permian producing powerhouse with a yield of 10%, or $8.57 per share.

"I've always said we would aggressively repurchase shares when the market presented opportunities," Scott Sheffield, Pioneer's CEO, said on his earnings call.

The company generated $2.7 billion in free cash flow in the second quarter and increased its base dividend by 40%. The increase, its third in four quarters, means that Pioneer's base dividend nearly doubled in the 12 months ending with the second quarter.

Even the mighty Permian Basin can endure headwinds, and Underhill's list includes: lower demand from a potential recession, a stronger U.S. dollar, lockdowns in China, ever-present geopolitical volatility and the release of crude oil from the Strategic Petroleum Reserve, which he expects to end shortly before the midterm elections in November. However, Underhill expects these to be under control by the end of first-quarter 2023. As long as E&Ps stay on track, they can expect to be rewarded.

"We expect the producers to continue the focus on financial discipline until they get the tacit approval from investors to increase capital spending given the higher oil/natural gas prices," he said. "We expect the producers to be measured in providing both shareholder friendly actions such as dividend hikes and share repurchase, special dividends combined with disciplined growth in capital spending." OGI



Source: Hart Energy from company filings

Revenue is up for the leading Permian producers quarter-over-quarter on a percentage basis.

JOIN US IN 2023

Hart Energy events provide attendees, sponsors and exhibitors with unrivaled content and networking opportunities across the upstream oil and gas industry. They are designed to facilitate interaction with industry leaders, policymakers and experts in a professional environment.

Please keep these opportunities top-of-mind when you plan your 2023 calendar.

NEW OFFSHORE
GoM ENERGY TRANSFORMATION Conference
Feb. 21
Norris Centers
Houston, TX

SHALE
DUG HAYNESVILLE
March 28-29
Shreveport Convention Center
Shreveport, LA

SHALE
DUG PERMIAN EAGLE FORD MIDCON BAKKEN
May 22-24
FW Convention Center
Fort Worth, TX

SHALE
EXECUTIVE OIL Conference & Exhibition
Nov. 16
Midland County Horseshoe Arena
Midland, TX

SHALE
DUG EAST
Nov. 29-30
David L. Lawrence Convention Center
Pittsburgh, PA

NATURAL GAS
AMERICA'S NATURAL GAS Conference
Sept. 6-7
Hobby Center
Houston, TX

ESG
25 INFLUENTIAL WOMEN IN ENERGY
Feb. 7
Hilton Americas-Houston
Houston, TX

ESG
CARBON MANAGEMENT Conference
Aug. 30
Norris Centers
Houston, TX

ESG
ENERGY ESG Conference
Sept. 19
Hobby Center
Houston, TX

INVESTMENT
ENERGY CAPITAL Conference
Oct. 2
Statler Hotel
Dallas, TX

INVESTMENT
A&D STRATEGIES & OPPORTUNITIES Conference
Oct. 3
Statler Hotel
Dallas, TX

NEW TECHNOLOGY
ENERGY INFRASTRUCTURE Conference
April 12-13
Norris Centers
Houston, TX

NEW TECHNOLOGY
ENERGY CYBER SECURITY Conference
June 7
Norris Centers
Houston, TX

NEW TECHNOLOGY
CLEAN ENERGY & TECH Conference
Oct. 23-24
Marriott Rivercenter Hotel
San Antonio, TX

REV: 10/21/22

HART ENERGY
Conferences

VIEW EVENTS

For more information, visit **HartEnergyConferences.com**

YOU CAN'T SPELL PERMIAN WITHOUT 'PE'

Private equity sees continuing opportunities in the prolific basin.

ARTICLE BY
MARK DRUSKOFF
CONTRIBUTOR

Laureled with many epithets, the Permian Basin may have been most aptly described as the gift that keeps on giving. And for private equity sponsors and their portfolio companies, that has been particularly true where their influence keeps on growing.

In recent months, drilling has boomed in the Permian, and in the past two years, the number of rigs almost tripled since the COVID downturn. Meanwhile, the Gulf Coast and Midcontinent saw increases of 550% or more, as well as the Rockies with a 376% increase, a recent report by Stephens showed. But the Permian's lower volatility is a sign of its strength.

Through the last major oil price downturn during COVID, all other oil-weighted basins saw rig counts drop into the single digits, but the Permian managed to hold on to moderate levels of activity, noted Brad Thielemann, partner, EnCap Investments LP.

"Many public companies will be forced to acquire inventory through asset purchases or consolidation, ultimately placing a premium on undrilled locations."

—Brad Thielemann, *EnCap Investments LP*

As of mid-September, the Permian accounted for 48% of all Lower 48 horizontal rigs, the Stephens report showed. Such numbers demonstrate the strong confidence upstream operators and their private equity sponsors have in the basin.

Currently EnCap portfolio companies are running close to 20 rigs across the Midland and Delaware basins, Thielemann said.

The fact of the matter is that the Permian has been, and remains, a "focal point" of activity for its quality and depth of inventory, he said. Characteristics weighing in its favor include the Permian's large size and extent; stacked pays; prolific and predictable well recoveries; robust economics weighted to oil but with exposure to associated gas and NGL; and good access to midstream infrastructure.

The Permian's already abundant attributes are amplified by Texas' more predictable regulatory environment, said Austin Elam, a partner with Haynes & Boone LLP. There are fewer regulatory concerns compared to many other basins in the Lower 48, contributing to a sense that deals can be done more quickly, he said.

In fact, the Permian accounted for the largest share of upstream deal activity (30%) between September 2021 and September 2022, according to the Stephens report.

Private equity was an active seller during this time, as a backlog of portfolio companies developed because of challenging market conditions in 2018 and 2019, said Elam. Many private equity-backed management teams took advantage of positive commodity prices and capital availability for buyers in order to achieve an exit, he noted.

The trend has been developing since at least 2019, agreed Anthony Speier, partner, Kirkland & Ellis. "Even before the pandemic, companies were understanding that investors want scale, and they want cash flow. The publics needed to be bigger, and the private companies wanted to get bigger to be attractive to the publics," Speier said.

During the challenging times of 2020 and early 2021, much of the activity was private equity creating so-called "smashcos" to combine various portfolio companies together, Speier noted.

Smashcos were driven by a need to rationalize balance sheets and facilitate a means to get capital back to investors when there were no exits in sight, said Elam.

In second-half 2020, corporate upstream M&A blossomed thanks to

Permian-centric deals like ConocoPhillips Co.'s $13.3 billion takeout of Concho Resources and Chevron Corp.'s $13 billion purchase of Noble Energy, but A&D remained muted, the Stephens report showed. As 2021 wore on, however, asset transactions quickly picked up, particularly for private equity-backed companies.

Shifting strategies

During 2021, several factors were at work in bridging the gap between seller and buyer, helping deals to get done. One was the availability of public debt capital markets that buyers were able to tap for financing, said Elam. Another was an enthusiasm by private equity sponsors to accept public equity as consideration in transactions.

Known for its preference for cash in earlier times, private equity was "willing and happy to take equity to ride the upside," said Speier. "There was a pretty strong feeling that equities would perform better" because they could see the pressure on commodity prices building up from underinvestment.

As a result, private equity has aggressively entered the public markets in recent years, and Permian assets have been the currency used to buy their way in.

Since 2021, seven different private equity sponsors have sold nine Permian-focused portfolio companies totaling $3.94 billion. Notable exits include EnCap's sale of Sabalo Energy for $717.6 million, NGP's sale of Titus Oil & Gas for $617 million and Warburg Pincus' sale of Chisholm Energy for $604 million. Stock consideration played an important role in many of those deals.

Multiple upstream companies now register private equity firms as their largest shareholders. Earthstone Energy Inc., Permian Resources LLC and Ring Energy Inc. are three notable E&P examples.

Since 2014, EnCap has been involved with Earthstone Energy when it took over the company through the sale of Eagle Ford-focused Oak Valley Resources. In 2016, Earthstone acquired Bold Energy III, an EnCap portfolio company in the Midland Basin. In the past two years, Earthstone has been on an acquisition tear adding to its position in the Permian.

In early 2022, Earthstone acquired Midland-focused Bighorn Permian Resources for $860 million. Bighorn Permian began as Aubrey McClendon's American Energy Partners-Permian and then became Sable Permian after a bankruptcy that saw ownership pass over to J.P. Morgan. In June, Earthstone announced the Delaware-focused acquisition of Titus Oil & Production and Titus Oil & Production II, backed by NGP, for $627 million. In 2021, the company acquired Warburg Pincus-backed Chisholm Energy for $504 million and Independence Resources Management for $182 million; EnCap-backed Tracker Resource Development III for $126.5 million; and Foreland Investments and BCC-Foreland for $73.2 million.

Earthstone's current ownership includes EnCap, which holds 37.9%, and Warburg Pincus, with 24.5%, according to securities filings.

Private Equity-Related Permian Deal Activity

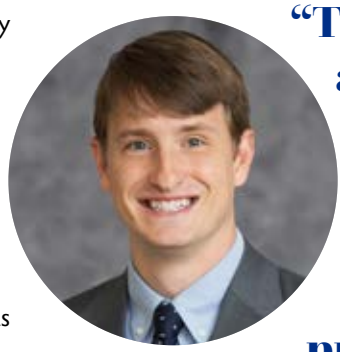
Since 2020, there has been at least $30.2 billion in upstream transactions in which private equity sponsors have held significant minority or majority stakes in either the buyer or seller.

Company (PE Stakeholder)	Company (PE Stakeholder)	Date Announced	($MM)
Ring Energy	Stronghold Energy II (Warburg Pincus)	Jul-22	465
Earthstone Energy (EnCap)	Titus Oil & Gas (NGP)	Jun-22	627
Centennial Resource (Riverstone)	Colgate Energy (Pearl, NGP)	May-22	3,900
Petro-Hunt	Admiral Permian Resources (Ares Management)	Mar-22	ND
Earthstone Energy (EnCap)	Bighorn Permian Resources	Jan-22	860
Maverick Natural Resources (EIG)	ConocoPhillips	Jan-22	440
Split Rock Resources (North Hudson Resource Partners)	RSC Resources	Jan-22	97.5
Earthstone Energy (EnCap)	Chisholm Energy (Warburg)	Dec-21	604
Northern Oil & Gas	Veritas Energy (Carnelian)	Nov-21	406.5
Colgate Operating (Pearl, NGP)	Oxy	Nov-21	190
Henry Resources & Pickering Energy	Centennial Resource Development (Pearl, NGP)	Nov-21	101
Earthstone Energy (EnCap)	Foreland Operating, BCC-Foreland (Vortus Investments)	Oct-21	73.2
Lime Rock (Lime Rock)	Undisclosed	Jul-21	508.3
Colgate Energy III (Pearl, NGP)	Luxe Energy (NGP)	Jun-21	508
Contango Oil & Gas	Independence Energy (KKR)	Jun-21	4,500
Percussion Petroleum (Carnelian)	Oasis Petroleum	May-21	375
Laredo Petroleum	Sabalo Energy (EnCap)	May-21	717.6
Sixth Street Partners (Sixth Street Partners)	Laredo Petroleum	May-21	405
Earthstone Energy (EnCap)	Tracker Resource Development (EnCap)	Apr-21	126.5
Pioneer Resources	DoublePoint (Apollo, Quantum Energy, Magnetar Capital, and GSO Capital Partners)	Apr-21	6,400
Diamondback Energy	Guidon Operating (Blackstone Energy Partners)	Feb-21	862
Surge Energy	Grenadier Energy Partners II (EnCap; Kayne Anderson)	Jan-21	420
Pioneer Resources	Parsley Energy (Quantum Energy; Post Oak Capital)	Oct-20	7,600

Sources: Dealogic, Stephens, proprietary research

Permian Resources, the name of the recently merged Centennial Resource Development and Colgate Energy Partners III, also brings together multiple big name private equity sponsors. Prior to the merger, Riverstone held 25.5% of Centennial, according to securities filings. Meanwhile, Colgate Energy was formed by Pearl Energy Investments and NGP and bulked up by acquiring NGP-backed Luxe Energy in mid-2021. When it merged with Centennial, Colgate Energy was valued at $3.9 billion in the transaction.

Although not planned from the outset, clubbing up was a practical move by private equity sponsors to consolidate the Permian and facilitate return of money to investors, said Elam.



"The Permian's already abundant attributes are amplified by Texas' more predictable regulatory environment."

—Austin Elam, *Haynes & Boone LLP*

Positive indicators

As private equity has rationalized its holdings in the Permian, the string of exits creates opportunities for new upstream enterprises.

The exiting management teams are not looking to sell out and go home but rather take advantage of an opportunistic exit so they can go out and build a new company, particularly those focused on drilling inventory, said Elam.

"Many of the management teams we work with are planning to re-up and get back in," said Speier.

Although high commodity prices can give management teams a pause, the longer commodity prices stay high, the more confident people are at investing in a higher price environment, he said.

Positive signals are coming from both the supply and demand side. Not only are public upstream companies remaining disciplined in their drilling, but recent world events have rocked widely held assumptions on energy transition and are shaking up opinions.

One standout sign of new perspectives on energy security took place in early July when the European Parliament voted to label investments in natural gas as climate-friendly. It looks likely to pass into law despite opposition.

Although the long-term impact is unclear, Elam described the European move as an "injection of pragmatism into the energy conversation that has been long overdue."

Pragmatism is not only driving the natural gas markets. The domestic political implications of high gas prices create many a strange bedfellow—and a push for greater crude production.

"Longer term, we expect to see an increased premium placed on inventory," said EnCap's Thielemann.

"This is evident in the valuations of public companies with a depth of core inventory of greater than 10 years who trade at a meaningful premium to companies with a perceived lack of core economic inventory. Many public companies will be forced to acquire inventory through asset purchases or consolidation, ultimately placing a premium on undrilled locations."

Both Elam and Speier are seeing buyers giving value to undeveloped acreage in transactions.

"Publics are willing to maintain their drilling programs," said Speier. "We're not back to the days where it's all about inventory ... but we're definitely seeing a lot more deals where it's 50:50 PDP to undeveloped, whereas a year ago it was probably 75:25."

Pearl Energy partner Stewart Coleman agreed but had a tempered outlook on its impact.

"Core areas of the best basins are receiving undeveloped acreage value in transactions today," said Coleman. "That said, we do not expect anywhere near a return to the 'heyday' of private equity acquisition activity, both from a $/acre and transaction velocity perspective."

Buyers are underwriting more realistic spacing and development pace assumptions, higher discount rates and expect more balanced PDP versus undeveloped value, with the assets able to self-fund development via cash flow compared to requiring new debt or equity capital, he explained.

Furthermore, limitations on the availability of private equity capital to finance undeveloped acreage development will lead to more subdued activity levels overall.

"Even before the pandemic, companies were understanding that investors want scale, and they want cash flow."

—Anthony Speier, *Kirkland & Ellis*

Capital constraints

Funding access will be a key factor for management teams looking to enter or re-enter the Permian.

"It's a tale of the haves and have nots," said Elam. Ability to source capital to pursue development and drilling will be a key differentiator, he said.

"While there will absolutely be teams returning for second and third iterations, the pace of new portfolio company creation will remain subdued given continued lack of capital formation in energy private equity more broadly," said Coleman.

"Core areas of the best basins are receiving undeveloped acreage value in transactions today."

—Stewart Coleman, *Pearl Energy Investments*

Coleman's expectation is that unlike boisterous periods, like 2015 to 2017, when individual private equity firms may have had five or more $100 million-plus equity commitments to portfolio companies in the Permian, new commitments are likely to be more limited to one or two substantial platform portfolio companies.

"The amount of private equity dry powder for upstream has dropped substantially over the last four years," said Thielemann.

Scarcity of funding can be traced back to a vacuum left by large sponsors, such as Blackstone or Warburg Pincus, opting to not raise new funds focused on hydrocarbons, said Speier. That pullback creates gaps in the marketplace that is being served by direct investment by institutional investors, such as endowments or family offices, he said.

Going direct requires a very good pedigree, Speier acknowledged. "You have to have gotten a 4.0x to 5.0x return a couple times and then you can cut out the double carry because investors will come directly to you."

Meanwhile, private equity sponsors with available capital see significant opportunity.

"There are a limited number of large-scale cash buyers in the space, and we see far less capital available for transactions than there are sellers," said Thielemann.

Public companies have remained highly selective on deals, while opting to focus on allocating available cash to shareholder returns. And private equity capital is in limited supply. "We believe this puts firms like EnCap, with significant dry powder, in a unique position to capture attractive opportunities."

EnCap disclosed a big bet on the Permian in June when it teamed with Apollo, Magnetar and other partners to back Double Eagle Energy Holdings IV and Tumbleweed Royalty IV with $1.7 billion in committed equity. Led by Cody Campbell and John Sellers, Double Eagle IV will follow a similar strategy as its predecessor Double Eagle III Midco 2, which sold to Pioneer Natural Resources Co. for $6.4 billion in April 2021.

Another team with plenty of Permian experience and lots of capital is FourPass Energy. In late 2020, the company helmed by former Felix Energy executives received a $900 million equity pledge from Oaktree Capital.

Other private equity-backed companies with a Permian bent include KKR-backed Spur Energy Partners, which acquired Concho Resources' New Mexico Shelf assets for $925 million; Carnelian Energy-backed Percussion Petroleum II, which paid $481 million for Oasis Petroleum's entire Permian position in June 2021; and Acon Investments-backed Sequitur Energy Resources, which paid $264.6 million for Callon Petroleum's properties in Reagan and Upton counties, Texas. OGI

MORE THAN A BYPRODUCT

Crude, not natural gas, drives the economics across the Permian Basin. Nevertheless, associated gas volumes have risen to historic levels in the play.

Daily production of dry natural gas in the Permian is now averaging 15.5 Bcf/d, up from just 7 Bcf/d in 2018, according to figures from RBN Energy.

Both EnCap Investment partner Brad Thielemann and Pearl Energy Investment partner Stewart Coleman are clear that oil remains king in the Permian, but both noted there are opportunities in specific areas within the Permian where associated gas production becomes meaningful.

"In most instances, supportive gas prices have added incremental economic benefits but haven't drastically altered development plans. However, we have shifted some development to more gas-prone acreage in the western portion of the Delaware Basin and farther south in the Midland Basin, to take advantage of current market dynamics," said Thielemann.

While private equity investment in gas is a niche for upstream players, midstream private equity investment has boomed. Rising gas production has driven private equity investment in midstream infrastructure, which has surged in recent years.

Invariably it has also led to a spate of exits to private equity-backed midstream companies.

Notable recent deals include Targa Resources' purchase of Lucid Energy Delaware for $3.55 billion in cash, creating a payday for Riverstone and Goldman Sachs. Enterprise Products paid $3.25 billion for Navitas Midstream, backed by Warburg Pincus. Apache-owned Altus Midstream combined with EagleClaw Midstream in a $3.11 billion all-stock transaction to form Kinetik, which acted as a reverse takeover, giving EagleClaw's sponsors, Blackstone and I Squared Capital, 75% of the new company.

M&A OVERDRIVE

Scale equals relevance and Ranger Oil Corp., hitting the same benchmarks as its larger peers, wants to build its way to higher trading multiples in the Eagle Ford, says CEO and president Darrin Henke.

RANGER OIL CORP.

ARTICLE BY

DARREN BARBEE

dbarbee@hartenergy.com

Above, Ranger Oil operations in Gonzales, Texas, in the Eagle Ford Shale. Ranger has been on a path toward expansion since its acquisition of Lonestar Resources in 2021.

Ranger Oil Corp.'s mission to relentlessly build its Eagle Ford position went into liftoff in June, when the company closed the first half of 2022 with nine deals and 10% more acreage than it had at the start of the year.

Raw acquisition power is nothing new in the oil and gas industry. But Ranger Oil's goal wasn't mere conquest. President and CEO Darrin Henke said the company has tried to make every deal count.

The phrase "accretive transaction" may ring hackneyed, but Ranger has piled up $139 million in bolt-on deals while reducing debt by $50 million and paid its shareholders $49 million in buybacks and a dividend.

Ranger's deliberate focus on the Eagle Ford, with its low water cuts and a surprisingly robust deal market despite commodity price volatility, has put it on the path for a second half where it continues to evaluate deals—and possibly make a much larger acquisition splash.

Henke recently spoke with Oil and Gas Investor *senior editor Darren Barbee for an exclusive interview to discuss the company's M&A strategy, the pipeline of A&D opportunities in the Eagle Ford Shale and some notable milestones on the horizon.*

DARREN BARBEE: ***In October 2021, Penn Virginia merged with Lonestar Resources, then rebranded as Ranger Oil. How did that deal put Ranger on its current path and set the tone for the acquisitions you've transacted this year?***

DARRIN HENKE: On the closing of the Lonestar [Resources] transaction last October we rebranded to Ranger Oil, so it was definitely a transformational acquisition for us. And when we're looking at acquisitions, we're thinking about the strategic fit: accretion to financial metrics. We're looking at accretion to long-term value and also maintaining a strong balance sheet as we do those larger more strategic deals. Lonestar fell into that category and really checked all the boxes for us.

Scan to read the full article.

It was a great transaction, and we were able to do it at a discount to PDP PV-10 at the time and picked up a lot of really good acreage, similar to the deals that we've done this year. You know, the eight bolt-ons we've been able to do at a discount to PDP PV-10 and picked up 20,000 additional acres this year—from 140,000 acres to 160,000 acres. So a material increase in acreage position, that's probably going to add a year of drilling inventory to a very robust inventory that we already are blessed with.

DB: ***As you've evaluated your bolt-on acquisitions this year, are you allocating any value to the upside of a particular***

deal? Or are your deals purely an exercise in PDP value?

DH: The eight bolt-ons that we've done year-to-date, we really haven't ascribed any value to the upside. We're able to get them done at a discount to PDP PV-10 at strip pricing at the time that we did the deals in aggregate. So really not ascribing value when we're making these acquisitions, you know, as far as, "OK, we spend $140 million, $120 million is PDP and the other $20 million is for the upside." We obviously look at what we think the upside could be and look at the acreage positions, et cetera, but the bolt-ons that we've done year-to-date, they really fit hand in glove with our position.

Darrin Henke
CEO, Ranger Oil

DB: ***What's motivating the sellers?***

DH: With the tight service environment that we're seeing today, a lot of the counterparties are just having a challenge to get a rig or to get the lateral lengths with their acreage footprint that they have. Can they develop the lateral lengths that make sense in today's environment where we have the rigs? And these bolt-ons in many cases not only improved our working interest in wells that we've already drilled this year or will be drilling later this year but also allowed us to drill longer laterals as we drill off of our acreage onto the acquired acreage.

Some of the counterparties, they were nonop owners in our wells. And strategically, they'd like to sell that interest out of those wells and use that cash to develop and control their own destiny on lands that they operate. So I think it's just been an interesting year-to-date anyway, with a myriad of counterparties and different reasons why the deals have come together.

Deals don't get done if they're not a win-win deal. We don't come to the table unless both counterparties are excited about the transaction. And that's the kind of deals we're able to put together this year. I think it's just a unique environment.

DB: ***I've heard a lot about the number of assets that are coming to market that ultimately aren't finding buyers. What's the situation like in the Eagle Ford?***

DH: Yeah, we've seen more. The pipeline of acquisition opportunities in the Eagle Ford has definitely accelerated this year. We're seeing opportunities at all different sizes. You know, the blocking and tackling bolt-ons that we've done, a lot of midscale $100 [million] to $500 million type opportunities and then billion-dollar-plus type opportunities.

The way I think about it is we want to be at the table for every acquisition opportunity that presents itself in the Eagle Ford, and we're going to stay disciplined in our evaluation. And we look at all those I mentioned: the strategic, accretion to financial metrics, accretion to long-term value. And then, how does it impact our balance sheet?

DB: ***I've heard that a lot of M&A in 2022 has been stymied by price volatility and a resulting disconnect between buyers and sellers on price. What's your secret in bridging that gap?***

DH: That bid-ask spread, I think, moves all around as the oil price has gone up and down this year. We can't control that. Really, all we can control is our valuation and how it fits strategically with our assets.

We do our best to do transactions. They don't always work out. We don't win all of them, nor would we want to. We try to just rise above … the fray of the macro environment and just try to do really complete technical analysis and understand how the opportunity fits within our portfolio, and then we bid accordingly. And yeah, you win some and you lose some, but we're going to stay disciplined in our approach and also disciplined with a very strong balance sheet. That's very important to us.

"We do believe that scale equals relevance in our business today."

DB: ***You've obviously been aggressive this year with acquisitions. Does Ranger have a strategic goal or a set budget for M&A?***

DH: We don't have a specific target of what we're trying to get done from an acquisition standpoint this year. My concern around setting those specific targets is [that] we have really talented people. They're high achievers, and when you set a target you don't want them stretching to hit that target. You want them to stay really disciplined in their subsurface evaluation and the evaluation of the opportunity and how it fits in with your assets.

And so there's absolutely no targeted dollar level or growth percentage we're trying to achieve. We want to do smart accretive deals and it just seems to be more of a pipeline of them this year.

DB: ***You've added about 10% more acreage this year to Ranger's footprint. What's your strategic outlook in terms of how large Ranger should be and how you see the company as a consolidator?***

DH: We don't have a specific target of a size that we're trying to get to. We do believe that scale equals relevance in our business today. And you look at the multiples that the larger companies enjoy versus the small- and mid-caps,

where we're at. We don't have as strong a trading multiple, and Ranger's doing all the right things.

We're paying down debt, [and] we're active on the M&A front. We're growing organically. We have shareholder-friendly initiatives where we're buying back shares, and we're also paying a dividend. So we are running the business very comparably to a lot of the larger companies. We're just not as large. And so we think that with additional scale, that smart accretive transactions will result in a multiples expansion.

I think some milestones are going to be forthcoming.

DB: *Such as?*

DH: It's likely next year with our activity level, the organic growth that we're seeing, that we will break 50,000 boe a day net to the company next year. We've had investors say that's an important milestone for Ranger to achieve. And so you'll see that happen next year. That's an exciting milestone—but not specific, "we want to be a $5 billion enterprise value company in two years." Nothing like that.

DB: *And as far as consolidation, can you envision a point where you would want to combine with another operator that's complimentary? We've seen Devon Energy active in the Eagle Ford this year. Is that something you're willing to consider?*

DH: We would love to do some transactions like Lonestar [Resources] that grow Ranger materially by 50%, 75%, double the company. I think that the industry is benefiting from consolidation, the shareholder is benefiting from consolidation, and that's really what we're here for—the benefit of our shareholders and creating more value for our shareholders.

And there'll be a day where we may go from being the basin consolidator of choice to being consolidated into. You mentioned Devon. They announced a transaction [of Validus Energy] near our acreage here a few weeks ago. And that's a logical progression of our industry. Our opinion is we're going to do what's right for the shareholder. And if we get gobbled up by a larger entity, so be it.

DB: *Ranger has been able to execute on multiple fronts besides M&A. Your leverage is 0.8x. You're paying down debt. You're paying back shareholders. How have you managed to maintain that balance while doing deals?*

DH: You're hitting on a point that I think is very unique about Ranger Oil for the size of company that we are. We can pay down debt, as you've noticed, and keep a low leverage ratio—pay down $50 million of debt in the first six months of the year. We've said publicly we want to run the company at 1.0x or less leverage ratio in this commodity price environment.

With the additional free cash flow, we're able to grow organically, [and] we're able to do these M&A transactions. We're also able to buy back shares and pay a dividend. It really all comes back to having a very high-quality inventory with very strong margins, and that's absolutely what we have.

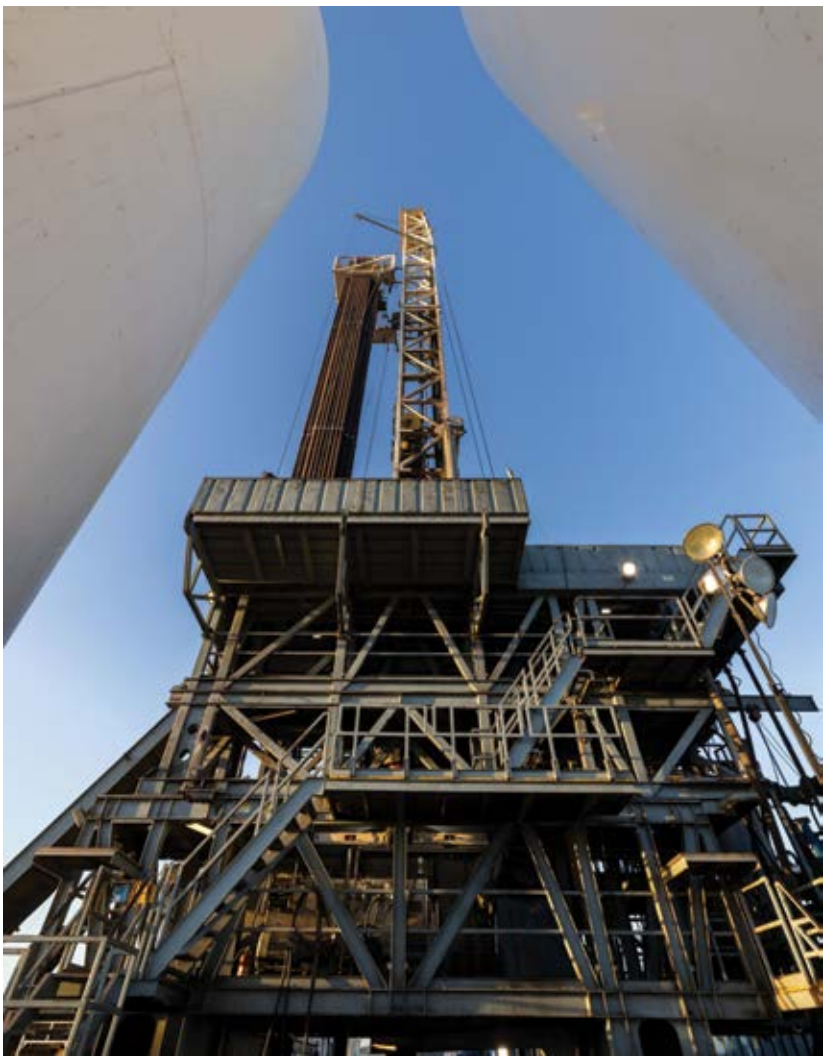
DB: *And that leads into why you've set up shop in the Eagle Ford, particularly as some other companies have diversified their portfolios?*

DH: One of the things that we're really blessed with is a very high-quality inventory and also working on the Gulf Coast in the Eagle Ford where we enjoy the No. 1 EBITDAX margin of any publicly traded independent over the past two years, and that's because we have low overhead.

We [also] don't make nearly as much water in the Eagle Ford as a lot of the other shale plays do. And so we have lower lifting costs and then we enjoy a premium marketplace and premium pricing. It's very easy to get our products to market very inexpensively in the big picture. And then we're getting a premium to WTI at the wellhead. After you pay for transportation, we're getting a premium to WTI in the Eagle Ford based on MEH [Magellan East Houston] pricing primarily.

You add all those things up and it generates tremendous free cash flow. You're hitting on a point that I think is very unique about Ranger Oil for the size company that we are.

Ranger Oil has seen the pipeline of acquisition opportunities in the Eagle Ford accelerate this year, with larger deal opportunities on the horizon.



RANGER OIL CORP.

RANGER OIL CORP.

Ranger Oil's hedging program has allowed a consistent return at $50/bbl even during the depths of the COVID pandemic.

DB: *How have investors responded? Are they warming up?*
DH: We definitely have demonstrated a track record of shareholder value and accretion both organically and through M&A. So just getting the message out there. People, a year ago … weren't really that excited about meeting with us. And that's certainly changed this year. We've been on a Midwest road show here recently, and also to the Southeast, we went to the West Coast. So just continuing to tell the story of what differentiates Ranger from other SMID [small and mid] caps is the message we're trying to get out there as well.

DB: *Are there concerns about commodity prices perhaps being artificially inflated because of the war in Ukraine? And how do you respond to questions about what might happen to commodity prices?*
DH: We try not to weigh in on our view of commodity pricing, because the one thing the last couple of years has taught us is what we think is going to happen and what may happen can be starkly, starkly different. We feel like oil and gas pricing and the demand for the commodities that we produce are going to continue to increase short term. There's a lot of recession talk. There's a lot of macro events. An election is coming up. People have a lot on their minds.

What I can assure our investors is we have a very well-thought-out hedging strategy that … has nothing to do with taking a view on what commodity prices are or might be. It is around when we invest capital, be it for drilling a well or share buybacks.

In 2020, through this risk management hedging program that we put in place, we made over $50/bbl at the wellhead for every barrel we sold in 2020, right through COVID. Couple that with a conservative balance sheet and we're going to win long term, we're going to be a viable entity long term. That's how we think about it.

We try to stagger the length of our service contracts, such that if we see a material pullback in commodity prices, like we did back in 2020, if need be, we can pull back on the activity and then turn around and get back into it when it makes sense. And that's exactly what we did in 2020. We went from three rigs to no rigs and then waited four or five months and picked a couple rigs back up and we've been running them consistently since.

DB: *How has inflation affected Ranger's business?*
DH: Inflation has been material across the board in our industry and broader, no question about it. That's supply chain issues, bottlenecks. First and foremost, having really high-quality service partners where we don't lose sleep at night, wondering will I have frac sand? Will my frac crew show up? We hear that a lot from other companies that the supply chain doesn't even show up, no less what they're actually charging. And inflation's certainly been material.

DB: *You had a busy first-half 2022. Do you anticipate being as aggressive in evaluating additional bolt-ons?*
DH: Absolutely. We can't promise that there'll be more deals getting done. We would love that to be the case. We're focused on the $100 million to $500 million opportunities. And then we're focused on the large, strategic opportunities as well. You've probably seen where Chesapeake [Energy Corp.]'s talking about bringing assets to the marketplace later this year in the Eagle Ford. We hear some good-size companies are planning to come to the marketplace later this year. So, we hope that it's a very active second half of the year as well. OGI

THE PERMIAN HAS A PEOPLE PROBLEM

Booms and busts are part of the oil business, but the last two came at the worst possible time, happening less than six years apart—with a pandemic to boot.

ARTICLE BY

RYAN RAY
CONTRIBUTOR

The so-called "great crew change" had been whispered in oil and gas circles dating back to at least 2014. By 2015, those conversations began taking form in places other than the water cooler. The industry attempted to train a new generation of workers before it lost thousands of years of knowledge to retirement.

Then a double black swan event ended all hope of a smooth transition.

First, in early March 2020, OPEC+ found itself in an impossible spot. Its two largest producers, Russia and Saudi Arabia, could not agree on production quotas. The backdrop, of course, was a softening market as COVID-related demand decline was in its early stages.

Second, just days later, the U.S. began canceling international flights, and most states began rolling out lockdowns. The one-two punch of the Saudi versus Russia price war and COVID lockdowns started a downward price spiral that would see oil prices briefly go negative.

And so began the great reformation of the American workforce. Companies across the U.S. started working from home, offering early retirement packages and trimming every expense they could—including manpower.

Many who were a few years away from retiring left the industry. The great crew change happened but in more ways than one. Not only did older workers retire, younger workers found other industries that would pay similar wages but without the travel.

Now, on the backside of 2020, the industry is trying to find its way again—this time, it's finding it harder to fill those jobs than before.

Midland is a tough sell

To say that people refuse to move to Midland, Texas, would not be accurate. Over the past 40 years, its population has doubled in size. That has allowed the industry to lean into a historically high population as they searched for workers to put back in the patch.

For local labor, it's a great time to be in the industry. According to the Federal Reserve Bank of St. Louis, the unemployment rate in Midland is 3.5%—in other words, if you want a job, you can get one.

With the local labor market maxed, companies have been forced to bring in outside help.

"About 95% of our 350 employees live outside of the Permian," said Cody Pope, the Permian regional manager for Upstream International. "The local talent is hired out, so we have to look to bring people in."

As companies expand their reach, they are not finding the historic eagerness to return to the Permian.

"Companies haven't been investing in training in the past 10 years, and now we don't have enough skilled labor."

—Cody Pope,
Upstream International

"It's challenging to get people to relocate from DFW [Dallas-Fort Worth] or Houston to Midland right now," Michael Oliva, senior recruiter at the Oliva Consulting Group, said. "A lot of people are still looking for remote or hybrid work."

While companies have tried to work with employees to accommodate them, many oilfield jobs require manpower in the field. This puts the industry against an emerging work-from-home movement.

According to the McKinsey American Opportunity Survey, 58% of Americans have the option to work from home at least one day a week, and 35% have the chance to work from home five days a week. Even more troubling for

companies looking to put people in the field, nearly 87% of workers will choose the ability to have the work-from-home option rather than be forced to go to the office every day.

Service companies are trying to weave in a hybrid model when they can, but it's not practical for most jobs.

"We employ over 140 people, and a majority of them have to be on site or in the field," Brian Green, COO of TOPS, said. "We learned a lot of lessons about being more efficient during COVID and have focused on work-life balance to retain workers while maintaining a service level our customers expect."

The more you dig in, the more bleak the situation gets. Perhaps the industry could convince workers to give up the work-from-home mentality and head to Midland but pay across most basins is rising. For long-time oilfield workers, travel has been the norm. With workers desiring to work closer to home and competing against rising local pay, it's tough to ask to get labor to return to the Permian.

"It's getting harder to convince people to come out here. Permian operators assumed that people would be willing to work out here because of the higher likelihood of long-term work," Pope said. "The Permian is playing catch up to the other basins, particularly the Haynesville in northern Louisiana. Add to that many of the qualified supervisory workers live in Louisiana—the Haynesville is much closer to home.

"If you find a candidate that is working and willing to leave their current company, don't wait."

—Michael Oliva,
Oliva Consulting Group

The great crew change

"By the end of 2020, the Great Crew change was done," Oliva said. "The ones close to retiring took their packages—most will choose to never return."

And with them left countless hours of unreplaceable experience. Over the years, companies have been forced to choose who to keep during a downturn. Is it better to keep around the person who has all the experience or train the new employee?

Many times, the ones with experience stayed on, but when they did not, often the new employees did not get the training they needed.

"Companies haven't been investing in training in the past 10 years, and now we don't have enough skilled labor," Pope said. "Now when we go out looking for skilled labor, they are either hired or retired. We've seen some retirees return because the pay is too good to pass, but that's the exception."

General labor is tough to find, but skilled labor is where the glaring gap is.

"Overall, the labor market is incredibly challenging, but skilled labor is especially difficult," Green said.

Traditionally, the industry has been able to transition some of the general labor to more skill labor positions with on-the-job training, but with deficits in both pools, it is not clear how companies can overcome these obstacles.

What does it take to get a job?

Producers are in a tough spot. They need to hire to drill more wells, yet they are concerned about repeating the mistakes that have plagued the industry.

"The pace at which companies are hiring is faster than it was in 2019, but at the same time, they are more measured in who they hire," Oliva said. "They are trying

The oil and gas industry is facing a skilled labor shortage, particularly in the Permian Basin.

to fill very specific roles with the right candidate while trying to avoid overhiring."

It goes beyond that. Both Oliva and Pope are seeing companies require basin-specific experience.

For Pope, his company mainly sees it with drilling supervisors. "Outside of drilling supervisors, we don't see it, but for those roles, companies are keen on only bringing in talent with the requisite experience."

Olivia, who is recruiting for a wide swath of positions, said, "It can even be down to the county. It just depends on the role, but there are some in which that will be the biggest single factor in whether you get hired or not."

With a labor shortage in play, for some roles, companies are content to leave the position unfilled.

> **"Overall, the labor market is incredibly challenging, but skilled labor is especially difficult."**
> —Brian Green, *TOPS*

A speed race

While companies desperately need new talent, some are still struggling to adapt to the current hiring pace.

"If you find a candidate that is working and willing to leave their current company, don't wait," Oliva said. "After three or four weeks, those candidates are off the market. If your HR [human resources] department takes two months to hire, you are missing out on the best candidates."

Some things haven't changed, however. Potential prospects are not nearly as concerned about long-term price stability as they are about how much money they will be paid.

"We've seen an increase in wages of about 25% in the past few years. Employees want to ensure they are getting top dollar and that their pay will keep up with inflation," Green said.

Wages are not the only aspect of the industry impacted by inflation. Prices have to be viewed differently in a high inflation environment.

"We're sitting here around $80 oil, but that's not the same $80 oil from 2019. Everything is more expensive for oil companies. They understand that the labor we provide is going to cost more just like materials will," said Green.

On the horizon

The news isn't all bad.

According to Goldman Sachs, insiders expect the price of WTI to average $100 in 2023. Regardless of inflation, $100 oil is a price operators can make money on and expand their drilling programs.

"As long as prices stay above $80, we expect there to be plenty of work," Pope said. "At some point if producers want to keep putting money in their investor's pockets, they will have to ramp up production. We expect work to pick up a bit for the rest of 2022."

The news is even better when you look at the rig count. According to Baker Hughes, the total number of active U.S. oil rigs sits at 602, which is well below the 700, or even 800, rigs the industry has grown accustomed to seeing.

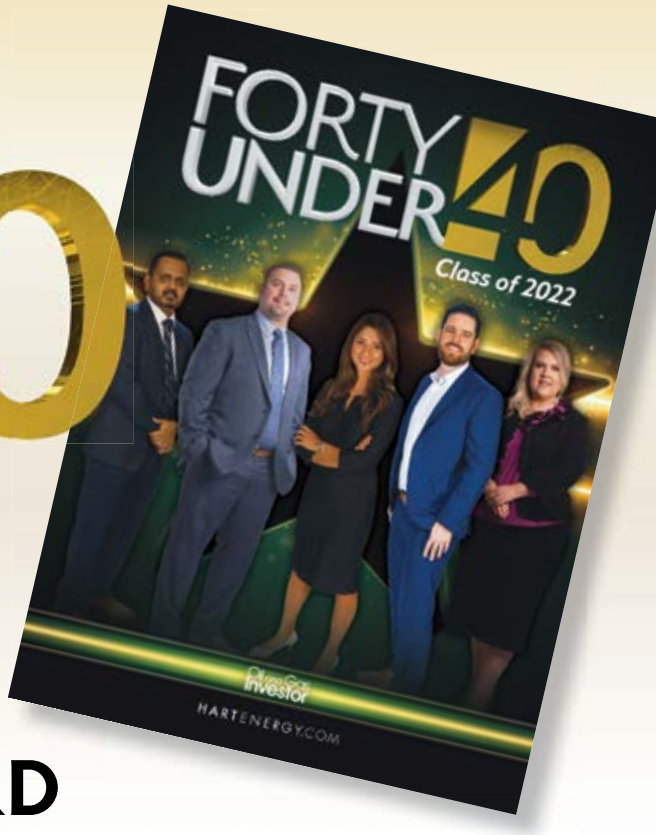
There is plenty of room to grow production, which would create more jobs.

This brings the industry full circle. Since 2020, companies have shown unprecedented restrain and financial discipline—even if a lot of that was forced on them. As companies try to woo prospects to return to the Permian, will they find themselves in a similar spot as before?

Can companies thread the needle of hiring the right talent at the right pace and in the right amount for a prolonged period? Or will investor pressure to capitalize on high prices push them to go on a hiring frenzy?

If the past few years are truly the start of a new look industry, perhaps we can say that the industry has learned its lesson on how to manage booms and busts. This would be a welcome relief to the worker who does return. Not only will they see increased wages but also more job security. OGI

FORTY UNDER 40



We invite you to NOMINATE those that are **MOVING INDUSTRY FORWARD**

Oil and Gas Investor is accepting nominations for the 2023 Forty Under 40 in Energy awards. We encourage you to nominate yourself or a colleague who exhibits entrepreneurial spirit, creative energy and intellectual skills that set them apart. Nominees can be in E&P, finance, A&D, oilfield service, or midstream. Help us honor exceptional young professionals in oil and gas.

Honorees will be profiled in a special report that ships with the November issue of *Oil and Gas Investor* and on HartEnergy.com.

NOMINEES SHOULD DISPLAY:

- A desire to find new challenges
- Community involvement
- Leadership initiative
- Creative problem solving
- Professional excellence
- Entrepreneurial spirit

HartEnergy.com/form/fortyunder40

Deadline for submissions is June 9, 2023

Oil and Gas Investor

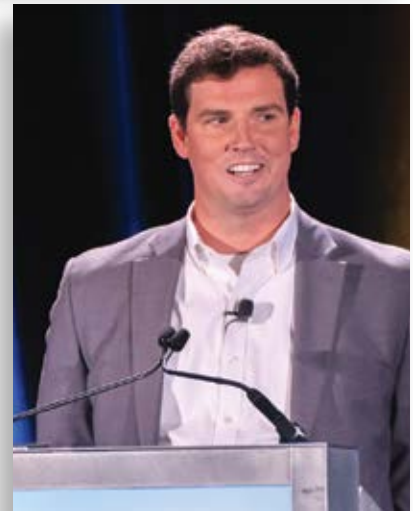
HARTENERGY

AMERICA'S NATURAL GAS CONFERENCE DEBUTS

Photos by Arnaldo Larios/Hart Energy

Hart Energy's first conference devoted exclusively to natural gas brought experts together in Houston throughout the supply chain. U.S. natural gas offers exponential growth opportunities to provide power in the nation and abroad. A bounty of resource is on tap resource within the Marcellus and Haynesville, the gassy fairways of the southern Eagle Ford, Midcontinent and Denver-Julesburg Basin, as well as untapped U.S. "deep gas" and the bounty of the Gulf of Mexico.

Clockwise from top left: Kristy Kramer, vice president and head of as and LNG markets research at Wood Mackenzie; Ken Hersh, president and CEO of the George W. Bush Presidential Center; Craig Jarchow, president and CEO of TG Natural Resources LLC; Thomas Holcombe, Kinder Morgan's business development director and Emily Easley, CEO, NOVUS Energy Advisors; Amol Wayangankar, Enkon Energy Advisors' founding principal; Reed Olmstead, executive director of North American upstream research, S&P Global Commodity Insights, visiting with a conference attendee; Kyle Koontz, chief operating officer of development, bpx; John Harpole, president and founder, Mercator Energy; Dan Lopata, vice president, Marcellus, Chesapeake Energy Corp.; attendees during networking break. Emily Patsy, Hart Energy's senior managing editor, and Deborah Gholson, Berkshire Hathaway Energy GT&S' gas development service advisor.




HARTENERGY
presents
AMERICA'S
NATURAL GAS
Conference

GB HART/SHUTTERSTOCK

PERMIAN PLAYERS PAVE ENERGY TRANSITION PATHWAYS

Industry veterans and experts share insight on energy transition trends evolving in the Permian Basin.

ARTICLE BY

VELDA ADDISON

@ VeldaAddison

vaddison@hartenergy.com

The push to hit net-zero goals is transforming the energy landscape as U.S. shale players look to operate more sustainably.

Reducing emissions has taken a pivotal role in operators' strategies to incorporate low-carbon solutions. The Permian Basin is no exception as producers seek to work in cleaner and more efficient ways to produce affordable and reliant energy. The pathways are plentiful, and there doesn't appear to be a common route. However, partnerships are prevalent as companies come together to slow climate change.

"In the Permian Basin, I think what you have is the continuation of an improved ESG process. They're absolutely focused on getting their carbon emissions down and reducing flaring, reducing methane," Dan Pickering, founder and chief investment officer for Pickering Energy Partners, told Hart Energy. "Then, there's the electrification element, which helps get emissions down, and that's across everything from power to oilfield service equipment."

Along with that comes investments in solar and wind energy as well as battery technology as shale players look to power well sites and large energy companies look to diversify their assets. Some are also diving deep into carbon capture, while others are making plans to become part of the hydrogen economy.

Like other experts, Pickering cautions that the energy transition will take time, and oil and gas will still be needed. Plus, there are profits and access to capital to think about.

"We've seen the traditional energy business go from resisting and viewing the energy transition as a competitive negative to now saying, 'It's coming. Where can we participate? What are the opportunities? How can we make money?'" he said. "We're seeing the incumbent energy space embrace decarbonization more aggressively."

Energy produced by wind and other renewables is being used to power some operations in oil fields.

Evolving landscape

As the largest oil field in the U.S., the Permian Basin produces more than 5.4 MMbbl/d of oil along with more than 20.7 Bcf/d of natural gas, according to estimates from the U.S. Energy Information Administration.

Wind turbines and solar panels increasingly are placed among the oil and gas rigs as operators turn to renewables to help power parts of their operations.

"We're seeing the incumbent energy space embrace decarbonization more aggressively."

—Dan Pickering,
Pickering Energy Partners

"What the Permian shows is really underscoring the underlying theme that energy is an 'and' not an 'or,'" said Greg Matlock, Americas energy transition and renewable energy leader for EY. "This is a strategic energy producing area. The focus is on production to meet strategic needs and how we can operate in cleaner, more efficient manners."

There is also focus on improving carbon intensity and decarbonizing.

Companies are making net zero and other ambitions publicly known, communicating plans for specific assets, added Pat Jelinek, Americas oil and gas leader for EY.

"You're starting to see a lot more innovation and focus around methane reductions, a lot more transparency on how it's measured, reported and ultimately contained, and a lot of investment around carbon capture," Jelinek said.

Also evident is more discussion on feasibility, what it takes to scale and required infrastructure to get products to market, he added.

There are no specific pathways that all shale players appear to be taking to lower emissions and reach net-zero goals. However, "without question, you're starting to see a lot of collaboration through the suppliers," Jelinek said. "They'd already been advancing things like automation in the field, but now you are starting to see electrification. You're starting to see a lot more integrated planning with some of the drillers and ultimately, the equipment manufacturers that support the drillers as well."

Conversations are taking place on optimized scheduling, management of gensets in the field, how to best decrease carbon intensity of basic operations as well as through capture and other adjacencies.

"It's definitely not a one size fits all [approach]," Matlock added. "I think the recent past has kind of opened up a full review of the entire value chain where each company is looking for areas of improvement both operational and economic. There are ways to achieve both. It's fairly bespoke on a company by company basis."

Results of a study released this year by analysts from the Joint Institute for Strategic Energy Analysis (JISEA) and the National Renewable Energy Laboratory (NREL) revealed that integrating clean energy into oil and gas operations could reduce emissions and maximize higher-value use of produced hydrocarbons.

The study evaluated clean energy technologies for an oil field in the Delaware Basin and aimed to determine which options were economically attractive. Results included that smaller renewable energy technologies—such as those generating 5% of a site's load (i.e. an 8-kW PV system)—could be effective in lowering grid purchases. However, larger systems generating at least half of the site's load could add costs, though there are environmental benefits.

The study also pointed out the advantages of microgrids, highlighting their ability to overcome electrical outages and operate independently from the electric utility, when needed. It noted microgrids' potential to "create higher value streams from [distributed energy resources] through an optimized dispatch strategy and the deployment of ancillary services."

Eyeing trends

Electrification is becoming more common in the Permian, helping to not only lower carbon intensity of operations but also find uses for some offtake, Jelinek said, noting it's a trend that EY believes will continue.

bp, which grew its Permian Basin presence with its acquisition of BHP's shale assets in 2018, is among the companies stepping up electrification efforts in the basin. The company in April 2021 commissioned an automated, electrified central oil, gas and water handling facility called Grand Slam near Orla, Texas. The facility uses a separation and compression system that recovers gas that would have otherwise been flared at traditional well sites.

In addition to lowering operational emissions and improving efficiency, the project increased gas production, creating another commercialization opportunity.

The intent is that the facility, alongside other investments in electric infrastructure, will lead to more than 95% of the company's Permian-operated wells becoming electrified by 2023, the company has said. Grand Slam marked the largest infrastructure project to date for bp's onshore business.

More companies are also pursuing carbon capture projects, especially as incentives in the Inflation Reduction Act (IRA) make projects economic.

"It's really an area where oil and gas companies can take historic knowledge bases and skill sets from the upstream through midstream, capturing and moving molecules downhole, … and achieve net-zero goals," Matlock said. "You see quite a number of announcements in the Permian in particular around enhanced oil and natural gas recovery, permanent sequestration. I do expect that to be more mainstream, especially with the positive economic benefits of the Inflation Reduction Act."

The EPA approved San Antonio-based Stakeholder Midstream's monitoring, reporting and verification

"What the Permian shows is really underscoring the underlying theme that energy is an 'and' not an 'or.'"

—Greg Matlock, *EY*

plan for its Permian Basin carbon capture project, the company said in September. The project calls for permanently storing the CO_2 in the Devonian formation more than 2 miles below ground and 10,000 ft below the water table.

"We believe that by offering these services to third parties, including other gas processing plants in the Permian region and beyond, we can provide an environmentally responsible solution for CO_2 emitters to reduce the carbon intensity of their oil and gas operations and to meet their ESG goals," Stakeholder Midstream chief commercial officer Brett Baker said. "Our vision is to become one of the leading carbon solutions providers in the United States by helping producers and like-minded midstream companies across multiple basins decarbonize their operations."

Companies are trying to balance energy security and energy transition now, Jelinek said, noting CCUS is a proven technology that can be put to use today.

Partnering with renewables

Permian players are also partnering with renewable companies, sourcing energy for drilling operations from wind and solar companies.

"You're absolutely seeing collaboration and discussions between core renewable companies and oil and gas companies because either generally can't do what the other party is doing," Matlock said. "These are the hyper-technical ways of producing energy."

In recent months, companies active in the Permian and other U.S. shale plays have formed partnerships in areas such as hydrogen, geothermal and battery technology.

Independent oil producer ConocoPhillips Co. will provide natural gas and manage a CCS facility for a proposed U.S. hydrogen gas project to be jointly developed with Japan's utility JERA.

Nabors Industries Ltd. has invested $7 million in Natron Energy Inc. to be used for the advanced production of Natron's sodium-based battery technology, the company said in July.

Oilfield service company Liberty also invested in the sodium-ion battery manufacturer, looking to batteries to provide backup power for its electric frac pumps.

"You're [also] seeing a lot of interest from the oilfield service community around geothermal because it involves a lot of the same—drilling holes in the ground," Pickering said. "Geothermal has raised some money recently. There are several successful financings within geothermal startups."

The only way to invest in some of these adjacencies and collaboration is to have volume, Jelinek said. Operators with higher cash flows from upstream operations and more global demand for products—given the impact of Russia's invasion of Ukraine—are leading to more M&A activity.

"The momentum is accelerating greatly, and now with these additional incentives through IRA and various other global schemes," he said, "you're seeing a lot more people realize the economic viability of a longer-term basis for some of these assets."

Still, projects need to make economic sense. The IRA is making that happen, Matlock added.

"I think longer term, you'll see more and more pairing of renewable power with other power," he said.

Though energy transition-related projects are not beating oil and gas projects when it comes to rates of return, costs are hopefully still on the decline curve, Pickering said.

"There are plenty of projects that look like they have economics that meet hurdle rates. I don't think they're as good as oil and gas, but they're not necessarily intended to be right now," he said. "With the support from the Inflation Reduction Act, an increasing [number] of projects can make money for investors, including the credits."

Balancing act

Adapting to a low-carbon world won't be a quick journey and hydrocarbons will still be needed.

"I'm hopeful that we learn from things that we've seen in

BP PLC

bp's Grand Slam facility near Orla, Texas, uses a separation and compression system that recovers gas that would have otherwise been flared at traditional well sites.

Europe—that the faster we go, the potentially more expensive and volatile it might be," Pickering added. "So, we've got to make sure that we balance these things. I think we'll see the cycles in all of it. But I would just say we need to prepare for a 25-year process, not a two-quarter process."

Companies have tighter ESG frameworks with higher standards. They also have more money than they've had before, so there is less need for as much external capital—though needs still exist, according to Pickering.

"These companies are funding a lot of their own initiatives and they're not going out asking for new equity capital. They want to roll their revolvers. They want access to bank markets," he said. "They want access to the public capital markets. But they're not desperate anymore. So, there's a competitive tension there as well. The money is not making all the demands in this environment."

Looking at energy security as a backdrop, Jelinek called the Permian "one of the crown jewels" where companies want to deploy capital. "So, decreasing the carbon intensity in that asset and looking for adjacencies … all go hand in hand," he said.

"You're starting to see a lot more innovation and focus around methane reductions, a lot more transparency on how it's measured, reported and ultimately contained, and a lot of investment around carbon capture."

—Pat Jelinek, *EY*

Net-zero targets by 2050 will be hard to hit, Pickering added.

"We're going to be talking about all forms of energy for quite a while and we are really lucky that the U.S. has the best of both worlds. We have an increasingly vibrant energy transition community and we've got an oil and gas community that is delivering pretty low cost and secure energy. You put those two things together, and we ought to be in a pretty good spot for this next 25-year run." OGJ

MORE PERMIAN MIDSTREAM

The current round of pipeline expansions means more capacity and consolidation in the Permian Basin.

ARTICLE BY

GREGORY DL MORRIS

GMorris@hartenergy.com

Some operators and capital providers have noted how midstream in the Permian Basin is winding down a heavy phase of consolidation during which there was also notable expansion. Now the shift is to a phase of expansion, in which there will continue to be consolidation.

"Given continued production growth in the basin, commensurate processing capacity expansions will be needed to process the wet gas into residue gas volumes for pipeline transportation," said Tom Dender, midstream chief commercial officer at Kinder Morgan.

"Based on the current processing capacity, the Permian as a whole will be short of processing capacity starting in the next couple of years," Dender said. "A likely outcome will be that the Delaware Basin will need processing capacity initially, followed shortly thereafter by the Midland Basin."

Notably, long-haul capacity is being added but more is expected to be required.

"Given continued Permian production growth over the next five to 10 years, capital expansions will be needed to provide takeaway capacity out of the region," Dender stated.

> **"EnLink is in the process of adding about 200 MMcf/d of capacity that will be on stream by the end of the year."**
>
> —**Benjamin Lamb,** ***EnLink Midstream***

"While the timing is uncertain, most analysts expect that more expansion projects will be necessary around the 2026 timeframe, assuming the current expansions have occurred on Whistler, Permian Highway, Gulf Coast Express and Matterhorn," Dender said. "The most probable destination markets for this egress capacity will be in support of the numerous proposed Gulf Coast LNG export projects as well as potentially Mexico LNG projects and power generation in the desert southwest."

Pipeline expansions

Kinder Morgan is part of the Permian Highway Pipeline (PHP) expansion project, which was announced in June. The project will increase PHP's capacity by about 550 MMcf/d, primarily by adding compression. The greater gas deliveries from the Waha area to multiple mainline connections in Katy, Texas, and various U.S. Gulf Coast markets are scheduled to begin Nov. 1, 2023. PHP is jointly owned by subsidiaries of Kinder Morgan (26.7%), Kinetik Holdings (53.3%) and Exxon Mobil Corp. (20%).

"This expansion couldn't come at a more critical time, as it will foster future gas production growth in West Texas and provide several liquefaction facilities along the Texas Gulf Coast with more affordable, reliable supply," said Jamie Welch, president and CEO of Kinetik.

"In addition, approximately 30 of Kinetik's customers will gain access to premium priced markets and transportation flow assurance, which is critical to minimizing flared volumes," he continued.

Before confirming the final investment decision (FID) on PHP, Kinder Morgan opened a binding season for the proposed expansion of the Gulf Coast Express (GCX) Pipeline. As with PHP, the expansion for GCX will be through additional compression and is expected to increase GCX's capacity by nearly 570 MMcf/d. If committed and completed, increased gas deliveries from the Permian Basin to South Texas markets would begin Dec 1, 2023.

Beyond Kinder Morgan's 34%, GCX is jointly owned by subsidiaries of DCP Midstream (25%), an affiliate of ArcLight Capital Partners (25%) and Kinetik (16%).

In May, infrastructure investment firm WhiteWater, EnLink Midstream, Devon Energy and MPLX made their FID to proceed with the Matterhorn Express

ENLINK MIDSTREAM

EnLink Midstream's Midland Basin natural gas processing plant, Bearkat, has a capacity of around 75 MMcf/d.

Pipeline after securing sufficient firm transportation agreements with shippers. The new line will move as much as 2.5 Bcf/d of natural gas through approximately 490 miles of a 42-inch pipeline from Waha, Texas, to the Katy area near Houston.

Supply for Matterhorn will come from multiple shippers around the Permian, including direct connections to processing facilities in the Midland Basin through an approximately 75-mile lateral, as well as a direct connection to the 3.2-Bcf/d Agua Blanca Pipeline, a joint venture between WhiteWater Midstream and MPLX. Ridgemont Equity Partners and First Infrastructure Capital are partners with WhiteWater in Matterhorn.

Also in May, some of the same players committed to an expansion project. MPLX, WhiteWater Midstream and a joint venture between Stonepeak Infrastructure Partners and West Texas Gas made the FID to proceed with the expansion of Whistler Pipeline, after securing sufficient firm transportation agreements with shippers.

The Whistler expansion will increase the mainline capacity from 2 Bcf/d to 2.5 Bcf/d through installation of three new compressor stations. The expansion is expected to be in service in September 2023.

Whistler is a 450-mile, 42-inch diameter intrastate pipeline that moves gas from the Waha Header in the Permian to Agua Dulce, Texas, and provides direct access to South Texas and export markets. An 85-mile, 36-inch diameter lateral connects to the Midland Basin.

"Processing capacity is actually rather tight in the Midland Basin," said Benjamin Lamb, executive vice president and COO of EnLink Midstream.

"EnLink is in the process of adding about 200 MMcf/d of capacity that will be on stream by the end of the year. Our neighbors are mostly full too, and most of them have announced their own expansion plans. This current round of expansions won't be the last."

The EnLink's Phantom Plant project is being relocated to Martin County, Texas, near the town of Tarzan. When in service, it will bring the company's total capacity in the Midland Basin to about 900 MMcf/d.

"The Delaware Basin is not like the Midland because there has been a lot of excess capacity," said Lamb. "But it, too, is starting to feel tighter. Many of us in that basin are starting to think about new capacity, which up until recently I didn't think was a consideration."

Connecting to the pipe

The same realization is happening in long-haul transportation as well.

"We have started seeing basis differentials at Waha that we have not seen in the past few years," said Lamb. "It is those considerations that prompted us, and our partners, to fund and build the WhiteWater Matterhorn project, in which EnLink has a 15% equity interest. That project is well underwritten by both shipper and capital commitments."

On the crude side, Lamb noted that "all the large new oil production is connected to pipe. It is well understood that fewer trucks on the road is safer and cleaner and usually cheaper. It is also far more reliable than trucks. We had a small fleet of trucks in West Texas as an entry to the gathering business, but once we had lines in place, we divested the trucking business."

Along with the tank truck driving off into the sunset, the industry is happy to see flaring becoming a vestige as well.

"Producers have heard the message from their investor base that flaring is not acceptable," said Lamb, "and we in the midstream have received the same message from

our customers. It just underscores that upstream and the midstream need to communicate and coordinate."

Consolidation and expansion

Both consolidation and expansion "will continue in the Permian," said Baran Tekkora, head of private equity at Riverstone Holdings, "in both the upstream and the midstream because the Permian is the best basin in North America. Upstream will continue to consolidate for scale, especially for the high-quality assets, and midstream will follow."

At the end of July, Riverstone completed a major midstream transaction when it sold Lucid Energy to Targa Resources for $3.55 billion. Lucid's assets, which will be integrated into Targa's existing Permian Basin operations, include about 1,050 miles of gas pipelines and 1.4 Bcf/d of cryogenic processing capacity in service or under construction primarily in Eddy and Lea counties, New Mexico.

Lucid's Delaware Basin footprint overlays some of the most economic crude oil and natural gas producing acreage in North America. Lucid's assets are anchored by more than 600,000 dedicated acres from a diverse set of shippers and underpinned by long-term, fixed-fee contracts.

"We made our investment in Lucid in the northern Delaware Basin in 2018," said Tekkora. "When we purchased it, capacity was 300 MMcf/d. We exited in one of the largest transactions in the industry [$3.55 billion] at 1.4 Bcf/d."

He acknowledged that the size and scale of such a development and the sale "may be more unique than repeatable, but the basic concept is not rocket science."

Notably, Lucid grew and flourished in the New Mexico side of the Delaware, where there were smaller operators and not many other midstream majors as compared to the Texas side of the basin.

ENLINK MIDSTREAM

EnLink Midstream's East Plant is located in the Midland Basin and has a processing capacity of around 120,000 MMcf/d.

Driving future development

Expounding further on the way conditions have changed in the industry and in finance, Tekkora added that one important model for midstream development has almost disappeared.

"For years a lot of midstream investment was focused on greenfield development because it was easier for entry," Tekkora explained. "Given the lower cost of capital for master limited partnerships [MLPs], the focus was on growth based on a few big contracts. That was the old game, and that ended about 2016. Now you have to have both scale and quality. The quick flip is pretty much over. The MLPs went away, and the infrastructure funds went away."

Wide-spread flaring has also gone away.

"Flaring was not good for the industry, and it was not good for the carbon footprint," Tekkora stated. "Some of the investment [to collect and connect associated and stranded gas] and stop so much flaring would have happened even if gas had not gone to $9."

He cited regulatory pressure and that reducing flaring "was simply the right thing to do. Whether operators truly believed that, or even it is just for public relations, either way it has happened and continues to happen. The economic driver in the Permian Basin is oil, so associated gas will continue to be something producers, and the midstream will have to deal with."

The need for take away is also not going away. "Overall the export capacity from the Permian is starting to tighten," said Tekkora. He stressed that "long-haul natural gas will always slightly lag production, so we will always see about six to nine months of hiccups."

"Near-term relief will come with some compression expansions on three existing pipelines that were installed in the past five years and a newly announced fourth project. However, there's likely to be a fifth greenfield project required or at least a collection of significant brownfield projects to provide similar capacity."

Oil transportation is also a factor.

"There is still a fair amount of oil being driven around," said Tekkora. "Even after so much consolidation among producers to create scale, there are still situations with two blocks together followed by a big empty space before the next. Gathering is all about density and production, so no one is going to build out for just one or two wells."

Water is also about economies of scale. "People have tried hard to make it a third stream in the midstream," said Tekkora. "And to the extent it can be a true midstream business with fixed contracts, it could be interesting. But if it acts like a service business, we don't have an interest." OGI

MULTINATIONALS IN THE PERMIAN BASIN

Companies with global influence and interests control more than half the acreage in the Permian Basin.

ARTICLE BY

PIETRO D. PITTS

@PietroDPitts

pdpitts@hartenergy.com

The Permian Basin has attracted the attention of U.S. companies with no international operations as well as international oil companies (IOCs) and a national oil company (NOC) from Latin America that operate in Latin America, Africa, Europe, Asia and beyond. This analysis is confined to eight multinationals with operations in the Permian. The majority, including Exxon Mobil Corp., Occidental Petroleum Corp. (Oxy), APA Corp., Chevron Corp., EOG Resources Inc. and ConocoPhillips Co., have corporate headquarters in the U.S. The remaining two include one IOC with corporate headquarters in London, bp Plc, and one NOC from Colombia, state-owned Ecopetrol, which stands out in a league of its own.

The eight multinationals control about 62% of the acreage in the Permian Basin, according to Rextag data. The dominant acreage holders include Chevron, which holds 30%, APA (22%), Oxy (5%), ConocoPhillips (3%), Exxon (1%), Shell and bp with a combined (1%) and others holding the remaining 38%.

"The IOCs are significant contributors to the basin's outlook, but we would attribute most of the successes in the Permian Basin to the E&Ps and energy service companies," Wells Fargo equity analyst Roger D. Read told Hart Energy.

"Associated gas production from the Permian is a meaningful, but not dominant, contributor to U.S. gas production growth and LNG exports. We continue to see traditional gas-producing areas such as the Marcellus and Haynesville as significant gas production growth regions alongside the Permian Basin."

Regardless of whether the IOCs were active in the Permian or not, the basin would be an active one and a meaningful contributor to U.S. and global production growth, Read said.

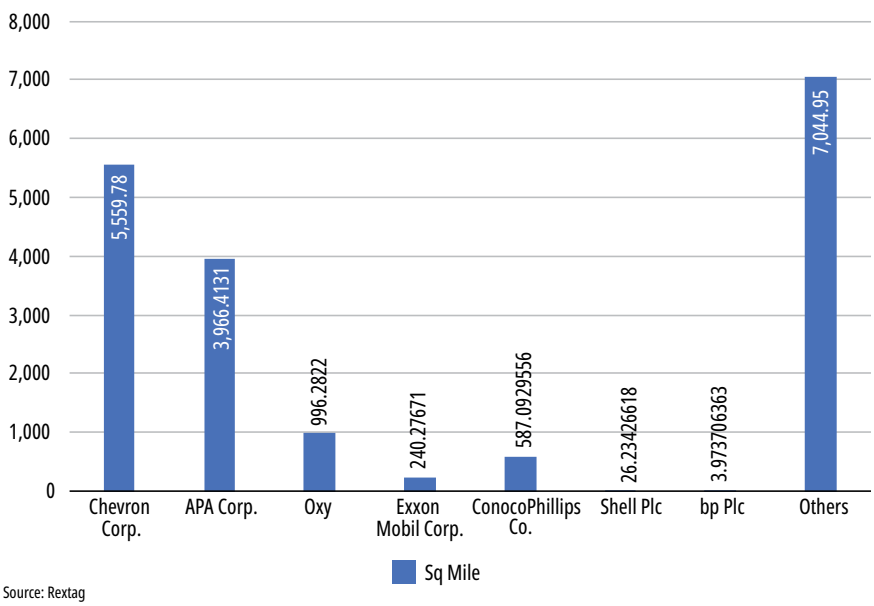
"What we believe the IOCs bring to the market is consistency, a high level of environmental compliance, a long fairway of growth potential through the end of the decade and their integrated model of development, which will capture value throughout the production, distribution and end-use chain."

The IOCs are "significant, but not dominant", players in the development of the Permian and will contribute one-sixth to one-seventh of Permian oil production growth through 2025 based on current forecasts, Read said.

What follows is a summary of the multinational's operations in the Permian including acreage, production and near-term plans.

Permian Basin Acreage

International oil companies control about 62% of the acreage.



Source: Rextag

MAJORS

Exxon Mobil

Houston-based Exxon Mobil, which acquired XTO Inc. in 2010, has key international upstream operations in Brazil and Guyana. In the U.S., the Permian remains a key asset within its portfolio as it looks to maximize the value of an advantaged acreage position through technology and integration.

The Permian continues to improve efficiency and grow volumes. Average production in the Permian during the first half of 2022 grew by nearly 130,000 boe/d versus the first half of 2021, and averaged more than 550,000 boe/d in the second quarter of 2022.

"For the full year in the Permian, we expect to achieve 25% production growth for the second consecutive year," Exxon Mobil CEO Darren Woods

said during the second-quarter webcast. "The plans that we have in place should deliver and our current production is in line with that 25% growth versus last year, which as you know is on top of 25% growth the year before."

Exxon Mobil aims to grow Permian free cash flow and retain development pace optionality and flexibility. By 2027, Exxon Mobil forecasts average Permian production to exceed 800,000 boe/d with free cash flow potentially exceeding $5 billion.

Exxon Mobil's development approach in the Permian leverages competitive advantages to drive efficient growth with benefits coming from early investment in surface infrastructure, which provides an established foundation for long-term efficiency as well as a multiwell pad corridor approach and significant operating cost reductions driven by efficiency and performance gains.

Exxon Mobil aims to achieve net-zero Scope 1 and 2 greenhouse-gas emissions at its Permian operations by 2030. The company's plan includes eliminating all routine flaring in the area by the end of 2022, upgrading equipment, improving monitoring and electrifying operations with lower-emission power.

Exxon Mobil's net-zero road map in the Permian includes minimizing methane emissions through use of leak detection, flare minimization, electrification of drilling, completions and operations, and purchasing or producing renewable power.

"The IOCs are significant contributors to the basin's outlook, but we would attribute most of the successes in the Permian Basin to the E&Ps and energy service companies."

—Roger D. Read, *Wells Fargo*

Chevron

San Roman, Calif.-based Chevron has operations and projects in North America, South America, Europe, Africa, Asia and Australia. In the U.S., Chevron, through its legacy companies, has been active in the Permian since the early 1920s and is one of the largest oil and gas producers. In the Permian, Chevron holds approximately 2.2 million net acres and approximately 75% have either low or no royalty payments.

Chevron's acquisition of Noble Energy in October 2020 strengthened its Permian position. In 2021, Chevron's net unconventional production in the Permian averaged 284,000 bbl/d of oil, 1.1 Bcf/d of gas and 148,000 bbl/d of NGL, while conventional production averaged 10,000 bbl/d of oil, 39 MMcf/d of gas and 2,000 bbl/d of NGL. Looking forward, Chevron forecasts Permian production to reach 1 MMboe/d by 2025.

Chevron's advantaged portfolio of development areas in the Permian consists of stacked formations, which allow production from multiple geologic zones from single surface locations. Top tier drilling and completion performance has allowed Chevron to report year-over-year capex efficiency improvement and cycle time reduction, generating higher returns throughout its Permian portfolio. Chevron's Permian operations have also demonstrated continual progress on its lower carbon and water goals, consistently ranking among the best Permian operators for methane emissions intensity, routine flaring and water handling (utilizing 99% brackish or recycled sources), Chevron said.

bp Plc

The bpx energy business, which began operating as a standalone entity in 2015, comprises London-based bp Plc's onshore oil and gas operations in the U.S. Lower 48. bpx operates in the Permian-Delaware and Eagle Ford basins in Texas and focuses on safely producing high-margin barrels, while driving down emissions. In 2021, bpx reported emission reductions comparable to the annual electricity-related emissions of over 114,000 typical homes, according to the company.

bpx's production in 2021 from its Texas and Louisiana operations averaged 296,000 boe/d. By 2025, bpx aims to achieve zero routine flaring at all its U.S. onshore operations mainly through investments in new and upgraded infrastructure.

In the Permian, bpx's new, state-of-the-art Grand Slam facility is an electrified central oil, gas and water handling facility that decreases operational emissions by replacing gas-driven equipment, compressors and generators. bpx forecasts that over 95% of its Permian-operated wells will be electrified by 2023, according to the company.

Additionally, the company plans to install methane measurement equipment at all of its existing oil and gas processing sites by 2023.

INDEPENDENTS

Oxy

Houston-based Oxy has operations in Oman, United Arab Emirates (UAE), Algeria and the U.S. where its acquisition of Anadarko Petroleum Corp. in 2019 significantly boosted the company's Permian holdings.

Oxy manages its Permian operations through two business units: Permian Resources, which includes unconventional opportunities, and Permian EOR, which utilizes EOR techniques such as CO_2 floods and waterfloods. The exploitation of synergies between the two business units allows Oxy to deliver short- and long-term advantages, efficiencies and expertise across its Permian operations.

Oxy's position in the Permian covers 2.8 million net acres.

In the basin, Oxy is known for its EOR—whereby CO_2 is injected and permanently stored in hydrocarbon reservoirs during production to improve efficiency, economics and environmental sustainability. Oxy boasts being the Permian's largest CO_2 EOR operator and stores up to 20 million tons of CO_2 underground annually.

In the second quarter of 2022, Oxy's share of production in the Permian averaged 493,000 boe/d, up compared to 487,000 boe/d in 2021.

"Our Permian production delivery remains very strong, with a growth of approximately 100,000 boe/d when comparing the fourth quarter of 2021 through our implied production guidance for the fourth quarter of 2022," Oxy senior vice president and CFO Robert L. Peterson said during the second quarter of 2022 webcast.

In 2022, Oxy has allocated $1.7 billion to $1.9 billion, or almost 50% of its worldwide capex, to the Permian, up compared to $1.1 billion in 2021, of which approximately 93% was spent on Permian Resources assets. In 2021, Oxy divested of certain nonstrategic assets in Permian Resources while acquiring additional working interests in certain assets related to Permian EOR.

Oxy, Ecopetrol joint venture

Oxy and Ecopetrol created a joint venture (JV) in November 2019 to develop 97,000 net acres of Oxy's Midland Basin unproved properties in the Permian. The JV allows Oxy to accelerate its development plans in the Midland Basin and retain production and cash flow from its existing operations in the basin. Recently, Oxy and Ecopetrol agreed to enhance their Midland Basin JV and expand their partnership to cover approximately 20,000 net acres in the Delaware Basin, which includes 17,000 acres in the Texas portion of the Delaware.

"In the Midland Basin, Oxy will benefit from the opportunity to continue development with an extension to the capital carried through the end of this agreement in the first quarter of 2025," Oxy president and CEO Vicki A. Hollub said during the company's second quarter of 2022 webcast. "In the Delaware Basin, we have the opportunity to bring forward the development of high-quality acreage that was further out in our development plans, while benefiting from an additional capital carry of up to 75%. In exchange for the carried capital, Ecopetrol will earn a percentage of the working interest in the JV asset."

Activity in the Delaware sub-basin is expected to commence in the fourth quarter of 2022 and add production from the first quarter of 2023 onward, according to Oxy.

In the first half of 2022, the Oxy-Ecopetrol JV in the Permian, known as the Rodeo JV, had a total of 149 wells in production, which represented average production of 268,000 boe/d net for Ecopetrol before royalties, up 94% compared to 138,000 boe/d for the first half of 2021, according to Ecopetrol.

Ecopetrol's forecast for 2022 includes the drilling of 97 wells, the completion of around 95 wells and an increase in production for Ecopetrol between 4,000 boe/d to 6,000 boe/d (corresponding to a greater Ecopetrol working interest in the Rodeo JV of 26%, increasing from 49% to 75% after the JV amendment), for an expected total average production in 2022 of 38,000 boe/d to 40,000 boe/d net to Ecopetrol before royalties.

In terms of emissions reduction, the Rodeo JV "continues to apply the zero routine flaring initiative and to install systems for the assessment of fugitive emissions," Ecopetrol CEO Felipe Bayón said during the company's second quarter of 2022 webcast. Additionally, up to 36% of the volume of diesel used in the completion activities has been replaced by CNG.

ConocoPhillips

Houston-based ConocoPhillips has operations in Asia Pacific, Europe, the Middle East, North Africa, Alaska, Canada and U.S. Lower 48. For ConocoPhillips, the U.S. Lower 48 now represents the company's largest business segment based on production. There in 2021, the company specifically reported significant growth in the Permian with the acquisition of Concho Resources Inc. in January 2021 and the addition of Shell Enterprises LLC's Permian acreage in December 2021. At year-end, ConocoPhillips held approximately 1.5 million net acres in the Permian.

ConocoPhillips' net production for the Permian in 2021 was 442,000 boe/d (286,000 boe/d from the Delaware, 136,000 boe/d from the Midland and 20,000 boe/d from other Permian assets), excluding production associated with its acquisition of Shell's prolific Delaware Basin position. The Shell assets include about 225,000 net acres and producing properties located entirely in Texas as well as over 600 miles of operated crude, gas and water pipelines and infrastructure. These assets were initially forecast to produce around 200,000 boe/d in 2022, roughly half of which is operated.

In the second quarter of 2022, production from ConocoPhillips' Permian assets averaged 634,000 boe/d. In 2022, Permian production growth is expected to be back-half weighted and grow at the higher end of a mid-to-high single-digit growth range on a pro forma basis, ConocoPhillips' Lower 48 executive vice president, Jack Harper, said during the company's second quarter of 2022 webcast.

ConocoPhillips' Permian footprint

In the Delaware Basin, ConocoPhillips holds approximately 709,000 total net acres spanning West Texas through southeast New Mexico, including approximately 654,000 unconventional net acres. Current development activity targets prospects in the Avalon, Bone Spring and Wolfcamp formations, while balancing leasehold obligations and permit terms. Ongoing improvements in drilling and completion efficiencies, infrastructure development and water management are supported by offtake agreements to further reduce the cost of supply.

In the Midland Basin, ConocoPhillips holds approximately 376,000 total net acres, which includes approximately 266,000 unconventional net acres located in the heart of West Texas. The current focus is on full-scale development utilizing large multiwell pad

projects targeting both Spraberry and Wolfcamp reservoir targets, according to ConocoPhillips. With over 2,500 ft of high-quality reservoir targets in the Spraberry, Dean and Wolfcamp formations, ConocoPhillips has more than a decade of remaining development inventory. The company reports it's leveraging new drilling and completion technologies to safely increase lateral length and improve drilling and completion efficiency while reducing the surface footprint.

ConocoPhillips' other Permian assets in the Central Basin Platform and the Northwest Shelf are legacy positions, mostly HBP.

APA Corp.

Houston-based APA Corp. has key operations in Egypt's Western Desert and the U.K.'s North Sea, and exploration opportunities offshore Suriname. In the U.S., APA has operated in the Permian Basin since the 1990s.

The Permian has played a significant role in APA's long-term strategy, offering conventional and unconventional opportunities. APA holds 332,000 gross acres (238,000 net acres) in the southern Midland Basin and 267,000 gross acres (134,000 net acres) in the Delaware Basin, including opportunities in the Bone Spring and other formations of eastern New Mexico and bordering West Texas, and the Alpine High play in the southern portion of the Permian Basin, primarily in Reeves County, Texas.

In the Permian, APA operates approximately 6,000 gross oil and gas wells across its acreage, with additional interests in more than 3,000 nonoperated wells. Of note, approximately 6% of the company's net acreage position in the Permian is on federal onshore lands. In the Permian, APA is targeting sub-basins shale plays, including the Woodford, Barnett, Pennsylvanian, Cline, Wolfcamp, Bone Spring and Spraberry.

The company recently added a third rig in the Permian, which is now drilling at Alpine High.

In the southern Midland Basin during the second quarter of 2022, APA averaged two rigs, while it placed six wells on production. In the third quarter of 2022, the company forecasts placing approximately 10 wells on production.

In the Delaware Basin in the second quarter of 2022, APA averaged one rig, while no new wells were brought into production. Six wells were drilled at DXL Field, which are expected online in the fourth quarter of 2022. A rig was also moved to Alpine High where it will drill the first pad since 2019. APA also recently completed a tuck-in acquisition in July of properties primarily in Loving and Reeves counties near the company's active development areas in the Delaware Basin in Texas. The acquisition consists of producing wells, wells in the drilling and completion process and an inventory of undrilled locations. Currently two rigs are operating with one rig to be released in the fourth quarter of 2022, while the other will be retained as a fourth U.S. development rig. OGJ

FORMER OXY CEO STEPHEN CHAZEN DEAD AT 76

Stephen Chazen worked up through the ranks to become president and CEO of Occidental Petroleum Corp.

ARTICLE BY
HART ENERGY STAFF

Stephen Chazen, an energy industry giant whose career included making Occidental Petroleum Corp. (Oxy) a key player in the Permian Basin, died on Sept. 22 "after a hard-fought battle with cancer." He was 76.

"In all his endeavors, Steve was a respected leader. He led with a quiet confidence and was a mentor and friend to many," his obituary said.

Chazen served as president and CEO of Oxy from May 2011 to April 2016. He joined the company as executive vice president-corporate development in 1994 and still served as independent chairman, a position he had held since 2020.

At Oxy, Chazen oversaw nearly $40 billion of energy-related acquisitions and more than $20 billion of divestitures. Under his leadership, Oxy became the fourth-largest U.S. oil and gas company, based on 2015 year-end market cap. The company's growth was driven in large part by its asset base in the Permian Basin, an area in which Oxy was the largest operator and producer of oil in 2015.

"We are saddened by the passing of Steve Chazen. We cared for him deeply, and our thoughts and prayers are with his wife, family and friends," commented Vicki Hollub, president and CEO of Oxy, in a statement to Hart Energy.

"Steve played a significant role in transforming Oxy into a focused global energy leader over the past 30 years, serving as chief financial officer, CEO and most recently as independent board chairman," Hollub said.

Following his retirement from Oxy in 2016, Chazen went on to found Magnolia Oil & Gas Corp., a publicly traded E&P company focused in the core of the Eagle Ford and Austin Chalk formations. Magnolia was formed through a transaction in 2018 between EnerVest and a blank-check company Chazen headed.

"Professionally, Steve had a profound impact on how E&P companies are managed with an objective of creating long-lasting shareholder value. He was the type of businessman who didn't follow trends but rather established trends," said Christopher Stavros, Magnolia Oil & Gas Corp.'s new CEO.

Chazen was Magnolia's chairman, president and CEO up until the very end. On Sept. 21, the company issued a statement that Chazen had stepped down because he was no longer able to serve in those positions "due to serious health reasons."

Stavros, the company's then-CFO, was appointed president and CEO, effective immediately with Chazen's departure.

"We are greatly saddened by Steve's passing and extend our thoughts and sympathies to his family. As Magnolia's founder, Steve has left an indelible mark on the company, the oil and gas industry and the greater Houston community," Stavros said.

"Professionally, Steve had a profound impact on how E&P companies are managed with an objective of creating long-lasting shareholder value," Stavros continued.

Prior to his career at Oxy, Chazen was a managing director in corporate finance and M&A at Merrill Lynch. Additionally, Chazen was a former chairman of the board of the American Petroleum Institute and the Catalina Island Conservancy.

Chazen was appointed to the University of Houston System Board of Regents in 2018 and served on the advisory board at Rice University's Baker Institute for Public Policy. He was also a director of Houston Methodist Institute for Academic Medicine, the Williams Cos. and the National Park Foundation.

Chazen brought more than a geology degree to the industry. After graduating from Rutgers University, he was drafted by the U.S. Army in 1969. He volunteered for the canine corps and was shipped to Vietnam, according to his obituary from Earthman Bellaire Funeral Home.

As part of the Oxy board's succession plan, Jack Moore, who is the board's independent vice chairman, will serve as interim chairman until the board convenes to elect a chairman. OGI

OXY'S HOLLUB PLEASED WITH PERMIAN BASIN JV

Vicki Hollub, president and CEO of Houston-based Occidental Petroleum Corp., spoke briefly with Hart Energy on the sidelines of the Energy Intelligence Forum about her company's operations in the Permian Basin.

INTERVIEW BY

PIETRO D. PITTS

@PietroDPitts

pdpitts@hartenergy.com

In the Permian Basin, Occidental Petroleum Corp. (Oxy) and Colombia's state oil company Ecopetrol are jointly developing Oxy's Midland Basin unproved properties. The pair also have a joint venture (JV) focused on the natural gas potential offshore Colombia's Caribbean coast.

The Permian Basin venture offers Oxy a way to move development plans in the basin forward while retaining production and cash flow from its existing operations there. The two companies recently agreed to enhance their Midland Basin JV and expand their partnership to cover acres in the Delaware Basin.

In Colombia, Oxy and Ecopetrol plan to jointly participate in exploration activities in four blocks located in deep waters offshore the South American country's Caribbean Coast. The blocks include COL 1, COL 2, COL 6 and COL 7.

Future activities offshore Colombia will come after two high-profile discoveries already this year which could lead to development of a gas province in the southern Caribbean. Such a development could contribute to supporting Colombia's energy security and opens the possibility of future gas exports, a fundamental energy source for the energy transition that Ecopetrol has been developing.

What follows are excerpts from Hollub's short interview.

"What we've been able to do together in the Midland Basin was something I didn't think we could do. The wells are better than we expected and the development's been positive for both of us."

—Vicki Hollub, *Oxy*

Pietro D. Pitts: *How is your JV with Ecopetrol advancing in the Permian Basin?*

Vicki Hollub: We just expanded the Ecopetrol JV to the Delaware Basin and it's going really well.

Ecopetrol has been a valued partner for a long time. They're a company that advances technology. We advance technology, [and] we share. So, this JV has been a benefit to both of us, and we're continuing to improve it.

But what we've been able to do together in the Midland Basin was something I didn't think we could do. The wells are better than we expected, and the development's been positive for both of us.

PDP: *It's been kind of a learning experience for Ecopetrol, a newcomer to the Permian. Do you see yourself being more in a teacher role as Ecopetrol gains experience participating in U.S fracking operations with the idea of transferring that experience and know-how back to Colombia someday?*

VH: I think they've learned from the shale, but we learned from Ecopetrol too. That's why the partnership has been strong because we share and we know that they know things and can do things better than we can. We don't have an ego in that we're the best here. We try to work with them to learn from them as they learn from us. So, that's the reason our work is [going] so well [as] we are sharing with each other and learning from each other.

PDP: *Ecopetrol has announced two successful finds this year offshore Colombia in partnership with Petrobras at the Uchuva-1 well and with Shell Colombia at the Gorgon-2 well. Now Colombian ministry officials and executives with the companies are talking about a new offshore gas province. What's your view on the discoveries this year and Colombia's gas potential?*

VH: I'm excited about those discoveries. And I think Colombia should be excited too. I think it's great … [and] we're not sure whether our blocks will have oil or gas, [but] we originally wanted oil, but now seeing how the gas situation's playing out in the world … it's OK either way. OGI

SAUDI ARAMCO CEO WARNS GLOBAL ENERGY SUPPLIES ON RAZOR'S EDGE

Oil and natural gas production and inventories remain low and any unexpected increase in demand could devour spare capacity, Saudi Aramco CEO Amin Nasser told a crowd in London.

ARTICLE BY

DARREN BARBEE

dbarbee@hartenergy.com

Underinvestment and a tight oil supply is one "hiccup" away from exposing just how fraught the energy markets really are, Saudi Aramco president and CEO Amin Nasser said at the Energy Intelligence Forum 2022.

Nasser, head of the world's largest crude oil producing company, said that the crisis between Russia and Ukraine has had a significant impact on global energy at large. But, he noted, markets were already tight prior to Russia's invasion as demand began to recover from the COVID pandemic.

"The crisis [in] Russia and Ukraine only intensified what was happening," he said.

As the full impact of oil and product embargoes kicks in, it's unclear what will happen, or how other sanctions affect world supplies if third-party buyers of Russian crude are targeted.

"More of an issue is gas and LNG because … first of all, there is no spare capacity available on the market," Nasser said. "These are all long-term contracts. So, it's a much bigger issue for gas and LNG than crude."

The increased demand of crude to Europe hasn't affected Saudi Aramco's ability to meet its obligations in Asia. The company has long-term contracts and great relationships with its customers, according to Nasser.

"We didn't see any impact because of the shifting balance from Europe to Asia," he said, adding that the company is also meeting commitments to North America.

But the underlying market, in his view, is more fraught than investors realize. While crude oil prices have softened from highs after the start of the Ukraine war, supply remains extremely tight, particularly around spare capacity.

"I think the market is focusing on short-term requirements rather than the fundamentals because of higher inflation and what the central banks are doing … increasing interest rates to control inflation," Nasser said. "And the sentiment that we are seeing in the market about recessions and what that would do to demand."

Nasser argued that the markets should be focused on supply, especially if China's economy opens up "a little bit, you will find out spare capacity will be eroded completely."

"Even if there is a small hiccup, you won't be able to avoid that spare capacity" reality, he said. "The world should be worried because there is not going to be any buffer for any hiccup, any interruption, any unforeseen event anywhere in the world."

Underinvestment in energy also remains a problem that Nasser has repeatedly warned about.

He noted that Saudi Aramco's plans to add 1 MMbbl/d of capacity through offshore drilling will take six to seven years to develop. The market is instead focusing on short-cycle projects that generate quick profits instead of long-term projects that sustain supply needs for long periods of time.

Nasser zeroed in on projections from the International Energy Agency (IEA) that by 2030, in a net-zero emissions environment, oil demand will fall to roughly 70 MMbbl/d, which would mean a 30-MMbbl/d reduction in crude.

"This really made an impression on investors because they see this coming from experts and they take this seriously," he said. "Why would you do an investment if you think by 2030 [demand] is going to be 70 million barrels?"

Saudi Aramco, however, believes that demand will continue to grow through 2030 and beyond. Nasser said that solar, wind and other renewables are "not ready, yet, to shoulder a bigger portion of the energy requirement."

"We need to work in barrels. We need to develop our oil and gas to make sure that we decarbonize our resources," he said. "When renewable is ready, you can phase out crude and gas and whatever you're talking about in terms of emissions. But make sure it is ready first. And this is where I keep saying, 'We have a slow transition.'"

The consequence of policies shifting from oil and gas has, he said, resulted in 8 billion tonnes of coal being consumed this year.

"This is the highest in a decade," Nasser said. "So, if you think about it, we are transitioning to coal." OGI

ANALYSTS FORECAST 'WILD RIDE' FOR LNG

East Daley analyst Zach Van Everen predicts gas markets will be oversupplied in the short term but believes exports will eventually drive production for decades.

ARTICLE BY
JAXON CAINES
jcaines@hartenergy.com

The energy industry in the U.S. is in for a "wild ride," according to Zack Van Everen, senior capital markets analyst at East Daley Capital Analytics.

Van Everen, speaking during a presentation at Hart Energy's America's Natural Gas Conference, cautioned the audience of changes on the horizon in the oil and gas industry, believing that gas markets will become oversupplied very soon.

"East Daley forecasts a significant amount of dry gas hitting the U.S. markets from now until the end of December 2023. Around 4.6 Bcf/d is what we currently have forecast from September 22 through December 2023," Van Everen said.

The past year has been a turbulent one for the energy sector. The Russian invasion of Ukraine, combined with oil scarcity within the U.S., caused a price jump in WTI crude during the first quarter, with the price rising as high as $115. In response to high prices, U.S. producers added over 100 rigs across the six major basins—the Permian, Anadarko, Eagle Ford, Ark-La-Tex, Appalachia and Williston.

While the main purpose of adding to the number of rigs was to increase oil production within the states, gas production also grew due to associated gas. The influx of associated gas has caused more gas to come online than can be stored, according to Van Everen.

"The capacity of storage is capped. It's never been that high," he said.

"What we want to highlight here," he continued, "is when we let our models run based on current and future strip prices, current activity in all these basins and the current demand, assuming a relatively normal winter and normal summer, what you get is storage filling and markets becoming unbalanced. Once this happens, you're most likely going to see some deferred growth in those three basins highlighted, mostly gas-centric basins [Ark-La-Tex, Appalachia and Anadarko]. If the price drops significantly, you'll likely see producers building a DUC inventory, shutting in wells until gas prices improve."

Longer term, at least until demand returns, he said, East Daley forecasts overall rigs to decline in the three highlighted gas-centric basins.

"Together, this will rebalance the market as the free market generally does," he added.

A surplus of natural gas in the short term isn't the only thing that East Daley forecasts. Due to the energy crisis in Europe and the invasion in Ukraine, they also see LNG exports in the U.S. taking over globally and driving production growth for decades.

"Even before the invasion of Ukraine, you can see a lot of contracts are being signed," said Van Everen. "We believe this is just the realization of the world that natural gas isn't going away. It's actually the best transition fuel while we sort out the renewable side of things. … From 2025 and beyond, you have a significant call for gas."

While demand will stay relatively flat from 2022 to 2024, a ramp-up in demand will kick start the "wild ride" East Daley foresees as there will be a call for more gas into the market. Prices are predicted to "come down and then in the outer years come back up as there's a call for production to feed this 12-plus Bcf of gas."

Regulatory, economic and geographic constraints could cause less gas than needed to be produced from the six major basins in the U.S. However, East Daley views the Tier 2 basins as a solid hedge for these possibilities, so analysts expect growing demand will be met.

Despite Van Everen admitting that his predictions are bullish, he remains confident in East Daley's forecasting methods.

"Since we come from an infrastructure lens, we follow the molecule all the way through the midstream. So, we're able to look at the wellhead production and

"We believe this is just the realization of the world that natural gas isn't going away."

—Zack Van Everen, *East Daley Capital Analytics*

then we flow it through a G&P (gathering and processing) system and then we actually flow it through egress pipes out of every single basin," Van Everen said. "So, between all those data points, we're able to watch production pretty closely in various different points."

The gas market looks to be heading on an interesting journey in the near future. He added that while things might start off slow, they will undoubtedly pick up and the U.S. will be a leading exporter of natural gas.

"We believe based on current activity, current production models on the natural gas and crude side, that the markets will see a significant amount of supply hitting the markets in the next, call it 12 to 18 months, to take this supply in the short term," he said. "There's not a significant amount of demand … Longer term, we will see a new demand source coming online throughout the years, 12 Bcf and new LNG on the conservative side, which will be a call for all the gas and oil basins out of the U.S. to feed the global demand for gas as that continues to increase throughout the years." OGJ

ARNALDO LARIOS/HART ENERGY

INDUSTRY MUST MAKE PROGRESS IN EMISSIONS

It's possible to produce more oil and gas while achieving net-zero emissions, say executives from Baker Hughes, Oxy, Nomadia Energy Consulting and more at ATCE.

ARTICLE BY

JENNIFER PALLANICH

jpallanich@hartenergy.com

The time has come for the oil and gas industry to "walk the talk" as the world works toward the energy transition.

The oil and gas industry faces a lot of challenges in the race toward net zero by 2050, but also a lot of opportunities, speakers said during a session on Sustainable Recovery—Transforming the Industry for the Future at SPE's Annual Technical Conference and Exhibition (ATCE) on Oct. 3.

Lorenzo Simonelli, chair and CEO of Baker Hughes Co., said the industry must work to balance sustainability, affordability and energy security, or what has become known as the energy trilemma.

"We have the opportunity to drive change and solve the energy trilemma," he said. "This is the time for our industry to be problem solvers, not part of the problem."

Vicki Hollub, president and CEO of Occidental Petroleum Corp. (Oxy), said the discussion shouldn't be around the fuel source and the "undirected, unbridled passion about killing fossil fuels" but rather around what to do about emissions and "how to collaborate and solve one of the world's greatest problems today."

She urged the industry to stay the course despite external pressures and comments from outside the industry.

"We've got to be better as an industry," she said. "We are going to have naysayers until we are walking the talk and showing progress with transition. Until those things happen in a big way, we are not going to get support from a very big vocal group that's attacking us."

She said all companies need a strategy as the world moves toward the energy transition.

"Oxy is headed toward becoming a carbon management company," Hollub said.

She said that doesn't mean Oxy won't produce oil and gas but that she expects carbon management will be as big as Oxy's chemical business in 12 to 15 years.

"I believe that companies that don't have a carbon transition story don't survive because that's going to be our social license to operate," Hollub said.

Schlumberger Ltd. CEO Olivier Le Peuch said focus on net zero commitments needs to be on actions that affect the curve, particularly around detecting, monitoring and eliminating methane.

"Methane is what's giving us the black eye in terms of society," he said, urging the industry to "go after it" at scale.

Iman Hill, executive director at the International Association of Oil & Gas Producers (IOGP), said the industry needs to face up to the fact that change is coming.

"It's not the energy transition. It's energy transitions, and it's not one size fits all," he said.

As Kamel Ben-Naceur, president of Nomadia Energy Consulting and outgoing 2022 SPE president, noted, different parts of the world have different views on the energy transition. Some parts struggle with access to energy, while Europe is facing energy poverty, he said.

"We have never seen energy prices in Europe at the level they are today," he said, noting the equivalent price of gas is roughly $600/bbl.

In the Middle East, Ben-Naceur said, Oman is formulating its strategy for 2071 and what happens when demand for oil is different than it is today.

But one thing is clear, he added: "We need to invest more in oil and gas."

Barton Cahir, senior vice president for upstream portfolio development at ExxonMobil Upstream Co., said that "everybody recognizes the need for more oil and gas investment" through the energy transition.

"Upstream oil and gas is a big part of the mix into the future," he said.

Increased production and emissions can exist simultaneously, he added.

"It's not an either-or thing. It's an 'and' thing," Cahir said.

For example, he said, Exxon Mobil has doubled its Permian Basin production in the past four years while reducing methane, flaring and total emissions.

"By the end of the decade, we will be at net zero for the Permian and grow production by a factor of two," he said. "The 'and' proposition is possible." OGI

Events Calendar

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

EVENT	DATE	CITY	VENUE	CONTACT
2022				
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
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
GoM Energy Transformation Conference	**Feb. 21**	**Houston**	**Norris Conference Centers**	**hartenergyconferences.com**
CERAWeek by S&P Global	Mar. 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
Global Energy Forum	April 11-12	Houston	Petroleum Club of Houston	usenergystreamforums.com
Energy Infrastructure Conference	**April 12-13**	**Houston**	**Norris Conference Centers**	**hartenergyconferences.com**
SPE Innovation & Entrepreneurship Summit	April 26	Houston	Norris Conference Centers	spegcs.org
Energy Workforce & Technology Council Annual Mtg.	April 27	Austin, TX	Omni Barton Creek Resort & Spa	energyworkforce.org
Offshore Technology Conference	May 1-4	Houston	NRG Park	2023.otcnet.org
AGA Financial Forum	May 16-19	Miami Beach, FL	Loews Miami Beach Hotel	aga.org
DUG Permian/Eagle Ford/Midcon/Bakken	**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
Energy Cyber Security Conference	**June 7**	**Houston**	**Norris Conference Centers**	**hartenergyconferences.com**
Texas Energy Forum	Aug. 23-24	Houston	Petroleum Club of Houston	usenergystreamforums.com
Carbon Management Conference	**Aug. 30**	**Houston**	**Norris Conference Centers**	**hartenergyconferences.com**
Monthly				
ADAM-Dallas	First Thursday	Dallas	Dallas Petroleum Club	adamenergyforum.org
ADAM-Fort Worth	Third Tuesday, odd mos.	Fort Worth	Petroleum Club of Fort Worth	adamenergyfortworth.org
ADAM-Greater East Texas	First Wed., odd mos.	Tyler, TX	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, TX	Petroleum Club of Midland	adampermian.org
ADAM-Tulsa Energy Network	Bi-monthly	Tulsa, OK	The Tavern On Brady	adamtulsa.com
ADAM-Rockies	Second Thurs./ Quarterly	Denver	University Club	adamrockies.org
Austin Oil & Gas Group	Varies	Austin	Headliners Club	coleson.bruce@shearman.com
Houston Association of Professional Landmen	Bi-monthly	Houston	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.

Thank You!

To Our Sponsors & Participants!

Energy Golf Classic benefitting KidLinks

OCTOBER 3, 2022
Dallas Athletic Club

SPECIAL EVENT SPONSORS

Akin Gump STRAUSS HAUER & FELD LLP

KIRKLAND & ELLIS

URBAN ENERGY FUNDS

ASPEN MIDSTREAM | SILVERHILL ENERGY PARTNERS

MEDIA SPONSOR

Oil and Gas Investor

EAGLE SPONSORS

EDGE NATURAL RESOURCES LLC

EDF

ENLINK MIDSTREAM

FOUNDATION ENERGY MANAGEMENT

HAYNES BOONE

IOG RESOURCES

Holland & Knight

KING OPERATING CORPORATION

MOSSADAMS

TEAM LYONS

NAMING SPONSORS

Alliant

APPALACHIAN MINERAL PARTNERS

BAKER BOTTS

BANK OF TEXAS

ONE STAR MINERALS

MEDALLION MIDSTREAM

PETRO-HUNT L.L.C.

PRODUCERS MIDSTREAM

SHEARMAN & STERLING

TAILWATER CAPITAL

Texas Capital Bank

BIRDIE SPONSORS: Alchemist Energy | Amegy Bank | Artemis Production Solutions, Inc. | Atoka Energy Blue Ox Resources | Chubb | CrossFirst Bank | Dale Operating Company | Energy Spectrum Capital Hamilton Squibb & Shores LLP | IMA, Inc. | Locke Lord LLP | NGP Pegasus Bank | PetroCap LLC | PetroVen, Inc. Pillar Energy LLC | Pine Wave Energy Partners | Premier Capital LTD | Purity Oilfield Services LLC | RT Specialty Shepherd Royalty LLC | Sidley Austin LLP | Steward Energy II LLC | Tubular Synergy Group Vaquero Midstream | Vinson & Elkins LLP | Vortus Investments | WAFD Bank | Weil, Gotshal & Manges LLP Wells Fargo | Winstead PC **HOLE SPONSORS:** Carnelian Energy Capital | EnergyNet | J. H. Blades & Co., Inc.
SPECIAL CONTRIBUTORS: Big E Drilling

KIDLINKS

For more information on KidLinks and our mission of Healing, Hope and Happiness for children everywhere through music and media, please visit our website www.kidlinks.org or follow us on Instagram @Kid_Links. *2023 Energy Golf Classic details coming soon on kidlinks.org/golf or email us at info@kidlinks.org!

***supporters as of print deadline 10.01.22**

REDUCING THE PERMIAN'S CARBON FOOTPRINT

After its landmark approval for a Permian Basin gas plant in Texas, Stakeholder Midstream shares how it plans to help reduce the industry's carbon footprint.

ARTICLE BY

JUDY MURRAY

Carbon capture and storage (CCS) is becoming a priority for operators across the U.S., and companies such as Stakeholder Midstream are providing attractive solutions.

Backed by EnCap Flatrock Midstream, Stakeholder Midstream has assets in the Permian Basin near the Texas-New Mexico border. The company recently received approval from the U.S. Environmental Protection Agency (EPA) for a monitoring, reporting and verification (MRV) plan that documents how Stakeholder will ensure permanent CCS of CO_2 in the Pozo Acido well from natural gas processed and treated at its Campo Viejo gas plant. The Stakeholder plan is the first approved by the EPA in the state for permanent geologic sequestration of CO_2 that is not associated with EOR operations.

> **"The world has changed, and there is more focus now on carbon emissions in oil and gas and across the board."**
>
> **—Robert Liddell, *Stakeholder Midstream***

Reducing the industry's carbon footprint

According to Rob Liddell, co-CEO at Stakeholder, CCS has been a focus for the company from day one.

"The world has changed, and there is more focus now on carbon emissions in oil and gas and across the board," he said. "We think sequestering CO_2 is one of the ways we as a country will be able to pull the lever and reduce our national carbon footprint and more specifically our industry's carbon footprint."

Fossil fuels will continue to support the world economy for the foreseeable future, chief commercial officer Brett Baker said, "and we have a moral obligation to do whatever we can to ensure those fuels are produced, transported and processed in the most environmentally responsible way."

Reducing wellhead flaring is one way to mitigate the effects of hydrocarbon development, he said, "but after mitigating flared and vented gas, we believe injecting captured CO_2 is the way our industry is best situated to help reduce global emissions."

The Permian Basin, the second-largest shale gas-producing region in the U.S., is a good place to start expanding CCS capacity. According to GlobalData, in 2022, production capacity in the basin was 19,891 MMcf/d, the majority of which is associated gas.

Liddell said one of the challenges in managing that associated gas is the fact that it is complex. "The gas stream produced in the San Andres has a lot of CO_2 and nitrogen in the gas stream," he said. The Stakeholder technical team's experience with that type of gas put the company in a good position to offer services that competitors do not.

Stakeholder started by managing its "equity CO_2," which Baker explains as, "CO_2 currently being captured and sequestered that's associated with the gas that we manage at our facilities and gas pipelines."

Equity CO_2 is part of normal gas treating and processing on site today. The company's low-pressure gathering system receives gas from nearby producers and moves it to

one of two processing facilities, where the gas is compressed and sent through an amine treatment to remove CO_2 and other impurities, which are sequestered nearby.

The location of the disposal site in relation to pipeline infrastructure is another plus, Liddell explained. "We are at the backbone of the existing infrastructure of major CO_2 pipelines, all of which run through Stakeholder's footprint," he said. "Our location provides access for other emitters. We can access third-party CO_2 volumes that are currently being vented and sequester them in a timely and capital efficient manner."

"We believe the widespread development of CCS in the Permian Basin will be a giant step toward reducing localized and global emissions."

—Brett Baker,
Stakeholder Midstream

Getting others on board

What Liddell and his team discovered as they began talking with producers and other midstream operators is that there are a lot of like-minded companies.

"They are venting CO_2 now, but they want to be good corporate citizens. They want to be environmentally responsible," he said.

Stakeholder intends to help those companies by providing sequestration services for their emissions. "We've been advantaged by the nature of our operations, which required us to drill the sequestration well and put in the equipment necessary to capture and inject," said Josh Roberts, Stakeholder COO.

Currently, Stakeholder is sequestering more than 90,000 mt/year, Baker said. "With updated capacity and the newly MRV-approved well, we will be able to sequester 691,000 metric tons per year of CO_2." Development of a third sequestration well, now underway, will soon give Stakeholder the capacity to sequester greater than 1 million mt/year.

The added capacity opens up more opportunity for "Non-equity CO_2" (CO_2 from third parties) that will come from other processing facilities where CO_2 will be removed from natural gas streams and sent to Stakeholder for sequestration.

With the MRV award from the EPA, Stakeholder can provide operators in the Permian and other basins access to a permanent carbon sequestration option that allows them to substantially reduce their carbon footprint using a solution they can trust.

"One of the reasons the MRV approval was so important for us is that it validates our process," Liddell said. "Our well is safe. Our process is responsible. This is a qualified home for CO_2."

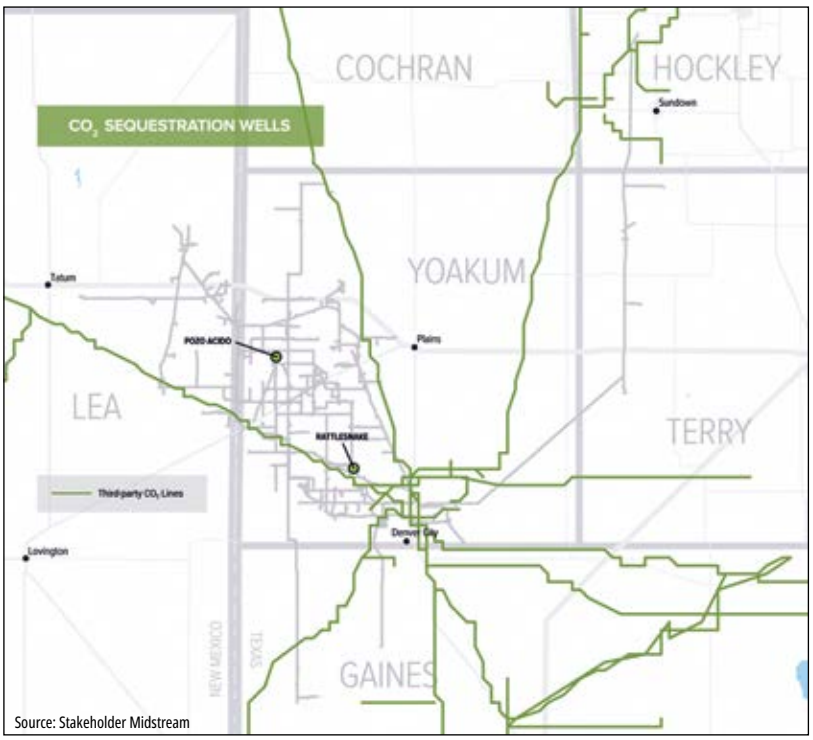
"We are in a unique position," said principal and co-CEO Gaylon Gray. "We have robust infrastructure and are excited about the opportunity that this injection reservoir affords us. Ultimately, by partnering with other midstream providers and offering them an immediate solution for carbon management, we have the potential to dramatically reduce the carbon footprint of operations in the Permian Basin."

Responsible development

One of the things that differentiates Stakeholder's service is its geographic location. There are geologic advantages of injecting into the Devonian Formation in Yoakum County, Texas, Roberts said, noting that it has some of the lowest seismicity in the Permian and that the permeability and porosity of the rock make it ideal for sequestration. Because the CO_2 will be stored at a depth of about 12,000 ft, there is little chance of it affecting drinking water in the water table 10,000 ft above, he said. Additionally, "The storage area is 6,000 ft to 7,000 ft below the nearest producing zone, so there is limited risk of area drillers accidentally penetrating it." With the Woodford shale acting as a seal above the formation, there is minimal likelihood of CO_2 escaping.

Though seismic events are unlikely, Stakeholder is installing a seismometer and will be trending and tracking CO_2 readings at nearby surface locations and monitoring its nearby water wells to provide assurance that there is no leakage.

Pozo Acido's proximity to the most prolific interstate CO_2 pipelines in the U.S. allows Stakeholder Midstream to provide carbon sequestration to third parties in the Permian Basin and beyond.



Source: Stakeholder Midstream

With updated capacity and the newly MRV-approved well, Stakeholder will be able to sequester 691,000 mt/year of CO_2.

STAKEHOLDER MIDSTREAM

Sequestration incentives

The U.S. Tax Credit for Carbon Sequestration (Section 45Q) incentivizes investment in CCS by offering a tax credit that is calculated per metric ton of qualified CO_2 captured and sequestered.

Liddell said Stakeholder's MRV approval and the ability to meet other statutory requirements allows the company—and other parties who use its CCS facilities—to qualify for 45Q tax credits.

"Ultimately, by partnering with other midstream providers and offering them an immediate solution for carbon management, we have the potential to dramatically reduce the carbon footprint of operations in the Permian Basin."

—Gaylon Gray, *Stakeholder Midstream*

"Stakeholder wanted to capitalize on these tax credits for CO_2 that we are currently removing," Liddell said, "and now we can make our service available to other companies so they can capitalize on the tax credits too. The credits are a catalyst for companies now venting CO_2 to look seriously at sequestration solutions."

Stakeholder's experience with the EPA has been positive, according to Liddell, who characterized the EPA representatives as "thorough and professional." Within the industry, there is a tendency to think about government agency involvement as an obstruction, but Stakeholder's engagement with the agency paints a different picture.

"Everyone wants to see progress," Liddell said. "We all want a pathway to safe wells that can be easily monitored and reported on."

According to Liddell, all the agencies the company worked with to get MRV approval are agencies they have been utilizing through normal business activities.

"Familiarity with the agencies and people put Stakeholder on the leading edge of opportunity and ultimately pushed us across the finish line," he said.

The fact that the company secured approval for its Permian Basin activities is proof that the process works. "When you're the first to go out and do something, there are a lot of questions, ambiguity and hesitancy," Liddell said. "MRV approval provides credibility for our offering. This is part of our industry's future, and it's achievable."

Although policies are evolving, and requirements continue to change, Stakeholder is enthusiastic about being part of the process, Roberts said.

"As we transition to the world of 45Q and carbon management, we understand that it is important for the industry to start taking steps in that direction. We are confident in our carbon sequestration solution from a policy and procedural perspective."

Stakeholder has invested in garnering the resources, the consultants, and the third-

party experts to impact the way this is going to be administered, Roberts said. "We have a deep bench of people with technical expertise and commercial polity to engage in this process and believe that we are emerging as leaders in carbon management."

CCO Brett Baker summed up the company's plans and its broader goals in simple terms. "We believe the widespread development of CCS in the Permian Basin will be a giant step toward reducing localized and global emissions. It's important to us as a company to do everything we can to maintain a more sustainable and responsible future."

"As we transition to the world of 45Q and carbon management, we understand that it is important for the industry to start taking steps in that direction."

—Josh Roberts,
Stakeholder Midstream

Planning for the future

"Our hope is that a few years from now this is not unique," Liddell said. "We have other wells we want to get permitted. We hope others will latch onto this."

The initial step of securing MRV approval for the permanent sequestration of CO_2 at its Pozo Acido injection well is a critical one because it provides a foundation upon which Stakeholder can build.

"We are a young team and want to be doing this for a long time because it is important to the longevity of the sector," Liddell said. "We are focusing on traditional gathering and processing opportunities in the hope that we can create opportunities and have a positive impact for our industry."

The company is looking for additional locations that can be used for sequestration and is continuing to have conversations with CO_2 emitters across the play with the goal of finding more storage capacity and an established customer base for its offering.

Meanwhile, Stakeholder has plans to further build out its capture and sequestration facilities with the goal of readying them for operation in 2023.

Rapid expansion has been possible because of the company's vision and the effort that has gone into planning for growth, Liddell said. "We did extensive modeling to determine what the capacity of our Pozo Acido well could be, while still ensuring safe and responsible CO_2 sequestration."

As Stakeholder starts to commercialize this plan, it will have to invest in pipeline infrastructure and additional compression and pumps to optimize ultimate capacity, he said, but the capital expense will be worth it. "There are a lot of emissions in the sector that would fill up 1 million metric ton capacity without eliminating CO_2 in the midstream space," he said.

Gray believes this approach will appeal to the company's producers, who he said have been aligned with mitigating the overall environmental impact of the play and want it to be as clean as possible.

"They worked with Stakeholder to eliminate flaring at the wellhead and take the first steps toward carbon sequestration in an effort to reduce the environmental impact of operations in the basin," he said, and they will continue to partner with Stakeholder to improve environmental stewardship in the region.

"We believe this marks the beginning of an important new aspect of the midstream business," Baker said. "We hope this landmark approval will encourage other midstream operators to pursue similar paths so we as an industry can reduce our overall carbon footprint." OGJ

STAKEHOLDER MIDSTREAM

Stakeholder Midstream's Pozo Acido CO_2 sequestration well is the first in Texas to have an EPA-approved MRV plan that is not associated with EOR operations.

HARTENERGY

All Energy, All the Time, Any Way You Want

BEST VALUE

DIGITAL

~~was $49.99/month~~

$29.95/month*

Auto-renews monthly, cancel anytime

DIGITAL + PRINT

~~was $65.99/month~~

$39.95/month*

Auto-renews monthly, cancel anytime

PRINT

~~was $25.75/month~~

$14.95/month*

Auto-renews monthly, cancel anytime

Digital Subscription Benefits

- Unlimited access to HartEnergy.com
- Real-time coverage of emerging energy subjects
- Real-time commodities pricing
- Video interviews with industry executives and Hart Energy conference/DUG summaries
- Weekly and daily topical newsletters you can filter
- In-depth coverage of markets, commodities, fields, plays and projects
- Access to Rextag's Energy Datalink – GIS, mapping and data
- Digital editions of Oil and Gas Investor and archives of E&P and Midstream Business magazines

Print Subscription Benefits

- 12 print issues of Oil and Gas Investor magazine
- Reimagined and redesigned to streamline readers ability to get to the point
- Easily scanned articles arranged in logically prioritized sections
- QR codes to longer format articles supported by related information on hartenergy.com for in-depth analysis
- Expanded coverage of plays and players with in-depth analysis, reporting and interviews
- Investigative journalism to uncover details and provide insight

Why subscribe to Hart Energy?

Catch expert analysis
To get ahead, you need actionable analysis that addresses your specific niche of the energy industry.

The day's events delivered
From the Morning Rush that helps start your day to specialized content such as Tech Direct, A&D Watch and Midstream Monitor, you can select from nine different newsletters—all packed with the latest reporting.

Stay informed more easily
Beyond Exclusive Content, HartEnergy.com is engineered to make finding what you need easy. You can get up to date on the news that matters to you without wasting time.

SUBSCRIBE HERE

HARTENERGY

*New subscribers only

CALLING ON TECH TO OPTIMIZE OPERATIONS

Security and data remain strong themes in discussions about technology, its costs and its potential payoffs.

ARTICLE BY

JENNIFER PALLANICH

jpallanich@hartenergy.com

Technology lies at the heart of most plans for optimizing operations, and humans and secure data play key roles in projects living up to their promise.

During several events in Houston in September, industry experts weighed in on the costs of technology against its possibilities as well as how the use of the Internet of Things (IoT) means oil and gas companies need to step up their security practices.

> **"We're not looking to replace people but enhance the work. We're addressing the rig personnel gap with new technologies, robotics."**
>
> —**Robert Goodwin,** *NOV*

At API's September general meeting, experts from NOV Inc. and Hewlett Packard Enterprise (HPE) discussed ways technology could move from cost center to income generator. At the same time, they acknowledged technology runs on and generates significant amounts of data, and the industry must contend with classifying and securing the data to improve operations.

Robert Goodwin, product line director for drilling equipment at NOV, said the company can work to optimize equipment and workflows, but crews within an organization often compete with each other. That means best practices are not always shared between different crews, he said.

Drilling contractors have also complained that "they've spent money on their assets, they've spent money on the maintenance, but they need more people," Goodwin said. "We're addressing that by changing how the drill floor looks. We're not looking to replace people but enhance the work. We're addressing the rig personnel gap with new technologies, robotics."

NOV is introducing robotics, along with other new technologies, for the drill floor later this year, he said.

Matt Maccaux, global field CTO for Ezmeral Software at HPE, said humans may not be willing to do the steps necessary to optimize operations, particularly if it's very complicated.

"If you can't optimize the process because the people cannot or won't do it, it's all for naught," Maccaux said. "We have to take the human into account. We have to incentivize them to participate."

Time and money

Technology is a cost center for HPE in that it may help the company do things like process payments, but it does not add value. The goal for technology, he said, should be that "instead of for every transaction it costs me a penny, that it makes me a penny."

He encouraged companies to "get smart people in the room" and find ways to make money from the data and technology the companies are already paying for.

"Is there a way to optimize the information they already have to bring in income" is the question companies should be thinking about, Maccaux said.

Data that is collected and processed can also be used to save money and time, said Bhuvaneshwari Guddad, solution architect at HPE. Data makes it possible to plan ahead.

"If you know a part will go bad in a few days, you can plan and save costs," she said. Without that information ahead of time, the facility could face downtime, she added.

"Is there a way to optimize the information they already have to bring in income?"

—Matt Maccaux, *Hewlett Packard Enterprise*

Only collecting data across all the rigs in all conditions and then analyzing it to apply meaning makes it possible to tease out patterns, Maccaux said.

Goodwin said one of the key questions is who owns data collected on drilling equipment.

"We make some of the best drilling equipment, but we may not get feedback" on how it's operating unless there's a call for warranty work or issue, or if the customer pays for an optimization program, he said. "It's a question of how to pass that data on, and who owns that data."

And the security of that data is becoming increasingly important.

"There was a concept of trust," Maccaux said. "You could trust the information being brought to you … But the world is moving toward an 'I don't trust anything model'" due to cybersecurity concerns.

Data being sent now uses trust chains to prove provenance or "to prove to the other side that it is who it says it is," he added.

Cybersecurity risks

During the IoT in Oil & Gas Conference, experts noted that equipment and sensors deployed in the field were not originally designed with cybersecurity in mind, which complicates operational technology (OT) cybersecurity, especially for an industry as ripe for attack as oil and gas. Also, experts warned it's not enough to fight the most recent attack method as cyber threats are always evolving.

Yasser Alsaied, vice president of IoT at Amazon Web Services, said the number of IoT connections is growing daily, with 14 billion IoT connections globally at the end of 2021 and IoT spending expected to exceed $1 trillion in 2024.

"When you digitize, you make things better and you don't have to rip things apart to do it," he said.

According to Jeff Bennett, Azure IoT partner executive at Microsoft, the reasons to connect equipment to the internet are going to increase because of the enormous value real-time operational information brings to businesses. But in the past, the sensors and equipment that provided operational information were air-gapped, which provided a level of safety.

"We didn't have to worry about hackers, but now it's connected," he said. And the addition of more sensors that provide more data present "an even greater threat surface for hackers to get in," he said.

One recent trend is that the people who write the viruses are not the ones who attack the target network.

"The people that implement the virus into the target network don't have the technical expertise to write it," he said.

Many hacking groups are supported by nation-state intelligence services, making them a "powerful, resourceful enemy,"

Bennett said. "The offense is more advanced, and thus the defense has to get better."

In short, he said, companies should assume an intruder is in the network.

"The question becomes not how do I build my walls higher, but how do I build my moat deeper? How do I respond to threats as they arise?" Bennett said.

Todd Anslinger, Industrial IoT (IIoT) and automation specialist at Chevron Corp., said the company has millions of devices linked to IIoT.

"Being a large company, we get attacked every day," he said.

One of Chevron's strategies for avoiding cybersecurity risk is to run its own IoT hub and only use third-party IoT hubs when absolutely necessary, he said. The super-major also standardizes on qualified sensors and gateways, he said.

"This keeps us out of cybersecurity risk," Anslinger said.

Asif Effendi, Baker Hughes' global director of product security, said a 2020 analysis by Mandiant on cybersecurity attacks revealed that the majority of attacks entered through IT and pivoted to OT because of the weakness of security associated with OT equipment.

"These bring in malicious possibilities that did not exist before," he said.

John Taplett, Ceritas' founder, said companies should not always look to the past for what to guard against.

"We're defending against what happened last time. It's generally not going to be what happens next," he said, noting the requirement that air travelers remove shoes at airport security because of one attack that involved shoes. "We always fight the last war all over again."

"The offense is more advanced, and thus the defense has to get better."

—Jeff Bennett, *Microsoft*

In order to win, always being aware of the company's scope for threat is crucial, Kevin Kumpf, chief OT strategist at Cyolo, said.

"It's really about knowing your baselines. If you know your baselines, you can get your declines. If you know your baselines, you can know your threats. If you know this, you can go to management and say, 'Here is what we think are the most important things to protect against," he said. OGJ

MANCHIN'S DEAL TO SPEED PERMITTING BUMPED TO SLOW TRACK

Even if Congress passes Sen. Joe Manchin's permitting reform bill, projects like the Mountain Valley Pipeline will not automatically get a green light.

ARTICLE BY

JOSEPH MARKMAN

@JHMarkman

jmarkman@hartenergy.com

Senate Majority Leader Chuck Schumer (D-N.Y.) and Sen. Joe Manchin (D-W.Va.) suspected that passage of Manchin's permitting reform legislation would not be a slam dunk when they attached it to a government operations funding bill at the close of the third quarter. In fact, it was anything but a slam dunk—it didn't even make it to a vote.

"A failed vote on something as critical as comprehensive permitting reform only serves to embolden leaders like [Russian President Vladimir] Putin who wish to see America fail," Manchin said in late September in explaining why he pulled the Energy Independence and Security Act from the funding bill.

He hasn't given up. The bill may yet come up for a vote, perhaps attached to another funding measure, before Congress adjourns for the year. However, even if the bill does pass, it may do little to accelerate the pace of infrastructure projects, legal experts told Hart Energy.

"I would anticipate, certainly, a change in perspective on the side of the federal regulator, but that does not mean that the permits for any particular project are a foregone conclusion or a project development is a fait accompli," said Cale Jaffe, law professor at the University of Virginia. "There still are other stakeholders that are not parties to that agreement, and I think you've seen that from a lot of the nonprofits who have already said they still intend to fight oil and gas infrastructure projects that they've been opposing."

The deal between Manchin and Schumer promised a vote on the permitting reform bill in exchange for Manchin's support for the Inflation Reduction Act (IRA), which passed in August. Among the permitting bill's provisions is a requirement for "relevant agencies to take all necessary actions to permit the construction and operation of the Mountain Valley Pipeline." It also would move all future litigation of the project to the jurisdiction of the U.S. Court of Appeals for the D.C. Circuit from the Fourth Circuit.

The bill aroused opposition from both sides of the aisle from the start. Rep. Rashida Tlaib (D-Mich.) told The American Prospect that progressives "sure as hell don't owe Joe Manchin anything now. He and his fossil fuel donors already got far too much in the IRA." On the Republican side, Sen. Lindsey Graham (R-S.C.) said, "I will not vote for a continuing resolution that is part of a political payback scheme."

Time frames

The bill would set maximum timelines for permitting reviews under the National Environmental Policy Act. They would be two years for major projects and one year for lower-impact projects.

Speeding up the permitting process drew support from Equitrans Midstream Corp., the lead stakeholder in the consortium building the long-delayed Mountain Valley Pipeline.

"The proposed permitting reform legislation addresses issues that have presented costly, time-consuming delays in the construction of energy infrastructure projects and supports Americans' demands to execute a timely transition to clean energy, while at the same time ensuring energy reliability and affordability," Natalie A. Cox, spokeswoman for Equitrans Midstream, told Hart Energy. "By providing a timely and certain permitting process, the proposed legislation would benefit all energy infrastructure projects, which is just as important for renewable energy infrastructure projects as it is for oil and gas."

David Adelman, professor of law at the University of Texas at Austin, agrees that resolving permitting issues is critical to managing the scale of development needed for the energy transition.

"We are not prepared for it," he told Hart Energy. "This is a pressing issue and it would be wonderful if we could develop permitting reform in a thoughtful, constructive way."

Strict time frames, however, may not be the way to go.

"Having an arbitrary time limit, I think, probably will be useless," Adelman said. "In a lot of cases, it won't matter; it can be done in that time period. But so much of it is going to turn on how you measure that two-year period."

If the time frame is not well defined, federal regulators might be tempted to delay environmental reviews until later in the evolution of the project, he said. This could happen if they believe the project will be delayed for other reasons or change significantly.

"Basically, what the agencies could do is game the system so that even if they're initiating some consultation and some work, they haven't formally started the time for preparing an EA [environmental assessment] or the time preparing an EIS [environmental impact study], and I think it would be really hard to monitor that," Adelman said.

He also disagrees with the logic that all delays are associated with the actual process of undertaking the analysis and writing up the EA or the EIS. Often, the key factor is resource limits that hold up projects, Adelman said, referring to a federal agency's shortage of people or budget.

"I cannot think of any other legislative precedent for moving an active controversy from one federal circuit to a different federal circuit."

—Cale Jaffe, *University of Virginia*

Change of venue

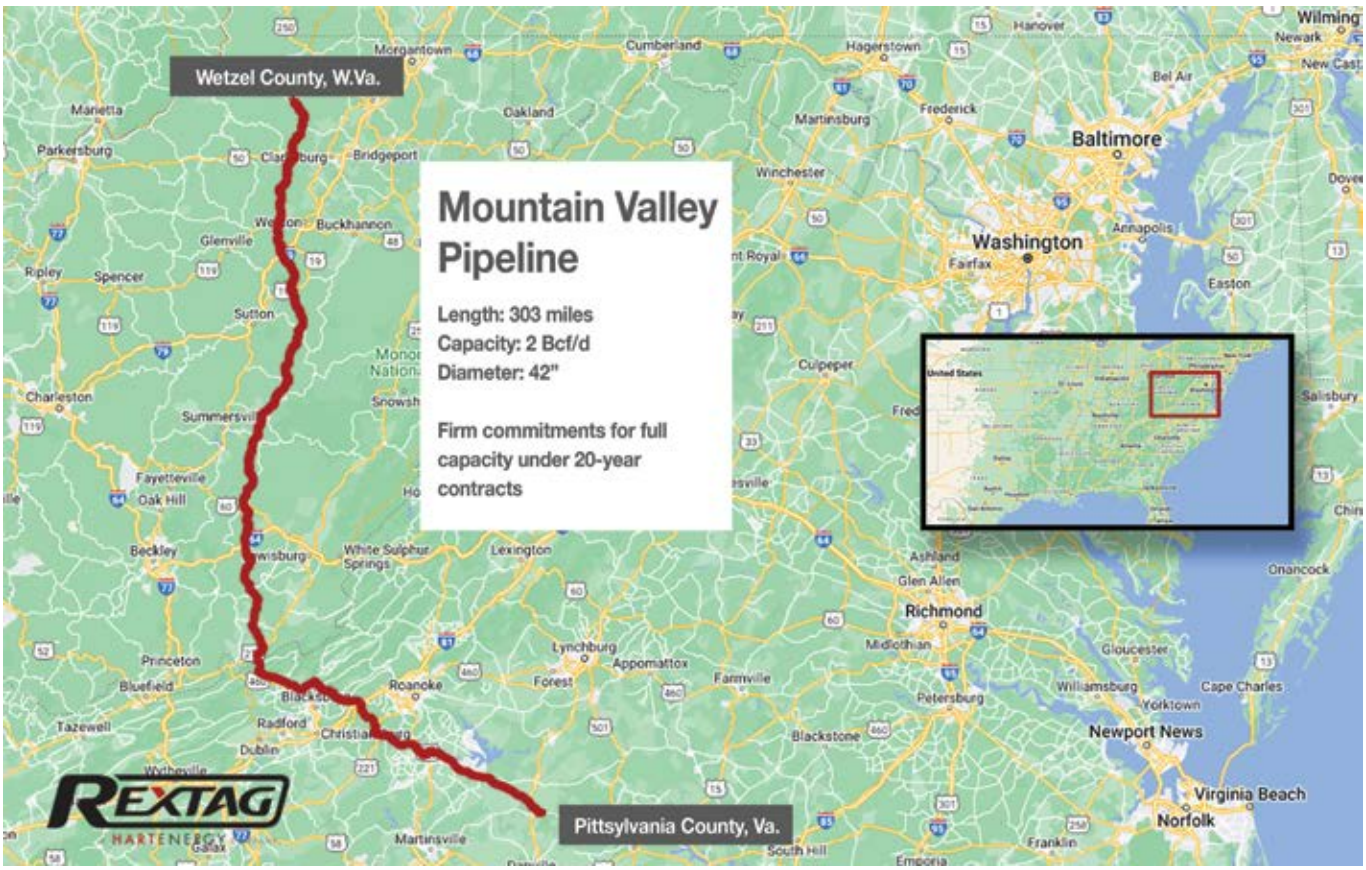
Perhaps the most unusual aspect of the agreement between Manchin and Schumer is moving jurisdiction of cases involving the Mountain Valley Pipeline to the more conservative D.C. Circuit from the Fourth Circuit, where groups opposing the natural gas project have had some success.

"It's going to be a more favorable forum for the federal government," Adelman said. "It's flagrant forum shopping."

"It's certainly novel," Jaffe said. "I cannot think of any other legislative precedent for moving an active controversy from one federal circuit to a different federal circuit."

There is, however, precedent for designating the D.C. Circuit as the forum for challenges. Under the Natural Gas Act, an appeal to the Federal Energy Regulatory

The agreement between Manchin and Schumer includes moving jurisdiction of cases involving the Mountain Valley Pipeline to the more conservative D.C. Circuit from the Fourth Circuit, where groups opposing the natural gas project have had some success.



Source: Rextag/Hart Energy

Commission on a natural gas permit decision goes directly to the D.C. Circuit, he said.

"It's not as if D.C. Circuit hasn't weighed in on some of these issues," Jaffe said. "Litigants will find D.C. Circuit decisions that are favorable to the oil and gas industry, and they can find D.C. Circuit precedents that are favorable to community opponents of that infrastructure. And there are cases that you could cite on both sides."

Jaffe also questioned a provision to address excessive litigation delays.

"I don't have the sense that the cases on the [Mountain Valley] Pipeline have languished, frankly," he said. "There have been some wins and losses on all sides and subsequent appeals that, of course, take some time, but I can't think of a case where it was briefed and argued and then just sat unresolved for a year or more."

And victories in court don't necessarily result in a project's success. Dominion Energy and Duke Energy prevailed in the Supreme Court in 2020 to gain permitting for the Atlantic Coast Pipeline. Less than three weeks later, they canceled the project.

The political climate in Washington might pose the biggest challenge to the bill. Acrimony over the process of passing the Inflation Reduction Act could, strangely, put some Democrats in opposition to a measure that could accelerate construction of infrastructure for renewable fuels. Some Republicans might find themselves refusing to vote on legislation that would benefit fossil fuel interests.

"This is a pressing issue and it would be wonderful if we could develop permitting reform in a thoughtful, constructive way."

—David Adelman,
University of Texas at Austin

"It seems like it would have to be bipartisan," Adelman said. "That is going to be challenging to put it together so that you can attract some Republicans but not make it overly Draconian. Threading that needle strikes me as something that will be hard." OGJ

WHEN PUTIN CAME TO SHOVE, A PRAGMATIC EUROPE RETURNED TO FOSSIL FUELS

Without Russian natural gas, European governments scramble for enough LNG but will settle for coal this winter, panelists say at Baker Institute conference.

ARTICLE BY

JOSEPH MARKMAN

@JHMarkman

jmarkman@hartenergy.com

Russia's cutoff of natural gas to western Europe forced governments there to became very pragmatic, very quickly, experts concluded at the recent Annual Energy Summit hosted by Baker Botts law firm and Rice University's Baker Institute for Public Policy.

"[Germany], in essence, wiped away all of their regulatory structures in order to allow [fossil fuel] projects to move at a rapid pace," said Dan Brouillette, president of Sempra Infrastructure and former U.S. Secretary of Energy. "I applaud that. I think it's important that we do that, just given the acuteness of the situation that we face today as a world."

While the start of the European energy crisis is commonly tied to Russia's Feb. 24 invasion of Ukraine, the continent was in crisis before that, said Marc Merrill, president and CEO of Uniper North America, a division of German electric utility Uniper SE.

Energy policies that mandated a rapid move away from fossil fuels toward renewable sources were put on hold.

> "The debates around whether gas is good or bad, or whether this technology is good or bad, or this fuel source is good or bad, I personally think needs to be set aside for a moment in time."
>
> —Dan Brouillette, *Sempra Infrastructure*

Germany was forced to restart mothballed coal plants to generate power, and its decision to continue to use nuclear power was presented with its own challenge because the European drought has severely limited the water supply necessary to cool the plants. Immediately, though, the country—indeed, the entire EU—rushed to fill natural gas storage ahead of winter.

"The German government came up with a very ambitious requirement to get those storage filling levels up to 95%. We're going to meet that," Merrill said. "And that's going to be essential for this winter. Let's see about next winter because I think we're all realizing that next winter is going to be just as critical as this winter."

An unacceptable source

But it's not simply a short-term pivot in energy strategy, not when the supplier of 40% of European natural gas suddenly decides to not supply it.

"Seven months ago, we were thinking about how to incorporate Russian energy in Europe, in particular," said Anna Mikulska, fellow in energy studies at the Baker Institute, who specializes in the geopolitics of natural gas in the EU, Russia and the former Soviet bloc. "Now, we're thinking how to replace it completely, and that's a huge change that will not happen from one day to another. And that will actually cause a lot of pain, both in terms of ability to heat your house at an affordable rate, but also going forward in economic terms."

Natural gas has long been heralded as a fuel that easily fit into the "three A" paradigm: availability, affordability and accessibility. Mikulska added "acceptability" as a fourth.

In western Europe, acceptability applied to renewables and other sources of clean energy. Natural gas from Russia was only acceptable because fossil fuels were on their way out, anyway.

Eastern European countries like Poland and Ukraine had an entirely different take. Natural gas could not be acceptable

if it was provided by Russia because the Russians had already shown a penchant for cutting off the supply when it suited their political interests. Russian gas may have been needed, Mikulska said, but not necessarily wanted.

The European gas equation illustrates the risk of relying strictly on government policies and not on markets to ensure sufficient energy supplies.

"We know that markets are not predictable, necessarily, but we know how they work," Mikulska said. "They work on the basis of supply and demand, whereas if we depend on governments to set up energy flows based on their policy, we can expect anything or everything. And that predictability is decreasing, particularly if those governments are like that of Russia."

An imperfect world

Even governments that don't resemble Russia can change course quickly.

Robert Habeck, Germany's vice-chancellor and federal minister for economic affairs and climate action, is a leader of the Alliance 90/The Greens party. Despite leading a movement fiercely dedicated to fighting climate change, he has spent much of this year working to secure sources of energy for his country, even if they are fossil fuels.

"The pragmatism with which he acted over the last six months is very commendable," Merrill said. "We've been flying around sourcing LNG, those coal plants are back on, the decision to extend the life of the nuclear plants. I think that is the kind of thing that we need going forward at all levels, particularly here in the United States."

In Brouillette's mind, the popular approach to the energy transition as a bridge ignores the realities of an imperfect world. Renewables are not yet scaled up and the world still needs fossil fuels. The trouble is, natural gas is not flowing on either Nord Stream 1 or Nord Stream 2.

"What are we going to do to replace that gas in Europe?" he asked. "The debates around whether gas is good or bad, or whether this technology is good or bad, or this fuel source is good or bad, I personally think needs to be set aside for a moment in time. And we need to understand that the needs of the population, the needs of the citizens around the world must come first."

Mikulska appreciates the pragmatism of European countries that intended to move away from fossil fuels but are now compelled to invest in them again. But that doesn't mean the world needs to make a full return to the former energy structure.

"We should see more focus, more investment into the decarbonization technologies like CCUS [carbon capture, utilization and sequestration], like others, that would take a much longer time to develop in places that are not as well developed," she said. "Like places in Asia that will continue, as we know, to use fossil fuels for decades to come." OGI

Oil and Gas Investor

COMPANIES IN THIS ISSUE

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

'NOW DO AUSTRALIA:' SHALE ROYALTY

@ CLOSING

NISSA DARBONNE
EXECUTIVE EDITOR-AT-LARGE
@NissaDarbonne
ndarbonne@hartenergy.com

Third-generation wildcatter Bryan Sheffield founded Permian-focused Parsley Energy Inc. with a handful of vertical wells and turned the E&P in 12 years into a $7.6 billion sale in stock and debt assumption.

Dick Stoneburner, a multidecade rockstar, was part of taking Petrohawk Energy Corp. to the early days of the Haynesville, then the Eagle Ford, selling the E&P in eight years for $15.1 billion in cash and debt assumption.

The pair are now partners in Australian shale. And their combination is winning investment dollars—A$138 million already with A$98 million of that from private U.S. investors. (A$ = US$0.66.)

Stoneburner is chairman of Tamboran Resources Ltd., now the largest acreage holder (1.9 million) in Australia's Beetaloo Basin. Sheffield, a private investor these days, is founder of Sheffield Holdings LP.

Here's the deal: Origin Energy Ltd., an interest-owner with ConocoPhillips Co. in the Curtis Island, Queensland, Australia, LNG facility sought to add Australian shale E&P to its portfolio. But it opted this summer to exit that side of the business.

Enter Sheffield and Tamboran—and they've brought along more shale royalty too: Helmerich & Payne Inc.

The pair is closing the purchase of Origin's 77.5% interest in three Beetaloo Basin permits (blocks 98, 117 and 76) for A$60 million, plus 5.5% royalties on future production.

They also agreed to a 10-year deal to sell up to 36.5 petajoules/year (36 Bcf/year) to Origin, which is a top Australian gas retailer, and an option to buy up to twice that amount per year for 10 years.

H&P has entered on the funding side of the deal—and is bringing The Iron. Born in 1920, H&P rolled out the new-tech FlexRig in 1998 that became the go-to among shale drillers.

H&P also kept its rigs hot-stacked in the Permian during the post-November 2014 downturn as Sheffield was rolling out new IPO capital to convert Parsley from a vertical Spraberry producer in the Midland Basin into a horizontal Wolfcamp developer.

In the deal for Origin's interest, Tamboran's A$98 million in private placements includes A$30 million from Sheffield and A$22 million from H&P.

With H&P, Tamboran signed a two-year contract for a super-spec FlexRig that will soon be getting to work on development drilling in the Mid-Velkerri B shale.

Joel Riddle, Tamboran CEO, told investors in a conference call, "They will be bringing in the first of five modern U.S. rigs that will be very critical for our ability to drop well costs and to drill very long horizontal wells in the Beetaloo moving forward."

The laterals will eventually target up to 4,000 m (13,000 ft) in length.

H&P president and CEO John Lindsay said the Australian entry is toward rolling out the unconventional-rock FlexRigs abroad.

For now, though, an Australia-based rig operator will be drilling Tamboran's horizontal Amungee 2H and 3H at an estimated combined cost of A$80 million. The frac jobs will be up to 20 stages in 1,000 m each.

Riddle said the target is to get well costs under A$20 million. "This H&P rig really will allow us to do that."

Netherland Sewell & Associates Inc. (also U.S. oil and gas royalty) is Tamboran's reserves auditor. It reported estimated prospective gas resources of some 147 Tcf and 2C contingent gas resources of 1.5 Tcf net to Tamboran upon closing with Origin.

Known to date about the Beetaloo property is that the Mid-Velkerri B has a good dry-gas system and data from tests across the holding show properties similar "to some of the highly successful shale gas plays in the United States," Sheffield said in a statement.

"I believe this multistacked resource play has the potential to replicate the Permian and be one of the solutions to address the global energy crisis."

In addition to the 50:50 deal with Tamboran on the Origin property, Sheffield has a 9.3% voting interest in Tamboran shares.

Ireland-based Falcon Oil & Gas Ltd., which holds 22.5% interest in Origin's Beetaloo blocks, waived first dibs on the Origin buyout, letting it go to Tamboran and Sheffield instead.

The pass sounds smartly like what one might say if a couple of Warren Buffett's want to turn your unimproved property into multibillion-dollar real estate for you: "Sure. Go ahead." OGI

American Petroleum Institute

PROVIDING TRUSTED, TIMELY, TRANSPARENT DATA SINCE 1929

API's Weekly Statistical Bulletin (WSB) provides accurate and reliable petroleum data on U.S. and regional crude inventories, refinery operations and the production, imports and inventories of major petroleum products.

Published every Tuesday afternoon, this survey report is available 18 hours before this data reaches the rest of the world from other providers, ensuring subscribers maintain consistent access to critical information.

TO LEARN MORE ABOUT THE WSB AND HOW TO BECOME A SUBSCRIBER VISIT:

www.API.org/WSB

THE WORLD NEEDS WHAT WE PRODUCE NOW MORE THAN EVER.

AT CONTINENTAL RESOURCES, we are proud to be a leader in the most important industry to impact quality of life for mankind – providing affordable, reliable, abundant, clean energy for the world.

We can imagine a time in which the rest of the world lowers emissions as quickly as America has. Where clean energy is abundant and affordable. Where conflict over energy supply ends forever. All thanks to the bounty of American light sweet crude oil and natural gas.

At Continental, we helped America achieve energy independence, led the efforts to lift the oil export ban, and led the charge to create a new pricing marker for American crude oil. We were the leading pioneer in horizontal drilling – the first to develop an entire oilfield with this technology. We will always be a proud advocate for our domestic energy industry and all of its benefits including the life-changing virtues it delivers.

These virtues of American energy are incredible: lower energy prices for every American family; trillions of dollars flowing back to America as a result of producing American petroleum versus imported petroleum. This provides energy independence, giving us economic and geopolitical security.

American energy producers have the opportunity and resource to meet the energy needs of our country and our allies, to ensure our national security, and to protect our way of life. Continental will continue to lead the way.

Continental
RESOURCES

CLR.com | NYSE: CLR